

## Maze Game

### Project Domain / Category

Game Programming

### Abstract / Introduction

Maze Game is ASHCOMBE MAZE inspired game which is located in AUSTRALIA. The unique soft textures of Australia's Ashcombe Maze are provided by more than 1000 Monterey cypress trees, maintained with careful trimming several times a year (each trimming session lasts an entire month). Visitors must traverse two halves, each with a separate layout, and there are no straight lines anywhere in the maze. The grounds also boast a lavender labyrinth constructed out of more than 4000 lavender plants—which sounds like one of the most relaxing places in the world to get lost.



Now as a game programmer, you are required to build a 3d environment just like ASHCOMBE MAZE in which a player can pass through the maze with beautiful trees and gardens. Overall feel of the project should be a soothing real environment like.

### **Functional Requirements:**

Following requirements must be fulfilled:

1. Player can choose his favourite maze right from the start of the game.
2. Player can check the maze route from the map displaying at the corner of the game while moving across. Map must keep updating with the current player location.
3. Player must finish the path quickly to break the records.
4. If the player gets lost for more than 30 sec, the hint path should be indicated which eventually leads to negative score.
5. You can introduce complex levels by incorporating beasts coming from anywhere in the maze. Player can kill them to continue to move along. Beasts can also kill the player leading to end the game.

### **Tools:**

Unity 3D (any latest version)

**Note:** VU will not provide any of its libraries, scripts, sprites, controls, assets etc. Students have to arrange on their own if required.

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## SMS Spam Classification

### Project Domain / Category

Data Science/Machine Learning

### Abstract / Introduction

As we know that, SMS (Short Message Service) is one of the economical and popular services and most used service in mobile network. It has high response rate and having good confidentiality with trusted and personal service.

Due to that unwanted SMS known as spam SMS will arise which will generate different problem to mobile user. To identify such spam message is one of the important challenges in internet and wireless network.

In this project we will use PYTHON text classification technique to identify or classify spam message. We will find accuracy, time and error rate by applying suitable algorithms (such as NaiveBayes, NaiveBayesMultinomial and J48 etc.) on SMS Dataset and we will also compare which algorithm is best for text classification.

### **Collect Data Set.**

- Gathering the data for SMS spam contains spam and non-spam messages.

### Functional Requirements:

#### **1. Pre-processing**

- As most of the data in the real world are incomplete containing noisy and missing values. Therefore we have to apply Pre-processing on your data.

#### **2. Feature Selection**

- After the pre-processing step, we apply the feature selection algorithm, the algorithm which deploy here is Best First Feature Selection algorithm.

#### **3. Apply Spam Filter Algorithms.**

- **Handle Data:** Load the dataset and split it into training and test datasets.
- **Summarize Data:** summarize the properties in the training dataset so that we can calculate probabilities and make predictions.
- **Make a Prediction:** Use the summaries of the dataset to generate a single prediction.
- **Make Predictions:** Generate predictions given a test dataset and a summarized training dataset.

- **Evaluate Accuracy:** Evaluate the accuracy of predictions made for a test dataset as the percentage correct out of all predictions made.
4. **Train & Test Data**
    - Split data into 75% training & 25% testing data sets.
  5. **Confusion Matrix**
    - Create a confusion matrix table to describe the performance of a classification model.
  6. **Accuracy**
    - Find Accuracy of all algorithm and compare.

**Tools:**

Python

Anaconda

**Prerequisite:**

Artificial intelligence Concepts, Machine learning.

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## IOT Based Automatic Vehicle Accident Detection and Rescue System

### **Project Domain / Category**

Automation / Embedded System Programming

### **Abstract / Introduction**

In the present days automated systems or embedded systems have fewer manual actions. They are much more flexible, reliable and much accurate as compared to our manual systems. Due to increase in demand of such reliable and flexible systems, we prefer an automated control system.

The rapid rise of technology and infrastructure has made our lives easier. The high demand of automobiles has also increased the traffic hazards and road accidents. Life of the people is under high risk. The delay in reaching of the ambulance to the accident location and the traffic congestion in between accident location and hospital increases the chances of death of the victim.

To overcome this problem our automatic ambulance rescue system comes to the rescue. This proposed IOT based accident detection system helps to reduce the loss of life due to accidents and reduces the time taken by the ambulance to reach the hospital.

To detect the accident there is accelerometer sensor present in this rescue system and the GSM & GPS modules included sends messages about the location to the respective guardian and rescue team. With the help of accelerometer sensor signal, a severe accident due to an obstacle can be recognized.

Controller used, sends the alert message through the GSM module including the location to guardian and a rescue team. So, the emergency help team can immediately trace the location through the GPS module, after receiving the accident location information, action can be taken immediately.

This proposed design consists of display unit, accelerometer sensor, GSM & GPS module and alarm. This automatic ambulance rescue system project is useful in detecting the accident.

### **Functional Requirements**

#### **Hardware Module**

- Accelerometer sensor module
- Display Unit
- GSM/Wi-Fi based Internet Connectivity Module
- GPS Module

### **Mobile Application (Android)**

- Capability to receive and manage an online database of the data from Hardware Module
- Capable compute the critical condition based on received data
- Capable to generate alerts to the guardian contact number
- Capable to contact Rescue team through SMS & Voice Call (Automated Call recording)

### **Tools**

- Arduino Kit or Any other Single Board Processors
- Android Studio
- Web API's
- C/C++ Programming Language
- Assembly Language
- Circuit Designing Software's (OrCAD Pspice, WorkBench)
- Keil Embedded Development Kit
- Circuit Components (Resistors, Capacitors, oscillators etc.)
- GPS Module
- GSM/Wi-Fi Module
- Temperature Sensor
- Humidity Sensor

**Note:** Virtual University of Pakistan will not provide any kind of hardware for this project, student must arrange required hardware by himself/herself.

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## IOT based Home Security System

### **Project Domain / Category**

Automation / Digital Logic Designing

### **Abstract / Introduction**

Incidents like Thefts, Fire and LPG gas leakage are very common these days. What is uncommon, is people's awareness about different systems like a smoke detector, gas leakage detectors, etc.

Installing all these different detectors in order to keep the house secured is also something that is difficult to maintain. Here, we have designed an integrated home security system that would help people secure their houses from such incidents.

IOT based Home Security System project is designed to help an individual secure his/her house from theft, fire and LPG gas leakage – all in one. This project uses several different sensors, from which data is sent over a website & mobile application through IOT. Internet of Things (IoT) is basically, the network of 'things' by which physical things can exchange data with the help of sensors, electronics, software, and connectivity. These systems do not require any human interaction.

IOT Based Home Security System uses four Sensors, namely, Temperature, Smoke, LPG and IR sensors. System will have a camera interfaced for security purposes related to theft & unauthorized entry.

System will sense Home Environmental Temperature, Smoke & LPG details through which it will provide intimation regarding any damage related to these things inside the home. System will have IR based sensing techniques to check false entry or any theft related security. A camera will be interfaced to provide the visual display or pictures at the entrance of the home. As soon as the person passes the IR sensor, the buzzer would be turned ON.

Temperature and Smoke sensors are used for fire detection. As soon as the fire is detected, the signal will be sent to the micro-controller which will then send appropriate data to the LCD and the GSM/Wi-Fi module.

Data is in turn sent to the owner mobile application using the IOT module. Similarly, the LPG sensor is used for LPG gas leakage detection. The Pre-requisite for this project is that the GSM/Wi-Fi module should be connected to a GSM/Wi-Fi zone or a hotspot. Camera pictures can be accessed by User End Mobile application.

## **Functional Requirements**

### **Hardware Module**

- Temperature Sensor Module
- Smoke sensor Module
- LPG Sensing Module
- IR Sensor based module
- Camera Interface unit
- Display Unit
- GSM/Wi-Fi based Internet Connectivity Module

### **Mobile Application (Android)**

- Capability to receive and manage an online database of the data from Hardware Module
- Capable compute the critical condition based on received data
- Capable to get visual display of home entrance

## **Tools**

- Arduino Kit/Raspberry Pi or Any other Single Board Processors
- Android Studio
- Web API's
- C/C++ Programming Language
- Assembly Language
- Circuit Designing Software's (OrCAD Pspice, WorkBench)
- Keil Embedded Development Kit
- Circuit Components (Resistors, Capacitors, oscillators etc.)
- GPS Module
- GSM/Wi-Fi Module
- Temperature Sensor
- Humidity Sensor

**Note:** Virtual University of Pakistan will not provide any kind of hardware for this project, student must arrange required hardware by himself/herself.

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## IOT based Smart Weather Reporting System

### **Project Domain / Category**

Automation / Embedded System Programming

### **Abstract / Introduction**

In the present days automated systems or embedded systems have fewer manual actions. They are much more flexible, reliable and much accurate as compared to our manual systems. Due to increase in demand of such reliable and flexible systems, we prefer an automated control system.

Here we propose a smart weather reporting system over the internet. Our proposed system allows for weather parameter reporting over the internet. It allows the people to directly check the weather stats online without the need of a weather forecasting agency.

Our System uses temperature, humidity as well as rain sensor to monitor weather and provide live reporting of the weather statistics. System must have the capability to have location-based information so one can use any mapping mechanism to elaborate/display these weather conditions based on GPS module. The system constantly monitors temperature using temperature sensor, humidity using humidity sensor and for rain.

The system constantly transmits this data to the processing unit, which now processes this data and keeps on transmitting it to the online web server & mobile application. This data is live updated to be viewed on the online server system. Also, system allows user to set alerts for instances, the system provides alerts to user if the weather parameters cross those values.

Thus, the IOT based weather reporting system provides an efficient internet-based weather reporting system for users.

### **Functional Requirements**

#### **Hardware Module**

- Temperature Sensor Module
- Humidity sensor Module
- Rain Drop Sensing & Estimation Module
- Display Unit
- GSM/Wi-Fi based Internet Connectivity Module
- GPS Module

#### **Mobile Application (Android)**

- Capability to receive and manage an online database of the data from Hardware Module
- Capable compute the critical condition based on received data

## **Tools**

- Arduino Kit or Any other Single Board Processors
- Android Studio
- Web API's
- C/C++ Programming Language
- Assembly Language
- Circuit Designing Software's (OrCAD Pspice, WorkBench)
- Keil Embedded Development Kit
- Circuit Components (Resistors, Capacitors, oscillators etc.)
- GPS Module
- GSM/Wi-Fi Module
- Temperature Sensor
- Humidity Sensor

**Note:** Virtual University of Pakistan will not provide any kind of hardware for this project, student has to arrange required hardware by himself/herself.

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## Network Attached Storage (NAS) Cloud Server using Raspberry Pi

### Project Domain / Category:

Networks-IOT

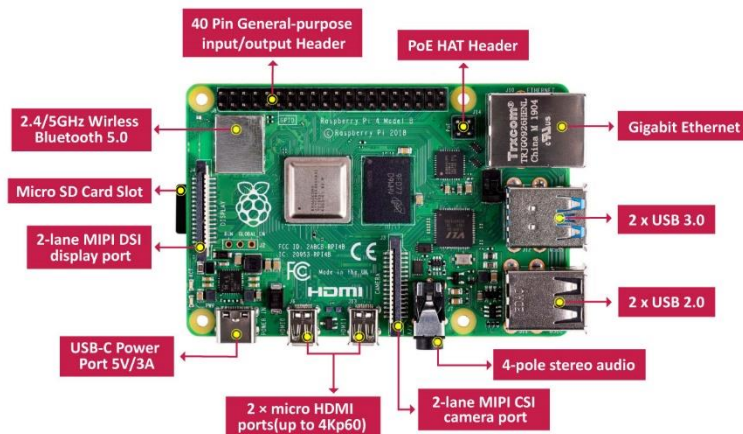
### Abstract/Introduction:

NAS stands for network attached storage, it allows you to store things like picture, videos, documents and backups, etc. NAS uses a portable hard drives an external storage device via your network.

Now a days, where almost everyone carries a smart phone along them wherever they go, people collects massive amount of data. When you upload images and video on Facebook, Twitter, Instagram, you depend on their “cloud” to keep your data safe and accessible. You could also store data on a local hard drive, but it’s pretty hard to access one of those remotely, or from other devices.

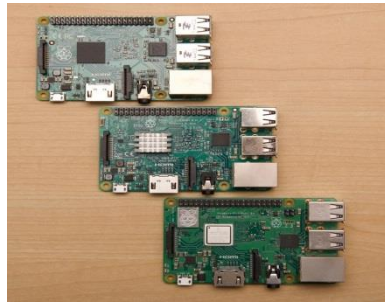
A solution is proposed which is a network attached storage (NAS) device, which stores data locally, like a hard drive, but acts as a server that anyone on your network, or even over the internet, can access.

The Raspberry Pi, on the other hand, is such a versatile little board that it can act as a cheap NAS, after the completion of this projects you can use your Raspberry for many other projects for your learning.



### Functional Requirements:

- Remote storage access over the Internet as if it is local.
- SSH or SSL Secure
- File System should be NTFS
- Cross platform support i.e. Android, Windows, Linux or IOs.
- Password Protection for NAS.



**Hardware Requirements: (Please note that No Hardware will be provided by the university)**

- [Raspberry pi](#) micro-controller (Better use the latest version).
- External Hard Drive
- USB to SATA adapter
- Power Supply for Raspberry Pi micro-controller.

**Important Notes:**

- Prior Knowledge of Raspberry Pi micro-controller is very important.
- Without Raspberry pi the project will not be accepted.
- You can use external libraries for uploading content to cloud storage. You need to make sure everything you do you know it well.

**Technologies:**

- Python

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## Reinforcement Learning Based Home Automation using Arduino

### Project Domain / Category

IOT

### Abstract / Introduction

Home automation is very emerging and popular field. And for home automation IOT devices are used mostly. Raspberry pi and Arduino are most popular out of all the IOT devices currently being used.

For this project we will be working with Arduino, Arduino have many versions and [variants](#) available in the market and it is quite difficult for beginner to choose one, for simplicity one can use Arduino Nano or Micro variant because these two variants does not require external power it can work with USB power and after soldering it can easily be connected on breadboard.

For this project some modules and sensors will be required as well, for instance Wi-Fi module.

### Functional Requirements:

1. The System will be able to control fan's and lights of a house (At least 4 lights and 2 fans).
2. The user will be able to turn on and off the appliances using the system (input method can be any).
3. The system will record the day and time of the appliances being turned on or off and store it in the database.
4. The system will train itself with the input data using reinforcement learning techniques (times of appliances being switched).
5. The system will switch the appliances automatically after two weeks of learning, but the system will still train itself in case the user change's the time of any appliance. And this process of training will be continued.
6. For example the user turns on light of room 1 on Friday between 6:00PM – 6:15PM now the system is trained for this time for two weeks and will automatically turn on light on third week in between this time for every week after that but on one week in future the user turns on light on 5:00PM this time is recorded as well. Now the system will switch the light next week on previous time and if user does not override this decision then 5:00 Pm time will be discarded and previous preference will be kept otherwise the new time must be recorded.

**Hardware: (Please note that No Hardware will be provided by the university)**

- Arduino (You can also use Raspberry pi)
- Wi-Fi Module.
- Relay switches
- Wiring and connectors.
- Components like resistors, capacitors and transistors if required.

**Tools:**

- [Arduino IDE](#)
- MySQL database (Any other database technology can also be used)

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## Android File Manager

### **Project Domain / Category**

Mobile Application

### **Abstract / Introduction**

Android File Manager will be an android application that helps mobile users to explore files and folders in mobile phone. The existing files on phone memory and external memory card (SD card) will be shown to user with details using graphs. The app will support basic file management operations along with simple and easy to use interface. This app will facilitate users to view and manage their mobile data during life at home and office.

### **Functional Requirements**

1. The application shall consist of simple and easy to use interface.
2. The application shall be able to view your mobile data including files and folders in phone memory as well as external SD card.
3. The application shall support basic file management operations like open, cut, copy, paste, move, rename etc.
4. The application shall be able to search any particular file or folder according to name, content type, date etc.
5. The application shall be able to show storage analysis that consists of categories like Images, Audio, Video, Documents etc. and their respective memory sizes.

### **Tools:**

1. IDE: Android Studio
2. Programming Language: Java
3. Unified Modelling Language (UML): Microsoft Visio, IBM Rational Rose

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## Car Tracking Android based Mobile App.

### **Project Domain / Category**

Mobile Application (Android)

### **Abstract / Introduction**

Car tracking mobile application is an android based app that aids in tracking the traveling location and the distance covered by the car. It is all done in real time i.e. to calculate the distance and direction with respect to the GPS location. It will provide the real time GPS navigation while tracking the car.

### **Functional Requirements:**

#### **1. Display:**

The display of the app must be refreshed in real-time that records and access the travelling information of the car.

#### **2. Live Tracking:**

Application will support live tracking with 10-20 seconds refresh rate and store the history of past 10-20 routes/locations.

#### **3. Dashboard:**

On dashboard, you can check your car's current location, speed and distance from your smartphone.

All of these in a simple and intuitive screen with a map.

#### **4. Locations:**

It shows the real address of the desired location, not just the longitude/latitude.

#### **5. Settings:**

In settings, you should be able to set/change the password, change the GPS mode, and define speed limit and move alerts and much more.

**Tools:** Android Studio

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## EasyBuy App

### **Project Domain / Category**

Mobile Application

### **Abstract/Introduction**

Shopping groceries has never been as simple as it is with the mobile applications. Just a few taps and the groceries are directly brought to the doorsteps. Mobile applications have transformed the buying processes significantly by making them convenient and easy. No trouble of traveling to the supermarket and standing in the queues for the payments. Shopping is now more of a fun activity where one can simply browse through the products they want and complete the shopping process right from their mobile devices.

The goal of EasyBuy App is to provide the shopping facility for its users to buy things easily from their favorite store at standard price, while taking additional benefits offered by stores, for example free home delivery or free delivery on order above 500.

### **Main Roles of the system:**

There will be five options in its side menu

- Profile
- Nearest Stores
- My Cart
- Feedback
- Logout

### **Core Functionality:**

Core functionality and basic flow of the app will be as follows:

1. First of all, the user will encounter the home screen which consists of a list of nearest stores.
2. The user will select suitable store and proceed his/her shopping from the menu provided by the concerned store.
3. App will provide checkout functionality during the shopping.
4. A special note may show to user during shopping (for example: "Free Delivery on order above Rs. 500")
5. The user will have to register before confirming his/her order if he/she is not registered already.

The other Screens will work as:

- **Profile.**

Profile Screen will show user his/her details (His/Her name, Address, Postal Code, note regarding address)

- **Nearest Stores.**

This screen will show the list of nearest stores, user can also search store from the list

- **My Cart.**

This Screen will show the user current cart status, if the user has nothing in his/her cart then it will show a message (“Your cart is Empty, Start Shopping :) ” ).

- **Feedback.**

This screen will show a wide text area and the submit button so that users can send feedback.

There will be a need for a backend web api which will handle all backend tasks such as managing all nearest stores, their categories and subcategories, products managing and user data etc.

**Tools:**

Backend Server side scripting technology	PHP
Api Testing Application	Postman
Development IDE for IOS	Xcode on macbook
IOS App Development Language	Swift 4 and latest versions
Code Editors	XCode, Sublime, PHP storm Visual studio, etc.

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## Eat at Home

### **Project Domain / Category**

Mobile Application (Android)

### **Abstract / Introduction**

People are getting busy day by day. They want to go outside for dining but due to time constraints sometimes, it gets difficult to go outside for food. Eat at Home! is an online food ordering mobile application which allows such users to order food from nearby hotels, restaurants using their mobile phones and get it delivered at their places. Online food ordering has become one of the fastest growing trends these days.

Proposed application will allow users to create their account, select food from the menu and place the order by using their smartphones. The payment method will be pay-on-delivery. Application will maintain confidentiality of users' data.

### **Functional Requirements:**

- User shall be able to register and login to the application.
- User shall be able to see menu from different nearby restaurants based on his/her location.
- User shall be able to place the order.
- User shall be able to select method of payment.
- User shall be able to track the order / food.
- Application shall be able to store the data of user.
- Admin shall be able to add menu for restaurants.
- Admin shall be able to manage employees of restaurants.
- Admin shall be able to accept the order from the user.
- Admin shall be able to transfer request to the rider/worker for delivery.
- Admin shall be able to delete, and update the data of restaurants.

### **Tools:**

IDE: Android Studio or any other.

Database: Firebase or any other.

**Note:** Supervisor or University are not liable to provide any paid resource required for project development.

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## Home Gardening App

### Project Domain / Category

Mobile Application

### Abstract / Introduction

Allah's Messenger (Peace Be upon Him) said, "There is none amongst the Muslims who plants a tree or sows seeds, and then a bird, or a person or an animal eats from it, but is regarded as a charitable gift for him." – Sahih Al-Bukhari (*Hadith: 2320*)

If you love gardening but often face situations when you want to plant something but are stuck with limited space at your home yard. Or you find some seeds of your favorite flower but can't do anything because you don't know about plantation technique or post plantation care. Don't be afraid, we have a best gardening app which will do that job for you; imagine how fun harvesting your own fruits and vegetables will be! Gardening is awesome!!!

**Home Gardening App** is an Android based mobile application for your gardening solutions which helps to harvest your own flowers, vines, fruits, vegetables and herbs etc. in your house at a very small space. It contains very useful information about cultivation practices, like choosing best varieties, right sowing depth, suitable harvesting periods and helpful tips for taking care of plants etc.

### Functional Requirements:

Functional requirements for Home Gardening App are as follows;

- I. **Minimum Plants:** There should be at least 50 small scale home based plants; all must be properly categorised like Flowers, Vines, Fruits, Vegetables and Herbs etc.
- II. **Firestore Real-Time Database:** It is needed to store all plants data in JSON form on Firestore Real-Time Database.
- III. **Registered Users:** Only registered users can view gardening ideas. So provide registration and as well as login interfaces; store users' credentials on Firestore Real-Time Database in an encrypted form.
- IV. **Plants List:** All plants data, after syncing with Firestore Real-Time Database, should be displayed to user in a sorted manner in ascending or descending order with respect to their title or category.
- V. **Search Option:** Search option is must, so that user could search any information regarding plants of his/her choice. It is also needed to provide voice search feature as well.

- VI. **Plant Detail:** Each plant must have complete information like proper title, description, category, species, when to plant, where to plant, how to plant, care (*watering & feeding tips*), harvesting, storage details and photos etc.
- VII. **My Garden:** Any plant could be marked as favourite (*i.e. should be saved in My Garden*) so that it could be viewed later and also provide option to remove any favourite from My Garden.
- VIII. **Custom Notes:** User should be able to add custom notes to any plant to record best varieties and successes & failures; these must be uploaded to Firebase Real-Time Database and should be visible to other users as well.
- IX. **Alarms/Notifications:** It would allow user to set alarm and get timely reminders to keep plants alive by watering and feeding them fertilizers.
- X. **Backup Feature:** User should be fascinated by giving backup option; all My Garden's plants must be stored/retrieved to/from Firebase Real-Time Database in an encrypted form.

**Tools:**

1. **IDE:** Android Studio
2. **Programming Language:** Java/Kotlin
3. **Databases:** Firebase Real-Time Database & SQLite/Room

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## HR Digital Transformation

### **Project Domain / Category**

Mobile Application

### **Abstract / Introduction**

These days work from home mode is increasing in some companies and they need to manage their employees remotely. So project manager and HR managers need to use such a mobile App that provides a new way to manage attendance, leave application and daily task in a quick and easy way.

### **Functional Requirements:**

1. User will be able to access mobile app through secure Login screen to use it.
2. Check In/ Check Out for working hours attendance by clicking button, thumb impression not required for attendance marking.
3. Employee can apply for Leave through mobile App, employee can easily check own report as well as colleague report working under him/her.
4. Push Notification: Manager/Supervisor will get notification if any colleague working under, send any leave application.
5. Employee can manage Project Tasks in mobile app, manager/supervisor can send daily task report easily.
6. Admin can manage all users and employees and their settings.

### **Tools:**

Android Studio as IDE, Java, PHP for APIs and MySQL, PostgreSQL , MariaDB, SQLite, FireBase for database.

**Note: Do not take any kind of guidance or help from your campus staff, senior students or any fake instructor at campus, contact to your supervisor directly via skype or email given above in case of any guidance or help. Mostly students are misguided by the non-official persons for final project or senior students and ultimately they get fail in the project.**

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## Location Tracker of School Bus

### **Project Domain / Category**

Mobile Application (Android) and Web Application

### **Abstract / Introduction**

The school bus tracking system is meant for tracking the location of the bus at which the children are boarded. This system will work by the combination of both web and android application. The driver will be using the android application whereas admin and parents will be using web application. On the parent part, parent can view the travelling information and location of their child and admin will be able to track the location of his driver to get information about his attendance.

The System allows the admin to add a student with a system generated password which is then emailed to the parent so that the parent can locate and track the bus. The System allows the Admin to add a driver and maintain a database to track his movements and accordingly his attendance. The bus driver has to login to his account as he starts his duty by using the credentials i.e. Phone number and the password will be given to him by admin. The GPS co-ordinates will be shared after every 5 minutes to the server. When the duty of driver is over he can logout of the app and windup for the day which will help the admin with his working hours and attendance. The Parent can track his child or children and can give a feedback to the Admin.

### **Functional Requirements:**

#### **Admin:**

- Add Driver: The Admin will add a driver.
- Add Student: The Admin is allowed to add a student and his details and a system generated password will be emailed to the parent's email address.
- View Feedback: The Admin can view the feedback given by the parents.
- View Bus Details: The Admin can view the bus details and likewise can modify them.

#### **Parent:**

- Parent Login: The Parent is allowed to login into the system with password sent to his/her email Id.
- Track: The parent can locate and track the bus movements.

- Feedback: The Parent can give a feedback regarding the service or any complaints or suggestions.
- Change Password: The Parent can change the password as the password is initially given by the system which is difficult to memorize.
- Forgot Password: The Parent can provide the email address and reset the password the parent forgets it.

**Driver:**

- Login/Logout: The Driver has to login into the app and during these actions the GPS coordinates is sent to the server.
- App Live: The Driver has to keep the app live till his duty is over as the App sends the GPS Coordinates in the interval of 5 minutes.

**Tools:**

- Windows XP, Windows 7
- Visual Studio
- Microsoft SQL Server
- Android SDK

**Note:** The frontend of the System makes use of Eclipse ADT and Asp.net with c# while SQL Server as the Backend.

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## Offline Prize Bond Wallet App for Android

### **Project Domain / Category**

Mobile Application

### **Abstract / Introduction**

Prize Bond is basically a lottery bond offered by the National Savings Pakistan (Ministry of Finance) and issued on behalf of the Government of Pakistan. Prize bond are available in the denominations of Rs. 100, Rs. 200, Rs. 750, Rs. 1500, Rs. 7500, Rs. 15,000, Rs. 25000 and Rs. 40,000 Bonds. Prize bond wallet system is an Android application which provides a platform for its users to keep record of their prize bonds and check the draw results. User will add prize bond draw lists in the system conducted every 15 days. User will need to create an account and enter all the prize bond numbers which he owns in the system. App will facilitate user to check prize bond result without going online.

### **Functional Requirements:**

1. User will download draw results in a file (Text) from web which is published every 15 days for different denominations. App should offer a file reading facility to store these lists of draw records into the system database.
2. Users can use the app interface for checking the draw results without registering but they will not be able to save their owned prize bond lists in the system. App should support a single prize bond check as well as a list of prize bond check simultaneously.
3. App should support a wallet for user to maintain record of his owned prize bonds after login (register). Users can add/delete and update their prize bond record for each denomination.
4. Once the user has entered their prize bond record, they can check the result by simply selecting the prize bond value and, draw number or all the previous draws.
5. After claiming the prize for a prize bond, user should mark that prize bond as claimed for the particular draw (if you still own that prize bond) so that it could be shown as claimed if searched next time.
6. User should be able to add draw schedule for the whole year and app should notify user regarding draw schedule date.

### **Tools:**

Android Studio/Eclipse or any other suitable IDE supportive for Android

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## Parking Space

### Project Domain / Category

Mobile Application

### Abstract / Introduction

Large cities are getting more and more crowded and finding parking space in them is a big problem. The app “Parking Space” provides vehicle owners or drivers with a list of parking slots for vehicles of different sizes available in the locations nearby their current location. The owners/managers of some parking place will register themselves with the app by providing the list of parking slots (for particular vehicle sizes) as well as the hourly rate. Manager/owner of a parking place will mark each of its parking slot occupied or free. The vehicle owner/driver can view the list of 10 free parking slots in its nearby locations. The vehicle owner/driver can book/reserve a parking slot which is free and will have to park its vehicle in that parking slot within 20 minutes of booking it. Once a parking slot becomes free, the owner/manager of the parking space will mark the parking slot free so that some vehicle owner/driver may book it again.

### Functional Requirements:

1. Parking space owner/manager will register its parking space with the app.
2. After registering the parking space, the owner/manager will enter the parking slots available within the parking space. For each slot it will provide the following information:
  - a. Vehicle size (length, width and height) suitable for the parking slot
  - b. Hourly rate for the parking slot

**Hint:** A parking space has many parking slots and each parking space has a manager/owner responsible for all the parking slots within the parking space.

3. A vehicle owner/driver will register itself as a user in the app.
4. A registered user can view 10 parking slots (along with the hourly rate for each slot) whose status is “free” (which are neither reserved/booked nor occupied by someone) for a particular vehicle size which are nearest to its current location.

**Hint:** The app will let the user select a vehicle size. The app will then calculate the distance of all free slots for that vehicle size from the user’s current location. Finally, the app will display the ten slots of that size which are nearest to the user’s current location.

5. A user can reserve/book a parking slot from the list (as explained in requirement no. 4). The status of the parking slot will be changed from “free” to “reserved”.
6. When the vehicle owner/driver parks its vehicle in the parking slot it had reserved earlier, the manager/owner of the parking space will change the status of the parking slot from “reserved” to “occupied”.
7. When the vehicle owner/driver leaves the parking slot where it had parked its vehicle, the owner/manager of the parking space will change the status of the slot from “occupied” to “free”.
8. The owner/manager of the parking space has the option to change the status of a booked parking slot from “reserved” to “free” if the driver/vehicle owner who booked the slot does not park its vehicle in the slot within 20 minutes of reserving the slot.

**Note:** The functionality of handling payments is not needed.

**Tools:**

Android

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## RFID based Advanced Parking Application

### Project Domain / Category

Mobile Application

### Abstract / Introduction

RFID based Advanced Parking (RFID-AP) application is an advanced Ticketing System used for the Parking spots. This system provides RFID based tracking to tag a vehicle, identifies the user and deduct parking fee. This System makes the work easier on both the ends to keep a track as well as pay the amount in a very efficient way. RFID-AP has two sub-apps 1) Parking Spot (PS) i.e. app attached to RFID Scanner, 2) vehicle user. When the car enters the parking base, the user has to scan the card.

The starting time and the user details are sent to the parking app. When the user takes out the car he scans the card again and if his card has the required amount, the amount will be deducted directly or he has to pay in cash.

The RFID-AP analyzes the start time, end time and calculates the fare, Moreover, the parking app has all the details regarding each vehicle entered to parking spots.

### Functional Requirements

#### RFID-PS:

1. **Registration and Login:** RFID-PS app should provide registration and login functionality into the admin.
2. **Add Parking Slots:** Should provide functionality for admin to add parking slots.
3. **Scan:** The App is mostly on this model listening to the RFID cards and on both entry and exit the data is sent to the parking app and it does its work.
4. **Transactions:** The admin can view all the vehicles which were parked and the ones which are still parked.

#### Users' App:

1. **Registration and Login:** User's app should provide registration and login functionality into the user.
2. **Add Money:** The user is allowed to add money into his wallet using his Debit or Credit Card.
3. **History:** The user is allowed to see his previous Parking history.

4. **Current Parking:** This module shows the user if he has parked his vehicle in any parking plots and shows the time and amount that he will have to pay.
5. **Change Password:** The user is allowed to change his password.

**Note:** There can be some other requirements that students should extract from these requirements.

### **Applications:**

- This system can be used by parking departments or Parking Plots as it is highly profitable for the users who park their vehicles daily.
- This System can also include Seasonal Passes.

### **Tools:**

1. Android Studio
2. Programming Language: Java
3. Database: Firebase/SQL Server

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## Saloon Appointment Scheduling Android Application

### Project Domain / Category

Mobile Apps

### Abstract / Introduction

Saloon appointment scheduling is an android application which will provide users the facility to search saloons online and book their appointment with the saloons. Users can search for saloons using different filters and decide to book appointment with any saloon upon their choice. Saloons can manage their staff and appointments using this application. This android application will be composed of two kinds of dashboards. Saloon Owner and Customers. Customers will register themselves in the app so that they can book appointment with the saloons.

### **Customer Dashboard**

Customer can search for the saloons using different filters, these filters include nearby saloons, saloons by area, saloons by price etc. Users can also use Google Maps for search purposes. They will enter area name and map will show saloons. After applying the filtration, the lists of saloons appear and the customers can view the profile, schedule of any saloon. The customer can send appointment booking request to the saloon. Customer can view the status of his appointment and keep the history of appointments. He can also rate the saloon upon his experience.

### Functional Requirements for Customers Dashboard:

- Customer User Management e.g. Login, Sign Up, Profile etc.
- Saloon Search using different filters e.g. Location, Area Wise (Using Google Map), Price Wise etc.
- Customer Appointment Management (Current and previous appointments, appointments notification, appointment booking functionality)
- Saloon reviews (customers can give reviews/ratings to saloons)

### **Saloon Dashboard**

The saloons can register themselves in the application so that they can manage appointments. The saloon admin can update saloon schedule, confirm/reject appointments. Whenever the saloon admin will approve/cancel any appointments the customer will receive a notification on his smart phone. The saloon admin can also add his staff members to the dashboard so that they can manage the appointments

### Functional Requirements for Saloon Dashboard:

- Saloon Profile
- Saloon Services and rate for each service
- Saloon Staff Record (if any)

- Saloon's Appointments Management (History of Appointments, Appointments confirmations/cancellation)

**Requirements Not Necessary but Appreciated:**

- Use Firebase database rather than other Technologies.
- Use libraries from Github or AndroidArsenal.
- Use Git as version control for project.

**Note:**

- These are basic requirements of the application. Students may add further functionalities to make the application more useful.
- Virtual University of Pakistan will not provide any kind of hardware for this project; student has to arrange the required hardware by himself/herself.
- VU will not pay for any license of the software, the libraries /toolkits/APIs used in this project.
- It may also be noted that your android devices must support all features necessary for this project.

**Tools:**

- Android Studio
- MySQL
- XAMPP
- Java/Kotlin
- XML
- PHP (for web services)
- Firebase
- Sublime Text/ Notepad++ etc.
- Google Developers Console
- Google APIs

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## Smart Budget Manager

### **Project Domain / Category**

Mobile Application

### **Abstract / Introduction**

Managing budgets is one of the toughest parts. Smart Budget Manager Mobile app is developed for controlling ledgers, costs and Income of a running project and ensuring that the different phases of work are completed efficiently and within a budget. It also helps to manage personal budgets. After adding your budgets, simply record your day-to-day transactions. It keeps track of who bought what, when, and for whom; and helps to settle the bills. You can track and manage daily transactions quickly & easily! Business expenses, personal expenses by using Smart Budget Manager. It should be simple and intuitive user interface.

### **Functional Requirements:**

#### **Income/Expenses**

- Create/Edit/Delete Income/Expense easily
- Recurring expense and income
- Browse entries by month, by category/date with the ability to drill-down
- Associate an account and payee with transaction

#### **Budget and Categories**

- Create/Edit/Delete categories
- Assign a colour to category
- View Transactions of a particular category or contact
- Set a budget, and track expenses at the category
- View Transactions of any one budget so you can see the amount of your expense against your budget quickly and make suitable financial inferences

#### **Accounts**

- Associate your bills, expense and income with your accounts and accurately track account balances.
- View transactions of a particular account
- Transfer between accounts.

#### **Reports**

- Trend chart for Expense and Income for the last 6 months
- Trend chart for Expense and Income for current year
- Pie/Bar charts for income/expense break-down



- Choose the report period
- Shows your budget and expenses by a graph
- Yearly Income/Expense Graphs

**Tools:**

- Android Studio (Language Java/Kotlin)
- SQLite
- Firebase

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## Smart Event Reminder (SER)

### Project Domain / Category

Mobile Application

### Abstract / Introduction

In this busy world it's quite cumbersome to memorize all important events of your life, daily tasks that must be performed, and especially birthdays of all family members. Sometimes it becomes awkward to forget age of some family member or their coming birthday.

The smartphone in our hands can rescue us from this situation. Currently almost all apps available are either only Reminder apps or To Do apps which does not integrate all functionalities into one package.

The SER mobile application will try to tackle this by offering three main modules:

- 1) To Do List
- 2) General Events (recurring and non-recurring)
- 3) Birthdays Reminder

### Functional Requirements:

#### **Module I: To Do List**

- The app will offer a comprehensive To Do list to the user in the form of checkboxes
- User should be able to set reminder/alarm for each list and item, as required
- User can create as many lists and sub-lists as he/she required
- Upon checking an item, it should be marked as done and move to the end of the list

#### **Module II: General Events**

- In this module user can enter important dates like Eid holidays or next interview day
- User should be able to set reminder/alarm for each entry
- System will show a detailed Calendar view with entries highlighted

#### **Module III: Birthdays Reminder**

- Main view of this module will be lists with contacts that user has entered

- User will enter birth year and date of his/her desired contacts and system will show their ages in years
- Lists will always be sorted by most recent coming birthday on the top
- Against each contact, total remaining days till his/her coming birthday should be displayed (for example: 10 days to go till 20 years)

**Tools:**

Language: Java or Kotlin

IDE: Android Studio 3.2 or later

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## Smart Notes Taker - OCR App

### **Project Domain / Category**

Mobile Application

### **Abstract / Introduction**

You need to develop a Smart Note taker Mobile app that will use ML Kit of Firebase to scan and extract text from images instantly. ML Kit makes smart text recognizer one of the fastest OCR apps in the market. User can also share text and download scanned text in pdf format.

App starts with splash screen and home screen which contains quick actions such as scan text, copy text to clipboard and share text anywhere. Minimal looking home screen allows users to navigate through app so quickly & easily.

### **Functional Requirements:**

1. Create a Splash Screen when App loads.
2. Create secure Login screen for user to access app features.
3. Scan & extract text from images instantly.
4. Scanned images text should be saved in database.
5. User should be able to edit or copy the extracted text.
6. User should be able to copy the entire extracted text.
7. User should be able to share the entire extracted text to any of your apps.
8. User should be able to download Scanned Images as pdf file.
9. Text To Speech (TTS) service. Convert Extracted any text into MP3 audio file.
10. Make App Ready to publish on Google Play

### **Tools:**

Android Studio, ML (Machine Learning) Kit, Java, PHP for APIs and FireBase.

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## Enterprise Manufacturing Units Inventory Control App.

### **Project Domain / Category**

Mobile Application

### **Abstract/Introduction**

The application must be well designed to serve the needs of enterprise manufacturing units engaged with the inventory control of different sale, purchase and production. Enterprise can select staff permanent / daily wages for different jobs and can view their production detail with complete Account book and report. This platform can be run as pure business purposes, so proper report required for inventory sales, purchase, production and accounts.

### **Functional Requirements:**

- Admin/system can add, modify, delete and search staff permanent / daily wages by first name, Last name, CNIC, contact number, qualification, experience and salary / daily wage.
- Customers can create their log in and profile by first name, Last name, domain, address, contact no and date of registration
- Admin/system can add first name, Last name, Vender CNIC, vendor address, vendor contact no and vendors inventory.
- Admin/system can add first name, Last name, Dealer CNIC, Dealer address, Dealer contact no and Dealers inventory.
- Admin/system can add, modify, delete and search/view reports of cash sales by date and Type.
- Admin/system can add, modify, delete and search/view reports of credit sales by date and Type.
- Admin/system can add, modify, delete and search/view reports of Product inventory.
- Admin/system can add, modify, delete and search/view reports of purchase inventory.
- Admin/system can add, modify, delete and search/view reports of payments and transaction by dealers.
- Admin/system can add, modify, delete and search/view reports of payments and transaction by vender.
- Admin/system can add, modify, delete and search/view reports of employee's job and payments record.
- Admin/system can add, modify, delete and search enterprise complete accounts with reports.

**Non-Functional Requirements:**

The mobile application must be Android-based, and its data is to be managed using SQLite. Also, the application should be easily accessible to users, secured, scalable and well performing. Those criteria are what would make the application stand up from a simple application to a product that can be delivered and used by real life clients. However, the focus is more on implementing the application using the new tools before considering these enterprise application features.

**Tools:**

Android Studio / Eclipse / Netbeans

Programming language (Frontend: XML, Backend: Java)

Database (SQLite or any modern database language)

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## Vehicle Tracker Mobile App.

### Project Domain / Category

Mobile Application

### Abstract / Introduction

Vehicle Tracker Mobile App. helps to track your traveling in terms of location, distance covered, speed and altitude. Practically it provides you real-time metering facility of speed, altitude, direction, distance calculation & other aspects during the travel through multiple driving modes.

Real time navigation and tracking using voice command is also helpful to give commands whereas a voice messages used to get information about speed, direction, distance, altitudes, weather & multiple real-time information.

### Functional Requirements:

#### **1. Create User Account:**

Give user name, password and email id to create user account.

#### **2. Navigation:**

See route and navigate through the address, map location, GPS coordinates track your journey. Navigation feature will not work if we are not having an internet connection.

#### **3. Vehicle Tracker:**

We can view the speed on the same and different graphs of speed & altitude. Watch your movements on a map and see your direction and elevation.

#### **4. Previous Trip Record:**

Keep record of your previous trips for future use so that it save trip information (record) as you move across your way.

#### **5. Speedometer in vehicle Tracker:**

This GPS speedometer features a fully functional speedometer with both analog as well as digital speed display. Analog meter shows speed just like your car's speedometer using a dial and a needle. Digital speedometer will show current speed in digits. Track vehicle location and speed at real time.

## **6. GPS Voice Commands:**

Voice Access is an accessibility service that helps users who have difficulty manipulating a touch screen. Tap on microphone to enable/disable voice commands and control your device with your voice.

## **7. Text Messaging & Voice Messaging:**

Add a feature of text and voice messaging through voice commands while tracking and also get voice direction messages when you turn ON device speaker.

### **Tools:**

Android Studio

Programming Language: Java

Database: SQLite

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## Women Safety Application

### **Project Domain / Category**

Mobile Application

### **Abstract / Introduction**

Women's safety is a big concern which has been the most important topic till date. Women safety matters a lot whether at home, outside the home or working place. Few crimes against ladies were terribly dreadful and fearful. Most of the women of various ages, till this day are being subjected to violence, domestic abuse, and rape.

As ladies ought to travel late night generally, it's necessary to remain alert and safe. Although the government is taking necessary measures for their safety, still, there are free safety apps for women that can help them to stay safe. Most of the females these days carry their smartphone with them, so it is necessary to have at least one of the personal safety apps installed. Such this app for ladies will definitely facilitate in a way or the opposite. This will be a user-friendly application that can be accessed by anyone who has installed it in their smartphones. In this system the user needs to feed three contact numbers, in case of emergency on moving the phone up and down thrice, the system sends SMS and calls on one of the numbers stored into the system with the location. The phone starts vibrating and the alarm starts ringing. This features for both everyday safety and real emergencies, making it an ultimate tool for all.

### **Functional Requirements:**

New user should register through phone number. A verification code should be sent to user mobile for verification process in registration.

By just shaking smartphone SMS will be shared with location in case of emergency.

This application sends the live location of the user.

**Tools:** Java, Android Studio and SDK tools, SQLite

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## Incorporating RTT in the Existing DCN Congestion Control

### **Project Domain / Category**

Networking

### **Abstract / Introduction**

Web applications are gradually shifting into cloud environments. These cloud services are hosted on huge scale computation and storage infrastructures called data centers (DC) (e.g. Google's data center, Facebook's data center etc.). In a large scale data center, hundreds of thousands of servers are interconnected through switches in a symmetric topology. A data center network (DCN) interconnects all the data center resources.

Current data center congestion control schemes may induce high latency in packet delivery due to path's latency-oblivious congestion signal. Explicit congestion notification (ECN) is the predominantly used congestion signal in the data center networks; it signals whether any queue along the path is above a predefined threshold or not, but does not inform about the end-to-end delay of the path. Information of the end-to-end delay / round-trip-time (RTT) of a path can enable a sender to adjust its sending rate to keep the network latency below a threshold. RTTs in data center networks are on the scale of up to few hundreds of microseconds and traditional data center operating systems lack such fine-grained microsecond-level timers; that is why delay-based congestion control schemes, that are widely deployed in the Internet, have not been used in the data center networks. But recent studies like [1] suggest that advances in NIC hardware has enabled accurate microsecond-level RTT measurement, thus, RTT can be incorporated in the data center congestion control schemes.

This project aims to incorporate RTT in the existing ECN based congestion control scheme; the implementation will be carried out in network simulator ns-2. The students will: i) study an existing widely-deployed DCN congestion control scheme and its implementation in ns-2, ii) design changes in the existing algorithm(s) to incorporate delay/RTT, iii) implement the design in the existing congestion control scheme in ns-2.

Working in ns-2 requires: i) understanding of basic commands of Linux operating systems (for ns-2 installation and running purposes), ii) excellent programming skills in C++ (for simulating the DCN environment and implementing the proposed changes in the existing congestion control scheme), iii) programming in TCL (for writing simulation scripts), iv) understanding of AWK command (for trace text processing), and v) understanding GNU PLOT command (for drawing graphs).

### **References:**

[1] Mittal, R., Lam, V. T., Dukkupati, N., Blem, E., Wassel, H., Ghobadi, M., ... & Zats, D. (2015). TIMELY: RTT-based Congestion Control for the Datacenter. ACM SIGCOMM Computer Communication Review, 45(4), 537-550.

### **Intended Outcome**

- Design of a path's latency-aware DCN congestion control scheme
- Implementation of a path's latency-aware DCN congestion control scheme in ns-2

### **Required Skills**

1. Understanding of basic Linux commands
2. C++, TCL, AWK and GNUPLOT (for working in ns-2)

### **Supervisor**

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## Opinion Mining For Social Networking Site

### Project Domain / Category

Information Retrieval

### Abstract / Introduction

Content growth in the Internet in recent years has made a huge volume of information available. This information is presented in different formats such as posts, news articles, comments, and reviews. Especially in the automotive, electronics and film sectors, customers have written reviews about products or their features. By collecting and analyzing these reviews, new customers find others' opinion about different features of the product. They can compare the products to each other to find the best one that meets their needs. Moreover, manufacturers will find out strengths and weaknesses of their products or those of their competitors. In this way, manufacturers will solve the reported problems and use the business intelligence behind the analysis for future investments.

Sentiment analysis is an interdisciplinary field that crosses natural language processing, artificial intelligence, and text mining. From the sentiment perspective, there are two kinds of textual information, namely, **facts** and **opinions**. While facts are the objective statements about the nature of a product, opinions describe attitudes, appraisals, and emotions regarding a product, service, topic, or an issue. The opinions could be judgments, evaluations, affective (or emotional) states, beliefs, or wishes. . Classifying the polarity of a given text as positive or negative is the basic task of sentiment analysis. Due to its many aspects it is often referred to with different names such as opinion mining, sentiment classification, sentiment analysis, and sentiment extraction.

Sentiment analysis is domain specific; therefore the polarity of some terms depends on the context in which they are used. For example, while “small” for “size” as a feature in the electronic products is positive, in agricultural products such as fruit it has a negative polarity. Sentiment analysis is used in different domains such as shopping, entertainment, politics, education, marketing, research and development. This project focuses on sentiment classification in social domains.

This project uses opinion mining methodology in order to achieve desired functionality. Opinion Mining for Social Networking Site is a web application. Here the user will post his views related to some subject other users will view this post and will comment on this post. The System takes comments of various users, based on the opinion, system will specify whether the posted topic is good, bad, or worst. User can change his own profile picture and can update his status. These changes can be viewed by various users. We use a database of sentiment based keywords along with positivity or negativity weight in database and then based on these sentiment keywords mined in user comment is ranked.

Once the user logs in to the system, user can view his own status as well as he can view the topics posted by other users. When the user clicks on a particular topic user can give his own comment about

the topic. System will use database and will match the comment with the keywords in database and will rank the topic. User can edit his own profile and can change his profile picture. The role of the admin is to add post and adds keywords in database. This application can be used by users who like to post view about some events that is already held, or can post about the events that is going to be held.

### **Functional Requirements:**

- ❖ User can easily share his view about any subject.
- ❖ Users can easily decide whether the posted topic is good or bad by using this application.
- ❖ System ranks the topic based on the keywords in database.
- ❖ System will match the opinion with those keywords which are in database rest of the words are ignored by the system.

### **Admin Module:**

- ❖ **Admin Login:** Admin will login to the system by using his Admin ID and password.
- ❖ **Add Post: After successfully login,** admin can post topics.
- ❖ **Add Keywords:** Admin will add keywords in database so that system will match the comment with the keywords in database and will rank the topic.

### **User Module:**

- ❖ **User Login:** User will login to the system by using his user ID and password.
- ❖ **Comment:** User will post comment on the topic.
- ❖ **View Comment:** User can view comment of other user's.
- ❖ **Rating Calculation:** System will match the comment with the keywords in database and will rate/rank the topic.
- ❖ **Edit Profile:** User can edit his profile and can change his profile picture.
- ❖ **Status:** User can view status and can change his status.

### **Tools:**

- ❖ SQL 2008
- ❖ Visual Studio 2010
- ❖ Senti Word Net Dictionary.

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## Study of Age Related Genetic Dataset using Machine Learning

### **Project Domain / Category**

Information Retrieval

### **Abstract / Introduction**

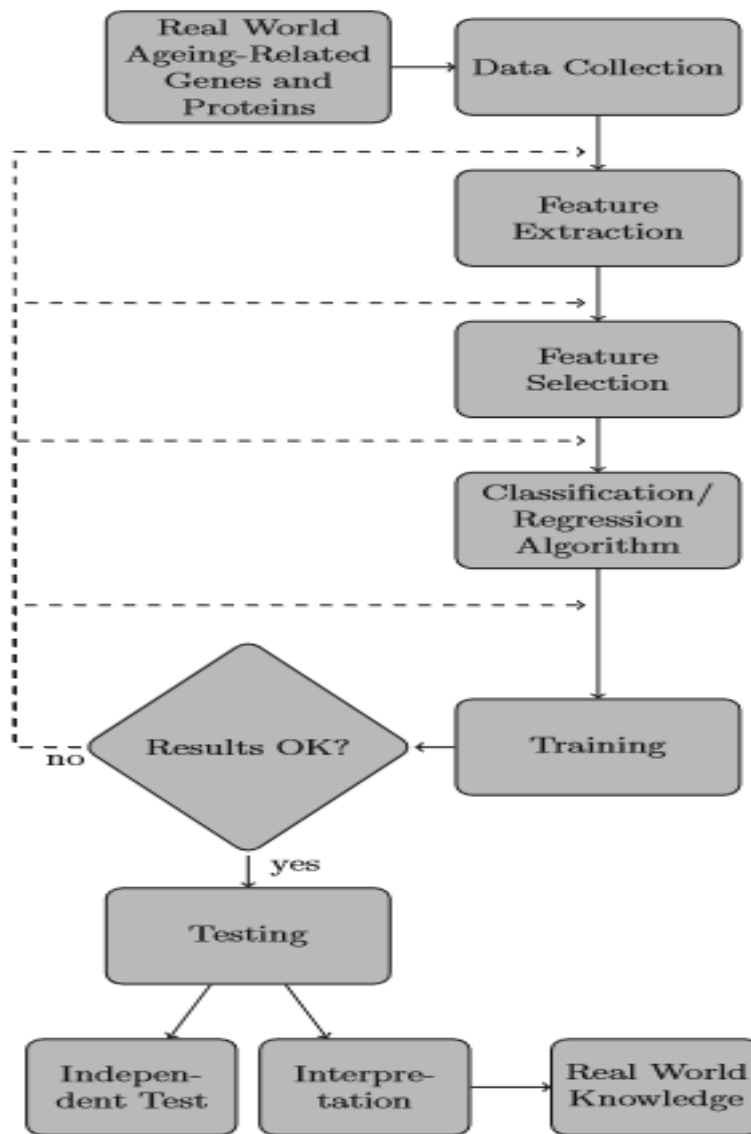
Aging process is very difficult to understand and it is very challenging in the field of bio informatics. As increasing potential experiments in bioinformatics we have large amount of data and experimental results so we can implement machine learning techniques to understand the new patterns in the available data.

Machine Learning techniques can be very helpful in understanding and predicting the age related genes. In machine learning, supervised learning mode is more suitable which is based on classification with annotated data as training dataset.

### **Requirements:**

- ✓ A dataset will provided to you to perform the machine learning algorithm preferably any supervised learning approach.
- ✓ Perform feature selection/extraction from the given dataset related to genes involved in the aging process.
- ✓ Now perform classification on the given dataset to classify genes involved in aging process and genes that are not involved in aging.
- ✓ Use random samples of training dataset to train your model and predict the genes involved in aging.
- ✓ Results will be shown graphically and statically.
- ✓ A web based interface can be created to take input (genetic dataset) and then result can be shown after processing.

The following flow chart will explain the functional requirements of the project:



**Tools:**

Note: any tool can be used from the following given options  
MATLAB, Python, Weka

Note: Interested student can get more details and information about the project from the concerned supervisor

**Supervisor:**

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## TF-IDF Modeling Based Scientific Articles Recommendation System

### **Project Domain / Category**

Web Application + Information Retrieval

### **Abstract / Introduction**

A rapid growth of scientific articles is creating a problem of information overload for the researchers. Due to which both novice and expert researchers find it very difficult to find relevant articles of their interest. Therefore, there is need of application which will be able to recommend similar articles to the researcher.

To overcome this problem, we will develop a web based scientific articles recommendations system which will recommend scientific articles of user interests based on Information retrieval TF-IDF modeling scheme and cosine similarity measure.

### **Functional Requirements:**

#### **1. SignUp:**

Create a Signup module. User will be required to register themselves in the application. User will get registered once admin will approve it.

#### **2. Sign-In:**

Create a Sign-in module. Only registered user will be able to use the application.

#### **6. Manage Users:**

Admin will be able to manage users means it can approve user, remove users and view user data through admin dashboard.

#### **7. Add Scientific Articles:**

Admin will be able to add scientific articles data to the database having title, keywords, abstract and area through admin dashboard. Add at least a total of 50 articles data of different areas in the database. You can use CSV file to add data to database from the following link.

<https://drive.google.com/open?id=1pvcuGk2nRTsYcd-l-yNBzvvRj2qW5rF>

#### **8. Pre-Process Data and Building TF-IDF Model:**

Pre-Process the data means that don't have any braces, commas or lowercase etc. Now you are required to build TF-IDF model from already stored data in database and save the model.



### **9. Recommend Scientific Articles Using Cosine Similarity Measure:**

Create a webpage which will take user related paper title, keywords, abstract and area as input from the user and on clicking generate recommendations your application will load the model and add the following data in the model and generate recommendations. Show related articles title and abstract based on cosine similarity in descending order on the webpage.

### **10. Save Similarity Scores and Recommendations:**

Save recommendations articles title and similarity scores in the CSV file.

#### **Tools:**

Programming Language: Python

Framework: Django or Flask

Database: Any database can be used.

#### **Supervisor:**

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## Load Balancing Controller

### Project Domain / Category

Networking

### Abstract / Introduction

In the thrust of best performance, unitization and economy of scale, modern networks are following a direction with isolated control and data plane that allows not only the consolidation and centralization of control plane but also allows new improved network control strategies to get better services performance. OpenFlow is one of the reputable protocols to allow the demarcation and management of the distributed or isolated control planes on the network's devices like router, switches, firewalls etc.

This project requires designing a network load balancer with OpenFlow that will provide GUI based interface to the network administrators. The data from the GUI will be fed to the load balancing controller that will coordinate with network nodes to manage the routes to the server.

The interface shall contain classification of client nodes having different requirements of bandwidth at different times. This shall be 4 periods with different bandwidth distribution. Student needs to select suitable bandwidth distribution. There will be 4 servers and 48 client nodes. The students can implement the project using any simulation tool or OpenFlow libraries.

Build the custom load balancer using OpenFlow libraries.

### **Functional Requirements:**

This project requires students to study the fundamental principles of the OpenFlow, networks and their device configuration as well as requires programming skills in the C/C++ in Linux environment. For this purpose, students shall be required to prepare a presentation on the OpenFlow networks and Linux system programming as part of the SRS document.

The core functional requirements of package are to:

1. Customize OpenFlow Based Controller
2. Develop GUI Interface to configure the controller
3. Customize a Network Topology

#### 4. Measure Performance and Utilization Statistics

- a. Throughput
- b. Delay
- c. Utilization
- d. Load Distribution
- e. Response time

#### **Tools:**

- Linux Environment
- Eclipse
- OpenFlow Libraries

#### **Supervisor:**

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## Objects Counting in an Image

### **Project Domain/Category**

Image Processing

### **Abstract / Introduction**

Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it. There are a lot of applications of image processing in different fields like medical, security, industries, remote sensing, pattern recognition and video processing etc. In this project we will create an application which will count different object in an image. This application can be used in different fields especially in industries to count different objects like bottles, eggs or other factory products.

### **Functional Requirements:**

1. User should be able to read an image.
2. Image should be consisting of different objects having different shape and size.
3. Convert the image into grey scale image.
4. Convert the grey scale image in to black and white image.
5. Some filtration techniques can be used to remove noise of the image.
6. Image segmentation techniques should be applied to count objects.

### **Tools & Technologies:**

Preferred tool and technology: MATLAB (Any latest version of MATLAB)

### **Supervisor:**

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## Garments Sale and Stitching Master

### **Project Domain / Category**

Desktop Application

### **Abstract / Introduction**

Garments Sale and Stitching Master is an application that will assist the owner and the customers more efficiently during the rush and normal hours. As observed during various festivals like Eid and wedding season people shop maximum garments and dresses. There is a need for a system to handle the customer's orders for purchasing garments or stitching the dresses. The proposed system will manage all orders, sales, customers, income, expenses, and measurements.

### **Working mechanism:**

#### **Purchase:**

Customers select different garments and dresses/ clothes from various racks in the shop and the helper bring all the selected items to the cashier counter. The cashier has the proposed application on the pc and performs the entry job for the selected items. The system should be capable of doing all the calculations by computing the bill with discount if any as per the deal or Offer. The cashier confirms the bill from the customer and prints the report showing detail of all the purchase like purchase id, time, date, price of individual items, quantity, total amount and the discounted amount.

#### **Stitching or Measurement:**

The customer puts order for dress stitching. The tailor master takes the measurement for dress stitching and provides the detail of measurement to the computer operator for entry using the proposed application. The customer record is saved with a unique id like mobile or CNIC number. A registered customer can be searched through this id, where he or she can submit order or can make some changes in measurement from the tailor master without going through the process of body measurement for dress. For example remove front pocket, make two side pockets, replace collar with simple ban, cuff size, button type, shirt/ pant width/ length etc. The information for that id will be printed on a paper and is attached with the customer dress/ cloths for stitching staff. Also the order slip is printed for the customer as a receipt to get the dress on delivery date.

#### **Reports:**

The admin or owner should be able to print report about the items purchased, sold, quantity in hand, total spent amount, total profit. The report can be printed for daily, weekly, monthly and annual basis. Also the system should be able to print slip having details:

Customer Information:

Customer ID, Customer Name, Address, Order Date, Mobile Number,

Measurement Information:

Full measurement detail of shirt, Full detail measurement of Pant

Also it should be capable to print receipt for the customer having the following details:

Order date, Delivery Date, Dress type: Double or single stitching, Number or quantity, Amount

**Note:**

The proposed system can be made in two versions: URDU or ENGLISH alphabets interfaces. You can choose any version *or* both for your project.

**Functional Requirements:**

Provide a bulleted list of functional requirements

**Portion 1:**

Admin log in

Password recovery

Adding various garments and cloths in stock

Providing Add, Delete, update, Search facility

**Portion 2:**

Admin can add new customer

Adding new order, measurement

Printing bills

Printing measurement slip of order for stitching staff

Displaying all orders, measurements of customers

Viewing detail of a specific item, order of a customer

Updating order, measurements, customers profile

**Tools:**

Python, SQLite3, SQL Server, MS Access.

**Supervisor:**

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## Personal Authentication System Using Iris Recognition

### **Project Domain / Category**

Desktop Application

### **Abstract / Introduction**

The iris is the colored, donut-shaped portion of the eye behind the cornea and surrounds the pupil. A person's iris pattern is unique and remains unchanged throughout life. Also, covered by the cornea, the iris is well protected from damage, making it a suitable body part for biometric authentication.

Iris recognition is the process of recognizing a person by analyzing the apparent pattern of his or her iris. Iris recognition is regarded as the most reliable and most accurate biometric identification system. The system is a desktop based application which will identify a person through his/her static image or through live image from camera connected to the system. The application will first register valid users into the system by entering their personal details and iris image. After registration process, the application will authenticate valid user via iris print.

### **Functional Requirements:**

The functional requirements for the project are listed below: -

1. User management (users' registration in the application, plus update/delete users).
2. Iris print management (add/update/delete user's iris prints)
3. Authentication using static images (images in jpg,jpeg,png etc. stored in system)
4. Authentication using live image from camera connected to the application

### **Tools:**

Any version of Microsoft Visual Studio with C#.NET and Microsoft SQL SERVER for database.

***Note:*** Virtual University of Pakistan will not provide any kind of hardware for this project; student has to arrange the required hardware by himself/herself.

### **Supervisor:**

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## Prison Management System

### Project Domain / Category

Desktop Application

### Abstract / Introduction

Prison management system can be used to save the records of prisoners and the guards. This system can be used by Jailor and the Admin. Jailor can log in as a user and can do the following tasks:

- Add the details of prisoners like name, age, address, crime and punishment.
- Add the details about the different guards that are on duty.
- Change attributes like time shift duty hours of guards.
- Write the First Information Report and save it. FIR's date, time, number and details can be seen anytime if required by the registered user. Whereas, a unique id is given to every FIR as required and also a unique number is assigned to a prisoner.

Admin can only add or delete the Jailor. Not only this, but this system can also tell when a prisoner's punishment period gets over or when they can be released. For tracking a prisoner later on by the government, this system will not provide any delete option for a prisoner's record that will also help in getting information about a specific prisoner later on.

### Functional Requirements:

We have two panels in this system one for admin and the other one for Jailor. While some other interfaces are:

- **Registration:**  
User needs to be registered in the system so that he can use the system and add the prisoner's details, change the guard's duty shift etc.
- **Login:**  
Login interface will allow a particular user to login to the system and use other interfaces.
- **Writing FIR:**  
In this interface, Jailor will write First Information Report and assign it a unique complaint number and other details like date, time and location.
- **Adding Prisoner:**  
This feature will add all the details of a criminal like name, address, age, criminal number, crime and the punishment in the system, as soon as he/she gets declared guilty by the court. And these details can never be deleted.



- **Adding and Deleting Guards:**

This requirement will let us add or delete the details about the guards of prison. Like if government transfers any new guard to a specific jail then our jailor will add his details, similarly upon transferring of some specific guard our jailor will delete his details from the system. Guard details will include: guard name, age, address, shift and duty hours so that details of any guard can be checked.

**Tools:**

C#, Visual Studio, Sql Server

**Supervisor:**

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## Railways Management System (RMS)

### **Project Domain / Category**

Desktop Database Application

### **Abstract/Introduction**

Railways Management System (RMS) is an application of Ministry of Railways which maintains data about different railway stations, tracks, trains and train schedules. A railway station may have different number of tracks connecting other stations (cities), different number of trains, train schedule, booking facility etc. There may be a single or many tracks connecting any two stations. A train has a name, number, different number of bogie, arrival and departure time etc. The system would be able to provide trains report on each station, booking details and tracks details etc.

### **Functional Requirements:**

A set of functional requirements of the proposed system may include the following.

1. There must be login process for administrator and authorized users to avoid unauthorized access to the software.
2. The system must be able to store the data about trains
3. The system would be able to store records of different tracks.
4. The system would be able to store the records of different stations.
5. The system would be able to maintain the train schedules and booking.
6. The system would be able to print the report of different trains on each station.
7. The system would be able to print the report of train schedules etc.

**Note:** Students are supposed to visit the problem domain or Ministry of railways website to understand the problem and gather the functional requirements not understandable from the given above.

**Tools:** SQL Server 2008, VB.Net etc.

### **Supervisor:**

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## Clothes Management System

### **Project Domain / Category**

Desktop Application

### **Abstract/Introduction**

Clothes store management system is specially designed for the purpose of adding clothing item's detail. The system elaborates the basic concept for storing and generating item's detail. In this system, staff can sign up as a system admin, He/she can have full access to the system for maintaining daily records. It will be a windows-based application which has been developed to make all the operations fast and easy.

The design of Clothes Management system is easy to use for every type of users because a lot of shops have salespersons which are not very qualified. Whereas, in our application there is a facility of report generation which gives detail information about clothes sell and purchase and make users possible to get hard copy of related reports.

### **Functional Requirements:**

1. Registration
  - The administrator can create a new user.
  - New user can login and logout.
2. Clothes
  - Admin add, delete or modify the details of the clothes.
3. Search
  - User can search for the required clothes based on name, id etc.
4. Sell Clothes
  - The sold clothes need to be deducted from the available stock
5. Purchase Clothes
  - The purchased clothes need to be added to the available stock
6. Report generation
  - Depending upon the organizational needs following reports can be generated
  - There can be daily reports
  - Weekly reports
  - Yearly reports

These reports will be of total available stock, how many clothes are sold out / purchase on daily, monthly and yearly basis.

The system should be able to **generate** a report of profit on daily, monthly and yearly basis.

**Tools:**

Python & SQLite

**Supervisor:**

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## Student Registration Management System

### **Project Domain / Category**

Desktop Application

### **Abstract / Introduction**

It is obvious that computers have brought great transitions in the world at large. The different and novel technologies in the field of information technology have facilitated the efficient use of computer system. This has resulted to increase productivity and security, many organizations including education have therefore introduced computer system in their operations and therefore the computer industry is growing very fast. Student registration system will bring a lot of impact to education sector. Proposed solution: provides solutions to the challenges faced in manual system. The manual registration system is rather tedious, wastage of time and also high cost of operations.

The proposed system will:

- Improve system performance.
- Lower costs of operations.
- Improve accuracy of the system
- Reduce Redundancy
- Retrieve the required information easily. And so on.

### **Functional Requirements:**

1. Display and Print students details.
2. Assign admission number of every student.
3. Add, delete and edit/update student record.
4. Allocate student to the registered course(s).
5. Allocate student to class/semester.
6. Display active and non active student.
7. Generate student's fees details.

### **Tools:**

Java and Mysql

### **Supervisor:**

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## Recommender system for Online Grocery Shopping

### **Project Domain / Category**

Web Application, Artificial Intelligence.

### **Abstract / Introduction**

In the last few decades, there has been a substantial increase in the web services like YouTube, Amazon, Netflix etc. Due to this rise, recommender systems have taken more and more place in our lives. From e-commerce (suggest to buyers articles, products that could interest them) to online advertisement (suggest users the relevant contents, matching their preferences) recommender systems are today unavoidable in our daily online journeys. Companies like Amazon, Netflix, LinkedIn, and Pandora leverage recommender systems to help users discover new and relevant items. In general, recommender/recommendation systems are a class of algorithm aims at suggesting relevant items to the user (items include movies to watch, text to read, products to buy and many other tangible entities).

A grocery store is a retail store that primarily sells food products. The Online Grocery System is the practical implementation of E-commerce for grocery goods. E-commerce (Electronic Commerce) is nothing but the selling or buying of goods and services online. As this saves their time and energy of visiting supermarkets and grocery vendors. Thus, this online grocery system has relieved people by providing access to all groceries and purchasing them by just sitting at home. The main objective of this e-commerce websites is to find out which products the customers might like to purchase based on his/her previous purchase history. This system is an online grocery recommender shopping system consisting of two modules namely, Admin and User. Admin will add groceries list and can view the users. Users can register for obtaining credentials and then can login by using credentials. They can view the product and can get suggestion of the previously brought or visited sites of related product.

### **Functional Requirements:**

#### **Modules:**

The system comprises of 2 major modules with their sub-modules as follows:

##### **1. Admin:**

- **Login:** Admin can login in his personal account using id and password.
- **Add Grocery:** Admin can add Groceries items.
- **View/Manage User:** Admin can view and manage all information about the user.

## 2. User:

- **Login:** User can login his account using id and password.
- **View Products:** User can view the products.
- **View Product on search:** User can view the product on basis of the searches.
- **Buy Products:** User can buy the grocery products by providing his/her card details.
- **View Recommends:** User will get the recommendation of the grocery items (Based on his/her buying history).
- **Technique:** To implement the recommendation feature you can either use collaborative or content based filtering technique in your application. Most preferable one is to use the collaborative technique.

To get understanding/knowledge about recommendation/recommender systems  
Visit the following links:

- <https://www.analyticsvidhya.com/blog/2018/06/comprehensive-guide-recommendation-engine-python/>
- <https://tryolabs.com/blog/introduction-to-recommender-systems/>  
<https://developers.google.com/machine-learning/recommendation/overview>
- <https://www.kdnuggets.com/2019/09/machine-learning-recommender-systems.html>
- <https://www.youtube.com/watch?v=Eeg1DEeWUjA>
- [https://www.youtube.com/watch?v=jhFFOmvPne4&list=RDCMUCyHta2dyCTkf29AB67AYn7A&start\\_radio=1&t=484](https://www.youtube.com/watch?v=jhFFOmvPne4&list=RDCMUCyHta2dyCTkf29AB67AYn7A&start_radio=1&t=484)

**Note:** You can customize or add more features into this system to make it more refined.

### Tools:

**Language:** Python (Preferred One)

**Frameworks:** Django or Flask, Bootstrap etc.

**IDE:** Pycharm, Visual Studio Code, or Any other Modern IDE.

**Databases:** MySQL, SQLite, Postgresql. etc.

### Supervisor:

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## Buy Car Parts Online

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

Getting genuine car parts is a difficult task these days due to the vast number of car brands and models. A decade ago, there were a couple of car brands and models in Pakistan but now it's a totally different story. With the induction of imported car models, users are facing the problem of finding the right spare part. This application will facilitate users to order the desired spare parts over the Internet.

### **Functional Requirements:**

Following is a list of functional requirements:

1. Administrator and customers are the two types of users.
2. Login procedure for customers only.
3. Customers can be either filer or non-filer.
4. Filers will be offered 20% discount on all spare parts.
5. Customers will order the relevant spare parts by relevant selection of brand, manufacturing date, model, trim and assembly (local/imported).
6. The available categories for spare parts should be:
  - Engine parts
  - Transmission parts
  - Suspension parts
  - Body parts
  - Electronics
  - Accessories
7. The administrator will calculate 5% tax on every spare part sold and submit it to Government of Pakistan.
8. The administrator will have a complete report of total parts sold categorically on monthly basis.
9. Total profit should be calculated for each month in the form of reports.
10. Based on total sales, the trend of higher sales of each part should be shown categorically in the form of graph.

**Tools:** PHP, My SQL

### **Supervisor:**

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## Car & Scooty Driving School Management System

### **Project Domain / Category:**

Web Application

### **Introduction**

Advanced Car & Scooty Driving School Management System is a web-based application for maintaining records of car and scooty training school. This application automates manual tasks by managing all records of student's admission, attendance, vehicles and trainers. It will maintain the record of entire students of driving school. Admin is having control over all modules of the system. Each student gets a unique user id and password. They can login into the driving school management system with this id and password. After logging, they will see basic training tutorials accessible on the portal. Students can search for nearby trainers and can select most suited trainer. Students can select vehicle type, package and timings using the application.

### **Functional Requirements:**

The application comprises the following major modules:

- Administrator
- Students
- Trainers

### **Admin**

1. Admin can login into the system
2. Admin can delete/ edit information of Trainers and Students
3. Admin keep track of all the hiring

### **Trainers:**

1. Trainer can register into the system
2. Trainer can login into the system
3. Can Add / Edit his information
4. Trainer can accept request of students

### **Students:**

1. Students can register into the system

2. Students can login into the system
3. Students can delete/ edit personal information
4. Students can select vehicle type
5. Students can search for Trainers
6. Students can select trainer
7. Payments for the completed work by students to trainers

**Tools:**

PHP language, HTML, MySQL

**Supervisor:**

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## Cash & Carry Online Departmental Store

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

This online store will offer wide range of grocery items and non-grocery items to buy online. You are required to develop a website that facilitate users to search required items and add into cart. User can pay through easypaisa or cash on delivery. This website will contain all information regarding steps to buy and payment in the shape of flow chart for new users.

Following key functionalities must be developed:

1. Meaningful icon at left side of the website.
2. Contact Us page placed in header on right side.
3. Frequently asked page (FAQs) placed in header on right side
4. Login and Registration link placed in header on right side
5. Social Media Pages icon placed in the header on right side
6. Shopping cart and total price on the top right side of the page.
7. A category list after the header of the website. User may click the category list to open particular page containing all product of that category. For example, insect killer sprayer and milk items etc.
8. Home page should contain only two broad categories. Grocery Items and Non-Grocery items.
9. Footer of the page must contain mission statement and link of these pages. Privacy Policy, Terms & Condition, Contact Us, FAQs, Order Tracking
10. A popup box open when user open website to ask email for Newsletter

**Tools:** Developer can develop this website in any tool.

### **Supervisor**

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## Content Scheduler & Notifier

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

In all educational institutes, the course content is taught by the concerned instructors but content scheduling for the instructor is not done by the management and there is a lack of communication gap between management and instructor of institution about course content taught. It is a hectic task for management to judge that whether instructor will be able to complete the course content during semester or not.

During each semester, an instructor has to teach many classes with different course content, so to manually manage it will be difficult scheduling task for every instructor and tiresome task due to challenges faced by the management as well. The proposed web-based application will enable management to keep track what have been taught and it will help instructor as well to know what is supposed to be taught in each lecture on specified date.

### **Users of the Proposed System**

- Admin/Principal
- Instructors

### **Functional Requirements:**

1. The Admin/Principal will enter classes and allocate code to all subjects which should be stored in the database as well.
2. The Admin/Principal will assign subjects to each class.
3. The Admin/Principal will be able to enter the course contents for each subject which should be stored in the database as well.
4. Admin will select Semester, Class and Subject then schedule the contents according to dates for each subject.
5. By using the admin interface, he will be able to add/update or delete the information about any instructor or course contents etc.
6. Searching option of any kind will be there i.e. instructor/courses etc.
7. One of the key features of our proposed system is notifier which should notify by popping-up message at Admin interface if any course contents date is due but not taught by the concerned instructor.
8. Admin should be able to create any instructor account to login.
9. Instructor will be able to see the course contents for each subject according to date and class.

10. After each class taught, the instructor will be able to update i.e. done.
11. If the date for any course content is over, the instructor should be notified through warning message pop up in instructor interface.
12. Admin will be able to see the report of any teacher and notified messages date wise and count so that admin will decide about the performance of the instructor regarding course contents cover.

**Tools and Languages:**

C# with SQL Server, or PHP with MySQL

**Supervisor:**

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## Online Examination System

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

This project "Online Examination System" aims to conduct examinations in an efficient manner. The main objective of the proposed project is to efficiently evaluate the candidates through a fully automated system that requires less human effort and is more accurate and less time-consuming.

After implementing Online Examination System, examinations will not be limited to four walls of a classroom, but students can take their exams from anywhere using Internet.

This project contains two modules namely administrator, and user. The control for all the process of the examination belongs to the administrator module.

### **Functional Requirements:**

#### **Admin Side**

1. Login for Admin
2. Admin can create new Online Exam with Edit and Delete feature
3. Admin can add Question in Exam as per defined criteria
4. Admin can view all Exam Question with Edit and Delete operation
5. Admin can view all user data registered for Online Examination System
6. Admin can view all user data enrolled for a particular exam
7. Admin can view individual user exam result on web page and in PDF format
8. Admin can view overall result of exam with user rank on web page and in PDF format

#### **User Side**

1. New User Registration for Online Examination with Confirmation Email Feature
2. User can Login into System using Email ID and Password
3. User can manage his or her profile details
4. User can change his or her password
5. User can view available examination list

6. User can enroll into examination
7. User can appear in online examination at the selected date and time
8. User can view the history of his/her registered exam
9. User can view the exam result on Web page and in PDF format also.

**Tools:**

HTML 5, PHP 5.6, jQuery Datatable Plugin, Mysql, Xampp Server.

**Supervisor:**

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## Donate Medicines for Needy

### Project Domain / Category

Web Application

### Abstract / Introduction

This medicine donation application aims to donate medicines which are not used. The unused medicine can be donated for further utilization by a needy person. This drug donation system helps the user to donate un-used medicines to NGOs.

### Admin's Requirements:

- FR1. Admin will manage members by deleting and blocking the users providing improper or expired medicines.
- FR2. Admin also has authority to approve/disapprove the requests of NGO.
- FR3. Admin has monthly report of medicines which has been donated.
- FR4. Admin manages the stock which helps to maintain a record of the available medicine.
- FR5. Admin also put request for the medicines demanded by NGOs, if not available in stock.

### NGO's Requirements:

- FR6. NGO can register and login using credentials.
- FR7. They can raise a request of medicines which is furthermore approved and scheduled by admin.
- FR8. In case of security, NGO can also change their password.

### Member's Requirements:

- FR9. Members can register and login using credentials.
- FR10. Member can be any pharmaceutical company, medicine store or common people.
- FR11. They can donate medicine by providing medicines details and raising request, further it will be approved by an admin.
- FR12. Members must mention the expiry date of the medicines.
- FR13. They will schedule the donating date.
- FR14. Members can also check the status of the delivery of the medicines to NGOs.

**Note:** Requirements can be Added/Updated as per need.

**Tools:** Microsoft Visual Studio (C#.Net) and SQL Server

### Supervisor:

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## **“E-Eyebuy” Online Eyewear Store**

### **Project Domain/Category**

Web Application

### **Abstract/Introduction**

Conventional means are taking their breaths with the passage of time. Because the technological means are replacing them. The later ones are more efficient, reliable and more effective at entertaining the audience. So same can be thought when anyone needs to deal with “EyeWear”.

Keeping in view the drawbacks of shopping eyewear from a physical store especially stores recommended by the doctors where the variety is not available. Sometimes rates at these recommended stores are high and may be these stores are located far away from our location.

With these needs in mind, we need a quicker and easier way of buying eyewear. For this we will create a web-based application named “E-eyebuy”. This application industrializes the eyewear products with many benefits as it would be easy to shop around on online before you decide which one you like best, give lots of information without having to drive to a store or office, you will have with you wide choice of styles, colors, and extras and finally it can save your money.

### **Functional Requirements:**

The system should have the following features:

User registration process in order to get login into the system. Login will be of two Types. Admin and Customer

### **Administrator:**

- Admin will enter Eyewear types like all Glasses, all Women's Glasses, all Men's Glasses and all Kids' Glasses.
- Admin will enter the categories of eyewear like new Arrival, Best seller, price levels, Goggles, Protective Goggles, Accessories, E-Gift Cards
- Admin will enter type of search for glasses like search by type or shape like rectangle Glasses, square Glasses, metal glasses etc.
- Admin will add the customer help material (text or audio) so that customer can buy best glasses e.g. How to Measure Your Frame Size, How to Adjust Your Glasses etc.
- Admin will add certain videos for customer regarding selection of glasses according to face shape and need.
- Admin will add the categories of Contact Lenses.
- Admin will add the brands of eyewear with listed products pictures and their prices.

- Admin will add how customer Order Glasses Online.
- Admin will make the form for online delivery information.
- Admin will add the “deals” for eyewear buy.
- Admin will enter the search Doctor Option.
- Admin will add list of doctors and their brief information, if customer want to visit.

**Customer:**

- Customer will register on site or visit as guest.
- Customer will view all products available by type, category etc.
- Customer will place order for glasses
- Customer will search for the order state, replace policy.

**Recommended tools and technology**

Programming Language: JAVA or c# only

Database: MySQL

**Supervisor:**

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## Electronic Disease Information and Health Recommender System (EDIHS)

### **Project Domain / Category**

Web Application

### **Abstract/Introduction**

With the advent of Machine Learning and NLP techniques, the quest for searching information over the Internet has been increased. Amongst wide-spread applications of online searching, the healthcare is amongst the top searched areas. For English and some other western languages, a plethora of techniques have been designed and developed to provide relevant information about electronic disease information (EDI) to the users and recommend them answers related to different diseases, their symptoms, Forbearance, and relevant doctor/consultant accordingly. Moreover, the delivery of accurate and complete information to the patients in an understandable format and language, increases his/her knowledge and changes the way of thinking, which is usually referred as patient empowerment. However, the existing medical related corpus are in-sufficient for audience whose first language is other than English such as URDU, Arabic etc. Despite large number of URDU speakers around the world, such approaches for URDU language are either missing or inadequate. Thus, there is a need to develop a corpus and approach to provide the users relevant, accurate and complete information to the users.

In this Project, we aim to develop and design URDU Electronic Disease Information (UEDI) System mainly targeting disease information which will be comprised of five attributes that are: disease, disease type, symptoms, precautions, and relevant consultant/doctor.

As such, providing valuable information to users for health-related issues, based on their personal health profiles, in the form of suggestions, approved by their caregivers, can significantly improve the opportunities that users have to inform themselves online about health problems and possible treatments. In this context, the proposed project contributes URDU health recommender system that will provide the user with information related to disease like disease name, disease type, symptoms, precautions as well as information of an appropriate consultant for the disease.

Tools / Application Platform : **Python**, Database: **MySQL**

### **Supervisor:**

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## Feed the Needy: Waste Food Management System

### Project Domain / Category

Web Application

### Abstract / Introduction

Food Waste is a massive problem. One third of all food produced in the world goes to waste. There is a lot of food wastage that occurs daily at the cafes, restaurant and at different social gatherings. From restaurant scraps, to grocers disposing of imperfect produce, to spoiled food, roughly \$400B in food ends up in landfills every year. Instead of throwing this food as a trash, it can be used to feed the peoples who are homeless or have less resources to buy food. As, worldwide nearly 800 million people do not have enough to eat. That means one in nine people are suffering from hunger. So this application would be bridging the gap between the two, by providing a simpler means of collecting the leftovers and providing the same to those in need. This will benefit both the restaurants and the needy.

### Functional Requirements:

Following are the functional requirements of the system:

1. Restaurants, cafes and volunteer organization register to the website.
2. Users (Needy people) will also register themselves.
3. Admin will add the points of needy people as registered food points.
4. All registered points must have the details about number of peoples, and the location.
5. Admin will keep the record of all restaurants, cafés, volunteer organization (NGO) for picking and distribution of food.
6. Admin will maintain the record of needy persons (including their credentials) of different points.
7. Restaurants and cafes can place request on the website to collect the leftover food.
8. This request will be sent to the volunteer organization.
9. Volunteer organization approves the request and assign task of food collection to their workers.
10. Worker picks the leftover food from restaurant and deliver it to registered points of needy peoples.
11. Volunteer organization's manager can keep track of the distributed food and can also request for food from other areas if there is a shortage in current area.

**Tools:** PHP, MySQL or any other modern language or tool.

### Supervisor:

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## Find A Labourer

### Project Domain / Category

Web Application

### Abstract

Finding labourers for short term work requires human physical efforts and time. Similarly, labourers also face difficulty in getting work. **“Find a labourer”** will provide businesses and individuals the flexibility of finding and hiring registered labourers online for short term work. Type of work can be Building & Construction, gardening, farming, driving, home services, office and admin, industry and businesses etc. The system will also be beneficial for workers as they can find their work easily. The system will set agreements between employers and workers. The system will provide a secure payment system upon successful completion of the work. The system will also provide employers and labourers to provide their review and feedback. Employer will rate labourers according to their work performance and labourer will provide rating to their employers.

### Labourer’s Requirements:

- FR1. Registration module for labourers
- FR2. Specify their work expertise in relevant field
- FR3. View different types of available work
- FR4. View employer’s information, feedback and rating
- FR5. Get hired for selected work
- FR6. Set work agreement
- FR7. Get payment on time
- FR8. Get feedback and rating from employer
- FR9. Provide feedback and rating to employer

### Employer’s Requirements:

- FR10. Registration module for Employers
- FR11. Submit different types of Work and its details to system
- FR12. View labourers’ profile, feedback and rating
- FR13. Hire a labourer for work
- FR14. Set work agreement
- FR15. Release payment on time
- FR16. Get feedback and rating from labourer
- FR17. Provide feedback and rating to labourer

### Admin’s Requirements:

- FR18. Add, update and delete different categories of work such as Building & Construction, farming, gardening, driving, home services, office and admin, industry and businesses etc.

- FR19.** Add different types of labourers such as plumber, electrician, carpenter, HVAC technician, painter etc.
- FR20.** Add, update and delete records of labourer and employers.
- FR21.** Post work
- FR22.** Assign work to labourer according to their locations
- FR23.** Tracking work progress
- FR24.** Handling agreements and payments
- FR25.** Keep records of registered labourer, their suggestions, feedback, rating, and queries etc.

Note: Requirements can be Added/Updated as per need.

**Tools:**

Microsoft Visual Studio (C#.Net) and SQL Server

**Supervisor:**

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## Global Shopping Mall (GSM)

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

This is cyber world where presence of any business in cyber space is mandatory. However, this presence not only comes with cost but also requires administrative management. Online Global Shopping Mall (GSM) is such an online web-based platform that presents cyber space to any business free of cost and related management issues. It helps businesses to freely present their products and different offerings to customers both at national and international level.

### **Functional Requirements:**

On GSM, each shopping store (here after referred to as Client-Store) can create its own business profile. A business profile of a Client-Store on GSM is displayed to user as a complete web page with Client-Store logo, header, navigation menu, product list, footer and contact. GSM allows Client-Stores to enter their complete business profile through dedicated interface.

Users can search different Products and Client-stores e.g. if user searches Nokia-1100, system should display list of all Client-Stores offering this product along with necessary information like image of the product, price, discount etc. Once user clicks a particular product, system should display its complete information (on separate web page).

Similarly, user should be able to search products and Client-Stores city and country wise. GSM should also provide advance search e.g. to search a mobile of a particular company with price between RS4000 to RS5000 in Rawalpindi. For this purpose, the GSM provides three interfaces:

**Admin Interface** from where, the GSM owner can manage Client-Stores e.g. to block a Client-Store, to block particular product of a Client-Store, advertisement management etc.

**Client-Store interface** from where a client-store owner can manage its business profile e.g. entering/editing/deleting its business logo, business header, navigation menu, products, Contact and details of these.

**User-Interface**, from where user can see and search products and Client-stores. User-Interface should also provide advance search option.

At home page of GSM, you can display any information e.g. list of stores or products that are searched most of the time or the products that are uploaded recently.

**Tools:** PHP, MySQL

**Supervisor:**

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## Meet Your Physician Virtually

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

In this project, we will build a web-based application named as “Meet your Physician Virtually”, in which different patients can make an appointment with a doctor and discuss his/her health conditions/disease in the form of text or in audio form. The doctor diagnoses the disease and provides the appropriate treatment in the form of medical tests or prescription.

### **Features of the proposed system:**

#### **Admin Panel features:**

1. Login for Admin
2. Admin can register a doctor and add different information about the doctor, like his/her name, specialization, timing, fee, picture etc.
3. The admin can edit the information of a doctor.
4. The Admin can delete the information of a doctor.

#### **Doctor Panel features:**

1. Login for Doctor
2. Doctor can see the appointments.
3. Doctor can view the patient described disease which was recorded by the patient in the form of text or in audio form.
4. Doctor can view the patient test documents.
5. Doctor can describe test to the patient.
6. Doctor can give the appropriate prescription to the patient.
7. Doctor can give any precautionary instructions to the patient.
8. Doctor can assign a particular date for the next appointment at the end, if required.

#### **Patient Panel features:**

1. Login for Patient

2. Patient can register himself/herself.
3. Patient can see the list of the provided doctors and make appointment with the appropriate doctor.
4. The patient can describe his/her health problems in the form of text or in audio form.
5. The patient can upload different test documents.
6. The patient can view the prescription of the doctor and any other instructions about the patient health.

**Tools:**

XAMPP Server, MySQL, PHP language

**Supervisor:**

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## Mingle Box

### **Project Domain / Category:**

Web Application

### **Introduction**

Mingle Box is a marketplace where Clients who need custom software developed can find coders in a safe and business-friendly environment. Clients can pick from a pool of registered coders, enabling them to hire a coder across the country or across the globe from the comfort of their computers.

Coders and Clients both can be benefited from this hiring. Clients who wish to hire internationally, can take advantage of favorable overseas exchange rates, resulting in work being done for 50-90% less than if the project were done in-country.

Coders are also given access to a huge pool of potential work and have the ability to work independently from their homes rather than for a company.

### **Functional Requirements:**

The application comprises the following major modules.

- Administration
- Coders
- Clients

### **Admin**

1. Admin can login into system
2. Admin can delete/ edit information of coder and Clients
3. Admin keep the track of all hiring

### **Coder**

4. Coder can register into system
5. Coder can login into system
6. Add / Edit his information
7. Coder can accept request of Client

## **Client**

8. Client can register into system
9. Client can login into system
10. Client can delete/ edit personal information
11. Client can add projects
12. Client can search coders
13. Client can hire coder
14. Payments for the completed work by Clients to coders

**Tools:** PHP language, MySQL

## **Supervisor:**

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## Online Advertisement Management System

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

PopularAds is a medium size advertisement company, having a substantial share of business in the country. Company specializes in the Print; Digital and Online advertisement have clients throughout the country. Company owns various billboards locations that are available for rent from time to time. Clients range from the local businesses to multinational operating throughout Pakistan. Company also provide marketing facilities to the educational institutes on discounted rates. In order to give back something to society, the company also publishes various advertisement from time to time to guide the people regarding various social and health issues.

Company accepts direct business as well as business via agents. For agents there are discounts available which depends upon the amount of business they bring for company. This system will help the company manage their advertisements. Company will be able to manage the progress and budget for each of the marketing campaign. Advertisement management system will provide solution to all problems faced in marketing.

### **Functional Requirements:**

1. System will be able to manage the marketing campaign. System will be keeping record of marketing activities and their budget, start and end dates, modes of advertisement being used.
2. Manage advertiser: Advertiser is a Person, Company or Institute that wants to advertise their business.
3. Manage billboard locations.
4. Manage the media partners, like newspapers, tv channels, online blogs, printing press etc.
5. Agent Management module will be able to manage the details, location and business brought and their commission.
6. User management module, with users of various levels like employees, managers and executives etc.

### **Tools:**

You can use C#/Java for the development of your project. The tools that can be used are .Net Framework, NetBeans etc.

### **Supervisor:**

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## Tile Master

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

Business industry is at boom now days throughout the world. Local market of Pakistan is also emerging in every aspect. The construction industry of Pakistan is at its peak in these days. Tiles are the essential part in construction industry. There is a wholesale market of tiles in which the product is sold to different shops or bulk users. Keeping in mind the importance of Tiles in construction industry, a website is needed to be developed. This website will help the wholesaler to not only work from his shop but also from the website. All the stock of the wholesaler is computerized and maintained. This will not only increase the sale of wholesaler but also keep a computerized record of the stock. This will benefit the wholesaler to generate multiple types of reports on just a single click. Ultimately time will be saved, and sales will be increased.

### **Functional Requirements:**

1. Login Admin
2. Registered Customer (only can place order online and view the available tiles)
3. Salesperson User (users can be multiple)
4. Admin can add, update, delete salesperson user.
5. Salesperson user cannot be signed up by its own.
6. Registered customer can only view and place order after the successful registration on the webpage.
7. There must be one single page for login into the website for all the users. After the successful login display the page according to the type of the user. There must be option of signup on the same page for the registration of the customers.
8. Admin can add, update, and delete the records of tiles and users.
9. Salesperson User can add the daily sales record into the system.
10. Salesperson User can add and update the available stocks on daily basis i.e. Tiles with company name, price, size and quantity into the system.
11. The tiles can be sold on cash and credit.
12. Reports generated by the system can be daily report, weekly report and monthly sales report.
13. On the basis of sales report the system must be capable of calculating the gross profit of the month. Keep in mind that the items sold on credit are exempted from the gross monthly profit report.
14. You have to make another report for the items sold on credit by the name of expected gross income.
15. Only the admin user can generate and view the sales reports.

16. You have to make 5 companies (master, sonex, china tile, Spanish tile, Irani tile etc.) of the tiles and each company has the 5 types of products according to the size of tile (5\*10, 10\*20, 32\*32, 16\*32 etc.) and each products quantity (in boxes) and price (in rupees) should be mentioned on the home page.
17. User can search any tile by its company name, size, price and quantity.
18. Database should be relational. You have to use primary keys and foreign keys to make database relational.

**Tools:**

Languages: C#, asp.net, sql, php, CSS, HTML, JavaScript.

Tools: Visual Studio, Dreamweaver or any other supported tool for above languages.

Database: mysql, sql server, WampServer, Xampp.

**Supervisor:**

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## Web Application for Quiz Development

### **Project Domain / Category**

Web application

### **Abstract / Introduction**

You have to develop a web application in which user can create quiz or survey. Application should provide an interface to the user in which he can add question and possible options. Developer should provide user with the option that whether he can add radio buttons or text box or drop-down list or check box for answer of the question. Each correct answer should be assigned marks. User can set time to the whole quiz. User can also set the number of times a user can take the quiz. Time taken by each user in solving the quiz or survey should also be recorded. Admin side of the application can see the marks, time taken by the user, summary of the results, detail results. Make sure that this will be a dynamic application in which user can create quiz or survey of his choice. So provide as much options as you can.

### **Functional Requirements:**

Provide a bulleted list of functional requirements

1. User can create quiz or survey or questionnaire.
2. Application should provide an interface to the user in which he can add question and possible options.
3. Developer should provide user with the option that whether he can add radio buttons or text box or drop-down list or check box for answer of the question.
4. Each correct answer should be assigned marks.
5. User can set time to the whole quiz.
6. User can also set the number of times a user can take the quiz.
7. Time taken by each user in solving the quiz or survey should also be recorded.
8. Admin side of the application can see the marks.
9. Admin side of the application can see time taken by the user.
10. Admin side of the application can see summary of the results.
11. Admin side of the application can see detail results.
12. Admin side of the application can group students based on results.
13. Make sure that this will be a dynamic application in which user can create quiz or survey of his choice and can set as many options as he can.

**Tools:** PHP and MySQL, or ASP.net and SQL server.

### **Supervisor:**

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## **“RENT A HOUSE ONLINE”**

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

Due to the rapid development in the field of IT and computer science most of consumers wants their needs to be fulfilled with a touch of a finger. Almost every facility from groceries to banking services are available online to provide security and services to the users online. Finding a rental house can sometimes be a very tedious task.

This application will be able to collect information from user about rental houses and make it available for people looking for rental houses. Due to this application we will be able to remove dealing with property dealers and users will be able to select from many options available.

### **Functional Requirements:**

1. Users will be able to create an account by signing up a form.
2. The form will consist of basic information such as name, address, phone# and email address for future reference.
3. Users will be able to post an advertisement about their rental houses.
4. Users will be able to upload pictures of the rental houses.
5. Users will be able to point the location via Google maps.
6. Users will be able to mention the expected rents.
7. Users will be able to check the houses online by selecting location, rent ranges, number of rooms, area etc.
8. Users will be able contact directly with the seller via a chat box to negotiate rents.
9. Users will be able to add a location to wish list.
10. Users will be able to remove an advertisement upon reaching an agreement.

### **Tools:**

PHP, MySQL, Xampp, Notepad++.

### **Supervisor:**

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## An Online University Management System

### **Project Domain / Category**

Web Application

### **Abstract/Introduction**

It is a web based management information system of XYZ University. The aim of this system is to store the data of students, teaching staff and non-teaching staff. Details regarding the different users involved in the system and the functions which they can perform are given below

### **Functional Requirements:**

Following are the users of this system. Each user has to log-in first, to use the system.

- Faculty Member
- Head of Department (Teaching)
- Registrar
- Non Academic Staff
- HR Manager
- Director Finance
- Vice Chancellor

Responsibilities and functions of each user are given below:

### **Faculty Member:**

1. There are multiple faculty members in each department. Each faculty member can teach multiple courses. Faculty member can access and browse the system to see which courses are assigned to him by his Head of Department.
2. The information which a faculty member can access include 5 non-editable attributes:
  - Faculty Member Employee ID
  - Faculty Member Name
  - Faculty Member Designation
  - Courses Assigned
  - Salary

### **Head of Department:**

1. There are multiple teaching departments in university and each department is headed by a senior faculty member.
2. The head of department assigns the courses to the faculty members of his department.

3. The Head of Department can access the information of the faculty members of his department which include 6 non-editable attributes and 1 editable attribute:

Non-Editable

- Faculty Member Employee ID
- Faculty Member Name
- Faculty Member Designation
- Courses Assigned
- Salary
- Collective Salary of Department Employees

Editable

- Assign Course

**Registrar:**

1. There is only one Registrar in the system.
2. The Registrar can view the information of the courses and can add/edit the courses into the system.
3. The Registrar can add/edit or remove any information regarding faculty members and head of department.
4. The Registrar can access the following information including 2 non-editable attributes and 6 editable attribute:

Non-Editable

- Salary of any Faculty Member
- His own Salary

Editable

- Faculty Member Employee ID
- Faculty Member Name
- Faculty Member Designation
- Add/Edit Employee
- Courses List
- Add/ Edit Course

**Non Academic Staff:**

1. There can be many non-academic staff members and are headed by HR Manager.
2. Non-academic-staff members can access and browse the system to see the information about themselves which include 4 non-editable attributes:

- Staff-Member Employee ID
- Staff-Member Name
- Staff-Member Designation
- Salary

**HR Manager:**

1. There is only one HR Manager in the system, he is the head of all non-academic staff.
2. The HR Manager can add/edit or remove any information regarding non-academic staff.
3. The HR Manager can access the following information including 2 non-editable attributes and 4 editable attribute:

## Non-Editable

- Salary of any non-academic staff Member
- His own Salary

## Editable

- Staff-Member Employee ID
- Staff-Member Name
- Staff-Member Designation
- Add/Edit Staff Member

**Director Finance:**

1. There is only one Director Finance in the system.
2. He can change the salary of any employee.
3. He can only view the salary of his own.

**Vice Chancellor**

1. HE is the power user and has the rights of all above users, he can add/edit/delete any information of any employee/course.

**Proposed Tools:** PHP, MySQL**Supervisor:****Name:** Shabib Aftab**Email ID:** [shabib.aftab@vu.edu.pk](mailto:shabib.aftab@vu.edu.pk)**Skype ID:** shabib.aftab

## Border Crossing Management System

### **Project Domain / Category:**

Web Application

### **Abstract / Introduction:**

Border Crossing Management System (BCMS) is a web-based management system. This system is made to keep the records about the people and goods who are crossing the borders of a country and are going to the other countries. This system helps the border control officers in checking those people who are going through the border to another countries, might have some luggage and that luggage also need to be checked and the passport of the people also needs to be verified. For passport might not be required in some countries, so people going to those countries should have all the other documents which are required. This system has one admin account and only admin can add officers who are on duty.

The duty officers have different duty shifts and this system has all the options that helps the officers in their shifts. Those People who are crossing these borders they do not have valid documents should be checked through responsible verification departments. In crossing border, if the people have caught with any illegal activity, then duty officer should add complain and send it to the related departments. The follow up of complaints can be seen through department profile. This system also has the option to add and delete officers as their duty gets keep changing.

Admin and different officers can check these duty officers which has duty on border. Officers approve the leaves and provide alternative for a duty through this system. All goods transportation will be checked through this system and keep record of the import and export of goods through border. All people have valid medical test report for border crossing. This system also linked with multiple labs which provide test report to the system through entering report number.

### **Functional Requirements:**

1. Admin Profile is a profile which have all access of the system.
2. Registration system for border crossing people.
3. Login system for each User.
  - Duty officer
  - Officer
  - Admin
  - Departments
4. Checking Luggage
5. Add Complaints
6. Status of Complaints

- Pending
  - Completed
  - Filled
7. Verification system for required department.
  8. Goods Transports
    - Import Goods
    - Export Goods
  9. Medical Reports
    - Infected people
    - Non-infected people
  10. Payments
    - Punishments

**Tools:**

1. Tool: **XAMPP**
2. Language: **PHP, HTML, CSS, JavaScript (other supporting language)**

**Supervisor:**

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## Web based Cognitive Video Learner (CVL) System

### **Project Domain / Category**

Web Application

### **Abstract/Introduction**

Online Education is gaining continuously higher reputation due to numerous reasons that includes the flexibility and comprehensive evaluation. With this trends online education systems needs to add more and more features and functionalities to enhance the learning experience and evaluate the learner's knowledge. This project is aimed contribute to improve the current online learning practices for Online Educational Programs.

Students are required to plan, design and develop a web based Video Player that can track a course video watching and learner attentiveness. Learner can open any video lecture by login to a course portal. Course Portal will use learner identification data from registration database that includes the student's face capture data.

Once learner is identified with face recognition, course video shall start. The player interface will continuously monitor the learner's webcam and reevaluate the learner's face recognition data when the significant change occurs in the user-Webcam video or schedule based. If the learner is not recognized, the system will pause course video and add an event to watch history to a database. This information will be shown on each course in learner section. Learner need to have the options to restart a course video, resume the course video from where he last left.

Course teacher requires the ability to add quiz at different parts of the video length, once learner watch the video to given extent or duration, video is paused and learner is taken to quiz screen, where learner will be required to answer the questions added by the teacher. Learners often need to have the option to skip the quiz, take quiz at the end or take the quiz at later time.

Teacher is able to see what duration of course has been watched by the student, and how many quizzes are attempted and their evaluation scores. Once the learner completes the video, system should give recommendation like, need to review, retake quiz, rewatch the course or lecture video.

## **Project Guidelines**

1. Student can choose any web programming language or frame work to implement the project. ASP/PHP and java.
2. Students can use the existing python or java-based or any other facial recognition libraries and their integration with their system.
3. Students can read about facial recognition from <https://pypi.org/project/face-recognition/>
4. Students can read more about video streaming using python from <https://pypi.org/project/pylivestream/>

## **Function Requirements**

Student is required to ensure the following functionalities are available in the final project.

### **1.1 Basic Course Portal where teacher and student can register**

#### **1.2 Teacher functions:**

- a. Add course
- b. Add video (single /topic based)
- c. Add student/approve student
- d. View student stats
- e. View course lecture or video stats
- f. Add/view quiz stats

#### **1.3 Student Functions:**

- a) Student enrolment to course
  - i. Student data
  - ii. Facial Recognition Capture
- b) Watch lecture/topic video
  - i. Pause Lecture/topic video
  - ii. Resume Lecture/topic video
- c) Student feedback

#### **1.4 System Functions:**

- a. Lecture/Topic Video Streaming
- b. Webcam Video/Picture Streaming
- c. Facial Recognition
- d. Facial Patterns Database
- e. Course/Teacher/Student Stats



- f. General Stats
- g. Watch History
- h. Quiz Evaluation and attempt history
- i. Firefox/Chrome Compatibility
- j. Mobile Compatibility

### **Tools/Languages**

Languages: Any Language e.g. PHP / ASP / Java / Python etc.

Frame Work: Any Open source frame-work

IDE: Any IDE e.g. Eclipse, Visual Studio, etc.

OS: Any OS

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## Design and Implementation of an online NEWS Web-Site

### Project Domain / Category

Web Application

### Abstract/Introduction

NEWS readers continue to move beyond traditional print publications such as newspapers and magazines, and focus on news web-sites to remain update. NEWS sites are prime opportunities to build an online presence of the world. With the rapid spread of the Internet, NEWS has become an essential resource, readily available at your fingertips. With the click of a search engine, it is possible to read and see both national and international NEWS that covers virtually any subject. Although the design may seem complex at first, NEWS sites are fundamentally simple database-driven web-sites. NEWS stories, articles on different topics and categories are typically stored in a database, and this information is formatted and presented to readers in a usable and attractive way.

Anyone can read NEWS and can search any particular news / article. Readers can write some comments on any particular news / articles. There will be two interfaces in this web-site: a **user interface** and **admin interface**.

On **user interface** a user will be required to register before he /she can subscribe for daily / weekly newsletter. He / she can enjoy reading both local and international NEWS. He / she can read NEWS residing under different categories like Social, Political, Economic, Educational, Sports and Entertainment etc. The user can read NEWS in different languages also. Registered users can comment under any article displaying their name, date and time.

On **admin Interface** login is required to add / delete / update any category. Admin can also restore deleted category. Admin can also add / delete / update sub-category. He can also restore deleted sub-categories. Admin can add / delete / update different NEWS. Admin can manage contact us page as well. He / she has right to approve or disapprove users. He / she should be able to approve / disapprove / delete user's comments as well. He / She can easily manage the user's subscriptions and sending newsletters to the registered users upon their successful subscription.

This web-site portal will be developed using ASP.NET / PHP as the front end and SQL Server / MYSQL as a back-end. The database will store all information about the NEWS. Categories, Articles, Images, Videos and Users.

### **Functional Requirements:**

- ❖ The system shall provide convenient interface for User Registration, Categories and NEWS Search.
- ❖ The database should be able to store images as well as videos of NEWS.
- ❖ A section in home page must be allocated to **breaking news**.
- ❖ A guest user can only read news. For any kind of comments and newsletter subscription he / she must have to register first.
- ❖ The system should be able to show all NEWS in their respective categories.
- ❖ Admin should be able to view details of each user and approve or disapprove the user's register request.

- ❖ The system shall be capable to provide search interface to the user to search any specific NEWS. It should be user friendly.
- ❖ The system shall provide Password Recovery facility through user email id.
- ❖ The system should provide the interface to store the name, and email address of the user during user registration for future communication.
- ❖ Each NEWS and article shall be allocated a unique identifier i.e. news\_id and art\_id etc.
- ❖ The system shall have both Admin and User views. i.e. Administrator View and User View.
- ❖ The system should store and display images of each NEWS also.
- ❖ Registered users shall be able to get newsletter weekly / monthly via email, upon their free subscription.

**Tools: ASP.NET, C#, SQL Server, PHP, MYSQL**

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## Effective Beauty and Health Remedies

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

The purpose of the proposed web site is to provide all age groups of the viewers, the advise and the tips to help them to maintaining healthy lifestyle and the health. It will negate many myths that are counterproductive and have negative affects on the health issues.

The main idea is to make a forum where the web browsers can share their experiences. It will also motive the young entrepreneurs to start their own business related to the health and beauty products. The web site will especially focus on the health issues that are related to the ill myth and due to the consumption of adulterated food. It will help to maintain the philosophical parameters of the body and as well as to maintain the skin and skeleton and tissue of the body. It provides the browsers to find the required products or the advises on health and beauty matters.

The proposed web site would be on the health and beauty issues of the public. It would cover the following topic

### **Health and beauty**

In health sector the people would be told the simple ways to maintain their health and beauty.

I would have two section

1. Ist would be the awareness of the normal physiological values of the body. For an example BMI , heart rate BP , Blood sugar level and other parameters.
2. Second section would be how to remain disease free. Tips to remain healthy.
3. Third section would be the types of physical activities that can make you fit and active.
4. Forth section would be the choice of food and drinks that make you healthy.
5. Fifth section would cover the importance of organic foods and how to acquire them
6. The simple tips to adopt in case of any health issues.

### **Beauty section**

This section with emphasis the important of super foods to boost immunity and to remain young. Use of simple natural products to look beautiful and young. It will also emphasis on the natural products to be used to look beautiful and to counteract the affects of the chemically based make up use.

The intended users of this applications are the admin and the viewers/visitors.

The admin can login, manage visitors/viewers by adding new visitors and updating their profiles. Admin can also check for the registered visitors. visitors can register and login and view all the contents of the application. visitors can ask their new queries related to health or beauty issues other than available solutions online. They can send their feed back also after experienced of the provided solutions. Admin can check online feed back of the intended visitors and accept and reply their queries as well. Visitors can get their feedback response notification online.

## **Functional Requirements:**

Some of the functional requirements are:

- Login process/authentication for Admin and visitors (Sign up and Sign in) to avoid unauthorized access.

### **1. Admin Requirements**

- Admin approves the registered visitors
- Admin can manage the visitors (add/ view/ update / delete)
- Admin can update the visitors details and manage login password
- Admin can check rating given by visitors about each product, health and beauty tips
- Admin can check average rating for each visitor
- Admin can block a visitor in case of continuous poor rating

### **2. Visitors Requirements**

- Visitors can register and Login to the system
- Visitors make their profile including their Name, Age, Address
- Visitor will rate a product /remedy matching with their requirements .
- Admin can view/ update the visitors profile and can update password
- Admin can check the rating given by the Visitors

## **Tools:**

Server side programming language: PHP

Scripting and styling languages: HTML and CSS

Client side scripting: JavaScript and JQuery

Database: MYSQL

IDE: PHP Storm or NetBeans or any one of your choice

Local host Server: WAMP or XAMPP

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## Employee Recruitment System (ERS)

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

This project Employee Recruitment System (ERS) is a website in which jobseekers can register themselves online, view organization requirements and apply for the suitable job. Employee Recruitment System provides online help to the users all over the world. This kind of system plays an important role in simplifying the recruitment process. The system has facilities where prospective candidates can upload their CV's, related documents and apply for jobs suited to them. It also makes it possible for organization to post their staffing requirements and view profiles of interested candidates.

### **Existing and Proposed System**

Earlier recruitment was done manually and it was all at a time consuming work. Now it is all possible in a fraction of second. Employee Recruitment System by overall is aims to facilitate the applicant to apply for the job online. Indirectly, it is also to facilitate the managerial department of an organization for an optimized and systematic employee recruitment process. The system also provides the global platform for both - jobseekers and the organization, where the jobseekers can find their dream jobs and organization can find the right candidate to fulfill staff requirements.

### **Objectives**

The objective of this website is to serve as a common meeting ground for jobseekers and organization, both locally and globally.

- This website helps applicants to find suitable job within the organization and apply for that job easily.
- The website helps in managing and viewing details of interested applicants for the administrator.
  - The system is capable of sorting and filtering best suitable candidates based on some criteria.
- Company will not have to waste their time for finding right employee at right post.

### **Number of Modules**

This system has web-forms like registration form, login form and account pages like user applicant page, admin account page etc.

It includes following main modules:-

- **Admin Module:** An administrator can be a manager who has full authority over the whole system. The administrator is able to update and retrieve data from the account of candidate.
- **Candidate Module:** The candidate is a center of this system. He has to register himself to use the services of the system.

## Requirements of a New System

### User Characteristics:

Three types of users can interact with the system:

#### 1. COMPANY (HR Department):

The following are the acts performed by the HR department of company throughout the system:

- Project Management
- Contact Management
- Team Member and Team Management
- Partner Management
- Data Management
- Activity Management
- Feedback Management

2. **ADMINISTRATOR:** Admin can update, delete, and modify the detail of the candidates, which are filled by them only of their respective department. He also can schedule examination activities and sort candidate's basis on exam results.

3. **JOBSEEKER:** Jobseeker can register himself, upload CVs, documents, find the appropriate job within organization's vacancy constraints, attend the exam and give feedback about the system.

### Functional Requirements

- The system should record all the details of an applicant.
- The system should provide applicant to edit his profile details.
- The system should allow user to give feedback about the system.
- The system should have the facility of administrative help for user to solve his important problems.
- The system should allow admin to have full authority over user accounts.
- The system should allow admin to display vacancy within the organization.
- The system should allow admin to sort and filter applicants based on some criteria.
- The system should allow admin to send notifications about upcoming events and deadlines to applicants.
- Username & password will be send to the users through email after registration.
- Password recovery system will also be provide in case of forgetting the password.

### Non-Functional Requirements:

- This application is secure for every kind of its users, because here is facility of session management. If any user logout from any session then nobody will be able to access his profile without knowing his confidential password.

- The database used here is robust, reliable & fast. Therefore, users will have to wait for the output very short time.
- This website can be access from any type of platform.
- There is no case of redundancy in the database so it will not take extra memory space.

### **Tools:**

#### **Hardware**

- Processor : Intel core processor 2 GHz
- RAM : 2 GB RAM
- Hard Disk : 80 GB HDD

#### **Software**

- Operating System : Microsoft Windows 7/8/8.1/XP/VISTA
- Programming Language: PHP
- Package : Adobe Dreamweaver
- Database : MY SQL
- APACHE Server
- Design : Adobe Photoshop CS6.0 , Micro media Flash Player
- Browser : IE (Version 6 or higher) , Mozilla Firefox or Google Chrome

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## Employee Task Management & Performance Evaluation System

### Project Domain / Category

Web Application

### Abstract / Introduction

In any organization, efficient management of employees and assigning different tasks is a challenging. Moreover, the performance evaluation of any employee can be done on the basis of how efficiency, the employee performs the tasks assigned to him/her. The proposed project is a task management and performance evaluation system that helps effectively organize and manage everyday tasks by using functions such as task creation, planning and assignment, tracking, reporting etc. The proposed system makes it easy to keeping eye on the performance of your each employee and assigning the task to them. The system will keep informing the high-ups about the status of activities assigned to different employees. Like: how much work is done by each employee and what sort work they are doing, all the pending tasks and how much time and man power is being consumed for fulfilling one customer's task and a lot more. Even an individual or team leader can track or assign a task or a project and can take decisions based on the progress of the project. So, it's time to make your team more productive. The second part of the proposed system is the performance evaluation of the employee based on the online status of the tasks assigned to the employee.

### Functional Requirements:

The system comprises of 3 major modules with their functional requirements as following:

#### **3. Admin Module:**

- **Login:** Admin can login with valid id and password in order to access the system.
- **Add / Manage Employee:** Admin can add employee with his/her basic registration details & other details such as employee designation, department, qualification, experience and also can manage those details.
- **Add / Manage Manager:** Admin can add manager with his/her basic registration details & payroll details (Salary, Bank Details, etc.) and also can manage those details.
- **Assign Employees to a Manager:** Admin can assign employees to any manager. An employee may be assigned to more than one managers at any time.
- **View Completed Tasks:** Admin can select a completed task to view the stage details of that task.
- **View Employee:** Admin can view employee details and also can manage it.

#### **4. Manager Module:**

- **Login:** Manager need to login using valid login id and password in order to access the system.
- **View/Update Profile:** Manager can view their personal account details.

- **Create Teams:** Manager can create a new team in case if a task is to be completed by more than one employees.
- **Assign Employee to a Team:** Manager can add his/her allocated employees into a team.
- **Assign Lead Role to a Team Member:** Manager can assign a role of Team Lead to any of the team member.
- **Assign Task to an individual Employee or a Team:** Manager can add a new task and assign to any individual employee or more than one employees in a team. Moreover, manager can further divide the task into sub tasks and assign each sub task to an individual employee. For each task or sub task, the information will be maintained such as Task Name, Creation Date, Task Completion Deadline, and Current Progress of Task. All the newly added tasks will be displayed to respective manager for assigning it to multiple employees.
- **New Task Notification:** After a new task is assigned to a team or an employee, a notification is sent to the official email account of each employee which has been assigned the task. The email will include the Task Name, Task Details, Creation Date and Completion Deadline.
- **Update Task:** Update the progress of each task with respect to stages and update the end date.
- **View Completed Task:** When all stages are completed then task will be shown with its complete details and manager can write a performance review for each employee for the respective task and rating will be calculated and stored into the database.
- **View Employees:** All the added employee's details can be viewed the manager.
- **Forgot Password:** In case, the manager forgets a password then he/she need to verify account details in order to receive password via mail.

## 5. Employee Module:

- **Login:** Employee need to input valid login credentials in order to access the web application portal.
- **Profile:** Employee can view their personal account details.
- **View Pending Task & Status:** Employee can view their assigned task and the status of their task with co-workers and manager details.
- **Add Subtasks:** If a team has a team leader, he/she can distribute the task into subtasks and assign the sub-tasks to individual members in that team. The subtasks will be able to be seen by the managers who created the team.
- **Update Task Progress:** Employee can update the progress status of task/subtask assigned to him/her.

- **View Completed Task:** Employee can view their previous/completed task details and review co-workers performance and the rating will be auto calculated and stored into the database.
- **Forgot Password:** In case employee forgot a password then he/she need to verify account details in order to receive password via mail.

**Tools:**

C# with .NET Framework / HTML CSS / SQL Server

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## Find Your Private Tutor Online

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

The system of private tuitions has been in existence in Pakistan for a long time but in recent times it has grown widely. This application will help to find qualified tutors from nearby locations. Tutors can also get students just by logging into the website and setting up their profile. In the system there are three entities namely, Admin, Students and Tutors.

Admin can login, manage tutors by adding new tutors and updating their profiles. Admin can also check for the registered students. Students can register and login and view the tutors. Students can filter and select a tutor and raise a request of a demo lecture. After attending the demo lecture, they can book the tutor online, and rate the tutor. Tutors can check for the request for demo lecture and accept the request. They can also check for the booking done. This system can help the students to find the best tutors.

This system will be built with effective graphical user interface which enables user openness. This system will reduce time and cost of both students and tutors.

### **Functional Requirements:**

Some of the functional requirements are:

- Login process/authentication for Admin, Tutors and students (Sign up and Sign in) to avoid unauthorized access.

### **3. Admin Requirements**

- Admin approves the registered Tutors
- Admin can manage the Tutors (add/ view/ update / delete)
- Admin can update the Tutors' details and manage login password
- Admin can manage the students (add/ view/ update / delete)
- Admin can check rating given by students about each Tutor
- Admin can check average rating for each Tutor
- Admin can block a Tutor in case of continuous poor rating

#### 4. Tutors Requirements

- Tutors can register and Login to the system
- Tutors make their profile including their Name, Academic qualification, tutoring experience, Subjects of interest, level (SSC, FSc, BSc. MSc. etc), and their Location
- Tutors can view/ update their profile and can update password
- Tutors can check the rating given by the students

#### 5. Students Requirements

- Students can register and Login to the system
- Students can view/ update their profile and can update password
- View Tutor: Students can search for all available tutors
- Tutors' List: All the available Tutors' details will be displayed to the Students
- Refine / Search: Students can search for relevant Tutors' details by Name, Academic qualification, tutoring experience, Subjects of interest, level (SSC, FSc., BSc., MSc. etc), and location
- Request a Demo: Students will select a tutor matching their requirements and raise a request for a demo lecture
- Book a Tutor: Students can book a tutor
- Rate Tutor: Students can give rating to the concerned Tutors after the Demo class and after the course completion

#### **Tools:**

Server side programming language: PHP

Scripting and styling languages: HTML and CSS

Client side scripting: JavaScript and JQuery

Database: MYSQL

IDE: PHP Storm or NetBeans or any one of your choice

Local host Server: WAMP or XAMPP

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## Labor Information Board (LIB)

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

In this project, we will develop a web-based system named as “labor information board” to facilitate people and labor. As in this modern era most of us are leading busy lives and don’t have enough time to go and book a technical person for daily small tasks, it has become difficult and time consuming task to find a trusted, responsible and reliable technical person manually, most of the time it is overburden for us. In this project we will develop an online system that will help the technical person to get registration and have more chance for employment. On the other hand, it will also help the people to find a trusted technical person. A user can view and book any nearby available technical person. Search by Location feature will also be integrated in the application so that the users can search for the technical people in their surrounding locations as well as the technical person can know from where the services are being requested.

There will be an admin and two types of users of this Application 1) labor and 2) clients

This application will store records of workers. It will have different technical section/ category

- Electrical technician
- Plumber
- Key maker
- Carpenter
- Transporter
- Loader (for shifting luggage)

This website project will be developed using ASP.NET / PHP as the front end and SQL Server / MYSQL as a back-end. The database will store all information about the users and technical persons.

### **Functional Requirements:**

#### **Admin panel:**

1. The admin can login and logout.
2. The admin can add different information about their services.
3. Admin can add different technical categories
4. Admin can view/delete record of any technical person or customer.
5. Admin can view feedback, complains and reviews.
6. Admin can block or generate an alert to any registered user in case of complains.
7. Admin can generate a report of registered user and technical persons.

**User Panel:**

1. The system will provide user-friendly interface for Registration.
2. The user will be able to search and view technical person's profile.
3. The user will be able to book a particular service according to his/her convenience on the availability of the service/resource person.
4. For booking the technical person, the user must be a registered user. If the user will not login already then there must be a "Registration" option available for the user.
5. The user will be able to pay dues online by using credit card, easy paisa or by cash.
6. User will be able to get notifications on his / her email id or mobile number as soon as his/her booking will be confirmed or cancelled.
7. User can give feedback/complaints about technical person or system.

**Labor panel**

1. The system will provide user friendly interface for Registration.
2. Technical person will be able to login and logout.
3. Technical person will be able to create his profile.
4. Technical person will be able to add his payment method as by cash or Online.
5. Technical person will be able to set wages type as per hour or per day
6. Technical person will be able to Set his availability status as available or not available
7. Technical person will be able to confirm the booking request.
8. Technical person will be able to cancel the booking request.
9. Technical person will be able o register complain against users.
10. Technical person will able to view his working reports (daily, weekly and monthly basis).

**Tools:**

ASP.NET, C#, SQL Server,PHP, MYSQL

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## Motor bike Sales Management System by using chatbot

### **Project Domain / Category**

Web Application

### **Abstract/Introduction**

In recent times Chatbots have the potential to save any individual's time, hassle, and tedium by automating different tasks. Main idea about chatbot application is that it will help the user to interact with the customer through B2C E-commerce application. To build a chatbot, there is currently an incredible amount of **platforms** and **tools**, with different complexity levels, expressive powers and integration capabilities. Chabot uses Natural language processing combined with Artificial Intelligences in E-commerce environment. For this conversational Chabot can be used in E-Commerce environment. Chabot are a form of artificial intelligence associated with natural language processing that interacts with users in a human-like manner. Secondly in E-Commerce environment there is lot of competition of different competitors. Chabot can judge the customer inclination through natural language processing by engaging customer interest in different motor bike specifications. Chabot are capable of asking a vast number of questions to learn about the specification of the required motor bike and finally recommend the motor bike as per customer demand.

Today, chatbot are bridging the gap between customer and latest E-commerce technologies. Chabot creates an interactive experience by facilitating the online selling and buying of goods, similar to a B2C business to customer in E-commerce application. The machine-learning Chabot are still in early days; in many cases, it is obvious that the customer is interacting with a Chabot.

### **Functional Requirements:**

Now-a-days E-commerce business is growing very rapidly. E-commerce or internet commerce refers to the buying and selling of goods or services using the internet, and the transfer of money and data to execute these transactions. Our proposed Motor bike Sales Management System by using Chabot used in B2C E-commerce domain. It facilitates the environment for every customer based on specific motor bike requirements. Our Chabot offers support by providing list of motor bikes and adaptive guidance to specific customers.

The goal of proposed system is to perform following activities.

- Customer used the CustomerID and password to access the motor bike Sales Management System. Pop up window should be displayed at the bottom right of our Motor bike Sales Management System by prompting the customer for any kind of guidance.
- The first priority of chatbot is to satisfy the customers that reach out the website. Customers reaching your page, app or website have to select the specific motor bike to be selected. Selection of motor bike enables you to offer customers a personalized offering of list of motor bikes based on customer required motor bike specification.



- Search results, personalized merchandising of motor bikes, recommendations can help your customer find specific motor bike specifications. When your customer online activity indicates willingness to buy motor bike however, customer is not buying, it may be a good time to probe what customer is exactly looking for. A conversational interface allows you to ask probing questions and understand your customers' intent better.
- Search result should be displayed the list of motor bikes with respect to model number, speed and efficiency.
- Your customer may be looking for a better price and believes qualifies for a discount. Understanding if customer falls into one of your segments qualifying for a discount and offering that discount immediately can reduce friction in buying motor bikes.
- Chatbot judge the customer behavior and suggest the specific motor bike according to his budget.
- Conversation Flow -- When a human talks to a human, he or she rarely plans the entire dialog in advance. When a human talks to a bot, this conversation has to be guided. The thing is, conversation flow is a dialog tree. It visualizes expected user-bot interactions and makes sure every user request is covered by some part of the bot's logics. To make conversation flow smooth and efficient, it's important to apply the best practices and build chatbot. For this Machine learning algorithms are used by taking into account business objectives and customer' expectations.
- Chatbot should already be "taught" common questions so that it will be able to answer customer questions and respond immediately to customer' queries.
- Once the customer has selected the required motor bike, chatbot should properly guide the customer of payment method.
- Chatbot should also guide the customer about the motor bike guarantee in case of malfunctions for specific time period.
- Chatbot should also guide the customer about the guarantee for time period of different parts of motor bike like mechanical parts, electrical parts and engine.
- For successful human-like interaction, chatbots need a perfect tone and dialect. To achieve coherence, a character is used to effectively communicate in audio synced with the text.
- Chatbot used a list of Frequently Asked Questions to generate a chatbot's list of pre-programmed queries and responses.

**Tools:** JSP, SQL server 2012, Dialogflow, IBM Watson, Microsoft Bot Framework, Wit.ai, Api.ai, Chatfuel.

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## Online Furniture Shop Management System

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

Online Furniture Shop Management System is a process in which we can order various furniture items online. Furniture items include bed set, dining set, chairs, table, sofas, and cupboard. The customer has to register first and then select the furniture of their choice from different categories. When a customer finalized the furniture items, then he can add these items into the shopping cart. By checking out from the shopping cart, his order will be placed and deliver to his location within 7 working days. When the customer is satisfied with the order, then he pays cash on the spot.

### **Functional Requirements:**

#### **Admin:**

1. Admin have access to monitor everything on the Online Furniture Shop Management System
2. Admin can add, update and delete the furniture items,
3. Admin can verify all the orders details.

#### **Customer:**

1. Customer has to register himself by sign up
2. Customer can view the different furniture items from the available category and then select items of his choice to the shopping cart.
3. The customer has to fill a form providing his name, number, address, city, delivery and payment method (cash on delivery) after his checkout from the shopping cart.
4. Furniture will be delivered to the customer location within the 7 working days.

### **Tools:**

PHP Language and MySQL Database for developing this project.

### **Supervisor:**

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## Online Grocery and Household Management System

### **Project Domain / Category**

Web Application

### **Abstract:**

As life is much busy in this digital era and its very hard to manage / control even remember household (billings / payments) and grocery. It's also very hard to keep track and have a report / summary of expense along with comparison with previous months. So, here we are trying to design and develop a web-based solution to cater these issues. We also try to develop few reports that would help users of this system / solution to keep track the changes in term of expense and quantity / quality of services / items.

### **Functional Requirements / Salient Features:**

This system will have the following features:

- User is registered to this web portal / web site
- There's only one Admin to this web site
- Admin will validate the user and in future also will manage users in term of block user, reset user password and even delete user
- Admin would not involve in any of the transactions or entries in the system
- User would have to enter his income resource (s) and his/her monthly income
- User would allow to enter main categories / heads of his / her household expenses
- For each month, values / amount against these heads would be changed. E.g. Electricity, Gas, Water, Grocery and Sanitation etc.
- User would also be facilitated to maintain a standard list for grocery that would replicate each month when user would enter details of his/her grocery. Sample example along with detail is as under;  
Cooking Oil – Habib Cooking Oil – 1kg Packing – 220 per KG - Purchase 5 pouches – 1100 total cost
- The list can be altered at the time of entry but these changes / update in grocery items would only reflect in respective month's grocery details
- Changes in grocery item would only be saved for future use when changes would be made in standard grocery item list
- Grocery list may vary from user to user and total control of list / expense heads would be in user's hands

**Required Reports:**

- 1- Custom Expense report (Yearly, Quarterly, Monthly and Weekly)
- 2- High frequency expenses in custom monthly report
- 3- Expense Segregation report based on grocery items / heads
  - a- (Text based)
  - b- (Chart based)

**Tools:**

Server-side programming language: PHP, HTML and CSS

Client-side scripting: JavaScript and jQuery

Database: MYSQL

IDE: PHP Storm

Reporting Tool: Kool Report ( [www.koolreport.com](http://www.koolreport.com) )

Local host Server: WAMP / XAMPP

**Supervisor:**

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## Online Health Directory

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

The aim of this project is to develop a web based system named as “Online Health Directory” through which the users will be able to get the information of doctors, hospitals, health centers, health clinics and medical laboratories. The website will allow the doctors to join and share/upload their information, availability timings, area of expertise/specialization and contact details while registering on the website. User registration requests and the whole website will be managed by the “Administrator” (Admin) of the website through Admin Panel. Admin will enter the information of hospitals, medical centers, health clinics and medical laboratories. The website will provide user friendly interfaces, easy navigation flow and proper search facilities for its users. The launching of this website will serve as a quick way of finding important information without physically visiting to medical / health related centers.

### **Functional Requirements:**

Following are key functional requirements of the proposed system:

#### 1. Sign In and User Registration

There will be proper interfaces for user registration and Sign In for the following three types of the users of the website:

- ✚ Visitor (Unregistered User)
- ✚ Registered User (Doctor)
- ✚ Administrator (Admin)

Roles of the users will be as follow:

Visitor will be able to visit the website to search his/her relevant information from the website and can contact to doctors or other medical centers on their provided contact numbers and emails.

The registered users will be the Administrator and the Doctors. Doctors will be able to upload their information on the website while registering them on the website whereas the admin will be the user of website having all the rights of information management as well as user management. Admin will approve the registration requests from the doctors. In case of any change in the information by the registered users (Doctors), it will be approved by the Admin prior to publishing on the website.

#### 2. Email Notification and Verification

An unregistered user will register him/her on the website. On submitting the registration information, an email notification will be sent with a confirmation link to the user’s given email

ID. On confirmation through link, the Admin will approve the registration requests from users. An email notification will also be sent to the registered user on approval or rejection of any request.

### 3. Website Information Management

There will be proper interfaces through which the Admin will be able to add/ delete and update information such as location, contact numbers regarding hospitals, medical centers, health clinics and medical laboratories. The website will display this information in easy and attractive manners. Admin will add specialization information/categories for doctors such as Neuro Physician, Dermatologist, Gastroentologists, Psychiatrists, Radiologists, Gynaecologist, and Psychologist etc. which will be used by the Doctors while registration.

### 4. Uploading of Personal Information/Profile by the Doctor:

There will be proper interfaces through which the Doctors will be able to upload their information such as Name, City, Area of Specialization, Designation, Official Registration Number like PMDC Number, Consultancy Fee, Availability Timings, Experience, Email address, Office address, Phone Number etc. Doctors could also be able to upload the scanned copies of their Educational Certifications /documents (For admin view only). Doctors will also be able to update their profile information. However, edited information will be approved by the admin before publishing on the website.

### 5. Search and Sorting System on Website

The website should provide rich search feature through which all types of users should be able to search information on the website using different filters and keyword such as:

- Hospitals, medical centers, health clinics and medical laboratories names /keywords
- Doctor Name
- Filtering City Name and Other Keywords
- Disease name
- Specialization etc.

Admin will also be able to search the information by user IDs.

### Tools:

1. PHP and MySQL (You can choose any framework such as Laravel)
2. Bootstrap or any other CSS Framework
3. Any JavaScript library/ framework such as jQuery, Vue Js, react Js or angular Js

### Supervisor:

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## PLMIS-Diagnosis system

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

Laboratories require to be more flexible than ever due to the kind of work proceedings they deal with and in order to support that ability, every laboratory requires a Pathology [Laboratory Information Management](#) that can meet its needs today as COVID spreads globally. If a patient is infected and goes out, he/she can infect many people. So it is better, patients place request sample collection online. It saves time of patient also. Laboratories as well as patients' needs to be a kind of web-based application that allows you to easily manage your lab data, resources and patient information. The core objective of this project is to develop a website that facilitates the patient to send request to laboratory for sample collection and get test result report on a single click. This web-based application will be helpful for the administrator also for the maintenance of the patient's history.

Patients can get the Pathology lab reports (e.g. blood analysis, blood count, bone marrow aspiration) by entering the invoice number and access code through their receipt. In case of assistance, users can email to the Support staff. Moreover, reports can be viewed for a period of 6-12 months from the invoice date.

### **Functional Requirements**

#### **Administrator Panel:**

1. Login process to allow authentic user to access the admin panel.
2. Admin will be able to do the following:
3. Keep the record of lab equipment and material
4. Keep the record of staff
5. Add/update/delete patient record
6. Assign patient to sample collecting staff
7. Assign pathologist to patient sample
8. Add patient lab report
9. Delete patient report
10. Maintain history
11. Send SMS to patient as report is uploaded
12. Send reminder to registered customers to repeat test after 6 months by offering discount and promotions.

**Patient panel:**

1. Patient panel will do the following:
2. Patient will create an account or register him/herself on PLMIS
3. Patient will sign-in.
4. Patient will place request for sample collection (based on place and time)
5. Patient can view lab test report by access code or any password
6. Patient can search lab report
7. Payment can be made via credit card or on cash at the time of sample collection.

**Tools:**

Visual Studio, .NET Framework, C#/Java, SQL Server

**Supervisor:**

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## Smart Irrigation System

### **Project Domain / Category**

Web Application/Android Application, Artificial Intelligence

### **Abstract/Introduction**

A smart irrigation system is an artificial intelligence (AI) based web application or android application in which an expert system will be built by using any AI algorithms automatically. In this system, it will be considered the fuzzy logic or any artificial intelligence approach to solving the watering system problem. This crop watering system utilizes any logic to determine how long the system must be open the water tap. This system accepts input in the form of three values, namely the value of temperature in the Celsius unit and the value of humidity in percentage and soil moisture in percentage ( like getting real-time data from sensors). The output will produce one value that is the duration in minutes the tap must be opened.

### **Functional Requirements:**

1. The application should have a graphical user interface which has admin interface (student can select option such as web application or android application)
  - a. The Admin should be login with a valid username and password.
  - b. Admin should manage all activities of input and output parameters on the GUI interface.
2. There are seven major tasks you will typically perform when developing a fuzzy logic expert system. Tasks (2-7) should be implemented internally while developing the system.
  - i. Task 1: Define the problem( Student should firstly select one specific crop or plant)
  - ii. Task 2: Define Linguistic Variables
  - iii. Task 3: Define Fuzzy Sets
  - iv. Task 4: Define Fuzzy Rules
  - v. Task 5: Build system
  - vi. Task 6: Test System
  - vii. Task 7: Tune System
3. The application should be used a knowledge-based system with the Fuzzy algorithm (Specifically select crop or any plant then build the rules or knowledge-based according to that plant)
4. The application should be used to manage reports weekly basis.
5. The admin should manage and view all backup records.
6. The admin should view the performance of crops weekly basis and update knowledge based on the requirement.

**Note:** Skype sessions must be attended to communicate with the supervisor about AI approaches otherwise project will not be accepted.

**Tools:** Python or C# or Java language but firstly should discuss with supervisor via email

**Prerequisite:** Artificial intelligence Concepts

**Supervisor:**

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## “toymania” - Online Store for Toys Shopping

### Project Domain / Category:

Web Application

### Abstract/Introduction:

“**toymania- Online Store for Toys Shopping**” is a website that offers purchase service to the webpage visitors. It offers different variants of a single toy. Main categories should include Electronic Toys, Mechanical Toys and Stuffed Toys [-you can add more categories as per needed-] . Toys will be delivered to the address provided by user/buyers during prescribed delivery hours. Payment will be made by “**cash on delivery**”.

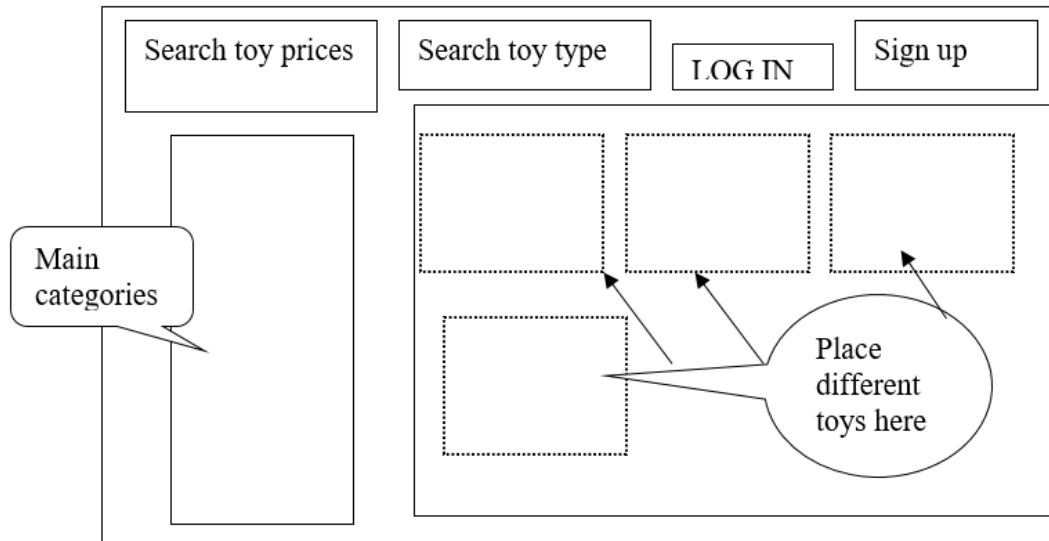
### Stakeholder:

1. Administrator
2. Visitor
3. User (Buyer)

### Functional Requirements:

#### GUI interface:

1. Main page will show different toys, categories list, search bars etc.



**NOTE: Above design is for demonstration purpose only.**

2. Sing Up/ Login Page: Signup page will be used to register a visitor of website.

3. Preview Page: When user/visitor clicks on any item, a new page for the details of the item should be shown to user/visitor.
4. Video preview: There must be a video preview available to user/visitor on Preview page. A short video for the selected item should be played for user/visitor.
5. Add search bars: search by prices, search by type/category.

#### **Visitor:**

1. A visitor is a non-registered user of the website.
2. Can view different toys and can explore different categories
3. In order to make a purchase, a visitor should register to the website using Signup.

#### **User (Buyer):**

1. User can view the information about toys.
2. Add different toys to the shopping cart.
3. Buyer will have to fill a form for required details needed to confirm the order.
4. A buyer can cancel an order before confirmation or can check-out from the main page.
5. After collecting toys, a buyer can write feedback on webpage.

#### **Administrator:**

1. Updates toys information
2. Manages toys repository
3. Generates reports from system
4. Manages categories of toys

#### **Others:**

- Online payments e.g credit/debit card, online vouchers can be implemented later.
- Return policies might be defined as per needed.

**[NOTE:** Student can add/enhance requirements as per needed.]

#### **Tools:**

WAMP server, PHP, MySQL, HTML editors (Dreamviewer, Notepad++).

#### **Supervisor:**

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## Web Based Personal Counseling System (PCS)

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

In this web based personal counseling system (PCS) to improve the facilities related to counselling process, many other virtual counselling schemes came into actuality, which provisions the students in getting essential help about the educational procedures of universities and colleges. Counselling is the process that comprises of various kinds of events such as guiding students towards colleges and universities, extending back up support for course registration, providing adequate guidance in acquiring the information related to respective college registration process.

This web based counseling system even gives immense support to universities and colleges through which they can eliminate the paper usage for counseling and guiding the students towards their university courses.

### **Functional Requirements:**

The system will be implemented through three key modules, which are Admin, Councilor and User. All these modules should be integrated among each other. The design of said system should be based on simplicity and user friendly. This system should be secured.

1. Admin has personalized login Id and Password.
2. Admin may induct a fresh counsellor with its customized details and create login id and password.
3. Admin can add new questions by emphasis various options and their suitable response.
4. Admin can view and analyse about the user information.
5. System allows admin to view/edit/delete a query.
6. Councillor can login through admin provided login ID and Password.
7. Councillor can review the user's test scores.
8. Councillor can give his feedback to the admin regarding the working of system.
9. Student can access the system by providing valid credentials access modules such as viewing their own profile, view books, view time-table, assignments, result, attendance and event.
10. User can login his account using id and password.
11. User can take test on general knowledge questions and select correct answer for the asked question.
12. User can view their own score history to know how they scored previously.

13. Counsellor can view their own profile and edit/update their details like contact no., email id and age.
14. User can change their current password with new one whenever required.
15. In that system is easy to understand and user friendly too.

**Tools:**

ASP.NET/C#, HTML, CSS, JavaScript, Crystal report, SQL Server,

**Supervisor:**

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## Disaster (like COVID-19) Management System

### **Project Domain / Category**

Web Programming

### **Abstract / Introduction**

There is no central information system for the government to be used for any disaster management. The aim of this project is to develop a Disaster Management System which will maintain a central repository in case of any disaster like recent outbreak of COVID-19. Using this system, red zones (the areas badly affected by the disaster) could be identified. The system will provide the important information to the Government and its organizations to take effective measures in the needing areas in case of disaster. System should be designed to in such a way that it can collect/receive and consolidate the information from different sources/systems. The integration can be done using REST API to get data from existing systems.

### **Functional Requirements:**

Below are the main functional points of the system:

- This will be served as central information system for the Government.
- The System must have an authentication mechanism to access it
- The System should maintain the information of hospitals in different locations.
- The System should have an interface to record patient details.
- The System will get data from the REST API and record patient details.
- The REST API will be tested by using “Postman” or any other API testing tool.
- The system integration will not be in the scope of this project.
- Alerts can be generated according to patient’s quantity, like if an area gets more than 20 patients it will be declared as a RED ZONE.
- Data graphs can be generated according to area, hospitals or date etc.

### **Tools:**

PHP, MySQL, JavaScript, jQuery, CSS, Bootstrap, PhpStorm, Sublime or any other IDE, Postman.

### **Supervisor:**

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## E-Cart

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

**E-Cart** is a multi-vendor web application (app) for sales and purchase of any item of any category online. There can be three main users:

- Administrator (Admin)
- Seller
- Customer

User can view all the products. This application will provide options for payment: cash on delivery or online payment through debit or credit card to its customers. The payments will be separate for every store.

Seller will create his/her store and will add his/her items and categories. The application will allow adding as many items and their associated categories as he/she wants to add. Seller will add his bank account number on which the customers will be able to pay through their debit or credit card.

Admin will have the top authority in this hierarchy who can remove any user (customer or seller). He/she will also have the authority to verify new stores.

### **Functional Requirements:**

There will be following modules in the application:

#### **Customer Module:**

- Sign Up/Login: The customer can view/search for all the items without registration. Sign Up and login is compulsory for purchasing any item.
- To put an item in favorite list, customer will have to register at first.
- Registered customer can also give feedback/review on the item which he/she has purchased.
- Application can store the purchasing history of the customer.
- Customer can add items to cart and check out using debit or credit card or cash on delivery.
- Check out for each store will be separate. Billing of same store items will be separate from the other.
- Customer has the authority to delete his/her account from the website, if there is no pending order.
- Logout



### **Seller Module:**

- Sign Up: The seller will sign Up and provide basic information about its store and wait for the approval from the Admin. If Admin approves seller and its store, then seller can add new categories and new Items.
- Add another seller/ Login: The seller can add any other person as partner/helper seller.
- Seller can add/remove categories and items or edit existing items or categories.
- Seller can view, confirm/cancel orders manually.
- Seller can generate coupons or discount offers against any item.
- Seller can manually add or delete any customers.
- Logout

### **Admin Module:**

- Add an Admin/ Login: The main administrator can login, after that he can add any other person as admin.
- Admin can approve/disapprove any store.
- Admin can view store wise report on daily, weekly or monthly basis. Report can include purchasing report or visit report (how many times a store is visited).
- Admin can manually add or delete any customers.
- Admin can generate any warning to any seller on the basis of any feedback or review.
- Logout

### **Tools:**

#### **Software Requirements:**

- Operating System: Window7and above
- HTML,CSS, Bootstrap (Front-end)
- Adobe Dreamweaver/ Sublime Text
- MYSQL(Backend)
- PHP(Server side programming) / Laravel
- XAMPP — Web Application Server

### **Supervisor:**

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## Online Auction Management System

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

The system aims to manage Auctions securely by access-based user roles. There are two basic roles in our system i.e. Admin and Buyer. Admin have unlimited access to system while buyer can only have access to bidding and payment modules. The Admin can create an auction with basic details like start date, end date, bidding price, security amount for participation etc. A single auction can have multiple items along with their pictures. For Buyers, it's mandatory to register by his/her personal details like CNIC number, payment details etc. The Admin shall be responsible for account verification of the Buyers. The buyers should join the auction prior to its held date by paying the participation amount through credit card or Bank Account. Only valid Buyers (who paid the participation amount) should be allowed to participate in the auction. When auction time starts, the buyers can place their bid. The current bid should be available on the bidding page along with the countdown timer to end the auction. The winner is the one who bids for the highest price. The winner has to pay the full price within 15 days of auction through Credit card or Bank Account. If the winner can't pay the full amount within 15 days of the auction, the participation amount will be kept by the system and will not be refunded in any case.

### **Functional Requirements:**

Below are the main functional requirements of the system.

- Admin can create auctions and add items in it.
- Buyers can register themselves by giving their details.
- Admin shall verify Buyers Account.
- The escrow of bidding participation amount.
- Payment of Security amount and bidding amount.
- The Buyers can only bid within auction specified time.
  - Whenever a Buyer records its bid, it will automatically update the current bid.
- The Bidding should stop at specified time.
  - If Buyer can't pay the bid amount within specified time, his/her participation amount will not be refunded.

**Tools:** PHP, MySql, Javascript, JQuery, CSS, Bootstrap, PhpStorm, Sublime or any other IDE.

**Note:** You've to use any payment gateway from EasyPay, 2Checkout or Skrill.

### **Supervisor:**

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## Online Fee Payment System

### **Project Domain / Category:**

Web Application

### **Abstract/Introduction**

In digital era of today's world, almost nearly for all businesses, the payment collecting methods from customer is quite complex. So, organizations are finding out the ways to make it easy and convenient. Specially in educational sector, paying the students fees through banks or in institute has not been efficient enough especially during the tenure of tests and examinations. Most of the students are paying fees to meet the requirements for entering the examination room. The process of fees payment in such periods is suffered by long queues at banks where payments are made, too much waiting by students and congestion at banks also. Students queue to pay fees and those who do not reach counters within the bank's working hours are advised to return the next day. This always resulted in students missing their lectures, tests and/or examinations due to the nonpayment of fees. It has also resulted in too much costs and a lot of time used in transferring and withdrawing money whenever sponsors of students transfer money to students who can pay their fees at specific bank branches. In this regard, there must be an online fee payment system to tackle all mentioned obstacles by designing the given modules.

### **Functional Requirements:**

Proper user-friendly Graphical User Interfaces must be designed, to make all tasks interactive and the system should comprise of some important interfaces/modules like:

1. Student must register him/herself on the system by filling the related form. Admin will approve the registration of students.
2. Students must be able to get login.
3. Fee payment module must contain tabs like for designing fee voucher:
  - Student's Registration Number
  - Student's Name
  - Student's Father Name
  - Student's Contact Number
  - Student's Semester Number
  - Student's Study Program (e.g. BSc, MIT, MSc, Psychology, Mass Communication ...)
  - Student's Batch Number
  - Fee per course
  - Total number of enrolled courses
  - Payment Date
  - Address
  - Module to calculate total Fee (according to number of enrolled courses)

4. There must be a proper Fee payment method to bank i.e. either via online Cash Transfer, through Credit Card or Debit Card.
5. After successful applying of fee, it must be printed in form of crystal report through your system and will be available for Admin for Approval or Rejection.
6. Admin will review about the fee voucher and will be authorized to 'Accept' or 'Reject' the student's request to sit in exams on basis of his previous record.
7. After the "Approval" or "Rejection", SMS Alert/ Email Notification must be sent to the concerned department as well as to student as a proof.
8. In the end, all status of fee voucher must be shown to the student and fee department also, all records and history of fees must be saved into the database by admin.
9. Admin must be able to keep record of students as well.
10. Student must be able to logout to release the interface.

**Note:** These given Functional Requirements (FRs) must be incorporated into the project. However, more FRs can be added other than given.

**Tools:**

MySQL, PHP, ASP.net, C Sharp (Students may select software tools of their own choice as per their convenience).

**Supervisor:**

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## Online Global Medicines Directory

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

Everyone in this world, living anywhere can face any kind of disease or injuries. To cure the disease, we need to contact a doctor and take some medicines. We go to a doctor who analyzes the problem and prescribes some medicines. Then, we go to market with doctor's prescription and purchase our required medicines easily. A problem may arise when the person who is using some sort of medicine needs to travel to any other country.

There are some international-level companies having their medicines in most of the countries but if the prescribed medicine is not available in any country, the patient may face problems to find that particular medicine or any alternate of it. To tackle this problem, we need to build an online system where we could find directory of medicines available in any country and alternate of each medicine with its manufacturer name and formula.

Following are some abstract level functional requirements. Student will provide detailed requirements in software requirement specification document.

### **Functional Requirements:**

Our required application should provide following functional requirements.

1. Application should be an online system which can be accessed from anywhere in the world.
2. The application should be divided in three major modules called admin, medicines producing or selling company's interface where a company can provide information of medicine and user interface where user of application can search any medicine by name, formula name and disease.
3. There will be admin side where admin will be able to manage whole application like user management, medicine management and company's accounts management.
4. From company's end, they should be able to enter details of medicine produced by them. This can be medicine name, formula name, usage detail, side effects and precaution of using it, diseases for which the medicine is effective etc. The agent of company will be able to manage details of all of their medicine from company's interface provided by our application online.

5. User should be able to search medicines by company name, formula or disease for which that medicine is effective.
6. User should be able to find the alternate of any medicine available in a particular country.

**Tools:**

PHP

MySQL

Use of any framework is not allowed.

**Supervisor:**

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## Online Hostel Management System

### Project Domain / Category

Web Programming

### Abstract / Introduction

The main objective of this project is to develop an interactive effective and a well-designed website for the needs of Hostel Manager and customer's convenience. The project is a web based application that allows the Hostel manager to handle all Hostel related activities online. Interactive GUI and the ability to manage various Hostel bookings and rooms make this system very flexible and convenient.

The website contains sophisticated search feature for customers to search for rooms according to their needs. Customers can view and can make room booking online. Other Hostel services can also be viewed by the customers and can request for them too. The main emphasis lies in providing a user-friendly searching for effectively showing the desired results on the GUI. The system is hence useful for both customers and managers to portably manage the Hostel activities.

### Functional Requirements:

- **User Registration:**

There will be **Sign In** interface for registered users and **Sign Up** interface for unregistered users to register on the website.

There is user registration form available where new users can create their account by providing required information to the system.

Unregistered user will be able to just search the available rooms on the website. Only registered user will have the privileges to request for 'room booking' from available rooms on the website.

- **Admin login and admin dashboard:** There will be admin login for the Admin of the website who has complete authority of the system and is responsible for approving and disapproving the users request for room booking. Admin has all the rights and privileges of view, add, delete and perform updates in the system.
- **Room Booking:** The system allows the admin to post available rooms in the system. Customers can view and book room online. User can request for the booking of any the particular available room according to their budget and need. Admin has the power of either approving or disapproving the customer's booking request.
- **Approving/Disapproving Request:** The booking requests are directly sent to admin account by the system. Admin can view all the requests along with respective user details and therefore can make decisions for cancelling or approving the requests.

- **Searching:**

Any user registered or unregistered can search for the available rooms. The user can select the room according to his/her requirements. Searching criteria will be like search by room type, such as normal room, premium room, luxury room, and can also search by price, facilities etc. Search begins by pressing the search button. If user requirement meets, then system will show result in proper format.

- **Room Services and Facilities option:**

Any customer, after booking a room can also choose the optional room facilities such as Breakfast, Lunch, Dinner, Wi-Fi, Wake up call, Laundry and dry cleaning service etc. as per their needs and requirements.

- **Payment Details:**

After filling the booking details and after its approval from Admin, customer need to pay the money using different options available like cash transfer, online banking/ATM card. Payment portal would use a payment gateway to clear payment. Moreover, an account number will be available to customer in which he can transfer his payment.

Once payment will clear, receipt of payment will be generated automatically and this receipt and a payment notification will be sent to Admin. After receiving the payment notification, Admin will make the room ready before the customer's arrival.

[**Note:** Student can add/enhance requirements as per needed.]

**Tools:**

ASP.NET, C#, HTML, CSS, JavaScript, Bootstrap, MS SQL Server

**Supervisor:**

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## Online Phone and Address Book Management System

### **Project Domain / Category**

Web Application

### **Abstract/Introduction**

The application will provide an interface through which users can easily search, view and download phone number, address and other information. Search operation can be performed by entering name, phone number and partial/complete address etc. Search results should be displayed on the webpage with the download option (as .CSV or .XLS etc.).

There are three types of users in this application: Admin, Registered User and Unregistered User. Admin can manage all the application-related data. Registered user can search, view, download and add contacts information. Unregistered user can search and view limited information.

### **Functional Requirements:**

Three types of users will be using this application.

Admin:

- The application will provide Login interface.
- Admin can search/view/download/add/update/delete any information.
- Admin can approve/reject registration requests.

Registered User:

- The application will provide Registration interface.
- User can login after Admin approves his/her registration request.
- User can search/view/download/add contact information.

Unregistered User:

- User can search and view limited information. Phone number and address of any contact should not be visible to unregistered user.
- User cannot add or download any information.

**Tools:** PHP, HTML, JavaScript, CSS, MySQL

### **Supervisor:**

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## Online Private Tutors Finder System

### Project Domain / Category

Web Application

### Abstract/Introduction

This system will help to find tuition teachers to its users. Teachers can also get students just by logging into the website and setting up the profile. In the system there are three entities namely, Admin, Parents/Guardian and Tutor. Admin can login, manage tutors by adding/deleting new teachers and updating their profiles.

Admin can also manage E-books by adding new books into the library. Admin can also check for the registered parents/guardians. Tutors and parents will get register themselves on the website and the Admin will approve/disapprove their requests. Parents/guardians can search and reserve the tutor according to their requirements. Parents/guardians can also rate the tutor. Tutors can accept/reject the reservation requests. They need to set their profile.

### Functional Requirements:

The system comprises of 3 major modules as follows:

#### Admin:

- **Login:** Admin can login using credentials.
- **Manage Tutor:** Admin can add/delete/approve the information of tutors.
- **View/Approve Parents:** Admin can accept/reject registration requests of parents/guardians.
- **Manage E- Books:** Admin can add/delete books in the library.

#### Parents:

- **Registration:** Parents/Guardians can register and obtain credentials.
- **Login:** Parents/Guardians can login using credentials.
- **View/reserve Tutor:** Parents/guardians can check/reserve for tutors.
- **Rate Tutor:** Parents/Guardians can rate tutor.

**Tutors:**

- **Registration:** Tutor can register him/herself.
- **Login:** Tutor can login using credentials.
- **Manage Reservation Requests:** Tutors can accept/reject the reservation requests of parents/guardians.
- **View /Access E-Books:** Tutor can access and read books from the library.
- **View Ratings:** Tutor can view his/her ratings

**Tools:**

Server side scripting technology	PHP/Asp.net
DBMS	SQL/MySQL/Oracle, etc.
Code Editors	Sublime Text, PHP storm, Visual studio, etc.

**Supervisor:**

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## Online Stationary Shop

### **Project Domain / Category:**

Web Application

### **Abstract/ Introduction:**

Due to current situation all over the world, all businesses are shifting towards the online mode. The main objective of this project is to develop a website through which the registered customers being located anywhere will be able to buy different stationary items. The launching of this website will help to remove the overhead of physically visiting to stationary shops. It will also be beneficial in terms that not only local customers could be able to purchase the stationary items but also the customers from different places could also purchase.

This website will contain different kinds of stationary items displayed in several categories. Any customer can visit available stationary items, but only the registered customer will be able to buy/place order. Admin will manage customers, orders and whole stationary website.

### **Functional Requirements:**

#### **Customer:**

- Customer Registration
- Customer Login
- Customer can search (by name, by price, by type, by item color etc.)
- Customer can add any number of stationary items (available in the stock) in shopping cart and can proceed for order
- Customer can select any payment option (credit card or cash on delivery)
- Customer can check his/her order status (Approved/Pending/Cancel)
- Customer can check his/her order history
- Customer can submit his/her review about purchased item and can give feedback about website services
- After successful completion of transaction, customer will receive confirmation message and a copy of the shopping receipt on his/her mobile number as well as in email.

#### **Admin:**

- Admin will manage the stock of stationary items on the website
- Admin can view list of registered customers, Total booking orders, shipping orders, pending orders, feedback etc.
- Admin can Add/Update/Delete item category
- Admin can Add/Update/Delete Subcategories

- Admin can check the list of existing Customers
- Admin can delete any existing Customer
- Admin can update information of any existing Customer
- Admin can check the complete history of orders
- Admin can approve or cancel any order.
- When admin will approve or cancel any order then message will be sent to the related customer at his/her mobile number and email address.

**Tools:**

HTML, CSS, Bootstrap, JAVASCRIPT, JQuery, PHP, MYSQL

**Note:** No any other language is allowed for this project.

**Supervisor:**

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## Online Event Hall Booking Management System

### Project Domain / Category

Web Application

### Abstract / Introduction

Online Event Hall Booking Management System is a system in which different hall managers can create their profiles by filling the mandatory information. The hall managers will be activated upon admin approval. A customer can search the hall by event type, location, price and size etc. and afterwards book the hall on available time slots.

This system will also integrate the feature of feedback in which a customer can give feedback to the hall managers. In this way a customer can select a best event hall for different events.

### Functional Requirements:

The system comprises of three major modules with their sub-modules as follows:

#### 1. Admin:

- a. **Login:** Admin can login using credentials.
- b. **Manage Event Hall Managers:** Admin can approve\disapprove new hall managers and edit their information.
- c. **View Customers:** Admin can check registered customers.
- d. **View booking:** Admin can check all the event hall bookings.

#### 2. Event Hall Managers:

- a. **Create Profile:** Event hall managers will create their profile by entering necessary information such as name, address, phone no., CNIC, profile picture etc.
- b. **Login:** After creating the profile, hall managers can login the system.
- c. **Manage Halls:** Hall managers can add halls by entering the required information such as Hall Name, Hall Size, Event type, Hall rent, Hall location, Hall Images, minimum No. of persons requirement and hall availability etc.
- d. **Manage Hall bookings:** Event hall managers can accept or cancel hall booking requests, in case a hall is booked it will be shown as booked to other customers.
- e. **Manage Hall timings:** Event hall managers can manage the hall timings.
- f. **Manage Food Menu:** Event hall managers can manage food menu and prices.
- g. **Manage extra features:** Hall managers can enter extra features and the prices such as sound system and decoration etc.

#### 3. Customers:

- a. **Create Profile:** Customers will create their profile by entering necessary information such as name, address, phone no. CNIC, profile picture etc.
- b. **Login:** After creating the profile, customers can login the system.
- c. **Search Halls:** Customers can search an event hall with different filters such as Event type, location, Hall size, price, minimum No. of persons, rating etc.
- d. **Book Hall Request:** If a hall is available, the customer can request for hall booking by entering information such as Event type, No. of persons, timing, menu , extra features etc. and the bill will be auto generated on basis of entered information.
- e. **Give feedback and rating:** A customer who has booked a hall recently can give feedbacks on basis of 5 stars to the hall manager based upon his/her experience.

**Tools:**

- PHP and MySQL (You can choose any framework such as Laravel)
- Bootstrap or any other CSS Framework
- Any JavaScript library/ framework such as jQuery, Vue Js, react Js or angular Js.

**Supervisor:**

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## Physiotherapist Tracking System

### **Project Domain / Category**

Web Programming

### **Abstract / Introduction**

A Physiotherapist offers the treatment of a disease, injury, or deformity by physical methods such as heat treatment and exercise rather than by drugs or surgery. The main aim of this project is to develop a website that facilitates the user with an on-the-click functionality which is useful to find a physiotherapist.

Patients can get appointment from their relevant physiotherapist at any time, from anywhere through this website and save their time needed to visit a clinic and book an appointment. Patient will upload his/her prescription (for the details of the type of therapy) also for the maintenance of the patient's history and availability of a physiotherapist at a certain time and date. Patient will submit the fee online and get the electronic copy of the receipt. However, patient can submit the feedback about the services of a physiotherapist. Administrator will verify from the physiotherapist before entering the receipt.

Patients can book the appointment as per available time slots and locality. Patient can choose the Therapy point on the clinic or at his/her home. Users (patient/physiotherapist) can inform about any change of schedule through message interface or email to each other. In case of assistance, users (patient/physiotherapist) can email to the Support staff for any change required in report/prescription. Moreover, patients can rate the services of a physiotherapists.

### **Functional Requirements:**

Here, following modules for Physiotherapist Tracking System

#### 1. Patient Module

In this module, patient can search a physiotherapist according to his/her choice, time, therapy location, book an appointment, submit fee, generate fee slip, submit feedback, Contact to support staff etc.



## 2. Physiotherapist Module

In this module, physiotherapist can make his/her account, profile, accept a booking request for appointment/therapy, reject a booking request for appointment/therapy, upload the progress report of a patient, contact to admin/support staff etc.

## 3. Administrator Module

In this module, administrator will manage the sign up requests from the users (patient and physiotherapists), approve /reject their feedback, provide the support to both its clients etc.

### **Tools:**

Java J2EE, JServlets, JSP, JSF

HTML, J Query, CSS

IDE Netbeans

MS Visio

My SQL

### **Supervisor:**

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## Recommendation System for Online Recruitment

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

Whenever jobs are offered, everyone applies and seeks to grab the opportunity. As a result, it becomes a hectic job for HR department to sort out the applications and select appropriate candidates for the job. "Recommendation System for Online Recruitment" is offered with the aim to facilitate HR department regarding recruitment. Whenever jobs will be advertised, the registered users of this application will be provided with a platform to apply for the job. This application will get the information from user, required for the job and if the user does not possess the required qualification for the job, he /she will not be allowed to apply. This application will also help HR department in terms of sorting the candidates with respect to their grades. On completion of all recruitment procedure, the system will recommend the appropriate candidates for the job on the basis of their aggregate according to criteria set by the HR Department.

There will be three users of this application.

- Administrator
- HR Staff
- User/Candidate

### **Functional Requirements:**

Here is a list of functional requirements:

- 1) Administrator can manage (create, update and delete) all the users of the web application.
- 2) User can create an account.
- 3) Registered user (Candidate) can apply for job.
- 4) System can do initial screening as if user does not have required qualification, he /she will not be allowed to apply. Furthermore, system will also show an alert message in such cases.
- 5) HR staff can sign up.
- 6) HR staff can advertise jobs.
- 7) HR staff can set criteria for selecting top candidates with respect to their grades.
- 8) System will recommend candidates for final selection on the basis of aggregate according to set criteria.
- 9) "Contact us" module for complaints and suggestions.

**Note:**

- These are basic requirements of the application. Students may add further functionalities to make the application more useful.
- Virtual University of Pakistan (VU) will not provide any kind of hardware for this project; student has to arrange the required hardware by himself/herself.
- VU will not pay for any license of the software, the libraries /toolkits/APIs used in this project.

**Tools:**

Microsoft Visual Studio, SQL Server, Asp.net; No other programming language is allowed.

**Supervisor:**

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## Property for All (PFA)

### Project Domain / Category

Web Application

### Abstract/Introduction

Property for All (PFA) is a kind of classified website, on which we allow users to place their ads regarding their properties. Seller and buyer both can post their ads on it, but to post their ads they have to setup a free account. Seller can post ad for a plot, home, flat, land which he/she wants to sell. Buyer can post ad about its demand about a plot, land, flat or a house and can also see the ads of different sellers. This kind of website is dynamic in nature where user interacts with this kind of website. Website also gives the facility of sending SMS alerts or emails to both the buyers and seller, for example a seller posts an ad for a flat. Buyer likes this ad and give his/her offer to seller then this offer is sent to seller in the form of SMS alert or email alert. Similarly, in case of buyer, if buyer wants to buy some property about which an ad is not yet available on the website, he/she posts the ad on site and if a seller has that particular property then that seller can send him/her SMS alert or email through this Website.

### Functional Requirements:

1. Admin shall be able to manage users
2. Visitor should be able to register with website
3. Admin will approve the user registration request
4. Website should also give the facility of managing different property categories, like plot, house, flat etc. so that buyer/seller can post ads or see ads under desired property category
5. Latest add should be shown in right side of home page
6. All ads will be email verified.
7. Once a property is sold, user can change its status to sold.
8. Ad should automatically be removed from website after 14 days from its post date.
9. User can view ads by city wise, area wise, or by minimum and maximum range of price
10. Website should also show the trend of most demanding area and this trend and this information should available somewhere on home page.

### Tools:

Asp.net, PHP, Adobe Photoshop

### Supervisor:

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## E-Commerce & Membership Portal

### **Project Domain / Category**

Web Application

### **Abstract/Introduction**

This will be an e-commerce website where the users will be able to buy different products such as cell phones, electronics, jewelry etc. This site will offer different subscription options for membership, and membership discounts.

### **Functional Requirements:**

This site should offer the user a variety of products through proper navigational structure. It means that each product should be listed under the appropriate category. For example the product LED TV should be under the Electronics category.

You can follow the following sites for your reference (for products, categories and design)

<https://www.daraz.pk/>

<https://www.shophive.com/>

<http://www.mega.pk/>

And any other related websites /portals

Your site should allow the admin to create any number of categories and products. Your site should have at least 12 to 15 categories and within those categories you should have at least 30 to 40 products added.

This site will have 3 different types of users:

1. Admin
2. Member (Gold, Silver, Bronze)
3. Non-Member (Site visitor)

#### **Admin:**

- Should be able to add/remove/update products or categories on the site
- Should be able to make any required updates on the site
- Should be able to create promotions for specific or all products/categories
- Should be able to add/update/remove a member
- Should be able to add/update/remove membership types

#### **Member:**

- There should be three different types of members. Gold, Silver and Bronze
- Members will sign up through a registration form on the site
- The registration form will determine the type of membership for a member
- Upon registration, the member will be able to login to his/her account.
- The registered members will have a default discount offered to them by the admin on all

the products on the site.

- Gold member will get 10%, Silver will get 7% and Bronze will get 5% discount on all the products on the site after they are logged in on the site.
- Registered users will also be able to utilize any promotion (promo code or date specific sale on the site).

**Non-Member:**

- A non-member is a regular site visitor who comes on the site to view its contents, offers etc.
- The non-members will not get any default discount on the site so will be charged with the full amount of the products.
- Non-member should be able to use any promotions or discount codes provided given by the admin.

Note: The following points should be strictly followed while developing the site:

1. The content of the site should be visible to everyone (member/non-member)
2. The site should have a registration/membership page where different types of memberships should be offered to the user
3. Membership types will include Bronze, Silver and Gold which will offer 5%, 7%, and 10% discount respectively on each product that user will buy
4. In case of non-member the user should be charged with full price of the product
5. User should be able to buy a single product or add multiple products into a shopping cart and then buy all at once
6. In either case, the user will be taken to the checkout page where the user will finalize the purchase of the selected product(s) by making payment (through credit card, paypal, etc.)

**Tools:**

HTML, CSS, PHP, Dream Viewer, Notepad++, Wamp Server, My SQL

**Supervisor:**

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## Law Management System

### **Project Domain / Category**

Web Application

### **Abstract / Introduction.**

You will be developing a web application for XYZ law chamber. Purpose of the application is to provide an access of a "LAW MANAGEMENT SYSTEM" to its users (Admin, lawyer and client). By using the said management system, lawyers will be able to keep record history of their cases, schedule case hearings, and will be able to update case records according to new hearing of the specific case. This management system will also be helpful for the clients in tracking record of their specific cases. Clients can get more information about other lawyers with the help of this Law Management System.

### **Functional Requirements:**

1. Lawyers and clients must submit registration request to the admin for access of Law Management System.
2. Only registered users (lawyers and clients) should be able to access the system after approval from the admin.
3. Lawyer must provide license to practice law at the time of registration.
4. Lawyer should generate the specific tracking id against each case
5. Lawyers should be able to Add/Remove/Edit/Delete case details of their clients
6. Lawyer should be able to upload relevant documents with each case
7. Lawyer should be able to generate combined report of all enrolled cases of a client
8. Admin should be able to enter the hearing proceedings and results /decisions of popular cases which will be publically available.
9. Client should be able to search record of hearing proceedings, results of popular cases that are publicly available.
10. Client should be able to comment on his/her each case
11. Client should be able to generate separate report of his/her specific case hearings
12. Client should be able to view profile of other lawyers of the chamber
13. Client should be able to check information about law articles, rules and regulations of the court.

### **Tools:**

MS Visual Studio, MS SQL Server, C#, ASP.NET

Note: Student may choose a different tool kit in completion of the proposed project.

### **Supervisor:**

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## Student Information System

### **Project Domain / Category**

Web Application

### **Abstract / Introduction**

The ultimate target of an educational institution is to enhance the performance of every student. This can promptly be achieved by analyzing the performance of each student using competent analytic tools such as a dashboard. The information thus obtained can be deployed for taking effective as well as corrective measures to help them in performing better and realizing their potential. If not done systematically, this process may become time consuming and tedious. The aim of this project is to develop a Student Information System (SIS) which will assist the institutions to manage every single detail about students in a holistic, organized and cost-effective way. Student Information System (SIS) will be helpful in eliminating the need of teachers to spend a considerable amount of time in compiling students' data and it will also assist the teachers in channelizing their concentration on the students' performance enhancement. SIS will also be helpful for parents to track the performance of their children.

There will be four users in SIS.

- Admin
- Teacher
- Students
- Parents

### **Functional Requirements:**

- Students will register themselves in SIS at the time of admission.
- Students will select subjects from offered subjects in a particular class.
- Students will be able to check their results and attendance.
- Parents will register themselves in SIS.
- Parents will be able to check their children's results and attendance.
- Teachers will register themselves in SIS at the time of appointment.
- Teacher will schedule the classes in the form of timetable in SIS.
- Teacher will mark course wise attendance of student.
- Teacher will feed student's marks in SIS.
- Admin will approve or reject the registration request of users.



- Admin will create classes with respective subjects.
- Admin will allocate course(s) to a teacher.
- Admin will approve the timetable.
- Admin will publish results.
- Admin can generate following reports.
  - Course attendance (daily/weekly/monthly/annually).
  - Class result.
  - Course result.

**Tools:**

PhpStorm, NetBeans, Sublime Text, Php, JavaScript, jQuery, CSS, bootstrap, MySQL

**Supervisor:**

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## Web-based Recommender Portal for Health Products

### **Project Domain/Category**

Web Application

### **Abstract / Introduction**

This is web based application which provides facility to users in curing their disease by giving the list of fruits and herbs that the user should consume in order to get rid of their disease. This system helps the user to reduce his/her searching time to a great extent by allowing the user to enter his/her health problem and search accordingly. The admin can add fruits and herbs in the system and their associated information. This system also allows the user to view the selected fruit or the herb's description which describes how the fruit or the herb will help to improve the user's health. This system also allows the users to place order which will add the items to the user's cart and make payment for the same. User will pay their bill by using debit/credit cards or cash on delivery method. The system also includes a module in which the user can search for the hospitals depending on the name of the disease that user enter.

### **Functional Requirements:**

Our required application should provide following functional requirements.

1. Registration /Login procedure for admin and users.
2. Admin will manage (Accept/Reject) registration requests.
3. Admin will manage (Add/Delete/Update) the information of whole website
4. The admin will add categories of fruits, herbs and their associated description in the system.
5. Admin will add the information of hospitals relevant to diseases.
6. The registered user will order the fruits and herbs that will be good for the health of the user depending on any health issue or disease that he/she is suffering from.
7. The registered user will be able to search hospital related to the name of the disease entered by the user.
8. The system will allow placing order to the registered users for more than one item.
9. Admin will add the information of hospitals relevant to diseases.
10. User can pay bill by using debit/credit cards or cash on delivery method.

**Tools:** C#, .Net and Sql Server , PHP, MySql and Dreamweaver

### **Supervisor:**

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