Fake Face Detection by Deep Learning Technique

Project Domain / Category
AI/Deep Learning/Machine Learning

Abstract / Introduction
With the growing era of social media, it is difficult to identify the real from fake whether it is any news or face/video of any celebrity, politician etc. Also, the fake or manipulated faces and videos are being generated enormously which are harder to detect by traditional means of software or methods. Therefore, Deep Learning which is a subset of Machine Learning can be employed to identify the real or fake images/faces/videos efficiently. We are going to detect the faces as real or fake from the given dataset. As there are already multiple images with faces which are generated by various softwares in the dataset. In this project, we will use Convolutional Neural Network (CNN) to detect the fake faces from an online database (https://www.kaggle.com/xhlulu/140k-real-and-fake-faces), we can also discuss about the various datasets and their usage. The images are fed into the detector, and it will then detect whether the image that is fed into it is real or fake.

This is indeed a very interesting project but requires in depth study of deep learning, neural networks. The following links may help you in better understanding:

Convolutional Neural Network:
https://towardsdatascience.com/convolutional-neural-networks-explained-9cc5188c4939

Deep Learning for Face Recognition:
https://machinelearningmastery.com/introduction-to-deep-learning-for-face-recognition/

Dataset:
https://www.kaggle.com/xhlulu/140k-real-and-fake-faces

Functional Requirements:

The following are the functional requirements of the project:

1. The tool based application/software must download the given Dataset that contains the database of real and fake images.
2. The system must be any CNN model that contains hidden layers for the fake face detection.
3. Whenever, any face is given as an input into the detection system, it identifies as real or fake as output.
4. The system must be able to detect the fake faces generated by any of the android apps like FaceApp, FaceSwap, Wombo etc.

Tools:

- Python (programming language)
- Keras (API)
- Tensorflow (open source software library for machine learning)
- Jupyter Notebook (open source web application)
- Matplotlib (library)
- Numpy (library for the python)

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Natural Language Processing Based Question Answer Engine from Videos

Project Domain / Category

Artificial Intelligence: Natural language processing, Speech recognition, Computer Vision

Abstract/Introduction

Automated question answering from lecture videos material will use in aggregation with PowerPoint slides that system will be built by using Natural language processing (NLP). In this system, it will be considered requirements that utilize logic to locate, extract, and represent a specific answer to a user question expressed in natural language (English). A QA system would take as input a question and it should get as output. For the online scenario, students will ask questions to an Instructor captured in the video.

Functional Requirements:

1. The application should have a graphical user interface that has an admin interface

    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 system. Tasks (2-7) should be implemented internally while developing the system.

    i. Task 1: Define the problem

    ii. Task 2: Question Processing

    iii. Task 3: Answer Extraction

    iv. Task 4: Video Preprocessing

    v. Task 5: Build system

    vi. Task 6: Test System

    vii. Task 7: Tune System

3. The application should have a knowledge-based system and have added phonetic-based transcript error correction, and enhanced video transcripts with the text from the PowerPoint slides.

4. The application should have reports management

5. The admin should manage and view all backup records.

6. The admin should view the performance 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 language

Tools will be recommended by supervisor like speech recognition etc

Prerequisite: Artificial intelligence and Natural language processing Concepts, students will cover a short course relevant to the mentioned concepts besides SRS and design initial documentation.

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<h1 style="text-align:center">Neural Network based Intelligent Irrigation Application</h1>

Project Domain / Category
Artificial Intelligence /Mobile App

Abstract / Introduction.
Irrigation is a significant factor in determining the cotton crop yield which varies with the geographical, climatic and topological factors. Farmers primarily depend on personal monitoring and their personal experience in irrigating the fields resulted inefficient and irregular irrigation. This calls for the need of the system which can provide an efficient and deployable solution. Different tools have been developed with the aim of improving irrigation scheduling. These tools have the potential to aid farmers in conserving water and nutrients, while maintaining crop yields. The water usages of cotton crop cultivated on area of one acre (43,560 square feet) or 69.50 yard is approximately 325,850 gallons where each plant consumes 10 gallons of water in its whole life till the harvesting moderate climate condition.

You are needed to develop an artificial intelligence (AI) based mobile application which internally implementing an artificial neural networks (Prediction algorithm) automatically. The capacity of the irrigation system should be able to provide enough water, in terms of quantity, time, and frequency, to the crop, whenever this demand is the highest, so water application is ensured during the entire crop cycle. This modern intelligent application which schedule the irrigation of crops is considered as supervised learning (AI) based approach, accepts input in different types of parameters named as area of land in sqr feet, quantity of water in gallons, of temperature in Celsius unit, of time in minutes or hours the land is needed to irrigate. The farmers, by putting the values of different inputs parameters mentioned above can irrigate their crops in efficient way by getting output accurately. This application would inform the farmers to switch off the irrigation system on reaching the moderate output level.

Functional Requirements:

Application must have two graphical user interface (GUI) to register and login to the application with the authentic user name and password. Admin should manage all activities of input and output parameters on the GUI interface.

You need to perform following tasks while developing an intelligent application based on artificial neural network (supervised learning).

- Define the problem(User should firstly select one specific crop)
- Define the Predicting algorithm
- Define the IDE for training of the algorithm
- Define Linguistic Variables
- Define the developing software
- Follow all steps of the training process(learning rules)
- Train algorithm by performing all required steps

- Test algorithm

- Tune the Algorithm

- The application must use a knowledge-based system with the predicting algorithm (artificial neural network) (Specifically select a crop then build knowledge according to that crop)

- The admin must manage reports weekly basis.

- The admin must manage and view all backup records.

- The admin should view the performance of crops weekly basis and modify knowledge based accordingly.

Note: you can get help to understand the basics of how artificial neural networks can be developed in MATLAB from the following links.

- https://youtu.be/4wmCg4Smpj0
- https://youtu.be/R1oxezUcYZI
- https://youtu.be/EYeF2e2IKEo

Tools: Python or Java language, MatLab
Prerequisite: Artificial Neural Networks

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Class Diagram to Code Converter (CD2C)

Project Domain / Category

Desktop Application

Abstract / Introduction

The is era of rapid application development where use of automated tools has become very much common to rapidly develop applications in order to meet deadline requirements. Class diagram to code converter is a desktop application that lets designers design the class diagram of an application with the help of drag and drop tools. Once the diagram is complete, the application generates the abstract level source code in C++.
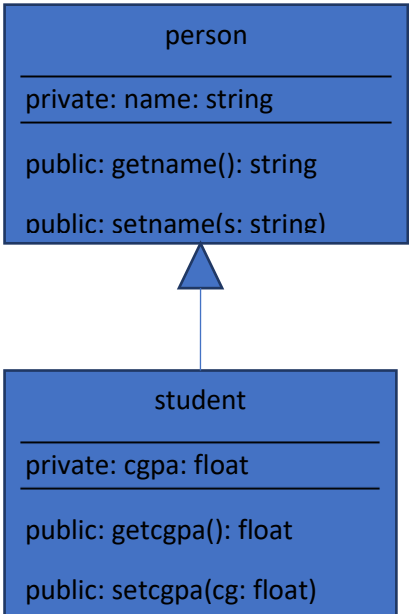
Functional Requirements:

The application will provide a complete tool set for drawing class diagram. The tool set should contain the following tools:

- Class
- Association (along with multiplicity)
- Inheritance
- Aggregation
- Composition

User will select any tool and place/drag it to drawing area in order to complete the class diagram. E.g. there should be a tool for "Class" which user will select and place/drag to the drawing area to draw the class. Once the class is drawn, user can set its properties e.g. Class name, data members and methods etc. by using the "Properties" dialog box. The properties dialog box should be displayed by right clicking on the class drawn on the drawing area. Similarly, user should be able to draw the association, inheritance, aggregation and composition between the classes and set their properties using the properties dialog box.

Once the class diagram is complete, then user should be able to convert the class diagram into C++ source code. Following table shows a sample class diagram and generated source code. Note that the shown class diagram implements the inheritance relationship.

Sample Class diagram	Sample source code generated in C++

person
 	
private: name: string
 	
public: getname(): string
 	
public: setname(s: string)
 	
student
 	
private: cgpa: float
 	
public: getcgpa(): float
 	
public: setcgpa(cg: float)
	class person {
	
	private:
	string name;
	
	public:
	string getname(void) {
	}
	
	public:
	void setname (string s) {
	}
	
	};
	
	class student : person {
	
	private:
	float cgpa;
	
	public:
	float getcgpa(void) {
	}
	
	public:
	void setcgpa (float cg) {
	}
	
	};

Video at following link may provide you some idea about how to implement the "drawing of class diagram" functionality.
https://www.youtube.com/watch?v=O2Qlw1QmCWQ

Tools:
C#.Net or Java

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Control and Monitoring of a Remote Network in Client/Server environment.

Project Domain / Category:
Desktop application

Abstract/Introduction
With the evolution of Internet the systems has become more advanced, old manual activities have revolutionized with the advanced automatic techniques. Innovative techniques have been adopted to remove security breaches. This system is designed to reduce the manual interaction with the client/users to authenticate access, session management of multiple users on different PCs in a client server environment, like multiple stories Internet cafes, shopping malls etc.

The aim of the project is to properly monitor the user's session, billing and termination in an autonomous way. Client will login the PC with login credentials. After login the camera will capture picture and send it to admin. At the start of the session the user will have to give information about the time duration to use the system using GUI interface of the proposed application. This information will be displayed at server side for administrator information. Illegal activities like proxy breaching attempt will automatically generate a warning alert.

Functional Requirement

- This proposed application should have two modules, an Admin Module & a User Module.
- The admin module will have the dashboard showing status of every PC on the network, start time, Duration.
- The request will be displayed at admin side which will get approval by the admin.
- User will access the system using valid login credentials.
- Camera will capture the picture and that should be sent to admin side.
- The user will select the time frame during which he will use the system for that duration. The user can extend the session when needed.
- Application will generate billing at the screen at user side as well as at admin side once after the selected time frame gets completed.
- The user will have the options to pay the bill through different online transactions. The user side will have multiple online transaction options available.

Tools:
C# / VB.net
SQL server

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District Playground Management System (DPMS)

Project Domain / Category
Database (Desktop Base application)

Abstract/Introduction
Usually every district of the province has a major playground for different type of sports like cricket, hockey, football, badminton etc where the school/college students, clubs or street players play their practice/training, friendly or tournaments matches. It is required to book the playground before a competition or match by the players or teams. The playground management manually (in registers) keeps the records of matches booking and allotment for different events (matches). This manual system creates different issues like, booking of same ground for different events at the same time (slot), not utilize a ground maximum, not able to priorities the event etc. In order to overcome these issues, and utilize the playground efficiently and in proper manner, it needs to have a desktop base application. This application would store information of different grounds in the playground, booking information for different events, priorities the events, rates/fee of each ground 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 application must be able to add information of each ground in playground like, ground fee, type, number of slots in a day etc.
3. The application must be able to add the booking of an event (match).
4. The system would be able to add/register a team or club. The register team/club can get ground fee concision for a match.
5. The application should display/check/print the booking information of a ground for a week.
6. The application should display/check/print the booking information of a ground for a month.
7. The system should be able to check the booking of a ground for a particular day.
8. The application should be able to show the earning of a ground weekly/monthly/yearly.

Note: The functional requirements are not limited to only the above given. The students need to understand the problem completely by collecting the requirements from the problem domain.

Tools:
SQL Server 2008 (or latest version), VB.Net etc.

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House Map Designer

Project Domain / Category
Desktop Application

Abstract / Introduction

House map outline the design you are building before construction begins providing an overall concept of the entire building project. Constructing the house without map may give disastrous results and may gives unwanted finished house.
House Map Designer (HMD) is a drag and drop based tool for designing the maps. The basic intention of the application is to reduce the manual map drawing work. The application lets the users to draw the map on computer just with the help of few clicks.

Functional Requirements:
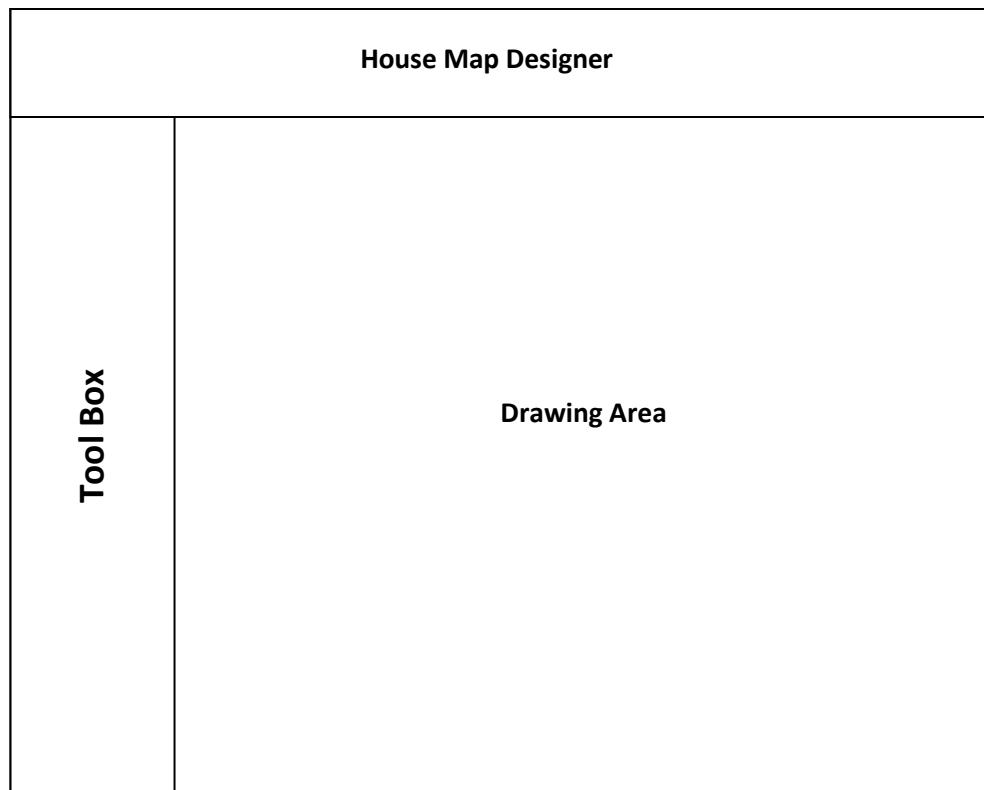
User should be able to enter plot dimensions i.e. total length and width in feet. Once the dimensions are entered, a rectangle representing the "Plot" should be drawn on screen.
The user should then be able to draw the map with the help of drag and drop tools e.g. there should be a tool to draw the "Room", so that, when the user selects the "Room" tool and places it anywhere in the plot area, a rectangle representing the "Room" should be drawn. However, user should be able to set the dimensions i.e. length and width of the room. For this purpose, there should be a "Properties" dialog box to enter the dimensions along with other properties. The "Properties" dialog box should be displayed by right clicking anywhere in the room area. Once the "Room" is drawn and properties are adjusted, user should be able to use other tools for example, "Door" or "Window" tools to place the doors and windows accordingly. Similarly, there should be properties dialog box for setting the properties of the doors and windows (the dialog box should be appeared by right clicking on the object i.e. door or window as mentioned above in case of "Room" tool). Once the complete map is drawn, user should be able to save the map in a file (e.g. PDF, GIF, PNG etc.) in order to publish the map.
Following is the mandatory list of tools that should be present in tool set:

- Room
- Window
- Door
- Gate
- Stairs

Note: You can add further tools if necessary. The interface of the application should look like figure shown on the next page.

House Map Designer	
Tool Box	**Drawing Area**

Tools: C#.Net or Java

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<div align="center">**Stationary Management System**</div>

Project Domain / Category
Desktop Application

Abstract/Introduction
Stationary management system is specially designed for the purpose of adding Stationary item's detail. The system elaborates the basic concept for storing and generating Stationary item's detail. These items will be distributed in different categories for example there is different type of Pens and books in the Stationary House i.e. Dollar, Piano and Urdu English so we can search it easily under the appropriate label and inform the customer about their price, Quantity and Quality if needed. 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 Stationary Management system is easy to use for every type of users because a lot of shops have salespersons which are not well qualified. The main objective of developing this system is to help inventory operator of Most Stationery shop to manage their inventory in a systematic and efficient way.

The main objective of developing this system is to help inventory operator of Most Stationery shop to manage their inventory in a systematic and efficient way. The main objective of developing this system is to help inventory operator of most of the stationary shop to manage their inventory in a systematic and efficient way. Whereas, in our application there is a facility of report generation which gives detail information about Stationary item's sell and purchase and make staff possible to get hard copy of related reports e.g. profit report.

Functional Requirements:

1. Registration
     - The administrator can create a new user (Workers at stationary shop).
     - New user can login and logout.
2. Stationary Item's
     - Admin add, delete or modify the stationary Item's and its details.
2. Add defect Stationary Item's
     - Admin add, delete or modify the defected stationary Item's and its details.
3. Search
     - User can search for the required Stationary Item's based on name, id etc.
4. Sell Stationary Item's
     - The sold Stationary Item's need to be deducted from the available stock
5. Purchase Stationary Item's
     - The purchased Stationary Item's need to be added to the available stock
6. Report generation

- Depending upon the Stationary 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 Stationary Items 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 is mandatory.

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Contactless Thermometer with Android App

Project Domain / Category
Automation / Digital Logic Designing

Abstract / Introduction
In the current situation across the world, COVID-19 has just changed the thinking and living approach of a normal human being. The use of contactless thermometers became very common in domestic as well as commercial places or areas. The most common issue we had faced at the populated areas or sections like schools or mosques, that using a common and generic approach of checking the temperature of the people can lead to the spread of this COVID-19 virus. When an infected person is in close contact with the security guard it may infect the checker that can be a reason for the spread. We can solve this by using Automatic Wall based Temperature checking. Automatic means, no need to trigger with our hand. Just place your head near the scanner. the system will automatically be triggered to check the temperature and log the reading in the local memory card as well. The whole project will consist of a Sensing module, which will sense the presence of humans near the system. On a valid sense, an entry will be logged to a memory card which should be accessible to the android application.

Functional Requirements

Hardware Module
- PIR motion sensing module
- Temperature alerts (upper and lower threshold values)
- Store reading with timestamp

Software Module
- Memory card logs
- The system turns on/off

Tools
- Arduino Kit/Raspberry Pi or Any other Single Board Processors
- C/C++ Programming Language
- Assembly Language
- Circuit Designing Software's (OrCAD Pspice, WorkBench)
- Keil Embedded Development Kit
- Circuit Components (Resistors, Capacitors, oscillators, etc.)

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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Home Automation using Android for Aged and Handicap Persons

Project Domain:
Digital Logical Design

Introduction:
This project helps to control the electrical loads with the help of android application. The electrical loads are controlled based on Bluetooth input signal.
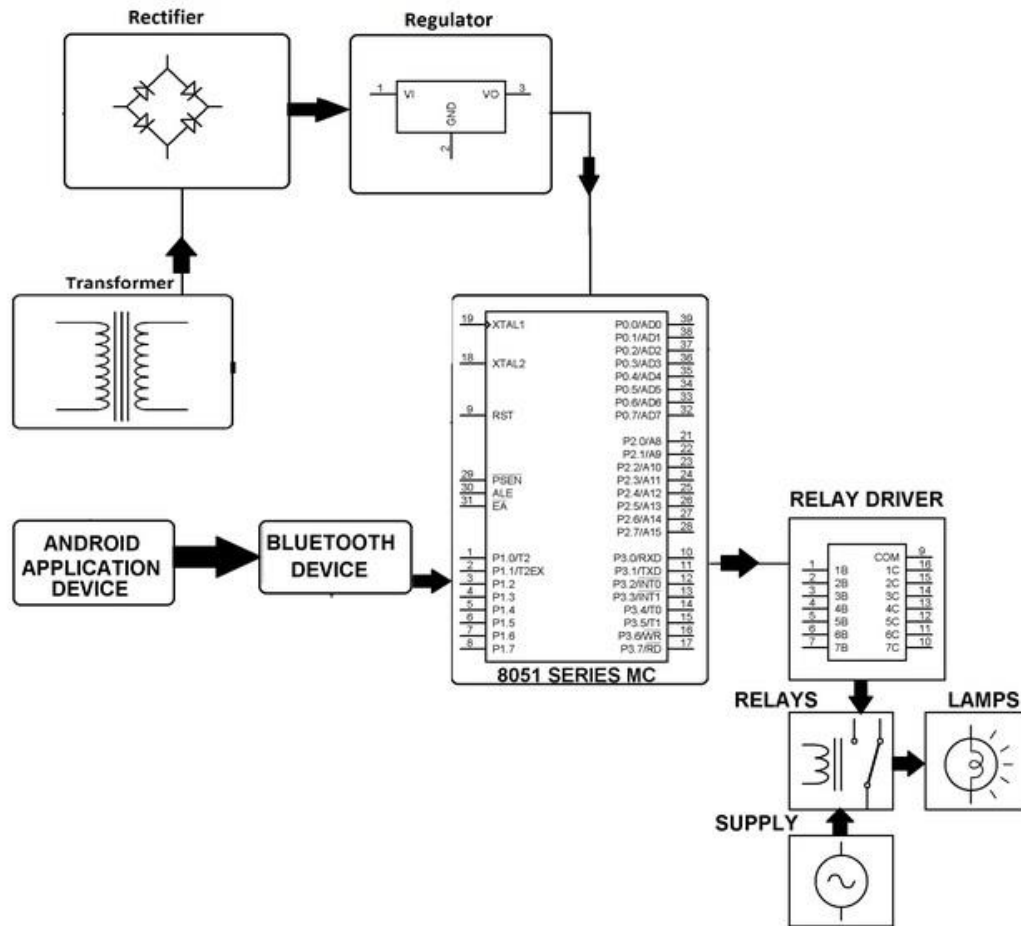
This input signal is received from the android device. Many times, it becomes too tiring to operate the electrical switches manually every now and then. This is a big problem especially in case of aged or handicapped people.

This system solves the issue by interfacing a unit with home appliances that switches these loads based on the input received from android device.

Functional Requirements:

- The android device may be any android based phone or tab having an android OS. The app also provides an effective GUI for providing this functionality.

- An 8051 microcontroller is used in this system.

- The Bluetooth receiver is interfaced with microcontroller in order to accept the commands and then react accordingly.

- It operates the loads through a set of relays using a relay driver IC. Relays are used between loads and the control unit.

- This system proves to be very beneficial for controlling various domestic applications and in industrial setups. The power supply setup of the system contains a step-down transformer of 230/12V, used to step down the voltage to 12VAC. To convert it to DC, a bridge rectifier is used.

- In order to remove the ripples, a capacitive filter is used and it makes use of 7805 voltage regulator to regulate it to +5V that will be needed for microcontroller and the other components operation.

Block Diagram:

Hardware Specifications

- 8051 series Microcontroller
- Bluetooth device
- Diodes
- Relays
- Voltage Regulator
- Crystal
- LED
- Relay Driver IC
- Transformer
- Lamps

Software Specifications
- Keil µVision IDE
- MC Programming Language: Embedded C

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Voice Activated Home Automation using Arduino

Project Domain / Category

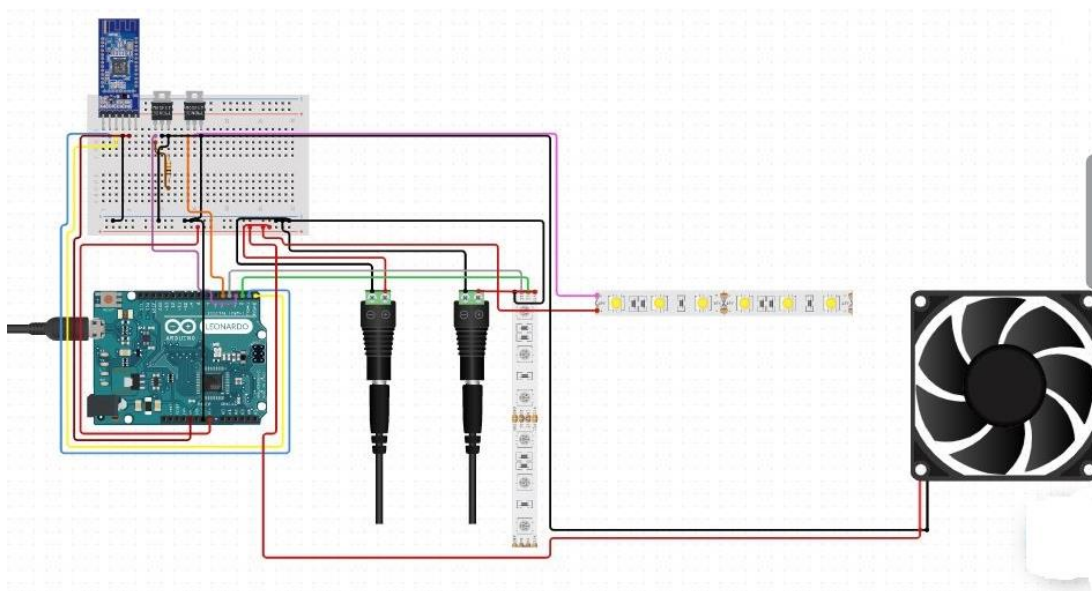IOT

Abstract / Introduction

In the modern world IOT plays a crucial role in home automation, IOT allows users to control their home with smart phones and smart wearables.

For this project we will also control lights and fans of home with smart phone but to add little more innovation we will use voice commands from smart phone.

Functional Requirements:

- There will be two modules of the system:
- First Module will be circuit of Arduino and Bluetooth or Wifi module, 12 V led and fans will also be connected to Arduino that will be controlled with relays and also 12v external power supply will be connected to the circuit.
- Second Module will be of mobile application, it is recommended to use flutter and dart language to develop a cross platform smart phone application which can work on both Android and IOS or simple Android application can be developed.
- Voice commands will be given from mobile application for example turn on room 1 light the mobile app will process the command and send the appropriate signal to the Arduino controller, appropriate messages must be displayed if the application is unable to identify a command.
- The Application must also have an interface to register new commands.
- Upon receiving a command from application, the Arduino will turn on the 12 v led light of a specific room.
- System will have 4 12 v led lights and 2 fans minimum.

Circuit Diagram:

Tools:
- Arduino IDE (For Arduino code)
- Flutter SDK for Dart Programming Language (flutter application development)
- Android Studio Java or Kotlin (for flutter or android app)

Hardware:
- Arduino
- 12 v Leds and 12V fans
- Bluetooth or Wi-Fi module (incase of Arduino)
- Relays to control led and fan
- Breadboard and wires

Please note Virtual University will not provide any type of hardware for the project.

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Shapes Classification using SVM

Project Domain/Category
Image Processing

Abstract / Introduction
Image processing is a method of performing operations on an image in order to improve it or obtain useful information from it. Image processing has various applications in fields such as medical, defense, industry, remote sensing, pattern recognition, and video processing, among many others. In this project we will create an application that should identify different objects like rectangle, square and circle etc., based on their features from the input image.

Functional Requirements:

1. For this application you should use 4 shapes i.e., square, circle, rectangle and star.
2. Use 10 different sizes for each of the shape.
3. Create 10 images of each of the shape and size using jpeg format in MS paint or any other software.
4. All the images should have equal height and width of 128 X 128 pixels.
5. All the images should have black and white. Black shape with white background.
6. The complete dataset should consist of 400 images.
7. Divide the dataset into 70% training set to train a model and 30% testing set to test the trained model. The division should not be biased.
8. You should use Support Vector Machine (SVM) for the classification.
9. Extract features from the images using different built-in functions of MATLAB like regionprops() etc.
10. Train SVM model using the training dataset.
11. Test SVM model using the test dataset.
12. The system should have the capability to test the complete testing set and then generate the accuracy report for all the shapes.
13. The system should also have the capability to test a single image.
14. You should create a proper interface for all these activities.
15. You should use different built-in functions of MATLAB where applicable.

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

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SHOPEE

Project Domain / Category
Web Programming + Image Processing

Abstract / Introduction
Shopee is the leading online shopping platform like 'aliexpress' in Southeast Asia, Taiwan and Brazil where users are guaranteed to either get their orders or money back otherwise. Here users can shop for the leading brands against various categories. There are multiple sellers having online stores on shopee. It is likely that a user can get the same product from multiple sellers having different price ranges based on store location, promotion or shipping cost etc. It has been noticed that a product description may vary from store to store but the images for a particular product usually will remain the same. Based on the images for a particular product which the user is interested in, website should recommend exactly the same product from other vendors in cost effective solution (be it the shipping route, days required for order delivery, rating or price etc).

Requirements:

There will be two parts of a project.

1. **PART-A (carries 60% weightage)**

   You have to make a complete shopee website including all features for users, admin and vendors. Generally speaking, users can manage their accounts, orders, order history, payments, disputes etc. Vendors can maintain their stores, products, orders (completed, in-transit, returned etc), payments etc. Admin can manage the whole website and give controls to users and vendors. You can explore more on https://shopee.com/ to extract as much features as possible for implementation.

2. **PART-B (carries 40% weightage)**

   Here involves some image processing along with machine learning part. User can search for a particular product offered from multiple vendors. Product images for a particular brand are same while the description or key-words may vary from store to store. You have to implement a recommender system which not only selects the same product from multiple vendors (image processing) but also gives the best possible way in lowering the product cost (machine learning).

Languages:
C sharp recommended. Python recommended.
Note: VU will not provide any assistance for purchasing libraries, toolkits or paid software. Students have to arrange on their own if required.

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Android Bus Service

Project Domain / Category
Mobile Application

Abstract / Introduction
Android Bus Service will be a nationwide transport android application that helps bus company and passengers to make the road travel convenient among several cities of Pakistan. The passengers can online book their seats in advance make sure to have a hassle-free journey. This app will facilitate users to view their travel information using graphs.

Functional Requirements
1. The application shall be able to register company officials like city terminal manager, driver / captain, support staff, bus details, routes etc.
2. The application shall be able to register passengers including their name, CNIC number, Cell number etc.
3. The application should be able to show all possible route plans (with departure terminal, arrival terminal and travel time) and company bus terminals to passengers using Google maps.
4. The application should be able to book their seat(s) according to the available route between cities. The app should be able to show seat-wise bus details so that passenger can easily book his/her seat(s) as per convenience. The passengers will buy their tickets from terminal physically accordingly. This app is for booking purpose, not for online purchasing of bus tickets.
5. This app should be able to send mobile message to the passengers once booking process is completed. This message should contain basic information like seat number, departure date and time, departure terminal name, arrival terminal name, arrival time, travel time, bus registration number, driver name and driver mobile number.
6. This app should be able to facilitate users (including company staff like Driver and passengers) to view and manage their travel information and statistics using graphs, pie charts etc.
7. The application shall be able to cancel pre-booked seats.
8. The application shall be able to search any particular trip according to its name, date, destination etc. for all users.
9. The application shall consist of simple and easy to use interface.

Note: Try Daewoo Express Mobile android app and see its functionalities to get idea.
https://play.google.com/store/apps/details?id=com.app.daewoo.miles&hl=en&gl=US

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

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Bike Tracking System

Project Domain / Category
Mobile Application (Android)

Abstract / Introduction
Bike tracking system is an android based app that provides the tracking the traveling location and the distance covered by the bike. 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 bike.

Functional Requirements:

1. Display:
The display of the application must be refreshed in real-time that records and access the travelling information of the bike.

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 bike'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 the speed limit and move alerts and much more whatever you can add your innovations.

Tools: Android Studio

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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Car Workshop Finder

Project Domain / Category
Mobile Apps

Abstract / Introduction
This an app that lets the drivers/car owners find a workshop that is nearest to them and meets their needs. A workshop will get itself registered in the app by specifying its location. The workshop also needs to specify the models (Honda Civic, Toyota Corolla, Hyundai Sportage etc.) and services (tuning, oil change, engine service, electric work etc.) it offers for cars of the specified models.

When a car owner/driver searches for a workshop in the registered app, it specifies its car model and the services it requires. Based on this information (owner's car model and services it needs), the app lists all the workshops offering the required services for the owner's car model. This list is sorted according to the distance of the workshop from the owner's current location (nearest workshops offering the required services for owner's car model appear first and farther ones appear in the end).

The owner/driver will book for services he/she needs from the chosen workshop (from the search list). The workshop will respond through the app and confirm booking specifying the exact time when the owner/drive may arrive at the workshop to get the car serviced/repaired. Finally, owner/driver and workshop will have the option to rate each other.

Functional Requirements:

1. A workshop manager should be able to register its workshop in the app. The manager needs to specify the following things during registration:
    a. Workshop location
    b. Car models it services/repairs
    c. Services it provides
2. A car owner/driver can search workshops appropriate for its needs. Car owner/driver needs to specify the following things for searching the workshop:
    a. Its car model
    b. Services/repairs it needs
3. The app will display a list of the workshops which can service car owner's specified model and the services he/she needs. The list should be sorted according to the car owner's distance (current location) from the workshop's location (nearest workshop will appear first).
4. Car owner can select one workshop from the list (as a result of search specified in the above requirement) and book for car service.

5. Workshop staff (manager) will receive the notification of car owner's booking in the app.
6. The workshop staff (manager) will confirm the booking by specifying the time when the car owner can come to the workshop for car servicing.
7. The car owner and driver will rate each other (optionally) once the car is serviced.

Tools:

IDE: Android Studio

Database: Online DBMS (like Firebase or any other of your choice)

Notes:

1. You do not need to provide registration functionality for car owner/driver
2. Mobile app development normally requires systems with good computational power. See the exact system requirements for Android Studio in the following link:
   https://developer.android.com/studio
   You are advised to enroll in this project only if you have the needed computational capacity.

Supervisor:

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Project Domain / Category
Mobile Application

Abstract / Introduction
Charity is an act of kindness, in which financially stable people provide help to those people who are needy. The majority of NGOs do not get enough funds to support their organization. Finding sponsor was a difficult task, and it was a big challenge for NGOs to deal with sponsors. This Charity Management System helps to find sponsors easily. The system has three modules, Admin, NGO and Sponsor. Admin can manage the requests raised by NGOs and can accept or reject. After approving request of any organization, NGOs get credentials for their login. NGOs will be verified by the admin by reviewing their uploaded documents. NGOs can request the Sponsors for funds. Sponsors can review the organization by their previous reports of events. Sponsor can register himself by the system. Sponsor will receive the notification of the request raised by the NGOs. Sponsor can accept or reject the request. NGOs will receive the notification and can see the status of their request.

Functional Requirements:
Application compromises of three modules.
- Admin
- Sponsor
- NGO

Admin:
1. Admin can login the system
2. Admin can register in the system.
3. Admin can review the organizations and sponsor, verify them and approve or reject their profile.
4. Admin can view all of history of NGOs and Sponsors.
5. Admin can manage the profiles of NGOs and Sponsors

Sponsor:
1. Sponsor can register and login in the system
2. Sponsor can view the details of a NGO who raised a fund request
3. Sponsor can accept and reject the request of NGO.

NGO:
1. NGO can register and login
2. NGO can raise the request for funds to any sponsor.
3. NGO can see the history of the sponsor
4. NGO can see it's status of it's requests

Tools:
Languages: Java, IDE: Android Studio, Database: Firebase

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Dermatology Online IOS App

Project Domain / Category
Mobile Application

Abstract/Introduction
Dermatology is the branch of medicine that deals with diseases concerning the skin, nails, and hair. There are various therapies covered under dermatology including laser therapy, tumescent liposuction, vitiligo surgery, hair transplant, hair removal, tattoo removal, photo therapy, allergy testing, etc. We know the Earth has undergone through dramatic climate changes from last few years and that natural factors driving these changes are varied (e.g. the relationship between the Earth and the Sun, volcanic eruptions, solar irradiance etc.). Furthermore, extreme weather events are also causing skin diseases in humans. So, there is a need to set up an online communication between a Dermatologist and a patient so that the patient can take initial advice from a Dermatologist and can maintain his/her skin health.

The main idea of the proposed "**Dermatology Online iOS App**" is to provide the patients easy access to Dermatologists and take initial advice regarding their skin issues. The iOS application will act as a client whereas the database containing the dermatologist's details, patient's details, and communication details will be maintained by a web server.

Core Functionality:
Core functionality and basic flow of the app will be as follows:
• First of all, the user will encounter the login screen which requires the user to log in to the application.
• For new users, there will be an option to create an account on the login screen, which will lead the user towards the further process.
• During registration, besides the personal information, the User will need to answer a few basic questions, regarding his/her Skin, the user may also need to upload pictures of his/her body parts in case he/she has allergy issues.
• After Registration, the application will redirect the user to the Main screen of the app which will get a Query from the user, this screen will show a heading: "your disease" and a drop-down to show the main diseases and their little description. (Following are the diseases and their description).
   1. Acne (Acne is a broad term of a skin condition in which a person gets pimples, white or blackheads on the skin.)
   2. Pigmentation (The disturbances in the natural skin color is known as Pigmentation.)
   3. Ringworm (It is a fungal infection of the skin in which a circular itchy rash is caused by the infection.)
   4. Fungal Infection (Just like bacteria, fungi also live on our skin. A fungal infection can occur due to several factors such as poor hygiene, or lowered immunity in the body.)
   5. Other (Select if your disease is not present in the above list)

The other Screens will work as:

- **Status.**

    Status screen will show the status of the user's query.

- **Messages**

This screen will show the user's communication with the dermatologists.
There will be a need for a back-end web API which will handle all back-end tasks such as managing all patients' requests, the replies of dermatologists, taking care of patient's records etc.

Tools:

- IDE: Xcode on mac-book
- Programming Language: Swift5 and latest versions
- Backend Server side scripting technology : PHP
- Api Testing Application : Postman
- Code Editors : XCode, Sublime, PHP storm Visual studio, etc.

Note: If you need any further assistance regarding tools, feel free to contact me.

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<center>**Early Learning for Child Labor Mobile App**</center>

Project Domain / Category
Mobile App

Abstract / Introduction
Early Learning for Child Labor mobile app is for those boys, who works at restaurants, welding shops, tailoring shops etc. The purpose of this app development is to let them learn basic ABC, numbers, animal names, fruit names and others in a simple and effective way.

Functional Requirements:

1. Every child labour can interact with the app at their own pace
2. App must be designed for child labor: No confusing menus or navigation.
3. App must be designed after complete understanding about the learning model of working boys.
4. Bright, colorful, child-friendly design.
5. Rich graphics, vibrant sounds and beautiful special effects.
6. Colorful early education app that helps children learn
7. Learn ABC & alphabets
8. Learn Numbers
9. Learn Animal Names
10. Learn Fruit Names

Tools & Technology:
Android Studio IDE using Java/PHP and MySQL/SQL Lite/ Firebase server for database.

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E-Property Manager

Project Domain / Category:
Mobile Application

Abstract / Introduction:
The E-Property manager will be an android application that assists users in buying, selling, renting, investing, and leasing a property. This app is a financial advisor for buying property. All property details will be provided on this app. This app allows users to sign up for their tenanted records. Users can use the app to search for a property within the specified location that meets their requirements. Additionally, the property record is verified through the land record of Pakistan upon the request of buyers. With the help of this app, users can view all pictures of available houses to rent or lease, which saves the time of users. This app makes it easy for them to communicate with each other.

Functional Requirements:
1. The login system for each user (Admin, Owner, User, Buyer) shows its dashboard correctly with appropriate functionality. Owners and Buyers can register through signup.
2. An owner can add details of a property as well as change the status of the property (Available/Not Available).
3. Tenant records can be registered by the owner.
4. A verified document of the land record of the Pakistan center can also be added by the owner. An owner requests an administrator to change the status of an owner (Verified Owner for specific property).
5. An admin will be able to check the owner's record and change the owner's status.
6. This app also allows the owner to verify the buyer's information and check their status (Verified / Not Verified).
7. This app allows buyers to see the details of a property and contact the owner through this app.
8. The buyer can apply for a loan through the finance manager.
9. The verified buyer requests to the admin to look up the record of the property by using Pakistan's land record office.
10. Users will be able to search rooms/flats/houses/portions to rent/lease applying search filters based on specific locations. They will see details (sizes, photos, etc.).
11. Owners will be able to manage the lease and rental agreements through this app.
12. The interface should be easy and simple to use.

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

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Intelligent Health Prediction and Consulting System

Project Domain / Category
Android Application

Abstract / Introduction
During these times of COVID pandemic, the health services of the country are being seriously affected. Often it happens that when a patient needs doctor's help, they are not available. Either the doctors are too busy or they are too afraid to physically meet the patient out of fear of being contracted by the COVID. This has led to the doctors providing consultancy to patients through other online means.

Following the same idea of online consultancy, we propose an android application that will allow users to get instant guidance on their health issues through an intelligent health care application online. First, the users (patient and doctor) will register themselves into the application. Then the patient will enter into the application and will feed information about the various symptoms and disease/illness associated with those symptoms. Based on existing information stored in the application, the application processes user's symptoms to check for various illnesses that could be associated with it. Here we use some intelligent data mining techniques to guess the most accurate illness that could be associated with patient's symptoms. If the application is not able to provide suitable results or the patient is not satisfied with the results generated by the application, then this information is submitted to the doctor. The doctor may contact the user and may require the user to go for blood test, x-ray, CITI scan or whichever report it feels user's symptoms are associated with. The patient uploads the image of those reports. These reports are then sent to respective doctor along with patient contact details. The doctors may now contact the patient for further process.

Functional Requirements:

Following will the functional requirements of the proposed application.
Patient:
1. **Registration:** If Patient is a new user, he will enter his personal details such as mobile number or email address and other details to complete the registration and verify it.
2. **Login:** Patient will be able to Login to the application using his ID and Password.
3. **Profile:** Patient will enter his complete personal details which will be maintained in his online profile. The profile may be updated time to time based on patients' history of consultation to the doctor.
4. **Disease Prediction:** Patient will specify the symptoms caused due to his illness. Application will ask certain question regarding his illness and application predicts the disease based on the symptoms specified by the patient and application will also suggest doctors based on the disease.
5. **Search Doctor:** Patient can search for doctor by specifying name or specialization type such as Immunologists, Dermatologists and Neurologists etc.
6. **Uploading Reports:** Upon doctor's recommendation, the patient may require to upload the reports of the tests suggested by the doctor for further examination of the disease.
7. **Feedback:** Patient will give feedback this will be reported to the admin.

Doctor:
1. **Registration:** The doctors will register themselves into the application by providing the relevant details such as email address, password, specialization and any other information.
2. **Login:** Doctor will Log into the application by providing login information.
3. **Profile:** Based on the information provided by the doctor, a profile will be maintained by the application which the doctor may update time to time.
4. **Patient Details:** Doctor can view patient's personal details.
5. **Patient's Previous Details:** Doctor will get all information about patient's previous case history. That will help him to serve him better.

Admin:
1. **Login:** Admin can login to the application using his ID and Password.
2. **Manage Doctors:** Admin can add/remove doctor details into/from the database.
3. **Manage Disease Details:** Admin can add disease details along with symptoms and type.
4. **View/Search Doctor:** Admin can view/search doctors along with their personal details.
5. **View/Search Disease:** Admin can view/search various diseases details stored in database.
6. **View/Search Patient:** Admin can view/search various patient details that had accessed the application.
7. **View Feedback:** Admin can view feedback provided by various users.

Tools:
Android Studio
Java or Kotlin
Firebase or any other database

Important Note: You are advised to read all the functional requirements very carefully and do some research beforehand to make sure that you will be able to implement it. The university will not offer any financial assistance for using any paid APIs in the project implementation.

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<p align="center">**Interactive E-Learning Android Application**</p>

Project Domain / Category
Android Mobile Application

Abstract / Introduction
An international educational institute is providing its educational services through both offline in campuses as well as online by using E-learning platform with the help of web applications. Now it wants to develop an interactive E-learning android mobile application for its students. This application will help the students in learning by using their smartphones. It will not only fasten the learning process of the students but also help them in learning in an easy way. Students will use this application for their ease in learning from different platforms.

Functional Requirements:
The application will have following features.

1. **Login:**
   Student can login the application by using his student id and password provided by the institute.
2. **Couse Selection:**
   Student can select a course from different courses for his learning. After that, all content will open related to the selected course.
3. **Professor Details Section:**
   This section will contain professor details which is handling the course including his name, qualifications, email, phone number etc.
4. **Notes Section:**
   In the notes section of the course student can write lecture related notes and can add it as a note having some title.
5. **Lecture Video Section:**
   In this section a student can see and watch all lecture videos related to the course.
6. **Discussion board:**
   In discussion board students can post their messages and both professor as well as other students can reply to the message.
7. **Helping Material:**
   This section will contain helping material related to the course. Which will further help the students in there learning.
8. **Logout:**
   After using the application student can successfully logout the application.

Tools:
Languages: Kotlin/Java, Design: XML/Material Design
Development Environment: Android Studio, Database: You can use any online or offline database

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Lost and Found Mobile App

Project Domain / Category
Mobile Application

Abstract / Introduction
People find missing items/persons/pets in daily life and report it to responsible authorities. Items could be material like wallet, passport, bag, car keys, cash, jewelry, luggage, mobile, tablet, laptop or it could be a person like a child or elderly parent. This app will track your location for 72 hours and keep a log of where you went to, your travel path, the stopovers, using Google Maps. This will record your track and store location for 7 days. Obviously when someone loses something they usually do not find out immediately, in rare cases they do realize immediately. Lost and Found mobile App will be used to search for your lost, stolen, or missing thing or your runaway pets. You can also search for the lost or found items added by others. User can contact reporter if have any clue on the reported item. User can search for found items added by others and contact them. User can search for missing people. User can Upload/View images of lost or found items or missing people's photo. User can share the details with friends through WhatsApp.

Functional Requirements:
1. User can login to app after registration process.
2. User can provide basic personal details for registration.
3. Location tracking will be ON by default.
4. App can provide two different forms; one for to upload lost items details and one for to upload found items details.
5. User can click Add Item button to upload Lost or found items details.
6. User can select the location from the tracking locations list.
7. User can also Upload/View images of lost or found items or missing people's photo in the item details form.
8. User can search for lost or found items added by other people.
9. User can contact reporter if have any clue on the reported item via SMS, WhatsApp or Email.
10. User can search for found items added by others and contact them.
11. User can search for missing people.
12. App can provide image based search method to compare lost or found items.
13. If a user finds its item on the mobile app, the user will click claim button against that item and will provide claim details.
14. Admin can verify claim and will update item status according to claim verification.
15. Admin can generate automated reports for users, inventory of lost & found items, and items claimed.

Tools:
IDE: Android Studio, Programming language: Java, Database: MySQL / Firebase/ SQLite

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Online Accounts and Inventory Control App.

Project Domain / Category

Mobile Application

Abstract/Introduction

The application must be well designed to serve the needs of Online Accounts and Inventory Control, engaged with the inventory control of different sale, purchase and production. Company can select workers permanent / daily wages for different jobs and can view their Inventory Control/production detail with complete Account book and report.

This platform can be run as pure business purposes, so proper reports are required for inventory sales, purchase, production and accounts.

Functional Requirements:

- 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/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 enterprise complete accounts with reports.
- 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.

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)

Supervisor:

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Online User Authentication Mobile App.

Project Domain / Category
Mobile App.

Abstract / Introduction
Online User Authentication Mobile App., is a user authentication android-based app, that verifies user by sending One Time Password (OTP) to a user's mobile number by using Firebase authentication. One time password (OTP) code is used to sign in your application by sending an SMS to user's device by using Firebase Authentication. When a user receives OTP code, it enters in your app., for login. If code is matched correctly, it successfully login and access the app., otherwise it generates the message" invalidate code".

Functional Requirements:
1. Create the user registration profile: user need to first register himself into this system by filing up the basic registration details. Like user name, email id, mobile number.
2. After completion of registration, OTP code will be sent on his/her registered mobile number via SMS.
3. After that user enter the OTP code in login page, if the user passes the authentication, then system will redirect to the main page.
4. The OTP code is randomly generated by the system at the time of login.
5. To create an app and add user interface elements such as Buttons, edit texts, and Text views use android IDE.
6. Add your project to Firebase console and enable phone authentication.
7. Implement click listeners on buttons to sign in (Generate OTP) and sign out.
8. Call Firebase authentication methods on the button on click events.
9. Retrieve user mobile number from firebase user data.

Learning Requirements:

- Basic knowledge of JAVA and Android.

Tools:
- The latest version of Android Studio Installed on your PC or Laptop.
- A smartphone, as OTP cannot be sent to an emulator.
- A Gmail ID to enable Firebase and add your project to Firebase console.

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Personal Expense Manager App for Android

Project Domain / Category
Mobile Application

Abstract / Introduction
Due to continuously increasing inflation rate in the country, it becomes very important for an individual or a family to manage their monthly budget efficiently. Personal Expanse Manager is an Android based application which can be used to record daily expanses of an individual. This app will enable a person to keep record of all his financial activities including the expanses, incomes and savings. User can trace/track his financial activities on daily, monthly or annually basis. This app enables its users to view the financial activity reports and adjust their budget to increase the savings. All data will be saved in the cloud storage so that you can get same record even after changing your device.

Functional Requirements:
1. User will need to register with the application using his/her email address for the first time use. These credentials will help him to store and retrieve his/her data on the cloud storage. User will be required to log into the application only once (for first use).
2. User can add and manage multiple incomes/wallets (i.e. cash in hand, bank accounts, mobile accounts etc.). User can add money to any account or transfer money from one account to another.
3. Application should facilitate its users to customize expanse categories or subcategories on their own. User can add categories and subcategories of his own choice.
4. User can add daily based expanses by selecting the source cash account and suitable category of the expanses. There should be an option for the user to edit or delete any expanse transaction in case of any mistake.
5. Application should provide a reserve/saving account facility to its users where they can add/transfer their extra cash saved from their routinely expanses or which is invested in the form of prize bonds or borrowed by someone.
6. Application should provide facility of setting a reminder for recurring activities like salary transfer or utility bills payment. User should be able to set the alarm for each such activity and should be able to edit or delete the reminder in case of any change in schedule.
7. User can view the daily, weekly, monthly expanse reports in charts or tabular form based on the customized expanse categories. User can also view the cash flow reports in the tabular form related to each cash account.

Note: All the data should be synched properly with the cloud storage so that you can get same record even after changing your device.

Tools:
Android Studio/Eclipse or any appropriate IDE supportive for Android.
SQLite or Firebase or any database of your choice.

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RFID-AP: RFID based Advanced Parking Application

Project Domain / Category
Mobile Application

Abstract / Introduction
RFID-AP is RFID based Advanced Parking and Ticketing application which is 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 i) Parking Spot (PS) i.e app attached to RFID Scanner, ii) 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 paring 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 it works.
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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Tollgate Payment App

Project Domain / Category
Mobile Apps

Abstract / Introduction
The final prophet of Allah (Peace Be Upon Him) said, "The two most undervalued assets by people are good health and leisure time." – Sahih Al-Bukhari (Vol: 8, Book: 76, Hadith: 421). Today, due to increase in the number of vehicles, there is a lot of gathering of traffic at toll gates. Main reason behind this is the manual collection of toll tax. On average, each vehicle needs to stop at the booth for about 2 minutes for payment of toll tax. To decrease this traffic and time consumption, we are coming up with a noble idea of a smart payment application.

Tollgate Payment App is an Android based application, in which travelers can pay their toll gate fees in a convenient way which decreases manual work, saves time, and reduces traffic congestion at toll gates. Furthermore, it allows vehicles to pass through the booth by just showing QR code. It relieves travelers of the burden of waiting in queue to make their toll payment in cash, which decreases fuel-consumption and time spent on each payment as well.

Functional Requirements:
Functional requirements for this app are as follows:
  I. **Users:** The app must support three types of user; Admin, Staff and Client
    1. Admin:
       - Login
       - Manage Staff (*add/update staff details etc.*)
       - Verify clients' registration
       - Add toll gates details (*address, location etc.)*
       - Define toll charges
       - View online transactions
       - View clients' feedback
       - Get notifications (*violation by client etc.*)
    2. Staff:
       - Login
       - Scan QR code
       - Verify vehicle details
       - Get notifications (*payment confirmation etc.*)
    3. Client:
       - Register
       - Login
       - Add vehicle details
       - View toll gates and charges
       - Manage eWallet
       - Get QR code
       - View transactions
       - Give feedback

- Get notifications (*nearby toll gates etc*.)

II. **Authentication:** App should provide registration (*for client only*) and login GUIs (*i.e. Graphical User Interfaces*) for all users; store users' credentials at Firebase Authentication.

III. **Databases:** Firebase Real-Time Database should be used as an online server for storing all users' data; use JSON format in this regard. However, for app internal storage, SQLite or Room database should be implemented.

IV. **Google Maps:** Client should be able to locate the toll gate via Google Maps by viewing the distance from his/her current location to next toll gate.

V. **Payment:** App should provide interface to pay toll fees online by using eWallet; provide add money (*using debit/credit card*) and view balance options.

VI. **QR Code:** App should generate a unique QR Code after payment confirmation. This code will be used as a gate pass and will be scanned by the staff at toll booth.

VII. **Notifications:** App should send proper notifications to specific user/s when an appropriate action is required/performed; like not having enough money in eWallet, after successful payment, completion of QR code scanning, and when toll gate is 1 km ahead etc.

Tools:

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

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Women's Safety Application

Project Domain / Category
Mobile Application (Android)

Abstract / Introduction
Women's safety is a big concern in now-a-days. Although the government is taking necessary measures for their safety, still, there is a need to timely inform the concerned authorities regarding alert situation. Keeping this in mind we are developing a smartphone application for this purpose. Most of the women carry smartphone with them while leaving home. By installing this app, they can send an alert to the emergency contact added to the application. Such a security app for ladies will facilitate them. They can contact their nearest help with fastest and simplest way. In this system user needs to add three contact numbers, in case of emergency on moving the phone up and down thrice, the system sends SMS on numbers added into the system with the location. This features for both everyday safety and real emergencies, making it an ultimate tool for all.

Functional Requirements:

1. User shall be able to register to the system.
2. User shall be able to update her profile including information like emergency contact information.
3. User shall have three option on main screen i.e., panic alert, cautious, and send status.
4. In panic alert emergency alert message shall be sent to emergency contact for help.
5. In cautious, message shall be sent for staying active.
6. In send status option, user location must be sent to emergency contact.
7. System shall be able to send messages by shaking the phone in panic alert option.
8. System shall be able to send message by selecting send status and cautious option.

Tools:
Android Studio or any other.
Firebase or any other.

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

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Fine-tunning ECN and RTT based Congestion Control in Data Centers Networks

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 combine ECN and RTT signals in the data center congestion control scheme and fine-tune it. First of all, RTT measurement (at the source) will be implemented; then the existing ECN will be combined with the RTT in the congestion control scheme; lastly the congestion control algorithm (based on the ECN and RTT) will be fine-tunned to give the optimal results. All 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 GNUPLOT command (for drawing graphs).

References:
[1] Mittal, R., Lam, V. T., Dukkipati, 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)

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Movie Rating System Based on Sentiment Analysis

Project Domain / Category
Information Retrieval

Abstract / Introduction
Movie rating system where users are allowed to rate and comment on movies online. These ratings are provided as input to the website admin. The admin then checks reviews, critic's ratings and displays an online rating for every movie. The purpose of this project is to develop an online system that automatically allows users to post reviews and store them. The system will analyze this data (comments) to check for user sentiments associated with each comment and the system breaks user comments to check for sentiment keywords. Once the keywords are found it associates the comment with a sentiment rank. After that the system gathers all comments for a particular movie and then calculates an average rating to score it. This score is generated for every movie in the system. This project will provide an automated movie rating system based on sentiment analysis.

Functional Requirements:
FR1: Users should be able to share his/her view about the stored movies provided in the system.
FR2: Users should be able to rate the stored movies provided in the system.
FR3: Users should be able to comment on stored movies only once. The system stores each comments of the users for further processing and find out the sentiments and their weightage and store it in database.
FR4: User can easily decide whether the stored movies provided by the admin/ system are good, bad or worst based on sentiment classification.
FR5: User can easily see/ analyze the better/top movies with the help of graphically representation of movie rating provided by the system.

Tools:
- ❖ SQL 2008
- ❖ Visual Studio 2010
- ❖ Senti Word Net Dictionary
- ❖ Wamp Server

Note:
1. This Application uses Visual Studio as a front-end and SQL as the back-end.
2. SentiWordNet Dictionary will be used for sentiment classification tasks.
3. You may use any other platform for coding in which you have command, but make sure all the mentioned FR's should be completely implemented.
4.

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Spatio-Temporal Characterization(STC) of Network Traffic

Project Domain / Category
Computer Networks

Abstract / Introduction
The knowledge of network traffic behavior is important for traffic engineering tasks such as link capacity planning, traffic classification, and anomaly detection. Traffic characterization is typically addressed through statistical analysis of individual link(s) and network-wide traffic volume properties such as counts of bytes and packets as well as by analyzing the distributional behavior of particular packet header fields. This project aims to develop a software solution to characterize network traffic to identify the spatio temporal features. The network traffic captures can be downloaded from the data source given in tools section. Any other data source can also be used.

Functional Requirements:
Students will be required to investigate the spatio temporal features of network traffic and develop an appropriate software solution to analyze the traffic from data sources given in this document.
1. The solution should be able to read the pcap files and extract the header information such as timestamps , source/destination addresses, TCP port, Packet Size, Type of Packet and other relevant information.
2. It should be able to store the extracted header information in a persistent database or text file such as csv.
3. The solution should allow the users to split the large size pcap files into smaller size based on file size and time duration.
4. It should be able to identify top flows for user traffic and network control plane traffic based on followings
    a. Source and destination with TCP port
    b. application type
    c. Data rates
    d. Session length
5. It should be able to measure the Flow Similarity across daily/weekly traffic captures.
6. It should be able to approximate data rate probability distribution for distinct flows for daily traffic
7. It should be able to approximate interpacket delay distribution on daily traffic
8. The results should include the analysis of at least one-week traffic captures of fifteen minutes from the reputable internet traffic sources.

Tools:
Python/Java, C/C++ (other programming languages could also be used.), And IDE of choice
Data Source : http://mawi.wide.ad.jp/mawi/samplepoint-G/2020/

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autoline.pk (A website for auto parts online selling)

Project Domain / Category
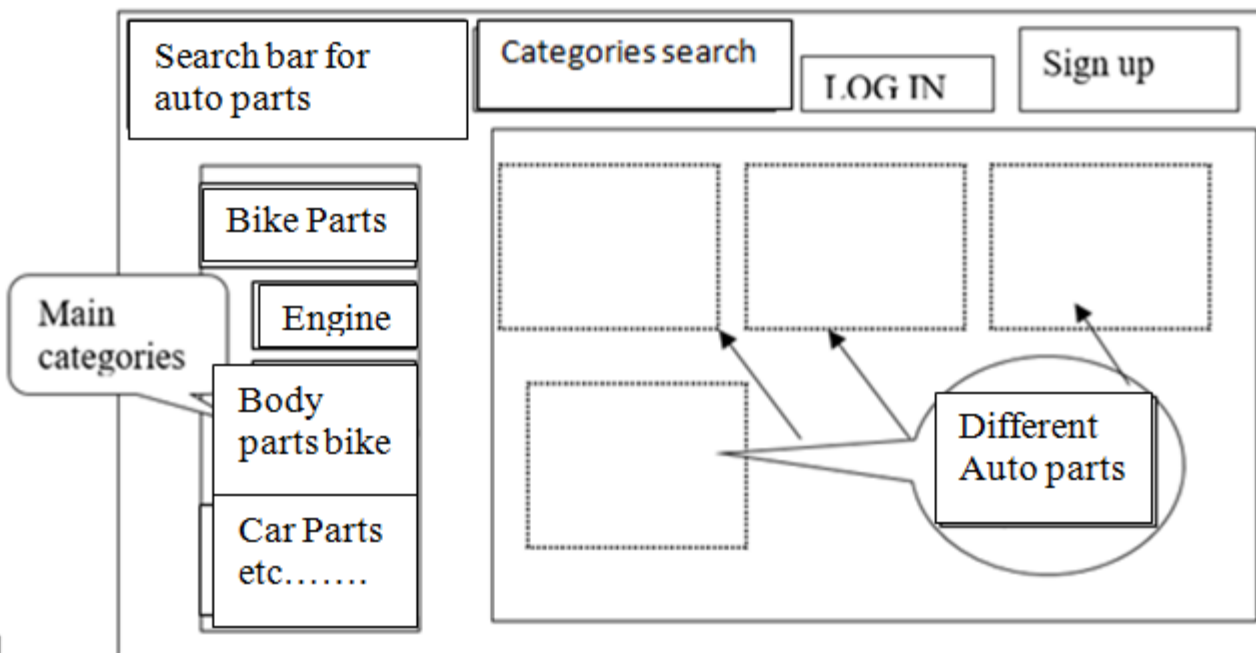Web Based Application

Abstract / Introduction
autoline.pk is a website that offers purchase services of different auto parts to the webpage visitors. This website offers different variants of any auto part. Main categories should include Motorbike, cars and SUVs [-you can add more categories as per needed-]. For each category of vehicle, there should be at least three subcategories of auto parts: Engine Parts, Electric Parts and Accessories. An auto part will be delivered to the address provided by user/buyers during prescribed delivery hours.
Payment will be made by "cash on delivery" mode.

Functional Requirements:

GUI:
GUI interface:
1. Main page will show different auto parts, categories list, search bars etc.

NOTE: Above design is for demonstration purpose only.

2- Preview Page: When user/visitor clicks on any item, a new page for the details of the item should be shown to user/visitor. This page should contain pictures for particular item. You can show current market price value on this page.

| Manufacturer: Honda Pakistan |
| Model: Civic |
| Price: Rs. 3,00,000 |
| [additional] |
| [additional] |

3- There should be at least 2 items of each auto part included in each sub category of vehicles.

Visitor:
1. A visitor is a non-registered user of the website.
2. Can view different auto parts and can explore different categories
3. To view or search a category/auto parts, a simple user can apply different filters on home page

Buyer (user):
1- To buy any auto part, a simple user must register him/her self with this website.
2- Categories should be available so that each auto part is available in respective category.
3- Add different parts to the shopping cart.
4- Buyer will have to fill a form for required details needed to confirm the order.
5- A buyer can cancel an order before confirmation or check out from the main page.
6- After collecting parts, a buyer can write feedback on webpage.

Administrator:
1. Updates auto parts information
2. Manages parts repository
3. Generates reports from system
4. Manages categories of parts.

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

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

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<p align="center">**Bells Enterprises Inventory Management system**</p>

Project Domain/Category
Web Application

Abstract/Introduction
Bells enterprises do confectionery business in Pakistan. Its head office based in Lahore. They have large distribution network across Pakistan. After manufacturing of finished products, they sent to warehouse located in Lahore. All finish goods dispatched to all distribution through warehouse.

You are required to develop an inventory management system for this warehouse. They need to maintain record of all incoming and outgoing products of this warehouse. Firstly you are required to develop a chart of account (parent accounts, control accounts and ledger accounts). Furthermore, you are required to generate different reports that helps the Bells enterprises in decision making. For example,

- Item wise details
- Day, week or month wise items come in and out from the stock.
- Brand wise items come and out

They have 4 broad categories of items.
1. Candies
2. Bubbles
3. Chocolates
4. Biscuits

Note: Bells enterprises all products fall in above 4 category. For example
1. Candies
   1.1 Hard Candy
      1.1.1 Candyland Apple
      1.1.2 Candyland Orange
      1.1.3 Candyland Banana
   1.2 Deposit Candy
      1.2.1 Candyland Apple
      1.2.2 Candyland Orange
      1.2.3 Candyland Banana
2. Bubbles
   2.1 Soft Bubble
      2.1.1 Dingdong Bubble
      2.1.2 Freshup Bubble
   2.2 Sour Bubble
      2.2.1 Boom Boom Bubble
      2.2.2 Zoom Bubble
3. Chocolates
4. Biscuits

Functional Requirements:

Admin Panel:
- Admin will enter in the system after login ID and Password.
- Admin can create users and give rights to other users.
- Admin can use complete system, enter, update and delete any record.

User Panel
- User will enter in the system after login ID and Password provided by Admin.
- User can also be enter, update and delete if admin give complete rights.
- User can enter data in the system. For example, creating vouchers and review ledgers.
- All other menu items that user has no rights will be disables in user panel.

Required Tools:
Developer can develop this project in any web based tool. For example, PHP, .net ect.

Note: You are required to discuss all requirements with your supervisor prior to start development.

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Book Online Event Management Consultant

Project Domain / Category
Web programming

Abstract / Introduction
In Pakistan, with the enhancement of technology, the use of Internet and computing devices is increasing day by day. It is the need of today's era that some provided services should be digitalized. "Book online event management consultant" is a website to facilitate the users like common citizen, institutes, restaurants, marquees etc to manage their regular events and ceremonies properly. It is a difficult task to manage such events for untrained person. Event consultants can create their profiles via this website by providing their complete details as well their previously managed events details. He/she can add images or videos of their managed events. Consultants can also add payment methods and their charges details. In this project a user can view the availability of the event consultants, on the availability of the consultant the user can book that resource for his/her "event". In the booking process, the user will provide all the details about event he/she is going to plan. User can visit website to get information about consultant. To book a consultant user should get registration. Users can give their reviews or feedbacks about consultant or website.
Event categories should be like that:
- Parties
- Ceremonies
- Seminars
- Conferences
- Exhibitions
- Media campaign

Functional Requirements:

Consultant panel:
1. Consultant should get registration.
2. He/she should be able to create his/her profile.
3. He/she should be able to add details of his/her previously handled events, can also add images or videos of those events.
4. He/she should be able to select more than one event categories while creating profile.
5. He/she should be able to add payment methods and his/her charges detail.
6. He/she can see the user's booking requests.
7. He/she should be able to update his/her status as available or not available.
8. He /she should be able to accept or reject a request.

User Panel:
1. The user can login and logout.
2. The user can view/search the event categories and consultant profiles without registration.
3. The user can book a particular consultant according to his/her availability.
4. For booking the user must be a registered user. If the user is not login already then there must be a "Registration" option available for the user.
5. In the booking process, the user should provide complete details about the event.
6. The user will be able to add review feedback or complaints.

Admin panel:
1. Admin can view Booking requests.
2. Admin can view reviews or feedbacks.
3. Admin can block any consultant or user.
4. Admin can add/remove categories or edit existing categories.
5. Admin will be able to generate a report on monthly basis for total number of bookings and their successful handling.

<u>Tools:</u>
- ➢ Operating System: Window7and above
- ➢ HTML, CSS, Bootstrap (Front-end)
- ➢ Adobe Dreamweaver
- ➢ MYSQL(Backend)
- ➢ PHP (Server-side programming)
- ➢ XAMPP — Web Application Server

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BuildersBid - Online Construction Bidding Company

Project Domain / Category
Web Application

Abstract/Introduction
BuildersBid is an online web site in which company facilitate customers to hire a builder for constructing / maintaining their plots as per their desire and budget.

Concept of Flow / Working of Project and Implementation details
A company has only one server at this time so has one Admin account for the system. But it will allow / facilitate to add more Admins if required in future. Web page allows users to register as customers and builders. One registered user account must have only one type rather customer or builder. Customers and builders account registration must save required attributes (minimum 10 attributes) as per developer's choice. After registration of user, Admin would authenticate the account that would result in activation of account. Account activation email would be system generated and send to user email having subject of as "Thanks for registration. Admin authenticate your user account named as ------. Now you are WELCOME to login to use our services. Thanks once more.".

After activation of account, customer would able to post details of building project any time. Building construction attributes are once again on developer's choice but few attributes of interest are mentioned here. For example, area of plot, new construction or demolishing or maintenance of old building, interior designing requirements, construction requirements along with maximum 3 photos (includes building blueprint, AutoCAD drawing or sample construction photos), building details that are in drawing (e.g. no of rooms, attached washroom, dinning, kitchen, laundry, no of stories, details of construction on each story (Maximum 2 story building would be entered for a building)), customer's budget, mode of payment, installments of payment after % of construction work completion, required deadline to finish project. Developers are also required to collect these information in parts (multiple web pages) not on one web page / input form.

After, Customer would post project details then builders would able to post a bid against the project till the bid time expires. After a specific time entered by customer that must be less than a week (7 days), customer could choose from the top five bidders to handover project details to them. Customer could also cancel / stop the bid process anytime and also able to delete the construction project. If, a bid would be approved by customer then bidder would have contact details of customer and vice versa.

Required Reports

1 – Customer would have summary of all posted projects along with their budget, bid and status as delete / pending / complete.
2 – Builders would also have two summary reports. One for rejected bids and one for approved bids having attributed in both reports like (Project Name, location, budget amount, bid amount)
3 – Admin of the system would able to find summary of following things as mentioned below.
     Summary 1 – Number of customers and Builders (calculate in separate fields) and no of active customers (that at least post one project after account activation) along with active builders (that at least big for one project).

Summary 2 – No of projects along with their statuses as no of deleted projects, no of completed projects and no of delayed projects.

Summary 3: No of bids in terms of active bidders, successful bids and unsuccessful bids in numbers and percentage too.

Tools
HTML, PHP, MySQL, Xampp / wamp server, PHP Report Maker / PHP Reports / Any other supportive tool for Report generation

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Canteen Automation System

Project Domain / Category:
Web Application

Abstract/Introduction
In today's age of fast food and take-out, many canteen have chosen to focus on quick preparation and speedy delivery of orders rather than offering an expensive dining experience. Until very recently, all of these delivery orders have been placed over the phone, but there are many disadvantages to this system. It includes the inconvenience of the customer needing to have a physical copy of the menu, lack of a visual confirmation that the order was placed correctly, and the necessity for the canteen to have an employee answering the phone and taking orders. What, we propose is a Canteen Automation System, which is a technique of ordering foods online applicable in any food delivery industry. The main advantage of this system is that it greatly simplifies the ordering process for both the customer and the canteen. When the customer visits the ordering webpage, they will get interactive and up-to-date menu. After selecting, the item is then added to their order, which the customer can review the details of at any time before checking out. This provides instant visual confirmation of what was selected. This system also greatly lightens the load on the canteen's end, as the entire process of taking orders is automated. Once an order is placed on the webpage, it is entered into the database and then retrieved, in pretty much real-time. Within this website, all items in the order are displayed, along with their corresponding options and delivery details, in a concise and easy to read manner. This allows canteen employees to quickly go through the orders as they are placed and produce the necessary items with minimal delay and confusion.

Functional Requirements:
The application comprises the following major modules.
1. Admin
2. Customers
3. Canteens

Admin
1. Admin can login into the system
2. Admin can delete/ edit information of NGO and Sponsors
3. Admin keep track of all the activities

Canteens:

1. Canteens can register into the system
2. Canteens can login into the system
3. Can Add / Edit his information(Upload documents)
4. Can upload attractive menu pictures
5. Canteens can accept/reject the orders
6. Canteens will deliver the orders
7. Can provide delivery status

Customers:

1. Customers can register into the system
2. Customers can login into the system
3. Customers can see the menu
4. Customers can order from the menu
5. Customers can add/delete personal information
6. Customers can select payment method
7. Customers can view delivery status

Tools:
PHP language, HTML, MySQL

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Cars Club

Project Domain / Category
Web Programming

Abstract / Introduction
This is an online car purchase and rent a car store that has listings of various cars along with their features (company, color and model) and price. This system allows user to buy a car by viewing inventory online. System allow user to check various articles submitted by user and even comment on them. Credit card payment facility is available. This system also consists of 'Rent a Car' feature where user can ask admin for car on rent. The visitor who visits the system must register himself by filling up personal details. After registration user can login to the system with his username and password in order to access the system. User can check various car listing and can view each car feature. User may select the product and can add the product to shopping cart. User can make payment through credit cards by clicking on credit card payment option. User must register himself for posting a review about the rented car or bought car. This application is a combination of both sales and inventory management of the cars. User can easily purchase car or rent a car by using this system. User does not have to come to shop to purchase the product. He can view the car in effective Graphical User Interface. User can view features of each car and can compare the products in order to purchase a better product.

Functional Requirements:

Admin:
1. Login.
2. Approve user.
3. Add, remove and update car's company, models, colour and price.
4. Manage rented cars, available for rent cars and new cars for sale. For this purpose on home page you give option to navigate for renting a car or buying a car.
5. Keep cars for rent and cars for sale on different pages. Both the options should be on index page.
6. Generate reports for both rented cars and sold cars (reports should be daily, weekly, monthly, yearly). Both the reports should be separate from one another.
7. On the basis of reports admin can calculate gross profit (separate for rent a car and buy a car) for the month, half year and year.
8. For calculation of gross profit for the sold car should be calculated by taking the difference in amount of retail price and sold price.
9. Database should be relational. You have to use primary keys and foreign keys to make database relational.

User:
1. Register using user register page.
2. User can buy a car.
3. User can rent a car which is available.
4. User can give review on the cars (for both rented and bought).
5. When user clicks the car which is available for rent it should automatically be marked as occupied (number of days of occupied should be also displayed).

6. When user clicks on rent a specific car there must be a page open where user can give the details like hours or days for occupying for rent.
7. User can buy a car using online portal and can add or remove to the cart.
8. After adding to the cart a user can use two modes of payments (cash on delivery and credit card) when checkouts.
9. User can search the cars by company, colour, price, and model on each page.

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.

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Central Dairy Form Milk Production Record to control Prices (CDFMPR)

Project Domain / Category
Web Application

Abstract / Introduction
In pandemic COVID 19, the Consumption of dairy products has increased all over the world. When demand exceeds supply, prices tend to rise. If there is a decrease in the supply of goods and services while demand remains the same, prices tend to rise to a higher equilibrium price and a lower quantity of goods and services. The same inverse relationship holds for the demand for goods and services.

The main problem is here we don't have a proper mechanism to keep a record of milk production of various dairy farms in rural areas. So, there is a need to develop an E-commerce website that helps dairy form individuals to keep the record of total milk production, demand, and supply in the specific territory. CDFMPR is a web application software to create communication between rural area people and dairy management.

The core objective of the CDFMPR project is to develop a website that facilitates the new dairy form to registers into this web portal and update regarding demand and supply for the better control of milk or dairy product prices centrally.

Functional Requirements
Administrator Panel:
1. Manage login process to allow the authentic user to access the admin, customer, and dairy farms.
2. Create and manage their account.
3. Keep the record of dairy farms.
4. Keep agreement between dairy form and administrator on milk quality report.
5. Add/update/delete specific dairy form.
6. Keep the record of total milk production/consumption /surplus
7. Generate reports to reflect total milk production of any territory.
8. Keep the record of the customer.
9. Add/update/delete customer.
10. Keep the record of customer order and status.
11. Set the price of milk according to demand and supply.
12. Manage the record of customers.
13. Manage customer history.
14. Manage the rating of dairy farms.
15. Get the Milk from the dairy form and made payment.
16. Deliver the order to the customer.
17. Receive the payment from a customer.
18. Send promotions to registered customers by offering discounts and promotions and also a rating of dairy from providers.
19. Manage revenue and expense records.
20. Inventory management record.
21. Keep a record of customer feedback.

Dairy form panel:

The dairy form will do the following:

1. Create an account or register him/herself on CDFMPR.
2. A dairy form will sign in.
3. A dairy form will upload the milk quality test report by accepting CDFMPR Terms and conditions.
4. Add/Update/Delete the milk rates.
5. Receive payment.

Customer panel:

1. Create an account or register him/herself on CDFMPR.
2. View the dairy farm in a specific territory.
3. View the milk prices.
4. View the dairy form ranking.
5. Place the order by selecting the mode of payment.
6. Confirm the order.
7. Delete the order before confirming it.
8. Submit feedback.

Tools:

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

Supervisor:

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Course Books Distribution System

Project Domain / Category:
Web Application

Abstract / Introduction:
In open universities, Books are dispatched for numerous courses when the request is generated from students. For consignment of course books, student information is needed like name, address etc. Each course includes variety of books. Stock of each book is maintained as they are printed individually. When a new request for each dispatch is received from student, first stock of each book is checked as it is available or not. If all the books for certain course are available in stock, books are dispatched right away otherwise information is moved to pending status. When books are printed, inventory stock of books is updated and dispatch is made to pending cases. The system generates reports about the total Books supplied and delivered for expected period according to user's need that can be used for future reference.

Functional requirement:
Admin:
1. Admin can login using credentials.
2. Admin can add or remove Courses (e.g. BSCS).
3. Admin can add or remove books (e.g. intro.to computing) in each course.
4. Admin receive orders from students and process them.
5. Admin update the status of student's orders.
6. Admin maintain a record of the stock of Books as available, supplied and demanded.
7. Admin keep record of student's order.
8. Admin can receive payments from students through Debit or Credit Card.
9. Reports can be generated about the total Books supplied and delivered for expected period.

Student:
1. Student can register and login into system using student ID.
2. Student can order multiple books from a course.
3. Student can track their order status.
4. Student can pay bill through Cash on Delivery method or through Debit or Credit Card.

Tools:
PHP language, MySQL

Supervisor:
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Project Domain / Category

Web Programming

Abstract:

"**COVID-19 Vaccine Management System**" is an appointment scheduling system to facilitate the residents with scheduling their COVID-19 vaccine appointments. It will provide on hand information about current COVID-19 situation. The aim of this website is to manage mass vaccination, including vaccine distribution and administration. The proposed system is designed to provide real-time access to vaccine distribution centers. The system will also reduce the manual efforts and cost required for paper work. So, it will benefit the both public and government.

This website offers following categories:

- Home Page
- Dashboard
- Vaccine distribution centers List
- Patient Registration
- Login
- Scheduling the appointment
- Get appointment confirmation SMS/email
- Register Complaint
- About
- Contact
- FAQ

Functional Requirements

Modules:

User Module:

- View: The user can view the details of vaccination, vaccination procedure and related information without registration.
- Register: Users will register themselves to get appointments.
- Schedule an appointment: User will get the appointment online.
- Feedback: User can also give feedback about services provided.
- Complaint: User can also register complaint about any suspicious activity or any misconduct.

Admin Module:

- Registration: Registration and Login of the main administrator.
- Add an Admin/ Login: The main administrator can add any other person as admin.
- Admin can add/remove categories or edit existing categories.
- Admin can insert, delete, view and update records.
- Admin can cancel the appointment.
- Logout

<u>Tools:</u>
Software Requirements:
- Operating System: Window7and above
- HTML,CSS, Bootstrap (Front-end)
- Adobe Dreamweaver
- MYSQL(Backend)
- PHP(Server side programming)
- XAMPP — Web Application Server

<u>Supervisor:</u>
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Project Domain / Category
Web Application

Abstract/Introduction
This job portal is a responsive website which offers users to search different jobs using filters. Admin can post the jobs on the website and will provide all the details of the job: Title, Location, **domain**, Experience required, description of the job, timings and link of the website to apply or Email address etc. Admin can specify the categories (**domain**) of the job like Software Engineering, Teaching, Administration, Marketing, Medical etc. User can view all the jobs without logging in and can apply for a job but to apply for jobs he/she must have to register with portal.

Modules:
- Admin Module
- End User Module

Admin Module Functional Requirements:

Login / Logout:
Admin can login or logout form the portal.

Add new user:
Admin can add new user as admin.

Post new Jobs:
Admin can add new job posts.

Edit/delete Previous Jobs:
Admin can edit/delete the previously posted jobs.

Add new Job Categories:
Admin can add new job categories through which user can search.

User Module Functional Requirements:

Login/ Logout:
Users can login/logout from the website.

View Jobs:
Users can view jobs without login.

Apply for Job:
Users can apply for job after logging in; user will be applying through the original website of the company/sending CV through Email.

Choose job preferences/categories:
User can choose his own preferences to get job updates

Get Email Updates:
User can subscribe for latest jobs according to their preferences through Email.

Search Jobs:
Offer filters for searching jobs for example: city, experience required and offered salary etc.

Tools:
- Core PHP / Laravel
- HTML, CSS, Bootstrap

Software:
- **Editor:** Sublime/Netbeans/Any editor supports web development
- **Server:** Xaxmpp/ Wampp

Supervisor:
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Design and Development of an Online Hospital Management System Portal

Project Domain / Category
Web Application

Abstract/Introduction
Hospital management system consists of a comprehensive information system that lets healthcare professionals function more efficiently and contains necessary tools to assist them in job fulfilment of their duties.

This historic institution has since emerged as a major player in hospital management and has remained one, further developing and merging with emerging technology and constantly increasing its ability. Hospital administration can require identification of patients, maintaining their information in the system, as well as the use of computers to bill and to examine, store and process. Although the design may seem complex at first, HMS sites are fundamentally simple database-driven web-sites.

There will be two interfaces in this web-site: a **user / patient interface** and an **admin interface**.
On **user interface** a user will be required to register before he /she can make an appointment with the doctor or see his / her medical record.

On **admin Interface** login is required to maintain patient's information. And make an appointment with the patient.

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 doctors and patient's medical records such as appointment information, billing information, prescriptions, staff, rooms, discharge summary etc.

Functional Requirements:

- ❖ The system shall provide easy and user-friendly interface for User Registration, Login and Search.
- ❖ The system should be capable to send reminders to the patients by keeping an eye on the appointment dates.
- ❖ The database should be able to store images of the lab report or prescriptions.
- ❖ The system should be able to maintain the medical records of the patient.
- ❖ The system should be able to maintain the contact details of the patient for future correspondence.
- ❖ The database should be well tuned and it should be responsive.
- ❖ A guest user can only see the details of available facilities which are being provided by the hospital online.
- ❖ The system should keep track of all rooms and it's staff also.
- ❖ The system should save the insurance information for later reference.
- ❖ The system should be able to track the bill payments also.
- ❖ Admin should be able to view details of each user and approve or disapprove the user's register request.

❖ The system shall provide Password Recovery facility through patient email id.
❖ The system shall have both Admin and User views. i.e. Administrator View and User View.
❖ Registered users shall be able to get reminders from the system regarding their visit to the doctor according to the appointment date.

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

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eSchool

Project Domain / Category
Web application

Abstract/Introduction

Current situation of pandemic has increased the demand of online learning platform at every level. The purpose of this web application is to assist school going students by proving a chance to study from anywhere. This application provides online classroom environment for students and teachers just like physical classrooms. In this application, there will be a list of courses for each grade/class and students. Students can opt for full time/part time study. For part time study, student can select any course of his/her choice whereas for full time study student must study all courses enrolled in a particular grade/class. Students can view the timetable, watch video lectures, read online material, upload/download assignments, attempt quizzes, test/exams and mark attendance. Teachers will upload online material, upload video lectures, upload timetable, upload assignments, quizzes, view attendance, develop quizzes/assignments/exams. Parents will monitor the activities of their kids through this application.

Functional Requirements:
The requirements of different types of user are given below:

Admin:
- Admin is responsible for managing all users in a website.
- Admin will add the admission eligibility criteria of different grades.
- Admin will add different grades/classes in website.
- Admin will add different subjects for each class in website.
- Admin will accept/reject the admissions of users in a system.
- Admin will assign subject to students and teachers.
- Admin will publish the results of each activity of a class.
- Admin will keep the attendance record of students and teachers.
- Admin will publish Fee voucher for each student.

Students:
- Students will register themselves into the website.
- Students will login to the website.
- Students can opt for full time/part time study.
  - For part time study, student can select any course of his/her choice.
  - For full time study, student must study all courses enrolled in a particular grade/class.
- Students will view the timetable of each grade/class.
- Students will view the syllabus of each subject for each grade/class.
- Students will view their attendance on the website.
- Students will update their profile.
- Students will view their results.

- Students will take classes and attempt assignments, quizzes and test/exams.
- Students will view the online material of their subjects.

Teachers:
- Teachers will register themselves into the website.
- Teacher will login to the website.
- Teacher will view the enrolled students in his/her course.
- Teacher will add/update timetable for a particular grade.
- Teacher will view attendance of his/her students.
- Teacher will add student's marks for each course.
- Teacher will take online classes and test/exams.
- Teacher will upload the online material of their subjects.
- Teacher will upload the assignments and quizzes of their subjects.

Parents/Guardian:
- Parents will register themselves into the website.
- Parents will login to the website.
- Parents will view the admission eligibility criteria of different grades.
- Parents will view the Fee structure.
- Parents will view the timetable of each grade/class.
- Parents will view the syllabus of each subject for each grade/class.
- Parents will view the attendance of their kids on the website.
- Parents will view the status of fee vouchers.
- Parents will view the results of their kids.

Languages/Tools:
C#/Java, .NET Framework, NetBeans etc.

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FINAL YEAR PROJECT PROCESS AUTOMATION SYSTEM

Project Domain / Category
Web Based Application.

Abstract / Introduction
It is completely web-based application. The main idea behind the project is to make an online Final Year Project process automation system for University, which helps the Students, Supervisor, and FYP Committee.
Manual procedure leads to lots of time-wasting because the student carrying out the project work is not updates or lead in lack of communication with the supervisor. It could make easier for supervisor and FYP Committee member that can see and check the progress of student. In this project student will have access to a centralized portal where they will find all the information, they need to register for the FYP. The student will simply register and mention their idea along with their group members and the desired supervisor. The supervisor then sees the projects that the students have posted and then they can call the corresponding group.

Functional Requirements:
1. **Super Admin**
    a) Super Admin, it will be single user no other super admin will exist
    b) Supper admin have the ability to create committee Head and committee members.
    c) Admin has authority to create Committee member
    d) The Committee member will register the Supervisor/advisor/external and students through Excel file.
2. **Create Committee Interface**
    e) One of the committee members will be head (created by super admin).
    f) All committee members will have the power to make a final decision.
    g) From admin id create committee link is clicked through which he can create committee through name and email.
    h) Committee head and 4-5 members to monitor and calendar all the exercises.
    i) Committee Member upload student sheet who are eligible for FYP on portal which create n number of student account with their name and university email.
3. **Committee ADD STUDENT Excel Sheet Interface**
    a. Committee can add bunch of students in one go with uploading excel sheet and then every individual student will be emailed with their email and password.
4. **Login as Supervisor/Advisor Interface**
    a. Login as Supervisor/Advisor. Supervisor/Advisor has authority to publish his idea see other Supervisor/advisors ideas.
    b. Advisors can see group ideas that don't have any advisor yet.
    c. Advisor can see groups' requests they made to make him their advisor. This will be an accepted and rejected case.
    d. If the advisor accepts then this request forward to the committee member if any of the committee members approve it then he becomes advisor.
    e. If rejected, the advisor must write the reason for rejection.
    f. Advisors can communicate with students

5. **Login as Student Interface**
   a. Login as Student, student can send request to other students, accept request from other students, see who he have sent request to.
   b. Student Send and View All Request GROUP CREATING.
   c. Can send request from student restricted in portal has limitation of 3 students only.
   d. Interface for request of other students that can be accepted or rejected by logged in user.
   e. Student interface for he has sent request to other students and that he can cancel.
   f. Student can view all Supervisor/advisers' ideas

Tools:
Laravel Framework or CodeIgniter, JavaScript, HTML, CSS, JQuery, Bootstrap, firebase
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Find Me Mobile (FMM)

Project Domain / Category
Web Application

Abstract / Introduction
Taking a right purchase decision from the plethora of mobile phones is a daunting task. Many local websites do not have authentic information and international resources doesn't cover spec sheets / reviews of mobile devices that are officially launched in our country. This results in incorrect decisions and, in the worst case, unsatisfied purchase and wastage of money.

Our web-based application will try to tackle these issues by providing official / verified content about mobile devices that are launched by respective companies in Pakistan. This app will also include video reviews of verified reviewers from Pakistan which will help user making sensible decision and will help them to answer the question "*Is this device worth the money?*"

Functional Requirements:

1. The app will provide a comprehensive list of companies and their devices (categorized into groups) that are only officially launched in Pakistan. The list of companies includes (but not limited to) Samsung, Xiaomi, OPPO, VIVO, and Huawei. Use **Web Scrapping / Web Crawling** APIs on only official websites of these companies to gather data.

2. On clicking a device, the app will show its detail spec sheet along with pictures from various angles. The app will also show in which **category** this device belongs to (lower mid-range, mid-range, flagship etc.)

3. A comprehensive list of filters should be available which user can apply. Some of the most important filters are:

   - Price Range

   - Operating System and its version

   - Chipset maker and model

   - Amount of RAM and storage capacity

   - Screen size and its technology (LCD, OLED, AMOLED, foldable etc.)

   - Screen notch design (notch-less, dew-drop notch, punch hole etc.)

   - Camera module setup (single, dual, quad etc.)

   - Battery capacity

4. The app should have comparison option in which user can select up to 4 devices and upon selecting, their spec sheets are presented side by side

5. The app will give a price comparison option in which selected device's official price is compared with renowned offline shops (from their website)

6. The app will also show video reviews from YouTube of the selected device. The video reviews must be of renowned Pakistani reviewers like *Reviews PK* etc.

7. On selecting a device, the app will also recommend other devices that have a similar spec sheet.

8. After purchasing a device, the app will show various resources about the device (like tips and tricks, user manuals, tutorials, upcoming planned software upgrades from the company etc.) both in text and video form (from YouTube)

Tools:
JAVA with any Web Scrapping / Crawling API, Java DB (Derby), NetBeans IDE or
C# with ScrapySharp® package, Microsoft SQL Server, Microsoft Visual Studio IDE or
Any other IDE of your preference

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Fully customizable WCMS Development

Category
Web Application

Introduction
Web content management (WCM) systems allow users to create, edit, and publish digital content such as web pages, content slider element for web pages, embedded URLs, text, embedded audio and video files, and interactive graphics for websites. For users that do not have coding skills, these systems make the process of uploading and writing content simple by offering theme-oriented templates for unique design. WCM systems are generally used in collaborative scenarios where multiple team members can manage web content and with our prior coding knowledge they are able to create new web pages for their website. Our WCM is for a Tourism company. We must create a WCMS along its Website. Our WCMS will provide A-Z Customization i.e Full CRUD operations, post creations Web page creation from WCMS each type of content which will be use in front end will be uploaded via WCMS.

Functional Requirements:

Website Development.

WCMS Development **using CodeIgniter or Laravel Framework only.**

Website Development:
1. Slider based Home Page:
2. About Us Page:
3. Tours Page:
4. Customize Tour Form Page:
5. Services Page:
6. Get Quote Form Page:
7. Contact Us Form Page

WCMS Development:
Create a WCMS, each element of website will be created and managed by WCMS. i.e. website pages mentioned above and the content for them will be created and upload from WCMS.
Add/Delete/update Web Page.
Content Upload and Delete.
Form View for form pages i.e., Contact us form page etc.

Tools and technologies:
Laravel/CodeIgniter Php Frame works only.
PHP, Sublime Text, Xampp, Bootstrap, MySQL

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Get a Freelancer

Project Domain / Category
Web Application

Abstract
Freelancing can be a big part of country's economy. It will become a more critical part of the workforce in coming years. In developing countries like Pakistan, it can contribute very effectively is supporting the economy.
This application provides the platform
- To freelancers(Talent) to get a job and
- To organization/persons/companies(Clients) to get their work done

Functional Requirements:
1. Application offers services in the following domains:
   a. Development & IT
   b. Writing & Translation
   c. Accounts & Finance
   Each domain has its own sub field like Development & IT has algorithm developer, c# developer, data analyst etc.
2. On home page a list of available domains should be displayed. When user click on any of domain, available jobs of that domain should be displayed.
3. Home page should have following tabs:
   a. Find Freelancer
   b. Find work
   c. Sign in
   d. Sign Up
4. Both the Client and Freelancer must have to register in order to post/get a job.
5. During registration, along with other information Freelancer and Client must be asked about their domain and sub domain.
6. Freelancers should also specify their skills and level of expertise in skills.
7. Find Freelancer tab has two options. First is Post a Job and second is find a project.
   a. When a registered client clicks on Post a job, a new page should display. Client should be asked to enter the field, sub field and description of project.
   b. Client should also add the budget of the job and number of days.
   c. Find a project option contains the list of already developed projects by different talents of different fields. All projects should be listed according to their domain.
   d. The expert level should also be asked form the user.
   e. A new job can only be posted by a registered client.

8. Find Work tab contain find work and post project.
   a. Find Work option contains the list of domains and sub domains. When user click on any domain and sub domain, only the available jobs by all clients should be displayed.
   b. The jobs should have most important details in the list. When user click on the job detailed description of the job should display with apply now option.

      c.   Only registered freelancer can apply for a job.

      d.   When user click on Apply now, a new page opens. User enters his/her rate per hour and no of days he/she thinks can complete the task.

9. Multiple freelancers can apply for a job.

10. Client gets notifications about job applications.

11. The client can view all the applications against a job and approves the one which suits him/her best.

12. Client can view the profile of the freelancer. Along with other information, the rank of the freelancer should also display.

13. Freelancer gets notification about job approval.

14. When a job is fixed, both the client and freelancer pays 5% of total amount to the application.

15. After job completion, client and freelancer rate each other.

Note: These are the basic requirements. Students must include all necessary functionality.

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

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HealthCare

Project Domain / Category
Web Application

Abstract / Introduction
In the modern era, people often careless about their health and thus do not go to the doctor for regular checkup. In the HealthCare web application, a patient will look for the doctors online and select the relevant doctor to book an appointment as per their desired time. The patient will enter his/her symptoms followed by entering the Blood Pressure (BP), Body to Mass Index (BMI), Blood Sugar (BS), Hemoglobin (HB), and Platelets. The doctor will review the symptoms, tests, and then prescribe the medicine if needed.

Functional Requirements:
Following is the list of functional requirements:
1. Patient and Doctor are the two types of users.
2. Login procedure for both types of users.
3. After login, a patient will search for a relevant doctor.
4. The list of doctors will be provided with corresponding qualification and expertise.
5. The patient will book an appointment with a doctor by entering the date and time.
6. The patient will enter his/her symptoms followed by entering the figures of the following tests:
   - Blood Pressure (BP)
   - Body to Mass Index (BMI)
   - Blood Sugar (BS)
   - Hemoglobin (HB) and
   - Platelets
7. At one time only 10 patients can book an appointment with a particular doctor.
8. If a doctor has an appointment at a particular date and time, that slot will not be available for other patients.
9. The doctor will have a graphical report of total appointments for each month.
10. The doctor will have a graphical report of types of diseases the patients came with.

Tools:
Python and SQL Server Only.

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Project Domain / Category
Web Programming

Abstract / Introduction
In this era of widely spread pandemic Covid-19, a number of businesses have been switched to online mode of working. The online mode of a business facilitates its customers / clients to place order for the goods and services online without physically visiting the business centers. So, in view of this, the proposed project aims to develop an online web based system titled as "Virtual Pharmacy" that will serve its registered users (customers/clients) to buy the medicines and related products online. The website will display the available medicines and related products category wise such as Covid-19, Men's Care, Women's Care, Baby's Care, Dental Care, Gym & Fitness, Nutrition & Vitamins, Surgical Accessories and Beauty etc. Besides, the medicines and related products will also be displayed Brand / Company and disease wise such as Fever, Diabetes, Digestive Disorder, Cardiac Arrest, Blood Pressure, Cancer and Mental issues etc. A user will be able to purchase / make order against available medicines and products after registration on the website. Payment method will be cash on delivery. In addition, the website will provide interactive interfaces and rich search facility of finding the different types of medicines and products through different filters. Online order placing of the medicines and related products through "Virtual Pharmacy" will remove the overhead of physically visiting the medical store for this purpose.

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 four types of the users of the website:
- Visitor (Unregistered User)
- Registered user (Customer / Client)
- Registered user (Staff)
- Registered user (Pharmacist)

Roles of the users will be as follow:

- Visitor will be able to visit the website to search his/her relevant medicines and products from the website.
- A user registered as a Customer/ Client will have the privileges of placing order on the website.
- A user registered as a staff will be able to upload the information of medicines and products on the website.

- The Pharmacist will be the Administrator (Admin) of the whole website, having all the rights of information management as well as user management. The Pharmacist will approve the registration requests from the other users. The information uploaded by "Staff" users will be approved by the Pharmacist 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. Pharmacist Dashboard

There will be proper interfaces through which the Pharmacist (Admin) will be able to add/ delete and update information such as the Medicines, Medicine and Product Categories, sub categories and Descriptions etc. The Pharmacist will also be able to accept / reject the user requests.

4. Uploading Medicines and Products information on Website

There will be proper interactive interface(s) to upload the category wise information and descriptions of medicines and related products on the website. The staff and the Pharmacist (Admin) user will have these rights. The pharmacist or staff will upload a PDF file against each medicine / product containing the detailed description (Introduction, Formulas, Uses, Side Effects, and Expiry Date etc.) about the medicine / product. Note: The information uploaded by the staff will be approved by the Pharmacist to be published on the website.

5. Display of Information on the website

The medicine / product name, company name, thumbnail image, price, PDF file and number of items available in the stock should be displayed on the website in proper design. On clicking the thumbnail, the website will maximize the medicine and product image. On clicking the PDF file, the user will be able to read the description of the medicine / product.

6. Category Management:

The Pharmacist (Admin) will have all the rights of creating, editing, updating, deleting any category.

7. Placing Order on the Website

The website will allow the registered user(s) to make order against their selected items. There will be proper interfaces on the website in this regard. The user will have to select the item(s) to put into the shopping cart and then confirm the order. "Cash on delivery" payment method will be used after the successful transaction.

8. Confirmation Email on transaction (Order Placing)

A confirmation email on successful transaction will be sent to the user's provided email.

9. Discount Management

The website will allow discount of overall 10 % to its customers on purchasing item(s) worth total 5000 or more.

10. Search Facility

Searching Medicines and Products:
All types of the users of the website will be able to search any medicine or product through different filters such as:
- o Medicine or Product Name
- o Brand / Company Name
- o Category Wise
- o Disease Wise

Searching Registered Users:

The Pharmacist (Admin) will also be able to search the registered users by different filters such as:

- o User ID
- o User Names
- o Cities
- o Countries
- o Order Placing Date

Note: For information regarding Popular Medicine / (related products) companies / brands, their associated medicines / products, disease wise medicines and products etc. you are advised to search on Internet by yourself and use the information in your project accordingly.

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

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An Intelligent System for Hotel Room Booking Online

Project Domain / Category

Web Application

Abstract / Introduction

Management of Online Hotel Room booking has always been a challenging task in the past few years. The increasing demand for Hotel booking online from the customers has encouraged all the hotel authorities to develop an intelligent system for their hotel managers to manage customer requests and to facilitate them to book the hotel room reliably and efficiently.

The project will be a web-based application that allows the hotel manager to handle all hotel activities online. Interactive GUI and the ability to manage various hotel bookings and rooms make this system very flexible and convenient.

Functional Requirements:

Modules:

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

1. **User:**

   - The user will first register into the system.

   - The user will be able to login into the system using his/her id and password.

   - After login, the system will show the list of hotels (at least 10) to the user where each hotel will be associated with the region or city for which he/she will select.

   - After selecting the hotel, the system will direct the user to the hotel page from which he/she will book the hotel room including (no of rooms, for how many nights, luxuries rooms, etc.)
     Note: You can customize this requirement on your choice

   - After selecting the desired rooms, the user will enter his/her card details for online payment. For this purpose, you can use any third-party API or gateway. Upon its completion, the user will receive an email upon successful payment and the receipt of his/her booking.

   - The system will take the review of various users, based on the opinion, the system will specify whether the posted hotel is good, bad, or worst.

   - The system will offer the user to search for the hotels and based on user search, recommendations will be shown to the user based on how many times a user visited that particular hotel.

2. **Admin:**

- Admin can log in into his personal account using his/her id and password.

- Admin will be able to manage the user information (search, inactive, delete, etc).

- Admin will be able to add new Hotels into the system based on the city and region.

- The system will provide the Admin and interface for managing the user booking details.

Tools:
Language: Python (Preferred One), Or any other Modern programming language
Tools: Any Modern IDE
Databases: MySQL, SQLite, XAMMP, WAMP, Oracle or any other modern database

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Digital Library Management System

Project Domain / Category
Desktop/Web Application.

Abstract / Introduction
In the past, when there was no concept of computerized/digital library management system at all, the librarian job was very bothersome and complex. The traditional library management system had a lot of issues.

Digital/Computerized Library Management System is a great way to monitor books, add them, update information in it, search for the suitable one, issue it, and return it when needed. This digital system has a lot of advantages over the traditional library system.

Functional Requirements:
1. Database module: This has two functions – Insertion of data and extraction of data with a user-friendly screen.
2. Report module: For the borrowed books list to display.
3. Available module: To view the availability of books.
4. Search Module: search facility for books and members.
5. Payment module: Payment facility for fine payments.
6. Login and logout module in case the student wish to use PHP.

Users in the system:
1. Admin
2. Librarian
3. Users (who want to issue books from the library)

- Admin: Add, view, and delete the librarian.
- Librarian: Add, view, issue books, return books, payment.

Tools:
1.Java/C++/PHP
2. MySQL

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Hire the Best Personal Chef Online

Project Domain / Category
Web Application

Abstract / Introduction
As we know, it is an era of technology and everything is getting digitized. In Pakistan, with the enhancement of technology, the use of the Internet and computing devices is increasing day by day. "**Hire the Best Personal Chef Online**" is a website to facilitate the users like a common citizen, institutes, restaurants etc. to hire chef for their events, parties, and ceremonies. Any chef can create his/her profile via this website by providing the complete details, chefs can add their recipes details. He/she can add categories of their cooking specialty such as Pakistani dishes, Italians, Chinese etc. Restaurant can also register and add their chef's details. Chef/restaurant can add images of their menus or add food categories. Chef/restaurant can also add payment methods and charge details.

In this project, a user can view the availability of the chefs, and upon availability of the required chef, the user can book that resource for his/her "event". Any restaurant may also hire chefs. In the booking process, the user will provide all the details about the required services or events he/she is going to plan. User can visit website to get information about chefs/restaurants. To book a chef, a user should get registered first. Users can give their reviews or feedbacks about the relevant chef services or the website.

Users of this website may be:

- ➤ Individual Chefs
- ➤ Restaurants (who provide their chefs' services)
- ➤ Restaurants (to hire chefs)
- ➤ Common citizens

Functional Requirements:

Chef/restaurant panel:
1. Chef/restaurant should get registration.
2. Chef/restaurant should be able to create a profile.
3. Chef/restaurant should be able to add details of previously handled chef services, can also add their cooking specialty.
4. Chef/restaurant should be able to select more than one food categories while creating a profile.
5. Chef/restaurant should be able to add payment methods and charges detail.
6. Chef/restaurant should see the user's booking requests.
7. Chef/restaurant should be able to update the status as available or not available.
8. Chef/restaurant should be able to accept or reject a booking request.

User Panel:

1. The user can login and logout.
2. The user can view/search the chef categories and restaurants profiles without registration.
3. The user can book a particular chef according to his/her availability.
4. For booking the user must be a registered user. If the user is not login already then there must be a "Registration" option available for the user.
5. In the booking process, the user should provide complete details about the event.
6. The user will be able to add review feedback or complaints.

Admin panel:

1. Admin can view Booking requests.
2. Admin can view reviews or feedbacks.
3. Admin can block any user.
4. Admin can add/remove categories or edit existing categories.
5. Admin will be able to generate a report on a monthly basis for the total number of bookings and their successful handling.

Tools:

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

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Hostel Record Management System

Project Domain / Category
Web Application

Abstract / Introduction
The main objective of this project is to develop a responsive web-based hostel record management system. This website will keep track of all members of the hostel, vehicles belonging to hostel members, incoming and outgoing vehicles as well as visitors to and from the hostel. In addition, the website will also have a property classification module through which website visitors will get hostel information for rent.

Functional Requirements:

1. **Home**
   - Your home page should be responsive, attractive and user friendly.
   - Logo should be visible at the top of your webpage.
   - Navigation should include in the header.
   - Photos of hostel and its rooms should be visible with the advertisement.
   - An informational footer should include which provide three features: contact information, links and social media integration.

2. **Search**
   - In search module, user can search rent property by different filter such as number of bedrooms, area of hostel (unit in Marla) and rent (Price) etc.
   For example: The user can find all properties between 1000 and 5000.

3. **Administrator Panel**
   - Administrator will login to the system for performing tasks
   - Admin can post property advertisements for rent.
   - Admin will generate passes for hostel members.
   - Administrator will create security guard login
   - Administrators can add, delete and update colony members' bio data and vehicle information in the database.
   - Both security guard and administrator can view the member record, vehicles in and out record and daily guest reports with respect to the time (E.g. January 20, 2021 to February 20, 2021).

4. **Security Guard Panel**
   - Security guard will login to system to perform his/her tasks.
   - Security Guard will add the visitor record and create the visitor card according to relevance information.
   - Security guard would add the hostel member in and out record.
   - Security guard would add the vehicles in and out record.
   - Both security guard and administrator can view the member record, vehicles in and out record and daily guest reports with respect to the time (E.g. January 20, 2021 to February 20, 2021).

5. **Create Responsive Web Page**
   - The web page should automatically adjust to different screen sizes and view ports that look good on all type of devices.

Tools:
1. HTML5
2. CSS
3. Bootstrap
4. JavaScript, jQuery or AngularJS
5. PHP
6. MySQL
7. Notepad or Notepad ++

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Humanity Care Services

Project Domain / Category
Web Application

Abstract/Introduction
"Humanity Care Services" is an NGO working for IDP's healthcare, food and shelter. This organization has its main office in Islamabad and sub office in Peshawar. Field Officers and workers collect data of the IDPs. The data is provided to sub office which is shared later on with main office by email, phone call or by hand, where Web Administrator is used to upload all the required data of IDPs to web server. The organization has a functional website that is accessed all over the world. The website has different sections: The upper portion should contain monogram design of the organization, different links or buttons like About, Home, Mission, Food, Staff, Contact Us and Media. The main or central portion should have relevant background picture that should be changed with time automatically. The middle section should also have sub sections: Left sub portion and Right sub portion. The left sub portion should have Photo Gallery and Video Gallery. The Right sub portion should have daily news highlights of complete week in marquee form; going from right to left side in this portion. This portion should also have Weekly briefs or news. The bottom portion of the website should have various links or buttons, like About Us, Careers, Articles, Address, phone numbers, Fax number etc.

Functional Requirements:
(a) To host your website on free servers so that your website can be accessed from anywhere in the world.
(b) Types of users
Admin:
- Takes Login interface.
- Can search/view/add/update/delete any information, like Daily News, Weekly News, Articles, IDP's data, Food Info, Staff Info, Photos, Videos, Articles and Events.

Staff Members:
- Can search, view and add IDPs data online to the admin panel.

Unregistered User:
- User can search and view all the information.
- User can use Subscribe facility to get news alerts
- User can send email

Tools:

Python, MySQL, SQlite3

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Inventory Installment Plan and Management System

Project Domain / Category
Web Application

Abstract / Introduction
The purpose of this project is to provide a platform where user can buy different products according to their desires and can avail the installment plan. With this plan, customers could purchase automobile, household appliances, homes, furniture, and other items. Essentially, installment plans allow people to buy things that they could not necessarily pay for. The company would give the buyer the product first, and then every month they would have to pay a certain amount of money until the item is paid off.

The goal of this web application is to put all the inventory available on the website with the information of installment plans. People will be able to compare different inventory and their installment plans too. Moreover, if a seller / company wants to own this website, it will be able to manage its current clients and their installment plans on the website which clients can easily view as well by logging into the website.

Functional Requirements:

1. **Search the Inventory:**

   ➢ User will be able to search the inventory By Name.

   ➢ User will be able to search the inventory By Company.

   ➢ User will be able to search the inventory By Price Range.

2. **User Module:**
   ➢ Users will be able to register itself.
   ➢ Users will be able to login from login panel.
   ➢ Users will be able to add cart into their accounts.
   ➢ Users will be able to see their instalment plans / records.
   ➢ Users will be able to compare actual cost of same inventory from different sellers/company.
   ➢ User will be able to compare instalment plans for the same inventory from different sellers/company.
   ➢ Users will be able to see their personal information as well as to edit their personal information.
   ➢ Users will be able to Logout from the site.

3. **Apply for Installment Plan:**
    - ➢ New user will be able to fill the form and apply for Instalment plan from seller / company.
    - ➢ If a user selects 5 months instalment plan, then (5% x Actual cost) or percentage can vary from company to company.
    - ➢ If a user selects 12 months instalment plan, then (12% x Actual cost) or percentage can vary from company to company.
    - ➢ User's query will be forwarded to admin for further review.

4. **Admin View:**
    - ➢ Admin will be able to login from login panel.
    - ➢ Admin will be able to accept or reject the instalment applications.
    - ➢ Admin will be able to edit the inventory.
    - ➢ Admin will be able to Logout from the site.

Tools:

- HTML, CSS, JavaScript, jQuery, Bootstrap (Front-end)
- MYSQL (phpMyAdmin) Database
- PHP (Server-side programming)
- XAMPP — Web Application Server

Supervisor:
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Job Portal System Online

Project Domain / Category
Web Application

Abstract / Introduction

Job portal is an interactive application that will help people belonging to different fields to find and apply for different available jobs. This web based application will serve both candidates and companies to apply for different jobs and publish job vacancies. The main objective of this web based application is to allow the candidates to create a detailed resume, search for their desired area of job, search for companies of different areas and will be able to search job vacancies in their desired field.

This application allow companies to advertise vacant vacancies, go through potential candidates while candidates will be able to search and apply for suitable jobs. Using this application, we will be able to reduce the work done in manual scrutinizing and selection for jobs. Moreover companies will be able to provide training to different selected candidates. A list of successful candidates can also be provided which will help in inspiring the new candidates. Candidates will also be able to check the profile of a company, job responsibilities and other details before applying for the job. This application will act as an admin based module with the functional requirements given below:

Functional Requirements:
- Administrator will be able to create an account
- Administrator will be able to approve or disapprove a company's post
- Administrator will be able to review a published post
- Administrator will be able to approve or disapprove registration request of a newly registered company or candidate.
- A company will be able to register an account and maintain their profile.
- A company will be able to post a job vacancy.
- A company will be able to check the application of a candidate.
- A company will be able to delete or edit a published job vacancy.
- A company will be able to contact the candidates who have applied for a published post via chat box.
- A candidate will be able to create an account.
- A candidate will be able to create his/her resume
- A candidate will be able to search for jobs.
- A candidate will be able to apply for a job.

Tools:
PHP, ASP.net, MySQL (Students can also use tools of their own choice).

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Kitchen World

Project Domain / Category
Web Application

Abstract / Introduction
Now a days COVID is on its peak. So, market visits to buy kitchen items are risky. There are things that are indeed for kitchen. To buy these things without going to markets, people do shopping from different online stores. In this project, a web application will be developed named as "Kitchen World". This website would have all types of kitchen products that are necessary for kitchen.

Functional Requirements:

1. Home page of website should have title and related image on top.

2. Menu bar should contain "Cookware & Bakeware, Tableware & Crockery, Small Appliances & Electric, Table Decor categories of product.

3. By clicking on one category, it leads to a next webpage having all items of this category with proper name and its price. (same functionality of category page direction should execute when click on same category in menu bar list).

    I.   A sort option (on the basis of Position, Product name, Price).

4. Search, tracking order and cart images having their web pages links should be there.

5. Also create Register and login pages to add Admin, customers or members record in data base with fields (Username, Password, Email Id, Contact No, Address).

6. Customer can order product in two ways:

    I)   As a member by logging in his/her account

    II)   He/She can directly order items as guest.

7. When customer click on the product, there should open a big image of selected product with one line of description.

8. By clicking on an item, it leads to next webpage which should have complete detail about this item.

    I.   Above page should contain a drop down to select "Quantity" and update price of each quantity when it is selected. There must be an "Add to Cart" button to put selected items in cart.

    II.   The description of item should contain the fields like.

    No of items in a set:

    Material:

    Size:

    Color:

9. By clicking on cart, a list should be visible for selected items and their quantity, price, delivery fee, and total amount. There should be a remove button against each item.

    I. Continue shopping, update, and check out button should be there at the end of cart.

For example you should visit https://www.kitchenware.pk/ website and try to build web application front end and backend functionality like this website.

Tools:
Visual Studio / Xamp / Wamp
C# / PHP
Sql / mySql Database
HTML
CSS
Java Script

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OLMS: Online Library Management System

Project Domain / Category
Web Application

Abstract/Introduction
OLMS is a web based Library Management System for XYZ College. Details regarding the different users involved in the system and the functions which they can perform are given below.

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

- Admin
- Librarian
- Student
- Faculty Member

Responsibilities and functions of each user are given below:
Admin:

1. Admin can add, remove and modify any user information (Librarian, Student and Faculty Member).

2. For each book, following information will be available in the system.

   - Author of the book
   - Title of the book
   - Published place
   - Publication Year
   - Location in the library
   - Number of copies
   - Current status
3. Admin will Add, Remove or modify the records regarding any book of library.

Librarian:

1. He has to log in first.

2. He will be able to search the book by giving title of book or by name of author.

3. Librarian will issue the book and enter the information of concern Student/Faculty member who will borrow the book.

4. He will receive the book which will be returned by the Student/Faculty member and enter the information.

5. He will be able to see the history regarding any book such as which user has borrowed? When it was borrowed? And when it was returned?

6. He will be able to see the history regarding any Student/Faculty such as how many books he has borrowed? When borrowed? And when each book was returned?

7. The system should automatically calculate the fine on daily basis if any Student/Faculty member did not return the book within 15 days.

8. The amount of fine per day will be entered by the librarian.

Student:
- He has to log in first for online book searching on the computer of library.
- He will be able to search the book by giving title/name or by author.
- Student can borrow 2 books at one time.

Faculty:
- He has to log in first for online book searching on the computer of library.
- He will be able to search the book by giving title/name or by author.
- Faculty can borrow 4 books at one time.

Application Type: Web
Possible Students: 1 to 2
Proposed Tools: Java, Dotnet Framework, any other tools which meets the requirements.

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Online Animal Booking System

Project Domain / Category
Web Application

Abstract / Introduction
In this project, we will create a website which contains images and information about several animals for Eid Ul Azha. As we know, in this covid pandemic, it's difficult to go and spend time in searching for suitable animals. So, from this website it would be easy to select an animal from your home and then just pay and pick them afterwards from a certain location. Animals will be categorized according to their age, breed and size.

Functional Requirements:

1. **Login:**

   Admin and customer will login to the system using id and password.
2. **Add Animals:**
   Admin will add all the necessary information regarding animal whether its goat, camel, cow or sheep. Information should also include: animals age, price, breed, status and its vendor etc.
3. **Update Animals Information:**
   Admin can also update any information regarding animals.
4. **Search Information:**
   Customer can search information based on different categories like their age, breed, price, status etc.
5. **Change Animals Status:**
   Admin can also change animal's status to "Not for sale" in case some mishap occurs with a certain animal. This is also applicable when certain animal gets sold.
6. **Animal Booking:**
   Customer can book animals online, thus resulting in change of the status of animal to be "booked". But customer has to pay in person while picking the animal. But if customer fails to appear at the site within 3 hours of booking then animal will be up for sale again by changing its status to "Open for sale".

   Tools:
   - Visual Studio
   - SQL Server
   - Tomcat or any other webserver

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<h1 style="text-align:center">Online Auction System using Python (OAS)</h1>

Project Domain / Category
Web Application

Abstract / Introduction
In online auction system, buyers and sellers involve in transactional business, in which buyers purchase items through price bidding. Here, the bids have a starting price for a limited time period. Potential buyers who place the highest bidding price for an item are declared the winners and owners of particular items. After winning the item(in the auction), buyer will pay the whole amount of the item within 7 days through cash on delivery, credit card or debit card. In this project, you will create a secure online auction system using the fraud detection method. If a user wants to buy a product through an online auction, they must provide their identification details like CNIC number, email address, mobile number, etc. The system will then save the user's personal data, authenticate, and authorize them. Only authorized users can bid in the auction. The system will be designed to predict fraudulent users in the early stages, eliminating the risk of online fraud and scams.

Functional Requirements:
Registered user Module:
1. User will be able to register and sign in for bidding.
2. User can bid on single or multiple items.
3. Only highest price bid's user will be able to buy the specific item.
4. The Buyers can only bid within auction specified time.
5. Buyer will be able to adopt any payment method (cash on deliver, debit card, credit card).

Admin Panel:
1. Login availability.
2. Admin can accept/ reject user's registration requests (If any scam or any fake information found).
3. Admin can view all user's details
4. Admin can update all users' detail.
5. Admin can view and edit all items available for auction.
6. Admin can enter more items in auction if required.

Tools:
Python, MySQL,
(Student can use any Python IDE for this project, PyCharm, Spyder, Atom)

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Online Citizen Record for COVID -19 Vaccine

Project Domain / Category
Web Application

Abstract/Introduction

As COVID-19 is on its peak and Pakistan is badly suffering from the 3rd wave of COVID-19. Government of Pakistan has purchased the vaccine made by different countries, and plan to take a dose of vaccine to the senior citizen first who are above 60 years of age, then in the 2nd phase, Govt. will vaccinate citizen who are between 50 to 60 years of age, and will gradually vaccinate remaining citizen also. You have to develop a system for the government of Pakistan to keep record of those people with their family tree who got vaccinated. You also have to provide the interface to the citizen to register themselves, in which the designated centres at each city should be mention. Number of vaccine centres can be more than one in big cities and that centre should be mention at the registration form.

Functional Requirements:

1. Admin shall be able to manage users.
2. Admin can view the record of a family by giving family number, to know how many members of that family are vaccinated or not.
3. Each paramedical staff should be registered with the system, with respect to designated centre.
4. Each paramedical staff should have its own system id and password.
5. A person first provide their details to web interface in order to get registered for the vaccine.
6. After providing the required details successfully, the system should automatically generate a unique number against the details of that person.
7. After a person reach at the center for get vaccinated, his/her record should be available in the system against the unique number that system was auto generated, and then after vaccinated, status of that person should be updated with vaccinated, date and time, and paramedical staff name who give him/her vaccine.
8. System should also generate the report by taking the family number, that how many members of particular family got vaccinated or how many are left.
9. System should also enter the previous disease record of a person who reach at the centre to get vaccinated.
10. After get vaccinated, a person should stay for half hour in the centre, in case of any reaction, system should record this and this activity is performed by paramedical staff.
11. System should have the facility to generate report of province wise, city wise, area wise, family wise.

Tools:
Asp.net
PHP
Adobe Photoshop

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Online Courier Services

Project Domain / Category
Web Application

Abstract/Introduction
In the modern age, people's needs & requirements increases as per demands of livings. People want more facilities and try to do their tasks quickly and within time limits. But such a speedy requirements fulfillment is not possible because they cannot get all the things at the nearest market area, so it becomes need of the hour to import the missing things from any place of the world. Many ways to import are like, within the country, through post service. But it consumes the time & sometimes problem of damage or missing can occur. Whereas from the international market, one way to get things is shipping, but it also requires more time. The courier service is one of the solutions of these problems. But manual processing of these courier services make it still slow and has many issues. To cope all these limitations in service providing we proposed this project "Online Courier Services". This project is provided for making this work as computerized one. So the manual work can be reduced by this valuable processing.

Functional Requirements:
The system should have the following features:
Types of Users
- Customer
- Admin

1. Admin Functionalities:
- Admin can manage the courier.
- Admin can track all the information of the courier.
- Admin can Create, Read, Update and Delete operations of the courier.
- Admin will manage all tracking of couriers.
- Admin can add new tracking.
- Admin can see the list of tracking details.
- Admin can edit and update the record of the tracking.
- Admin will be able to delete the records of the tracking.
- Admin can add new customer records.
- Admin can see the list of customer details.
- Admin can edit and update the record of the customer.
- Admin will be able to delete the records of the customer.
- Courier services will have many offices at remote places. All Office will be managed by admin. Admin can edit/delete the office. Admin can see the list of all offices.
- Admin will manage all Managers and Employees. It tracks all the information and details of the managers and employees subordinate to these managers.
- Admin can add new manager/employee. Admin can see the list of manager/employees details. Admin can edit and update the record of the manager/employees Admin will be able to delete the records of the Manager/employees.

- All shipments will be managed by admin. Admin can edit/delete the shipments Admin can see the list of all shipments
- Admin assign shipments to managers and managers further manage ships with employees
- Admin can see their shipments report.
- Managers /Employee can see his shipments
- Admin and manager at different levels will manage reports, Report of all Customers, Report of all Courier Report of all Tracking, Report of all Offices, Report of all Managers, Report of all Shipments.

2. Customer Functionalities:
- Customer Registration for Login
- Customer Change Password and Customer Edit Profile, Forgot password etc.
- Customer View his Shipments
- Request for edit and delete shipments
- Customer can view Payment History and view his Bill History
- Customer can Track the shipment according to Courier

Tools & Technologies Preferred tool and technology

C#, Java, Visual Studio and SQL server

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Online Crockery Store

Project Domain / Category
Web Application

Abstract / Introduction
An Online Crockery Store is a crockery supply store having the specialty of selling the crockery items to its registered customers. The registered customers will be able to select the crockery product of their choice from different categories, and add to their shopping cart. By checking out from the shopping cart, the order will be placed and delivered to the customer's provided address within 7 working days. The payment will be made on cash on delivery.

Functional Requirements:

Admin:
1. Admin have access to monitor everything on the Online Crockery Store.
2. Admin will approve the registration requests.
3. Admin can add, update and delete the crockery products such as cups, glasses, dishes etc.
4. Admin can verify all the orders details.
5. Admin can view the available and sold crockery products.

Customer:
1. Customer has to register himself by sign up
2. Customer can view the different crockery products such as cups, glasses, dishes, dinner sets, water sets, tea sets from the available categories and then select products of his/her choice to the shopping cart.
3. The customer has to fill a form by providing his /her name, contact number, postal address, city, delivery and payment method (cash on delivery) to checkout from the shopping cart.
4. Crockery will be delivered to the customer address within 7 working days.
5. After the order is delivered to the customer, it will be marked as "delivered" in the database.

Tools:
PHP and MySQL

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Online Doctor Search and Appointment System

Project Domain / Category
Web Application

Abstract / Introduction
The proposed project is a smart appointment booking system that provides patients or any user an easy way of searching a doctor as per doctor's specialization and booking a doctor's appointment online. This project also provides a platform for doctors to create their profile so that a user or patient can search them and book an appointment.

This is a web based application that overcomes the issue of managing and booking appointments according to user's choice or demands. The task sometimes becomes very tedious for the doctor himself / herself in manually allotting appointments for the users as per their availability. Hence this project offers an effective solution where users can select a doctor and view various booking slots available and select the preferred date and time for the selected doctor. The already booked space will be marked yellow and will not be available for anyone else for the specified time. This system also allows users to cancel their booking anytime.

Functional Requirements:

This project has three main actors:

1. Administrator

2. Doctor

3. Patient or user

The functional requirement for each actor is given below:

1. **Functional requirements for Administrator**
   a. Login
   b. Approve or disapprove a doctor
   c. Add, update, delete and view specializations
   d. Add update, delete and view locations
   e. Book, cancel and view user's appointments
   f. Add, update, delete and View doctors
   g. Add, update, delete and View users

2. **Functional requirements for Doctor**
   a. Register
   b. Login

c. Upload and update profile, the profile must include doctor's name, Doctor's Picture, doctor's introduction, doctor's qualification, experience, location, fee, availability days, timing slots, and hospital name.
d. View booked appointments
e. Cancel an appointment
f. View records of own patients

3. **Functional requirements for user or patient**

a. Register
b. Login
c. Upload and edit profile, the profile must include patient's name, age, email address, phone number and address.
d. Search a doctor according to specific filters (Specialization, fee, location, and availability etc.)
e. Book an appointment according to availability, if a slot is already booked it must be marked yellow and this slot cannot be selected for booking.
f. Cancel appointment.
g. After successful appointment booking, an email notification should be sent to patient's email address.

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.

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Online Donation Box

Project Domain / Category
Web Application

Abstract / Introduction
Online Donation Box, a website through which people can donate their money, wheel chairs, Water Coolers, Air Cooler and other life commodities for the help of deserving patients. This website is for "Donors" and keeps their secrecy if they want. Donors can donate their money through "Internet Banking", "easy paisa" etc.

If a person wants to be a "permanent"/long term donor can "create an account". However, if a user keeps his/her secrecy can donate as a "guest user". The novelty of this Online Donation Box will be that people can donate money in case of their special terms like if a donor wants to donate a wheel chair and he/she can mention the usage of money in "comments" section. Team of Online Donation Box will manage the mentioned commodities and ABC hospital management will provide to the deserving patient. People of different zones can donate wheel chairs, meals medicines, budget of a surgery etc., without leaving their zone. Moreover, humanity can be served without popularity.

Functional Requirements:
Here, following Minimum modules for this System are:
1: Home Page:
- Provide a brief introduction of your System
- Briefly write how your system supports donors
- Briefly write how your system supports Patients/recipients
- Briefly write how your system serves Humanity
- Briefly write how your system support Hospital
- Donate any amount of your choice or be an official online fundraiser of ABC Hospital by following these simple guide lines:
  Step-1: Sign up/Donate as Guest
  Step-2: Donate
- Step-3: Share it to your friends through WhatsApp. Facebook and spread the motivational message "If we all do a little, we can do a lot!"

2: Donor
- Donate any amount of your choice or be an official online fundraiser of ABC Hospital by following these simple guide lines:
  Step-1: Sign up/Donate as Guest
  Step-2: Donate
  Step-3: Comment/mention the terms and conditions in which a donor wants to donate his/her money (if any)
- Step-3: Share it to your friends through WhatsApp. Facebook and spread the motivational messgae "If we all do a little, we can do a lot!"

3: Administrator

In this module, administrator will manage the sign up requests from the users (donors and support staff), approve /reject their feedback, etc.

4: Support Staff

Support staff can provide assistance to the donors (if required) etc.

Tools:

PHP
HTML, J Query, Javascript, CSS
IDE: Netbeans, Eclipse
MS Visio
My SQL

Note:

These are minimum requirements, it will be appreciated if you would like to add more details (valid) in any of the module or in all modules. It is advised to understand the functional requirements first, if you still feel any issue, feel free to contact.

Supervisor:

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Online Drug Store Management System

Project Domain / Category
Web Application

Abstract/Introduction
It is a web based Drug/medical store management system for XYZ Company. The aim of this system is to manage the purchase and sales of medicines in the chain of drug/medical stores, all over the country. 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.

- Salesman
- Store Manager
- City Manager
- Country Manager
- Chief Executive Officer
- Admin

Responsibilities and functions of each user are given below:

1. Salesman:
There can be many salesmen in a medical store, however one particular salesman can only belong to one particular medical store. Salesmen are responsible to enter the record of all the sales and returns in the medical store. The following information can be accessed and entered in the system by a salesman:
   a. Medicine Name (In case of sales and return)
   b. Medicine ID (In case of sales and return)
   c. Medicine Price (In case of sales and return)
   d. Total Price/Amount (In case of sales and return)

4. Store Manager
There can only be one store manager in a store. More than one salesmen can work under the supervision of one store manager. The following information can be accessed and entered in the system by a Store manager:
   a. Names of Salesmen
   b. NIC no's of Salesmen
   c. Total sales of the store in a day/week/month/year
   d. Total Returns of the store in a day/ week/month/year

5. City Manager

One city manager will supervise all the stores in one particular city. This user can access/enter/modify the following information:

      a. Names of Store Manager
      b. NIC no's of Store Manager
      c. Total sales from the city in a day/week/month/year
      d. Total Returns in the city in a day/ week/month/year

6. Country Manager:

There is only one country manager of the company. This user can access/modify the following information:

      a. Names of City Manager
      b. NIC no's of City Manager
      c. Total sales from the country in a day/week/month/year
      d. Total Returns from the country in a day/ week/month/year

7. Chief Executive Officer (CEO)

There is only one CEO of the company. This user can access/modify the following information:

      a. Names of Country Manager
      b. NIC no of Country Manager
      c. Total sales from the city/country in a day/week/month/year
      d. Total Returns from the city/country in a day/ week/month/year
      e. Profit from the city/country in a day/ week/month/year

8. Admin

Admin is the power user and have the rights of all other users. Moreover He can add/remove any CEO as well as any user in the system. He is also responsible to add the records of medicines in the system including price of purchase and price of sales. Profit will be calculated on runtime.

Proposed Tools: PHP, MySQL

Supervisor:
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Online EBook Maker

Project Domain / Category
Web Application

Abstract / Introduction
Online E-Book Maker Project will be a web based application that will be available for users to create online E-Book free of cost. This application will have Admin Login and Author Login. This system will allow the authors to make their E-Book without any problem and without any charges. First the Author will have to register in the system. And existing member can Create new book or resume with old book. One Author cannot keep more than 3 incomplete Books, S/he has to complete 1 book at least to start new one. Book will be created on basics of Title, Context, and Number of Pages in books.

Functional Requirements:
The application will consist of two modules.

1. Admin
    - Accept request from Author
    - Check Author Details
    - Checked for finished Books
    - Make E-Books
    - Can Process request by mailing the E-Books to authors

2. Author
    - Register into the system
    - Fill Details
    - Login and Choose
    - New E-book or Resume Existing E-Book
    - Enter Context of book
    - Can pause e-book after completing context
    - And resume it.
    - Can have E-Book in MS Word or PDF format.

Tools:
Latest version of Microsoft ASP.NET MVC with C#.NET and Microsoft SQL SERVER for database

Supervisor:
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Web based E-Visa Processing System

Project Domain / Category
Web Application

Abstract / Introduction
With over a billion people on the move today and an estimated two-third of the world's population requiring a visa to facilitate international travel, the need for more efficient and cost-effective visa processing has moved to the forefront of many national agendas. Using this system, user can apply their visa online. It is main key to enhancing both security and convenience.

In this system, user has to upload some required documents for verification purpose. The applicant can apply for visa conveniently from any place. As a result, a new generation of e-Visa solutions has emerged; User can view their all visa process online through an e-Visa gateway.

Functional Requirements:
In this system, there are four modules, which are namely Admin, Human Resource (HR), Assistant Admin and User/Applicant. Each module is interconnected to others. This system should be user friendly, secure and reduces the staff requirements. This system should also be best for communicating with the applicants.

- ✓ Admin can login using his credentials.
- ✓ Admin will add Human Resource (HR) basic details and generate his Login Credentials.
- ✓ Admin added HR details can be Viewed / Edited / Deleted.
- ✓ Admin will add Employee Basic Details and generate his Login Credentials.
- ✓ Admin added employee details can be Viewed / Edited / Deleted.
- ✓ Admin will view the current Visa status and its expiry information and request for renewal.
- ✓ Admin can Search Employees and refine it by location / Name and view the applicant report.
- ✓ Admin can view Final Result report contains details of candidate and their result.
- ✓ Admin can view onsite report/details which are entered by the employee.
- ✓ Admin can view feedback send via employees and HR and even delete them after it's viewed.
- ✓ HR person need to login using their valid login credentials.
- ✓ HR person added employees which will be displayed.
- ✓ HR will update Interview details with its result and even updating final result.
- ✓ HR can view all the visa reporting details.
- ✓ HR person can change the password with new one anytime.
- ✓ HR can send feedback directly to admin.
- ✓ Assistant admin need to login using their valid login credentials.
- ✓ Assistant admin can add/Edit details about the User/Applicant.
- ✓ Assistant admin will update its visa status.

- ✓ Assistant admin can change the password with new one anytime.
- ✓ User/Applicant need to login using their valid login credentials.
- ✓ User/Applicant can view the interview details with its result.
- ✓ User/Applicant can see the update status of visa.

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

Supervisor:
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Cloud Based File Sharing System

Project Domain / Category
Web Application

Abstract / Introduction
Recently, with the advancement in technology, there has been a drastic change in the way information is shared over the Internet. This involves the various channels in which files can be stored and shared. Cloud sharing is a relatively new technology advancement which has been steadily taking over more and more market share in the past three years. The cloud file sharing technique makes users share files among each other with ease.

From businesses to non-profit organizations and to single users, there seems to be various applications which use cloud file sharing or storage in daily computer usage because it offers a better, faster, and smarter way to store and share important documents/data. So, this project aims to develop a cloud based file sharing application, offering users the power to store and share files via cloud networks through easy and effective manners.

Functional Requirements:
The main aim of this project is the implementation and design of a cloud based file sharing system for easy sharing on a secured platform for the users.

Admin Module:
➔ Admin will be able to login in the application.
➔ Admin will be able to see the details of users registered with the application.
➔ Whenever a new user will register him/her with the system, admin will have the rights to accept his request.

User Module:
➔ User will register himself/herself first on the application.
➔ User will login to the system. For this purpose he/she will use his/her registered email and password.
➔ The application will provide effective and easy to use interfaces through which the users will be able to easily host, store, share and backup data.
➔ Files can be accessed without any limiting factor such as file size, storage size, file types and device compatibilities etc.

Note: You can take the idea of further functional requirements in this regard by visiting **https://www.dropbox.com/**

Tools:

PhpStorm, Sublime Text, Php, JavaScript, jQuery, HTML, CSS, bootstrap, Python, MySQL, AWS Educate (for cloud services), CentOS 7 VM, Vagrant, AWS Container Service

Note: (A complete session regarding AWS Educate and other services with helping material will be conducted / given by me to those students who will select this project).

Supervisor:

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Dream Home Loan Management System

Project Domain / Category:
Web Application

Abstract / Introduction:
An Organization named as "Dream Home" gives loan to Pakistani Nationals based on their salary or Business Income to construct home like Islamic Based Banking. There is a need of a web based Loan Management System for "Dream Home" to tackle the loan amount and installments for the clients and concerned officers for calculations. Client will fill online form and submit to on the said system to take loan in any category. The concerned officers will evaluate the form and verify the clients for further processing. After approval of loan, the said system must be able to make installment plan for the client. Similarly, the proposed system will handle the submitted installments and remaining amount etc.

Functional Requirements:

1. The proposed system will maintain the basic information of different categories i.e.:

Eligibility Criteria	i. All men/women holding CNIC ii. First time home owner iii. Only for construction and first purchase of newly constructed affordable housing units.
Size of Housing Unit	Loan is segregated into three tiers, as under: i. Tier 1 (T1) - Housing Units/apartments of up to 3 Marla with covered area of up to 650 square feet. ii. Tier 2 (T2) - Housing Units/apartments of up to 5 Marla with covered area of up to 850 square feet. iii. Tier 3 (T3) - Housing Units/apartments of up to 10 Marla) or apartments with covered area from more than 850 square feet to 1,100 square feet.
Maximum Price of Housing Units	Maximum Price (Market Value) of a single housing unit at the time of approval of financing/loan, as under: Tier 1 (T1) - Rs 3.5 million Tier 2 (T2) - Rs 4.0 million Tier 3 (T3) - Rs. 6.0 million
Maximum Loan size	Maximum size of the loan of a single housing unit, as under: Tier 1 (T1) - Rs 2.7 million Tier 2 (T2) - Rs 3.0 million Tier 3 (T3) - Rs. 5.0 million
Loan Tenor	10/15/20 years, depending upon choice of customers.

2. According to above table the system will provide calculator for the clients to get information about installments in any category after providing some down payment as per following table:

Loan Tiers	Customer Pricing
Tier 1	3% for first 5 years & 5% for next years
Tier 2	5% for first 5 years & 7% for next years
Tier 3	7% for first 5 years & 9% for next years

3. The proposed system will have login interface for registered clients, officers and one organization Administrator.
4. Clients after registration, will be able to fill online form of information i. e Name, Father Name, Salary/Business Income, loan category etc.
5. Concerned officer/Admin will evaluate the client form as per rules and Reject/Accept it accordingly.
6. The said web based system should provide different details in report form i.e. Client's remaining installments, Submitted installments. Missing installment, Penalty if any etc.

Tools:
 PHP/Python, HTML, CSS, JavaScript (other supporting language)
Supervisor:
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Online Application for Electricity Connection

Project Domain / Category
Web Application

Abstract / Introduction
In this project, we will build a web-based application named as "Online Application for Electricity Connection", in which the user/client applies for the new connection and the admin allocates the connection date and processes the connection request. Similarly, the admin can generate the monthly bill and the user/client can pay the bill online.

Features of the proposed features:

Admin Panel features:
1. The admin can login and logout.
2. The admin can accept/reject user registration requests.
3. The admin can view and accept/reject the new connection requests.
4. The admin can generate the voucher for the user.
5. The admin can assign the connection and meter installment date. The assigned date must be viewable at the user/client side.
6. The admin can generate the monthly billing for the user and upload it on the user account. In the generation of monthly billing, the admin must enter the total consumed units, price per unit, taxes etc.
7. The admin can view the users/clients uploaded vouchers and bills.
8. The admin can view the users/clients' complaints and take appropriate actions.

User/Client Panel features:
1. The user/client will register by filling the provided registration form. In the registration form user related different information must be saved like, username, CNIC number, password, address, phone number etc.
2. The user/client can login and logout.
3. The user/client can apply for the new connection by clicking the button/link "New Connection" and then fill the new connection form. The new connection form can contain different information such as, username, CNIC number, address, phone no, connection type (i.e. domestic, commercial), etc.
4. After applying for the new connection, the user/client can view the processing and connection fee in a voucher.
5. The user/client can download the voucher.
6. The user/client can upload the paid voucher.

7. The user/client can view the proposed connection date.
8. The user/client can view/download his/her monthly bill.
9. The user/client can pay the monthly bill online and upload the paid bill on the website.
10. In case of a complaint, the user/client can send the complaint to the admin.

Tools:
XAMPP Server, MySQL, PHP language

Supervisor:
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<h1 style="text-align:center">Online Books Buying and Selling Store</h1>

Project Domain / Category
Web Application

Abstract / Introduction
This main aim of this project is to develop an interactive and effective website for the needs of book buyers and book sellers. It will be like an e- bookstore website where books can be bought and can be sold from the comfort of home through the Internet. An online bookstore is a virtual store on the Internet where customers can browse the catalog and select books of their interest as well as can add a book on the website for selling it. A user will be able to search books on the website by applying different search filters. After selecting a book of his/her choice, a user can place an online order for buying it, on the website. At checkout time, the books in the shopping cart will be presented as an order. At that time, more information will be needed to complete the transaction. Usually, the customer will be asked to fill the basic details or select a billing address, a shipping address, and payment option such as debit/credit card information or cash on delivery. The website owner (Admin) will take 15% to 20% of the total amount on transaction of each selling book on the website.

Functional Requirements:
There will be three categories of Website users:
- Guest (Unregistered User)
- Registered User
- Administrator (Admin)

Guest (unregistered user) user will be able to just view the available books and can search the books on the website according to his/her need.
Registered user will have the privileges to place an order for a book that is available on the website as well as can add a book on the website for selling it. Administrator (Admin) is the super user of the website who can manage everything on the website.

- **User Module:**
a) **User Registration and Sign In:** There will be a proper signup interface for unregistered users to register on the website. A registered user will be able to login to the website by entering the correct credentials in the sign in interface.
b) **View Books:** All available books will be available on the website with proper interface. Any registered user or guest can view information of available books and can view the complete details of any of the book with its title, author name, images, price, book uploading date and its other necessary details.
c) **Search Books:** Any user registered or unregistered can search for the available books on the website. The search can be done using different filters like author name, book title, release year, price etc. If user requirement meets, then system will show result in proper format.
d) **Upload Books:** A registered user will need to upload the book details if he/she wants to sell a book. After login to the website, the user will upload all the necessary details i.e. book title, author name, price, book images etc. of the book on the website. An agent will contact the book owner and collect the book from him/her within 24 hours.
e) **Update details of uploaded books:** If a registered user has uploaded a book on the website, he/she will be able to edit and update the price or any other details of that book. The registered user

will also be able remove the book from the website but he/she will have to pay a small fine in case if he/she removes the book within first 2 days of uploading it on the website. After paying the fine, the book will be returned to the book owner.

f) **Update profile:** Upon successful login to the website by a registered user, he/she will be able to update any of his/her profile information and can update his/her account password.

g) **User Review and Feedback:** Any registered user will be able to submit his/her review about purchased book and can give feedback about website services.

h) **Buy Books:** A user must have to login successfully to the website to place an order for buying a book. A registered user needs to fill all the order details for buying the book of his/her choice. After filling the details, user will be moved to the payment section.

i) **Fine calculation:** If the user has placed an order and later cancelled it, system automatically calculates the fine that the user has to pay for subsequent days.

- **Admin Module:**

a) **Login:** Using valid login credentials, admin need to login into the system in order to access the system.

b) **Manage Books:** Admin can upload the books information, view all the added books online with their details by the registered users. Admin can block and unblock any book for displaying on the website.

c) **Admin Dashboard**: Admin can view the detailed summary of everything such as count of registered users, registered user details, total sold books along with buyer and seller details, total available books etc.

d) **Manage Users:** All the registered user details will be displayed to the admin. Admin will accept / reject the user registration requests and can block or unblock any user for uploading or buying a book on the website.

e) **Report Generation:** The admin will be able to generate a complete report of total sales of books purchased on daily, weekly and monthly basis.

- **Payment Module:**

After filling the order details, Customer can make payments online via debit/credit card or cash on delivery. After successful completion of transaction, bill receipt will be sent to that user (customer) through an email notification and the purchased book will be delivered to the customer's address within seven working days. Moreover, 20% of the total price of each sold book will be taken by the Admin (owner) of the website and the remaining 80% amount will be delivered to the book seller. However, on the sale of the books uploaded by the Admin him/herself the whole amount will be for the Admin.

[**Note:** Student can add/enhance requirements as per need and keeping the time span and scope in view.]

Tools:
ASP.NET, C#, HTML, CSS, Any JavaScript Framework, JQuery, Bootstrap, MS SQL Server

Supervisor:
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Project Domain / Category:
Web Application

Abstract/ Introduction:

Due to rapid spread of COVID-19 all over the world, many businesses are shifting towards the online mode. In view of this, the main objective of this project is to develop a website "Online Electronics Price Shop" through which the registered users (customers) will be able to buy different available Electronics items such as Refrigerators, Freezers, Washing Machines, Air Conditioners, LED TVs, Ovens etc. from anywhere on discount rates. This website will contain the Electronics items in different categories. Any User can visit /search the available Electronics items, but only the registered users will be able to buy/place order. Admin will manage users, orders and information of the whole website.

This website will be helpful for users to buy any electronics items without physically visiting to Electronics shops. It will also be beneficial in terms that not only local users could be able to purchase the Electronics items but also the users from different places anywhere in the world could purchase.

Functional Requirements:

User:

- ➤ User Registration
- ➤ User Login
- ➤ Search Facility (by name, by price, by item color etc.)
- ➤ User can add any number of Electronics items (available in the stock)in shopping cart and can proceed for order
- ➤ The Customer will get 5 % discount on total bill of 8000 Rs.
- ➤ The Customer will get 10 % discount on total bill of 30000 Rs.
- ➤ The Customer will get 15 % discount on total bill of 40000 Rs.
- ➤ The Customer will get 20 % discount on total bill of 750000 Rs.
- ➤ The Customer will get 25 % discount on total bill of 10000 Rs.
- ➤ User can select any payment option (credit card or cash on delivery)
- ➤ User can check his/her order status (approved/Pending/Cancel/delivered)
- ➤ User can check his/her order history
- ➤ User can submit his/her review about purchased item(s) and can give feedback about website services
- ➤ After successful completion of transaction, user will receive confirmation message and a copy of the shopping receipt on his/her mobile number or in email (you can implement any method as per your easiness).

Admin:
- ➤ Admin will manage the stock of Electronics items on the website
- ➤ Admin can view list of registered users, Total bookings/orders, shipping orders, pending orders, Feedback etc.
- ➤ Admin can manage and change the percentage of discount rates.

- ➢ Admin can Add/update/Delete item category
- ➢ Admin can Add/update/Delete Subcategories
- ➢ Admin can delete any existing user
- ➢ Admin can update information of any existing user
- ➢ 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/email will be sent to the related user

Tools:
HTML, CSS, Bootstrap, JAVASCRIPT, JQuery, PHP, MYSQL
Note: No any other language is allowed for this project.

Supervisor:
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Online Faculty Directory for Multi Universities

Project Domain / Category
Web Application

Abstract / Introduction

The aim of this project is to develop an online directory of the faculty members working in different universities. The directory will enable its users to effortlessly view the information of faculty members belonging to different universities.

The online faculty directory will include the effective and user-friendly graphical user interface which will enable its users to access their required information easily. User will be able to search faculty details such as name, university, department, courses, area of expertise, and professional interest etc.

There are three main entities who will access this system i.e. admin, faculty member and visitor/student. Faculty members will require registration in the directory that will allow administrator (admin) as well as other visitors/students to visit their profiles.

The Admin will be authorized to add and manage all the faculty details. Visitors/students will not need to perform any registration or login to access this system. Visitors/students will be able to directly search for faculty and view their details using different filters.

Functional Requirements:

1. **Faculty:**
   a. **Registration and Sign In:** Faculty member will register him/herself in the directory and will be able to login after the approval of registration request by the Admin.
   b. **Add personal details:** Faculty member will have the rights of adding, updating their personal detail in the profile.

2. **Admin**
   a. **Approve Faculty Registration:** Admin can approve the registration requests from faculty members.
   b. **Manage Faculty information:** All the added faculty details can be Viewed / Updated / Deleted by the admin.

3. **Visitor/Student**
   a. **Faculty List:** All the added faculty details will be displayed to the user.
   b. **Refine / Search:** User can search a specific faculty details by different filters such as Name, University, Department, Courses, Area of Expertise, and Professional Interests etc.

Tools:

- WAMP/XAMPP Server
- PHP
- JavaScript
- HTML
- Notepad++
- My SQL 5.6

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Online Intra-City Super Store

Project Domain / Category
Web Application

Abstract / Introduction
This project is about providing home delivery service of a super store in Islamabad. Due to COVID-19, lock down is implemented in various sectors, and it makes shopping of grocery and other items difficult for people. To handle this situation, a super store decided to provide delivery services at the doorstep, for which they receive orders through the website. The super store will provide special discounts for the orders placed online.

Functional Requirements:

Following are the functional requirements, you have to fulfill for this project.
1. User management system with authentication.
2. A computerized registration number will be provided to each user, which they will use to place their order(s).
3. Categorize the products in different categories like grocery, electronics, health and beauty etc.
4. User will provide his/her address and contact details in profile, which will be used when they place order.
5. Bill with charges of delivery service will be calculated at the end of placing order process.
6. Bill can be paid by both ways, which is online via credit card or on the spot by cash on delivery method.
7. A special discount will be applied on total amount of bill, discount can vary with amount of bill. Like if order is of more than 5000, then discount will be 5%, for 10,000 it will be 10%.
8. After delivering the order successfully, the delivery boy will update the order status in the system.
9. User can give feedback about products and delivery service also.
10. A membership / gift cards can be assigned to the regular customers.
11. There must be a Contact Us page.
12. Store will also provide return and exchange policy for products.
13. User can track their order status by using order number.

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

Supervisor:
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Online IT Hardware Products & Services Portal

Project Domain / Category
Web Application

Abstract / Introduction

The idea of this project is to provide all computer hardware shops an online platform where the owners of these shops can manage their shops online. It is a project where all computer hardware shops will be registered online. The users will be able to search for these shops online instead of going to markets. If they want to purchase any hardware, they will be able to place the order online and they will receive the desired hardware at their doorstep. Similarly, if they need any type of repairing services they will request for the service and any technician from their selected shop will reach their home to provide repairing service.

Similarly, the shop owners will be able to manage their shops digitally. They can maintain the inventory of the computer hardware products they are selling. They can manage the orders of user of different products. They will be able to receive repairing services request online. This digital platform will help to manage each single aspect of their shop online.

Functional Requirements:

1. **User Management**
   o Users Registration
   o Login
   o Forgot Password
   o User Profile

2. **Computer Hardware Shop Management**
   o Shop Registration
   o Shop Profile

3. **Product Inventory**
   o Product Categories
   o Product Stock
   o Product History
   o Product Profile
   o Sale/Purchase

4. **Order Management**
   o Order Confirmation
   o Order Cancellation
   o Cash on Delivery
   o Order History

5. **Repairing Services Management**
   - Repairing Services Categorization
   - Repairing Services request facility to users
   - Request Confirmation by Shop
   - Request Cancellation
   - Feedback by the users against service provided by shop

6. **Search Management**
   - Product Search
   - Repairing Services Search
   - Shops Search
   - Search with different filters in the above-mentioned search categories

Tools:

- Server-side programming language: PHP

- Framework of PHP : Laravel, CodeIgniter or any other framework of 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

Supervisor:
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Online Lecture Scheduling Application

Project Domain / Category
Web-based Application

Abstract/Introduction
This application will generate the schedule of lectures for the courses being offered in a semester of an educational institute. Usually, for every semester, a lecture schedule is manually developed keeping in view the students enrolled in different courses, faculty members teaching those courses, and classrooms or labs where those lectures are delivered. It is also considered that if a student is enrolled in more than one courses, then those courses must not be scheduled on the same day same time. Same is the case with a faculty member teaching more than one courses. Similarly, a classroom or lab cannot be used for scheduling more than one courses on same day same time. In order to generate the lecture schedule, user will be required to provide list of offered courses, list of students enrolled in courses, list of faculty members with the courses they are teaching, and list of available classrooms and labs.

Functional Requirements:

The application will be able to maintain the list of:
- Offered courses
- Students enrolled in courses
- Faculty members with the courses they are teaching
- Available classrooms and labs

The application will:
- Generate lecture schedule considering the above mentioned lists and avoiding any clash/conflict
- Provide an option to save/export the generated lecture schedule

Tools: PHP, HTML, JavaScript, CSS, MySQL

Supervisor:
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Online National Crime Repository

Project Domain / Category
Web Application

Abstract / Introduction
There is a lack of coordination between public, law enforcement agencies and intelligence agencies due to which either most of the crimes remain unreported or the culprits get acquitted due to lack of evidence. Therefore, a web-based system "Online National Crime Repository" is proposed with the aim to decrease the lack of coordination between the mentioned agencies and reduce the crime rate resultantly. Records Manager can manage the criminal records in the system and declare an area as red zone based on crime rate. The registered Law Enforcement Agencies personnel can check the criminal records. The system will provide crime trends with respect to kind of crimes and areas. General user can check crime trends provided by the system.

There will be four types of users of this application.
• Administrator (Admin)
• Records Manager
• Law Enforcement Agencies Personnel
• General User

Functional Requirements:

Here is a list of functional requirements:

1) Administrator (Admin) can manage (create, update, delete and approve/reject) all the users of the web application.

2) Record manager can create an account in the system which will be approved by the Administrator (Admin).

3) There can be multiple Record Managers (at least one per district) in the system.

4) Registered record manager can manage (create, update and delete) criminal's record.

5) Registered records manager can declare an area as red zone based on crime rate.

6) General User can check which areas have high crime rate and which crime is being committed the most and these details will be provided by the system.

7) The personnel of Law Enforcement Agencies (LEAs) can create their account which will be approved by the approved by admin.

8) The personnel of Law Enforcement Agencies (LEAs) can check the record of a certain criminal.

9) System can provide crime trends with respect to areas and kind of crimes.

10) There will be "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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Online Notice Board System

Project Domain / Category
Web Application

Abstract / Introduction

In the modern society, many people have access to modern technology. Therefore, the wall notice board is outdated and has many limitations. Examples of limitations:

- Insufficient space leading to overlapping posts
- It is hard to know the latest posts
- You don't have direct access to the people who post
- It's exhausting to keep checking the notice board for new posts

In view of this, the need to adopt the "Online Notice Board System" is necessary so as to digitize the normal notice board and make it online hence taking care of the limitations that come with the normal notice board. So, the main aim of this proposed "Online Notice Board System" is making information broadcasting much easier in a paperless community. The system will contain notice boards created by college/university admin. Admin can send the notification to the particular students as well as teachers regarding any new activity happening in college/university campus or any fest participation, fee payments, results, libraries dues, hostel dues, any workshop/conference registrations, warnings and reminders etc. This web application involves almost all the features of online notice board.

Functional Requirements:

System Modules:
The system has three major modules and each module has its features as follows:

Admin

Admin is the person who controls, monitors and manages the information of the whole system. After Signing-in the system, the Admin will have the rights of the following:

- Accepting / rejecting user registration requests.
- Keeping and tracking the total number of registered users (students and teachers) in the system.
- Adding, activating and deactivating any user.
- Adding new notice and publishing the notice-on-Notice Board for the registered users.
- Managing old notices and making available if needed.
- Updating Password

Student

Student can:

- Perform Registration
- Login
- Check Notification sent by admin
- Update his /her Profile
- Update his /her Password
- Log out the whole system

Teacher

Teacher can:

- Perform Registration
- Login
- Check Notification sent by admin
- Update his /her Profile
- Update his /her Password
- Log out the whole system

Tools:

HTML, CSS, Jquery, Bootstrap, PHP, MySQL

Supervisor:

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Online Service Sale Platform

Project Domain / Category
Web Application

Abstract / Introduction

This project aims to develop a marketplace for people and businesses to outsource their tasks, whether a user is looking for work or needs someone to do a specific task, this marketplace will help in either case. Skilled people can earn extra income through this Platform. Through this platform users will have an ease of access to different skilled workers whom they find fit for the job(s).

This platform is a solution that lets skilled workers live an economically stable life by selling their skills to the right people without opening their own conventional shops / service centers to offer their services.

Functional Requirements:

The portal comprises of 3 modules as following:

1. **Administrator**
   - Can manage whole website
   - Login to the system
   - Manage complete skilled worker's/Service provider's section. Like: activate/deactivate/delete/ edit skilled worker's information.
   - Manage complete skill seeker's section. Like: activate/deactivate/delete/ edit skill seeker's information.
   - Manage posted skills. Like: add /delete/edit, posted skills/services.

2. **Skill Seeker**
   After registration, skill seeker can perform following action:
   - Login
   - Add / Edit profile
   - Search a skill using specific filters such as skill name, service cost, location and ratings etc.
   - See full details of selected service provider
   - Book a service
   - Rate a service provider
   - Ask questions from service provider

3. **Skilled worker/Service Provider**

   After registration skilled worker can perform following actions:

   - Login
   - Add / Edit profile
   - Post a skill, in this section complete skill details such as Skill Name, Service Cost, Location and Service hours etc. should be entered.
   - Accept Service booking
   - Reply to skill seeker's questions

Tools:

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

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Online Wed Dress Store

Project Domain / Category
Web Application

Abstract / Introduction
The **Online Wed Dress Store,** web based application is proposed with aim to facilitate customers to order wedding dresses online for different occasions such as Engagement, Nikkah, Mehndi, Barat and Walima etc. Customers can buy Bridal, Groom, and Party wear dresses etc. Party wear dresses can be for Men, Women and Kids. The customers will be able to receive ordered dresses at their doorstep. Some amount will be paid in advance via Credit/Debit card while remaining amount will be paid via either Cash on Delivery or Credit/Debit card option. The Admin will manage dresses information, stock information, orders information, and customer's information etc.

Functional Requirements:
Following are abstract level requirements of the project. Students are required to provide detailed requirements in SRS documents. Students can also add more requirements as per need.
1. There should be registration and login modules for both Admin and customers.
2. There should also be "Home", "About Us", "Terms and Conditions" and "Contact Us" pages.
3. Wedding dresses should be for different occasions such as Engagement, Nikkah, Mehndi, Barat and Walima etc.
4. Dress categories should be for Groom, Bride and Party wear etc.
5. Arrange Party wear dresses in different sections separately for Men, Women and Kids etc.
6. Add image of each dress along with price and proper description.
7. The application should allow customers to place customized order as per their requirement too.
8. The system should provide customers an interface to order their dresses. Before order placement, customer should be able to update Cart to add some new dresses or remove some existing dresses. The interface should also get payment information from customer. On checkout, order and payments details should be shown to customer.
9. Customers should have complete record of all their orders.
10. The application should be able to manage all orders, and payments etc.
11. The application should be able to store information of all customers, dresses, stock, orders, reviews/feedback, suggestions and complaints etc.
12. There should be Admin module for whole application and customer management.

Tools:
PHP, Microsoft Visual Studio (C#.Net), SQL Server

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Plagiarism Detection Web Application

Project Domain / Category
Web Application

Abstract / Introduction

Now a day's online education is prevailed due to the corona virus around the world. As per SOP's of corona virus, students can learn from comforts of their home and staying safe using online education. Despite of having numerous advantages of online education there is also issues found related to plagiarism of the students as well. Students copy assignment from different sources like Internet or other student's assignments then submit their plagiarized assignments. This is very difficult for the teachers to check plagiarism manually.

In view of this, you are required to develop a plagiarism detection web application which will help to detect plagiarism of the assignments submitted by the students. The plagiarism report generated by the web application will help teachers in detection of the plagiarism and marking of the assignments. Using this application, student will be able to submit their assignments as MSWord, PDF or notepad files. Teacher will be able to check the plagiarism and mark the assignments with comments. When teacher will declare the result, student will be able to see the plagiarism report, marks and any comments given by the teacher.

Note: You can use some Artificial intelligence techniques to develop this software.

Functional Requirements:

1. There will be two modules (Admin and Student) of the proposed application.
2. Students will be able to register themselves, login and then submit assignments in MS Word, PDF or as notepad files. The students will be able to see the obtained marks in the assignment, plagiarism reports and comments by the teacher after the result declaration.
3. The admin user will register, login and check the plagiarism of the submitted assignments of the students.
4.   The application will allow the admin to set the different parameters on which plagiarism can be checked like the Percentage of the plagiarism which can be excluded like 0, 1, 2, 3 etc.
5. Similarly the admin will also be able to do settings to exclude references and text in quotes.
6. The plagiarism percentage of the each assignment should be shown in the front of the submitted assignment.
7. On clicking the plagiarism percentage, a detail report should be shown to the admin/teacher.
8. This report should contain plagiarism sources like website link, other student's assignments link or research papers links from which the assignment has copied.

9. The admin will have the rights of setting the due date for the assignment submission.
10. The application will allow the admin to add comments and insert marks for each assignment.
11. Admin will declare result after which students can view plagiarism report, comments and obtained marks.

Tools:

Python 3.0 or above, Jupyter Notebook or any python development environment, MySQL

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Racing Bicycle Sales Management System by using chatbot

Project Domain / Category
Web Application

Abstract/Introduction
From past few years, Chatbots are playing a vital role in B2C (Business to Customer) E-Commerce applications by providing the assistance to customers in purchasing the online products. Chatbots basically uses the Natural Language Processing combined with some flavor of Artificial Intelligence in E-Commerce environments. The core aim of this project is to design a web based Racing Bicycle Sales Management System by using Chatbot. The users (customers) of this system will be able to place order for the bicycle(s) of their choice. Chatbot will assist the customers in selecting the bicycle and will recommend the suitable bicycle on the basis of customers' requirements (budget and Bicycle characteristics/specifications) and demands. The application aims to provide efficient business environment to its users.

Functional Requirements:
Racing bicycle Sales Management System by using Chabot is an illustration of B2C E-commerce domain. It facilitates the environment for every customer to select the racing bicycle as per demand. Chabot will provide customer support by showing list of racing bicycles and adaptive guidance to specific customers.

The proposed system will have the following main users:

Admin, Sales Manager, Distributors, Customers
- Registration module: It will facilitate the registration process for all kinds of users. Admin will approve and perform activation of the different user's accounts and registration requests.
- Login Module: After successful registrations, all types of the users will be able to login to the system using their registered email and password.
- Pop up window should be displayed at the bottom right of the system by prompting the customer for any kind of guidance.
- Customer will go for product selection module where the chatbot will assist the customers to select the racing bicycles as per customer needs.
- In area allocation module, Admin will assign the different areas to distributors across Pakistan. Different sales manager will work under specific distributor for easy distribution of racing bicycles in different areas of Pakistan. Customers will be able to see the different sales manager in Google map to assess the fast shipment of racing bicycles to the customer.
- Conversation Flow module in chatbot is responsible to ask the question from users related to racing bicycle, that will able to suggest the most suitable type of racing bicycle as per customer demands. 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 of business objectives and customer' expectations.

- After the conversation flow is completed, search result module will personalized merchandising of racing bicycles, recommendations can help the customers to find specific racing bicycle specifications. It will show the list of bicycles as per customer demands. A conversational interface will allow the system to ask probing questions and understand the customers' intent better.
- Search result module will display the list of racing bicycles with respect to model number, price and related characteristics /specification such as speed and efficiency.
- Discount module will be activated in case the customer may be looking for discount. In case customer falls into one of the given category like (army officers, teachers).
- Chatbot will assess the customer behavior and suggest the specific racing bicycle according to his budget and demands
- Machine learning module for Chatbot should already be "taught / trained" common questions so that it will be able to answer customer questions related to specific racing bicycle and respond immediately to customer' queries.
- Once the customer has selected the required racing bicycle, the payment module should be activated; chatbot should properly guide the customer of different payment options. The system will facilitate the three payment options as per the user choice i.e. credit card, debit card and through cash on delivery.
- The proposed system should have customer care module. It should guide the customer about the racing bicycle guarantee in case of malfunctions for specific time period.
- Customer care module should guide the customer about the guarantee for specific time period of different parts of racing bicycle like mechanical parts.
- For successful human-like interaction, visual module is also used in chatbot for perfect tone and dialect. To achieve coherence, a character is used to effectively communicate in audio synced with the text to help out the customer for specific racing bicycle.
- There should be Frequently Asked Questions module to generate a chatbot's list of pre-programmed queries and responses.

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

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Railway E-Ticket Reservation System

Project Domain / Category
Web Application

Abstract / Introduction
"Railway E-Ticket Reservation System" is a web-based system that offers services to its users to reserve seats online for single/round trips, tourism trips and long trips. To promote tourism culture, special tourism trains are driven for different routes and due to limited number of seats in such trains, the clients/passengers/travellers have to first book seat(s) online, then their booking will be confirmed when the client/passenger/traveller will actually collect the ticket from the front desk at the concerned railway station. However, for general or long trips, the client/passenger/traveller can start travelling after the completion of online ticket reservation process i.e. e-generated ticket through the proposed system. "Railway E-Ticket Reservation System" will provide relevant details like train route, name, timings, fare and railway station etc., to its users which will help the users in planning a future trip.

Main Roles/Users of the system:

- Administrator (Admin)
- Front Desk Officer
- Client/Passenger/Traveller

Functional Requirements:

1. Admin will able to Add/Remove/Update train route details, ticket fare, arrival and departure timings.
2. Admin will manage registered users (Front Desk Officers, Client/Passenger/Traveller) accounts.
3. Admin will perform all system related activities e.g. Gallery Management (Images of Trains etc.), Instructions, rules and policies and related information etc.
4. Front Desk Officer will able to view and verify clients/passengers' details.
5. Front Desk Officer will confirm reservation and then ticket will be issued to client/passenger/traveller for tourist train.
6. Front Desk Officer will have the rights to change seat reservation status to "Reservation Completed".
7. Front Desk officer will also handle ticket cancellation requests.
8. Client/Passenger will register him/herself for e-ticket reservation process.
- Registration details include Full Name, Mobile No., Email Address, CNIC No., Nearest Station, Password and enter code.
9. Client/Passenger sign-in credentials will include Mobile number, password and Verification Code.
10. Client's dashboard will include the following options:
- Verify account and view profile
- Book E – Ticket
- Cancelled Orders
- Helpline Numbers

- Print Orders
- Train cancelled? (Cancel your order for which train is cancelled / late)
- Confirmed Orders
- Ordered History
- Instructions
- Suggestion and complaints
11. Client/Passenger/traveller will able to view information about train route details, ticket fare and train arrival and departure timings.
12. Client/Passenger/traveller may select some appropriate payment methods to book / reserve the tickets.
13. On successful e-ticket reservation process, ticket receipt will be generated.
- In case of tourist train trip only those clients/passenger/travellers will get ticket(s) who have already applied/requested for the ticket through online ticket reservation process at the proposed system and will collect ticket from front desk (before 2hrs of departure), and then ticket reservation status will be changed to "Ticked Received" in client/passenger account.
14. User will have the option to cancel the ticket through his/her online account.

Tools:
IDE: Dreamweaver/XAMPP
Language: PHP/HTML/CSS/JavaScript
Database: MySQL/SQL Server

Supervisor:
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University Group Chatting System

Project Domain / Category
Web application

Abstract / Introduction

Communication plays a vital role in developing trust among groups and serves a tool of exchanging important information and ideas with mutual understanding. There are a lot of social media sources available for communication purposes. Group chatting systems are used as a common tool by the universities, workplaces and in general for different types (verbal/text) of communication now a days.

This project aims to develop a web-based group chatting application titled as "University Group Chatting System" that will act as a medium among groups of students in the universities who will exchange their ideas / information, perform discussions about different topics via Internet on regular basis.

This application will be able to allow students from different disciplines to talk about their courses, assignment deadlines, share mutual research interests, events, and gatherings. This system will also be the source of helping other newly admitted students in understanding about university environment.

Functional Requirements:
Chatting application System comprises of following functional modules:

ADMIN
Administrator will be able to create an account.
Administrator will be able to login.
Administrator will be able to create different chat groups according to different disciplines or general such as Data base group, Networking group, Embedded system group, Assignment group, Machine learning group, Artificial Intelligence (AI) group, and Fun group etc.
Administrator will be able to approve requests to enter a group.
Administrator will be able to reject requests to enter a group.
Administrator will be able delete a person from a chat group.
Administrator will be able to devise rules and regulations for each chat group.
If a user does not follow the rules and regulations of a certain group then administrator will be able to mute that specific user.

USER:

User will be able to sign up to the application.

User will be able to join a group of his/her own choice.

Upon entering a chat group, general terms and conditions will be provided to user.

User will be able to post a message.

User will be able to share a file.

User will be able to use web cam in private chat.

User will be able to start a private chat with another participant.

User will be able to leave a group.

Tools:

PHP, ASP.net, MySQL (Students can also use tools of their own choice).

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University Recruitment System

Project Domain / Category
Web Application

Abstract / Introduction
This project proposes a web based "University Recruitment System" which will be beneficial for university's pass out students to find their interested jobs posted by the Administrator (Admin) and the representatives of various companies. The system will allow the pass out students to create their profiles and upload their qualification details on the system. The system will also consist of a company representative login where various companies visiting the said recruitment system will be able to post the information about their vacancies and will also be able to view a list of pass out students, their qualification details, contacts and respective resumes. The admin will approve the registration request of pass out students and companies' representatives. The admin can also check each student/company's details and can remove faulty accounts.

The admin has overall rights over the system for information and user management. The system will handle student as well as company data and efficiently display all this data to respective sides.

Functional Requirements:

The system will consist of following Modules:
Admin:

1. Login availability.
2. Admin shall be able to accept/ reject user's registration requests.
3. Admin shall be able to view all users' details.
4. Admin shall be able to update all users' details.
5. Admin shall be able to view all registered users' detail.
6. Admin's dashboard has overall functional rights.

Pass out Student:

1. The student shall be able to login to system.
2. The student shall be able to upload resume to system.
3. The student shall be able to download resume from the system.
4. The student shall be able to view a list of companies who have posted for vacancy.
5. The student shall be able to view and print the resume.
6. The student shall be able to view and print the list of vacancies.

Company:

The company representative shall be able to:
1. Register and login to system.
2. Upload list of vacant vacancies.
3. Download resume from the system.
4. View and print the resume.
5. View and print the list of students who applied for a specific job.

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

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