

SCRABBLE

Project Domain / Category

Game Programming

Abstract / Introduction

Scrabble is the ultimate crossword board game in which every letter counts. Scrabble is a trademark of American toy industry namely Mattel and is sold in 121 countries in more than 30 languages. It is used to increase confidence with words, quickness of thought, or to expand vocabulary.

The ever-changing mix of words available in addition to those made by the opponent can sharpen the thinking well.



Now as a game programmer, you are required to build a scrabble in 3d and implement scrabble rules for 2 to 4 players.

Functional Requirements:

Following requirements must be fulfilled:

1. Player(s) can choose his favourite board right from the start of the game. Letters along with their scores should be displayed in 3D tiles as shown in above figures.
2. Implement all scrabble playing and scoring rules as mentioned here <https://howdoyouplayit.com/scrabble-rules-play-scrabble/> OR <https://scrabble.hasbro.com/en-us/rules>
3. Only standard dictionary words are accepted. Slangs are not acceptable. Players should be notified properly if words do not match in dictionary.

4. You can introduce complex levels by incorporating time limits for each player. If a player fails to make a word in limited time it will lead to negative score for complex levels.

Tools:

Unity 3D (any latest version).

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

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Construction Information System

Project Domain / Category

Web Programming

Abstract / Introduction

Materials and labor cost are the two key inputs of any contractor while getting a contract and even constructing buildings or roads etc, therefore their pricing plays a big role in the overall construction cost. Every contractor aims to stay within the boundaries of their construction budget. Contractors have to handle all this manually and sometimes it becomes difficult to track all expenditure when many construction projects are in progress in parallel. Yet, without Information Systems, it is nearly impossible to achieve this goal. The proposed web-based project will handle all the information entered on each construction site and contractor will be able to plan accordingly by viewing the data.

Functional Requirements:

Functional requirements are as under:

1. Contractor will be able to create any new Building Project i.e Plaza, House, Road etc with detail such as address, Land Area etc.
2. Contractor will register/delete the data entry users according to no. of sites on which construction and development is going on.
3. Contractor will enter detailed information (such as weight, quantity, price, brand, service providing company/ supplier) about material i.e Cement, Sand, Steel, Concrete, Glass, Wood, Brick, and Stone etc.
4. Each user will enter/edit/ delete information about material used at sites on daily basis.
5. Each user will be able to enter/edit/ delete information about persons working on sites i.e Name, Father Name, Address, and Phone, expertise (Architect, Civil Engineer, Electrical Engineer, Mason, Plumber, Painter, Interior Designer, Carpenter) with working date and time.
6. Summarized data required in report form i.e total no. of working days for each person, Labour Paid, Remaining Labour etc. Material used category wise, cost on each material, total cost etc.

Tools Used:

HTML, CSS, Flask using Python with MySql DBMS

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Go Green Pakistan

Project Domain / Category

Web Programming

Abstract:

“**Go Green Pakistan**” is a website to facilitate the citizens to search and get the authentic information about the massive reforestation project of Pakistan. It will provide sufficient information about current running project. The aim of this website is to get a transparent current status report and the total area covered in this project. This system will also reduce the manual effort and cost required for verification through Govt. departments. So, it will benefit public as well as government agencies. The proposed system will be a great step to globally introduce the current project in much efficient way.

This web application will have following categories:

- Home Page
- Dashboard
- Province/District List
- Purchased Trees Record
- Planted Trees Record
- Area Covered
- Digitized Pictures
- Monthly Reports
- Register Complaints
- About
- Contact
- FAQ

Functional Requirements

Modules:

Customer Module:

- View/Search: The user can view/search the categories without registration.
- Users can search Province wise, District/City wise information.
- Users can also give feedback about services provided.
- Users can also register complaints about any suspicious activity related to project/ location of project.
- System will show complete history of the project with monthly/annual status reports.

Admin Module:

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

Tools:

Software Requirements:

- 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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Grasp Skillset Abroad

Project Domain / Category

Web Application

Abstract / Introduction

An organization nurtures with the increasing knowledge and skillset of its employees. In order to equip the workforce with state of the art knowledge and techniques, different human development programs are offered by the multinational companies. Keeping in view stern market forces and competition, the employees are offered foreign training programs based on their Annual Confidential Reports (ACR). Employees will be given training opportunities in any of the 10 foreign countries (as a reward for good ACRs) at the end of 3 years of contract.

Functional Requirements:

Following is a list of functional requirements:

1. Employer and employee are the two types of users.
2. Login procedure for both types of users.
3. After login, an employee will request for a training program.
4. A list of countries will be provided by the employer with corresponding training programs.
5. An employee will make a request by entering his/her employee id, name, CNIC, passport no, passport expiry and final remarks of the last three ACRs.
6. Following is a list of ACR remarks:
 - Excellent
 - Very Good
 - Good
 - Satisfactory
 - Poor
7. At one time only 10 employees will be allowed to go for training.
8. The employer has the right to allow, put in queue or reject any request.
9. The employer will have a graphical report of employees ACRs and their visits to respective foreign countries.
10. The employer will be able to track each employee's performance before and after the training.

Tools:

PHP and SQL Server

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Grow Green Earth

Project Domain / Category

Web Programming

Introduction

You will be developing a web application that will help the users in increasing consciousness about global warming and then provide knowledge about environmental pollution. This Application should be easy to use and would give awareness about importance of planting, growing and taking care of trees. Using this app, current user will be able to see the other users profile trends that how their fellows' recorded activities are contributing to the environment. Main purpose of the application is to facilitate those users who have passion for gardening and to involve other users to take part in tackling the global warming challenges. Sharing and uploading of images/videos/statuses will be the salient features of the application. Major tasks of the application are to keep the record of plants since getting them from nurseries and then also maintain the record of users' daily activities. This application will be helpful for the users to tally the health of the plants in the nursery with the standard chart saved in the application.

Functional Requirements:

- Signup/Sign-in with Google account/Facebook or others
- To manage user-profile which include Name (first, middle, last), Address, City, Age, Gender, Password, Email etc.
- Each user will be able to monitor and manage their own news feeds/posts for the relevant activities.
- To like, share (or comment) own activities to the news feeds like Twitter/Facebook
- The application will notify User's daily activities to respective users whenever any model will be followed from Garden Management System.
- A detailed report will be generated to view the recorded activities steps.
- You will develop a database of Garden Management System with built-in planned models (at least seven) about common plants life cycle or custom options
- Record of all activities will be maintained that will include most needed trees planned plants for environment.

Tools:

IDE: Dreamweaver/XAMPP

Language: PHP/HTML/CSS/JavaScript

Database: MySQL/SQL Server

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Heavy Bikes Sales Management System using Chatbot

Project Domain / Category

Abstract/Introduction

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

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

Functional Requirements:

Our proposed Heavy bike Sales Management System using Chabot facilitates the environment for every customer based on specific heavy bike requirements. Our Chabot offers support by providing list of heavy bikes and adaptive guidance to specific customers.

The goal of proposed system is to perform following activities.

- Customer will use the CustomerID and password to access the heavy bike Sales Management System. Pop up window should be displayed at the bottom right of our Heavy bike Sales Management System by prompting the customer for any kind of guidance.
- The first priority of chatbot is to satisfy the customers that reach out the website. Customers reaching your page, app or website have to select the specific heavy bike to be selected. Selection of heavy bike enables you to offer customers a personalized offering of list of heavy bikes based on customer required heavy bike specification.
- Search results, personalized merchandising of heavy bikes, recommendations can help customers find specific heavy bike specifications. When your customer's online activity indicates willingness to buy heavy bike however, customer is not buying, it may be a good time to probe what customer is exactly looking for. A conversational interface allows you to ask probing questions and understand your customers' intent better.
- Search result should be displayed the list of heavy bikes with respect to model number, speed and efficiency.
- Your customer may be looking for a better price and believes qualifies for a discount. Understanding if customer falls into one of your segments qualifying for a discount and offering that discount immediately can reduce friction in buying heavy bikes.

- Chatbot judge the customer behavior and suggest the specific heavy bike according to his budget.
- Conversation Flow -- When a human talk to a human, he or she rarely plans the entire dialog in advance. When a human talk to a bot, this conversation has to be guided. The thing is, conversation flow is a dialog tree. It visualizes expected user-bot interactions and makes sure every user request is covered by some part of the bot's logics. To make conversation flow smooth and efficient, it's important to apply the best practices and build chatbot. For this Machine learning algorithms are used by taking into account business objectives and customer' expectations.
- Chatbot should already be "taught" common questions so that it will be able to answer customer questions and respond immediately to customer' queries.
- Once the customer has selected the required heavy bike, chatbot should properly guide the customer of payment method.
- Chatbot should also guide the customer about the heavy bike guarantee in case of malfunctioning for a specific time period.
- Chatbot should also guide the customer about the guarantee for time period of different parts of heavy bike like mechanical parts, electrical parts and engine.
- For successful human-like interaction, chatbots need a perfect tone and dialect. To achieve coherence, a character is used to effectively communicate in audio synced with the text.
- Chatbot used a list of Frequently Asked Questions to generate a chatbot's list of pre-programmed queries and responses.

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

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Home A Heaven

Project Domain / Category

Web Application

Abstract / Introduction

To make house a beautiful home, we do different types of decorations like wall hangings, corner stands, table lamps, flower decoration... etc. Now a days due to COVID-19, we are required to stay home and go outside in case of very important work. So, to do a shopping in markets is risky. You are required to build a web application for shopping different types of house decorum articles for such customers who want to buy stylish and quality wise good decoration things.

Functional Requirements:

1. Build a web page with the name "Home A Heaven".
2. Create Register and Login pages to add members record in a Database with fields (Username, Password, Email Id, Contact No, Address).
3. Customer can order as a member by logging in his/her account or can directly order items.
4. Menu bar should contain "Living Room, Décor, Shelves, Leather Art, Engraving Art" menu items on the top panel of home page, on left side a logo and on right side search, profile and cart images having web page link should be. Example image is here.
5. In second panel on the home page, there must be a big image of collect items and on one side name of home page with one line of description should be visible.
6. In third panel on home page, there should be a collection list with three collection categories per row, showing the category name at center of image.
7. By clicking on one category, it leads of 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 filter (on the basis of items category) should be there on left side of page.
 - II. A sort option (on basis of Best Selling, Alphabetically A-Z or Z-A, price Low to High , Price High to Low).
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.
9. If you want to show sale on items, original price should be cut by a line on it, and sale price should be visible.
10. The description of item should contain the fields like;
No of items in a set:
Material:
Size:

Color:

11. By clicking on cart, a list should be visible for selected item , 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 visit <https://sixthgalleria.com/> website and try to develop the web application front end and functionality like this website.

Tools:

Visual Studio

Sql DataBase

HTML

CSS

Java Script

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Hospital Management System

Project Domain / Category

Web Programming

Abstract / Introduction

Hospitals deal with the life and health of patients. Medical care relies on well-trained doctors, nurses, high quality facilities, and equipment. Medical care also relies on good record keeping. Without accurate, comprehensive, up to date and accessible patient notes, medical personnel may not be able to offer the best treatment. He may in fact misdiagnose the condition which can have serious consequences. Associated records such as x-rays, specimens, drug records and patient registers must also be *well cared for if the patient is to be protected*. Record Management is a Systematic and on-going procedure by which the records of an organization are created, maintained, and disposed of. This system also ensures record preservation for evidential purposes, accurate and efficient updating, timely availability, and control of access only by authorized personnel.

Hospital Management System (HMS) is a software which is used for the automation of Hospital Management. In the context of Pakistan, where most of the hospitals are not using computerized technology to manage hospital records, Hospital Management System (HMS) will be a perfect way to manage these records. HMS should contain login form, patient and doctor registration, should allow patients to edit their information like patient name, contact number, and address etc.

Hospital Management System (HMS) will contain four types of users:-

1. Administrator
2. Doctor
3. Data Entry Operators
4. Patient

Functional Requirements:

Hospital Management System (HMS) will includes

- Maintaining Patient details.
 - Providing Prescription, Precautions and Diet advice.
 - Providing and maintaining all kinds of tests for a patient.
 - Billing and Report generation.
 - Following functionalities should be present in HMS.
1. Maintain records of indoor/outdoor patients.
 2. Maintain patients diagnosis details, advised tests to be done.
 3. Database of blood donors/blood group
 4. Staff record maintenance
 5. Providing different test facilities to a doctor for diagnosis of patients such as X-Ray, Urine Test, Stool Test, Blood Test, Biochemistry Test, etc.

6. Maintain patient's prescription, medicine and diet advice details.
7. Provide billing details for indoor/outdoor patients.
8. Maintain backup of data as per user requirements (between mentioned dates).
9. Results of tests, prescription, precautions and diet advice will be automatically updated in the database.
10. Related test reports, patient details report, prescription and billing reports can be generated as per user requirements.
11. User or Administrator can search a patient's record by his/her name or their registration Number.
12. If user forgets his/her password then it can be retrieved by hint question

Tools:

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

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Intercity Carpooling Application

Category

Web Application

Introduction

Intercity Carpooling has become an essential part for many people who travel intercity almost daily or very frequently, it is a cheap and hassle-free way to commute from one city to another city. This project presents the requirement, design and implementation of an enterprise-class web based intercity carpooling application using Laravel Framework or CodeIgniter Framework (both frameworks follows a Model-view-controller architecture).

There will be three type of main user roles in this web application 1. Administrator 2. Driver and 3. Passengers. You would have to design and implement four different interfaces, one for the Homepage/landing page, one for the Admin, one for the driver and one for the passenger. Admin will be managing both driver and passengers' account.

Our Application is intercity based, so we will be covering intercity carpooling services only. When any user will land on our website's home page, a listing of travelling event with respect to date time and seats availability will be exhibited to the user or user can also search for travelling events by entering his departure city, arrival city and date.

On our homepage, a sign-up for driver/passenger should also be functional, when any user will sign-up for driver, a request will be sent to the admin. He will be accepting or rejecting the driver's application.

When a user Sign-up as a passenger, then admin approval is not required but in future if passengers wishes to join an event created by the driver, he will be requesting the driver and the driver will be accepting or rejecting his carpooling request.

Functional Requirements:

Interfaces:

Landing Page

Admin Panel

Driver Interface

Passenger Interface

Landing Page:

1. Exhibits all carpooling events generated by the drivers
2. Link to the Sign-up/Sign-In for Drivers
3. Link to the Sign-up/Sign-In for Passengers

Admin Panel:

4. Accepting driver application
5. Converting Passenger Roles to driver and Drivers to passengers

6. Delete/Restrict Carpooling events created by the drivers
7. Adding Vehicle Types
8. Managers Support Tickets created by driver or passenger

Driver Interface:

1. Profile Creation
2. Add/Delete/Update intercity Carpooling events
3. Accept/Reject passenger's request
4. Report Passenger to the Admin

Passenger Interface:

1. Profile Creation
2. View Trips created by drivers
3. Request driver to join their intercity Carpooling event
4. Send query to the driver
5. Report Driver to the Admin

Tools and technologies:

Laravel/CodeIgniter Php Frame works only.
PHP, Sublime Text, Xampp, Bootstrap, MySQL

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kidZone Online Toy Shop

Project Domain / Category

Web Application

Abstract/Introduction

kidZone is an online web store in which a company displays its manufactured and imported toys for kids. Users are also registered and enter their details to track their toys orders / feedback in different durations.

Concept of Flow / Working of Project and Implementation details

A company in Pakistan is manufacturing and importing kid's toys for different age groups (0-10). Toys are categorized and displayed online with respect of age groups and types of toys. Age groups are as under;

- New-born
- 3 – 9 Months
- 10 – 18 Months
- 1.5 Years – 3 Years
- Above 3 – 5 Years
- Above 5 Years – 8 Years
- Above 8 Years – 10 Years

Toys are also categorized in different broader categories, that are as under;

- 1- Action figures
- 2- Animals
- 3- Cars and radio controlled
- 4- Creative toys
- 5- Dolls
- 6- Educational toys
- 7- Electronic toys
- 8- Executive toys
- 9- Food-related toys
- 10- Games
- 11- Model building
- 12- Puzzle/assembly
- 13- Science and optical

14- Spinning toys

15- Wooden toys

Users can visit online website / toy shop and can perform the following activities;

- **Scenario 1:** Just visit toy shop online [User login is not required]
- **Scenario 2:** Visit shop and order online [It requires user login. User can track his / her order by provided interface and provides feedback about product after receiving from the company]
- **Scenario 3:** Visit shop online and reserve a toy online to visit company's store physically to buy reserved toy (s) [User login is required. Not more than 3 toys are reserved by a single user at a time for 3 days. User will also not be allowed by system to reserve more toys in next days until he/she cancel reservation or buy them from the store physically.]
- **General instructions and Scenarios:**
 - Users can view toys by sorting them based on ages or categories / types
 - User can provide feedback that also shows with the product when it displays. Any user / visitor can check product feedback.
 - Admin has right to alter Toy categories and age groups

Required Reports

- 1- User Report: Online toy purchasing history for last 10 toys
- 2- Admin Report: Toy Selling report along with total sales from the specific time period provided by website admin
- 3- Admin Report: Complete Inventory Report for toys

Tools

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

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Kitab Ghar Inventory Management System

Project Domain / Category

Web Application

Abstract / Introduction

Kitab Ghar Inventory Management System keeps track of the books and stationery of the store. To manage the items properly, it is essential to make an inventory management system. This system will provide an efficient way for managing books and stationery in the stock, effective utilization of resources involved in the management and smooth coordination with internal activities and the customers. In Pakistan, some of the book store are fully automated, few are semi-automated and many are still having manual system for keeping the record of inventory. In manual system the management of inventory is quite difficult and time consuming. Semi-automated system is also not fully organized.

Functional Requirements:

1. System login function, with password change functionality after login.
2. Add new items and categories into the system assets list.
3. Remove items and categories from inventory.
4. Update system inventory items.
5. Each item price should be mentioned accordingly.
6. View inventory status.
7. Products search by name or by product category.
8. Add products and categories (add atleast 20 categories of books with 10 books in each category and 10 different type of stationery items).
9. Check bills generated for the day.
10. Check the money transaction for the day.
11. Check the inventory status, minimum, and maximum stock point and order point.
12. Create inventory reports i-e daily, weekly and monthly.
13. Database should be relational. You have to use primary keys and foreign keys to make database relational.

Tools:

Languages: asp.net, mysql, php, CSS, HTML, JavaScript (you may use any of the languages).

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

Database: mysql, sql server, WampServer, Xampp.

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My Contacts List Application

Project Domain / Category

Web Programming

Abstract/Introduction

My Contacts List is a web application that will allow its users to build their contacts database online. The users will be able to store, search, update, and delete their contacts from their created contacts list(s) through this application. Users will also be able to import/export their contacts list in .CSV or .XLS or any similar file format.

The users should be able to register for this application with 2 different types of user accounts:

- 1. Free Account**
- 2. Premium Account**

With **free account**, user should be able to store up to **20 contacts** under a **single list** only.

The users with **premium account** will be able to store **unlimited** number of contacts and will have the option to create **multiple lists** of the contacts.

The contacts' data must have the following information:

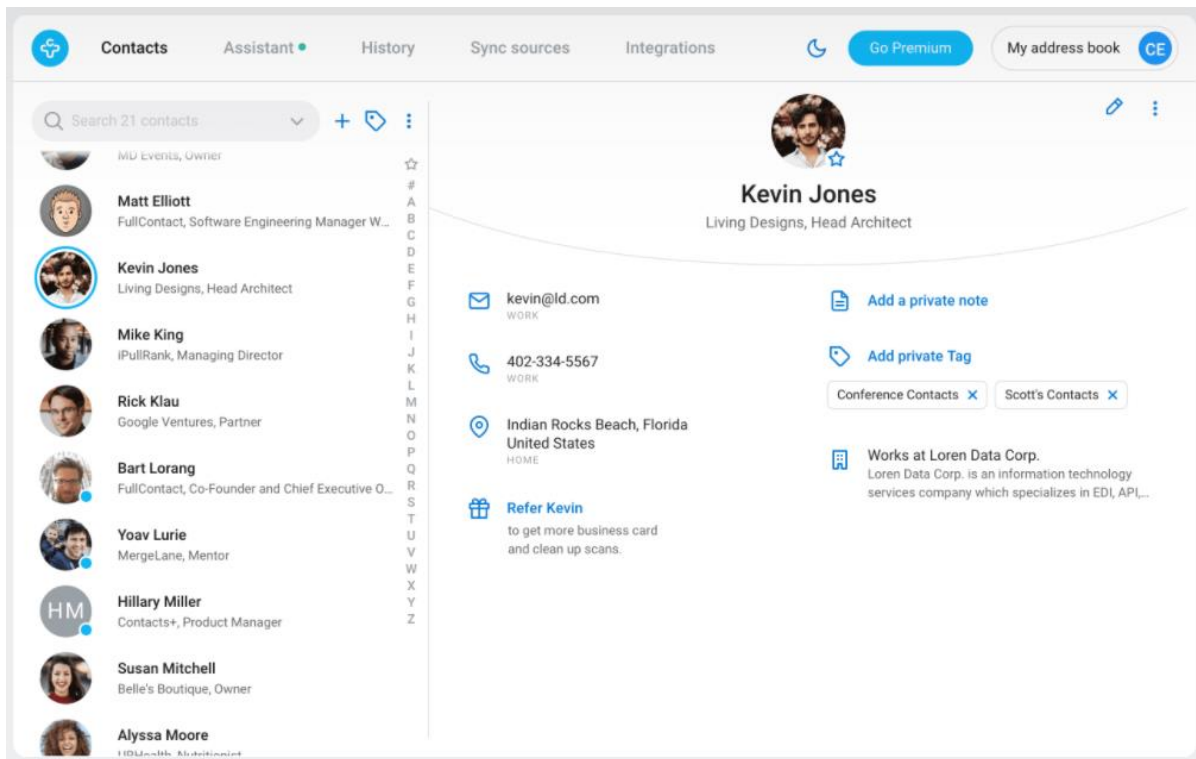
Name, Email, Phone, Gender, Picture, Date of Birth, Address, Company, Facebook, Instagram, LinkedIn. You can add any additional information about the contacts but the mentioned information is mandatory.

The users should also be able to create and apply different categories to the contacts. For example the categories could be Friends, Colleagues, Family, Business, and any other categories like these. The **free users** will be able to create **3 categories** only whereas **premium users** should be able to create **as many categories** as they want.

Both types of users should be able to perform the following tasks:

- Select multiple or all the contacts at the same time
- Perform bulk operation(s) on the selected contacts such as update a specific contact field, add a new field value to all the contacts or delete all the selected contacts at the same time.
- Import contacts from a .CSV or .XLS file
- Export contact to a .CSV or .XLS file
- Upgrade or Downgrade their account from Free to Premium or from Premium to Free.
- Should be able to view the contacts by list name or the category type.
- Should be able to move a contact from one list to another list.
- Should be able to search a contact by any parameter(s). For example search by name, email, gender, date of birth etc. and also app should provide the option to search by multiple parameters such as the contacts with name Ali and their year of birth must be 1990.

The interface of your application should look similar to this (not necessarily the same):



IMPORTANT INSTRUCTIONS:

Make sure you have sufficient data available in your application at the time of your application viva. Your application must have at least 20 contacts, 1 contacts list and 3 categories available at the time of your final application viva.

Tools and Languages:

You can use any combination of the tools and languages from the following:

HTML, CSS, JavaScript, PHP, WAMP server, SQL, Dreamviewer, Notepad++ etc

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Online Car Service Station Management

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. There are many types of service providers across the country. It is the need of today's era that these service providers adapt technology and digitalization. Since Pakistan is a very populated country, so vehicles are excessively used. Lots of People use their cars, motorbikes for travelling.

The aim of this project is to provide car service stations an online platform where people can contact them and book their services for their car maintenance . This online website will provide convenience to the people who do not want to go to a service station and wait for hours to get their car serviced. This user will contact the car service station online using this website and he/she will avail the car maintenance service at his doorstep. The client will send the service request to car service station and the service station will send their employee at the doorstep of the client.

Functional Requirements:

Client:

- User Management (Client login, sign up, forgot password)
- Client can send service request to car service station.
- Client can add the details of his car. Cars can be more than one.
- Client can choose the type of service for which he/she is looking for.
- Client must be able to cancel the booking.
- Client must be notified upon confirmation/cancellation of his booking from service station.
- Client must be able to provide review/rating to the service he received.
- Client must be able to see the details of the mechanic which will be sent by the service station at his/her doorstep.
- Client should be able to view all types of services offered from service station along with their prices.

Service Station Admin:

- User Management (Admin login, sign up, forgot password)
- Admin can add details of service station
- Admin will add/update the types of services with all details
- Admin should be able to manage the bookings.

- Admin should be able to manage his service station staff.
- Bookings should be managed on first come first serve basis.

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

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Online Couch surfing

Project Domain / Category

Web Application

Abstract / Introduction

Couch surfing is a service that allows traveller's community around the world to connect by hosting at their cities. Using this application, travellers around the world will be able to stay at a place or share their own home with someone else conveniently. This application will help travellers around the world to meet and make friends. Moreover, the hosts will be able to make extra money by offering their couch on rent OR for exchange with others around the world for specific time periods.

This application would be a great source to reduce the travelling cost; besides that, it can be a source of making friends throughout the world and exploring diversity of different cultures. Moreover, it can also be a source for online earning and using your extra rooms, couches and air mattress.

Functional Requirements:

1. Users will be able to create an account by signing up a form.
2. The form will consist of basic information such as name, address, phone# and email address for future reference.
3. Users will be able to offer their couch by mentioning specific time period.
4. Users will be able to upload pictures of their home/apartments, couches etc.
5. Users will be able to point the location via Google maps.
6. Users will be able to mention the terms and conditions i.e. either their couches are offered for free, as a paying guest or in exchange for other people's couch.
7. Users will be able to search available couches in any city around the world.
8. Users will be able to contact directly with the owner via chat box to negotiate the terms and conditions, payment modes and other terms and conditions.
9. Users will be able to add a location to wish list.
10. Users will be able to remove their couches from the application when it has been booked by a traveller.

Tools:

PHP, MySQL, Xampp, Notepad++.

Supervisor:

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Online Employee Information System

Project Domain / Category

Web Application

Abstract / Introduction

In this project, we will build a web-based application named as “Online Employee Information System”, in which employees’ information, salary details and leaves management can be managed very easily and efficiently.

Features of the proposed system:

Admin Panel features:

1. Login authentication for Admin.
2. Admin can register a new employee and add different information about the new employee, like his/her name, id, department, salary, picture, etc. The admin can share the account credential with the employee through SMS or email.
3. The admin can edit and delete the information about an employee.
4. The admin can generate the monthly salary of an employee.
5. The admin can view the monthly attendance record of an employee.
6. The admin can add the leaves according to the pay scale of an employee.
7. The admin can accept/reject the leave of an employee. On rejection, the leave/leaves can be added to the employee account.

Employee Panel features:

1. Login authentication for an Employee.
2. An employee can edit/update his profile (created by the admin).
3. An employee can mark his attendance (both Entry time and Exit time).
4. An employee can view his monthly attendance record.
5. An employee can view his/her leave records.
6. An employee can apply for the leave. And once the employee applies the leave/leaves, then it will be automatically deducted from his/her account.
7. An employee can view his/her monthly salary slip.

Tools:

XAMPP Server, MySQL, PHP language

Supervisor:

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Online Mobile Recharge Portal

Domain / Category

Web Programming

Abstract/ Introduction:

Online Mobile Recharge is a web-based application (to be developed in ASP.NET) to recharge mobile phones. The project focuses at providing an easy and reliable platform to recharge mobile of any telecommunication company online without buying any recharge card. The registered users of the system can recharge their prepaid mobile phones or can pay their postpaid mobile bills from anywhere at any time.

The proposed project for recharging mobiles aims to automate the mobile recharging process. It roots out the manual card system of recharge and introduces a new and genuine online recharge process.

The online mobile recharge system is beneficial to both the admins and users. Using the online application, the admin can add new operators, tariff plans, offers and update or modify the existing tariff plans. It helps the users in creating their account, and then recharging the mobiles phones at any time.

Functional Requirements:

The system comprises of 2 major modules following with submodules:

1. Admin Module

- Add Operator
- Add Plans
- Add Offers
- View User
- View Transactions
- View / Edit Operator
- View Feedback

2. User Module

- Register
- New Recharge (Select Operator, Select Plan / Enter Amount)
- View Past Transactions
- View Offers
- Feedback

❖ Hardware Requirements:

- i3 Processor Based Computer or higher
- Memory: 1 GB RAM
- Hard Drive: 50 GB
- LCD
- Internet Connection

❖ **Software Requirements:**

- Windows 7 or higher
- Visual studio 2010
- SQL Server 2008

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

The aim of this project is to develop an online web based system named as “TutorialTube” through which the users will be able to watch the video tutorials of different fields of computer science and information technology. There will be two main categories of the tutorials, i.e. “Free” and “Paid”. Free tutorials will be available to all users of the website. However, to access the “Paid” tutorials, the users must have to register themselves on the website and pay the fee of each tutorial of the “Paid” category. A fee voucher will be generated against the selected tutorials and the information of the user. The user will have to pay the fee in the bank and upload the scanned copy on the website. After verification, the paid tutorials will be accessible to the related user. The registered users will be able to post comments against any tutorial and will also be able to like and dislike any tutorial. There will be a proper video player embedded in the website to run / play the tutorials. The website will allow the users to become the “Trainer / Instructor” by proper registration on the website. The “Trainer” user will be able to post his / her tutorials on the website after approval by the Administrator (Admin) of the website. The admin will have a proper Admin Panel through which he / she will be able to manage the whole website (approving or rejecting user registration requests, approving / rejecting posts, adding / deleting tutorial categories, uploading /deleting any video tutorial and searching uploaded video file by different keywords and filters etc.) There will be proper search facility, user friendly interfaces and easy navigation scheme. The launching of the website will be beneficial for its users by providing valuable learning material in the form of video tutorials online.

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 (Student / Learner)
- ✚ Registered user (Trainer / Instructor /Tutorial Provider)
- ✚ Registered user (Administrator)

Roles of the users will be as follow:

- Visitor will be able to visit the website to search his/her relevant tutorials from the website and can watch the tutorials of “Free” category.
- A user registered as a Student/ Learner will be able to access the “Paid” tutorials after paying fee through available method (mentioned below in the document). Registered users will be able to post comments on tutorial and will also be able to like and dislike any tutorial.

- A user registered as a Trainer / Instructor will be able to upload the video tutorials.
- The user registered as the Admin will have all the rights of information management as well as user management. Admin will approve the registration requests from the other users. The tutorials uploaded by “Trainer / Instructor” users will be approved by the Admin prior to publishing on the website.

2. Email Notification and Verification

An unregistered user will register him/her on the website. On submitting the registration information, an email notification will be sent with a confirmation link to the user’s given email ID. On confirmation through link, the Admin will approve the registration requests from users. An email notification will also be sent to the registered user on approval or rejection of any request.

3. Admin Dashboard

There will be proper interfaces through which the Admin will be able to add/ delete and update information such as the Tutorials, Tutorial Categories, sub categories (Beginner, Intermediate, and Advanced) and Descriptions etc. The website will display this information in easy and attractive manners.

4. Video Player

There will be an embedded video player through which the users will be able to run/ play any video tutorial.

5. Fee Voucher Generator (Payment method)

There will proper interface through which the website will allow the registered users to generate fee voucher against selected video tutorials of “Paid” category.

6. Voucher Submission

There will be proper interface through which the registered user (Student / Learner) will be able to upload the scanned copy of the fee voucher.

7. Voucher Verification / Approval

The admin will verify the submitted scanned copy of the voucher. On his/ her approval the tutorial(s) of paid category will be accessible to the registered user.

8. Likes / Dislikes

The registered users will be able to like or dislike any video tutorial.

9. Comments

The registered users will be able to post comments against any tutorial.

10. Watch Counts

The website will maintain and display the “Watch counts” against each tutorial.

11. Search Feature

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

- Tutorial Title
- Category name
- Trainer’s name
- Free
- Paid
- Latest or any other related keywords
- Admin will also be able to search the information by user IDs.

Tools:

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

Supervisor:

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Art Web Gallery

Project Domain / Category

Web Application

Abstract / Introduction

An art gallery shows the work by numerous artists around the globe. Every artist is given a predetermined space on the online page. The artists are charged for the space apportioned to them on everyday schedule. The charges shift in various days. Monday to Thursday are 3000 rupees for each day per show, from Friday to Sunday charges are 5000 rupees for every day per display. Each show has a name according to the style of painting. The art products can be purchased by the online clients who need to register with the Art gallery. On accepting the full payment, the product is shipped off the client. The application monitors the status of shipment of the product to the client.

Functional Requirements:

Admin:

1. **Login:** Admin can login using credentials.
2. **Allot space:** Admin allot space for artists on the basis of days.
3. **Receive payment:** Admin receive payments from artist through Debit or Credit Card.
4. **Keep record:** Admin will keep record of clients, artists and payments.

Artist:

1. **Login:** Artist can login using credentials after registration.
2. **Send Request:** Artist send request to admin for space allocation.
3. **Add Products:** Artists can add their art products with details and prices, and can modify them.
4. **View Order:** Artists can view orders and can track them.
5. **Receive payment:** Artist can receive payments from Clients.

Client:

1. **Login:** Client can login using credentials after registration.
2. **View products:** Client can view products of all artists.
3. **Cart Features:** Client can add product to cart.
4. **View Cart:** Client can view cart to place an order.
5. **Bill payment:** Client can pay bill through Cash on Delivery method.

Tools:

PHP language, MySQL

Supervisor:

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Online Freelance Market Place

Project Domain / Category

Web application

Abstract/Introduction

Freelancing is growing day by day. Global pandemic is shaping the future of work. More people are preferring working from home.

Need for a local Pakistan based online freelance market place is at high. In this project students will develop a complete online freelance market place where the users will be able to post the jobs on website, whereas freelancers will bid for the jobs. Upon successful winning of the bid, freelancer will start working on the project and after completing the project requirements, he/she will submit the deliverable to the user. Upon acceptance of project by the user, funds will be released to the freelancer.

There will be different modes of projects according to job natures like fixed budget projects, projects based on per hour rate etc. Accounts will be managed for all the users where they will manage the funds and will be able to transfer the fund to bank accounts.

Functional Requirements:

- 1- User management for administrators.
- 2- User will be able to register on the website.
- 3- A user will be able to post a project and open bidding
- 4- A user/freelancer will be able to bid on a project
- 5- System will deduct amount equal to project cost and hold that amount with system.
- 6- Freelancer will submit the project after completion
- 7- User will review and accept the project.
- 8- Upon acceptance of project by user, system will release the payment to the freelancer.
- 9- A freelancer will be able to transfer the money to his/her bank (A dummy module will be made, no need to integrate any real payment gateway).
- 10 User will be able to update the account details.
- 11 System admin will be able to ban the user for violating any policy.

Tools:

C#/Java, .NET Framework, NetBeans etc.

Supervisor:

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Online Gawadar Port Management

Project Domain / Category

Web Application

Abstract / Introduction

As Gawadar port has become a major economic hub of imports and exports in the country, there is need to develop a web application in order to facilitate both, the port staff and the traders. Whenever a ship arrives at the port, the traders will request for clearance. Application will ask information about the ship and the items on it. Traders will provide these details to the application. Then, application will calculate custom duty on items and show it to the trader. Trader will pay that duty and staff will declare the ship “clear” if the duty is paid. Staff can update excise duty details. Staff can also check the trends of imports and exports.

There will be three users of this application.

- Administrator
- Port Staff
- Trader

Functional Requirements:

Here is a list of functional requirements:

- 1) Administrator can manage (create, update and delete) all the users of the web application.
- 2) Trader can create an account.
- 3) Registered trader can apply for ship clearance.
- 4) Registered trader can add information about ship and its items.
- 5) Register trader can add information about paid custom duty.
- 6) Port staff can sign up.
- 7) Port staff can manage (create, update and delete) custom duty details.
- 8) System will calculate custom duty.
- 9) Port staff can declare a ship as “clear” after verification of the payment details submitted by the trader.
- 10) System can provide imports and export trends.
- 11) “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. However, while doing this, must keep in view the scope and time frame.
- 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 GIFT SPOT

Project Domain / Category

Web Application

Abstract / Introduction

The main aim of this project is to develop an interactive website that facilitates the customers with an on-the-click functionality to order gifts for any occasion with different categories like combo gifts, occasions gifts, personalized gifts, gifts for him, gifts for her and make your own gift basket etc. and customers can buy them at any time. The aim of this application is to reduce the efforts required to the customer to physically visit the gift store to purchase the gifts as well as to reduce the manual efforts required to the Store Administration to manage transactions. The application will also help in easy maintaining and updating gift purchases in the website for the administrator.

Existing System

In conventional shops/stores, the customers have to physically visit the store and all the orders are taken manually. The stock is maintained on paper that takes more time and it also demands more man power.

Proposed System

- An online gift shop that allows users to check for various gift categories available at the online shop and purchase online.
- The online shop contains the list of available gifts displayed according to different categories along with their prices.
- The user may browse through these gift categories as per his/her requirement.
- If the user wants to buy gift he/she may add it to his/her shopping cart.
- Once user wishes to checkout, he/she must register on the website first. User can then login using same id password next time.
- Payment mode may be “Cash on delivery, “Debit card” and “Credit Card”.
- Once the user makes a successful transaction he/she gets a copy of the shopping receipt on his/her E-mail id.
- The system will also reduce the manual operation associated with the maintenance of the records consisting of the product, product order details, and customer details.

Number of Modules:

1. **Login/Registration Module:** In this module, the administrator or the customer will have to authorize his/her access to the modules of this online system.
2. **Gift Categories Module:** In this module each and every operation related to the gift category and gift item quantity such as adding new gift item category/quantity, editing the existing gift item category/quantity, deleting gift item category/quantity, getting the lists of gift item category/quantity and reports of gift item category/quantity will be managed by the Administrator. Gift items will be arranged and can be viewed in categories. i.e.

Combo Gifts

- Combo gifts for Karachi, combo gifts for Lahore, combo gifts for Rawalpindi and combo gifts for all major cities etc.

Occasion Gifts

- Anniversary gifts, Birthday gifts, Eid gifts, Father's day gifts, Get well soon, Missing you gifts, Mother's day gifts, New Year gifts, Ramadan gifts, Valentine's day gifts, Wedding gifts etc.

Personalized Gifts

- Make your own gift basket from different available gift items.

Visit this link for gift categories options

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

3. **Customer Module:** This module helps the customer, to create Account, Sign-in Search gift category, Select gift category/quantity, Buy gifts, Continue Shopping, View/Edit Cart, Checkout, Obtain Bill Information, Confirm order, and Delete Order etc.
4. **Admin Module:** In this module, interfaces for adding gift items, adding category/quantity, modifying gift items category/quantity, deleting gift items category/quantity, Sale Record, Database's data Report, transactions history are included.

Functional Requirements:

1. A Login and registration facility for enabling access to system both for customers and Admin.
2. The customer can view/search the gift categories without logging into the system or getting him/her registered.
3. To buy gifts, user should follow the registration and login process. Payment will be made through debit/credit card or cash on delivery.
4. Administrator will maintain the system through admin panel which consists of order bills, order Status add/update/delete the product details in the catalogue.

Tools:

Software Requirements:

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

Supervisor:

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Online Leather Point store

Project Domain / Category:

Web Application

Abstract/ Introduction:

Due to current COVID-19 situation all over the world, almost all businesses are shifting towards the online mode. In view of this, the main objective of this online leather point store is to develop a website through which the registered users will be able to order different Leather items such as bags, shoes and jackets etc. from anywhere without physically visiting the market. This website will be beneficial for not only the local users but it will also be beneficial for users belonging to other places for purchasing the Leather items.

This website will display different kinds of Leather items (bags, shoes and jackets etc.) in different categories. Any user can visit available Leather items, but only the registered user will be able to buy/place order. Admin will manage users, orders and whole website related matters.

Functional Requirements:

User:

- User Registration
- User Login
- User can Search (by name, by price, by item color etc.)
- User can add any number of Leather items (available in the stock)in shopping cart and can proceed for order
- User can select any payment option (credit card or cash on delivery)
- User can check his/her order status (approved/Pending/Cancel)
- User can check his/her order history
- User can submit his/her review about purchased item 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 as well as in email.

Admin:

- Admin Login
- Admin will manage the stock of Leather items on the website
- Admin can view list of registered users, total booking orders, shipping orders, pending orders, Feedback etc.

- Admin can Add/update/Delete item category
- Admin can Add/update/Delete Subcategories
- Admin can check the list of existing users
- 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.

Confirmation Message/Email

- When admin will approve or cancel any order then message will be sent to the related user's email or mobile number.

Tools:

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

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

Supervisor:

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Online Make-up Store

Project Domain / Category

Web Application

Abstract / Introduction

An Online Makeup Store is a cosmetic supply store having the specialty of selling the cosmetic products to its registered customers. The registered customers will be able to select the make-up product of their choice from different categories and add to the 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 method "Cash on Deliver" will be used.

Functional Requirements:

Admin:

1. Admin have access to monitor everything on the Online Make-up Store.
2. Admin will approve the registration requests.
3. Admin can add, update and delete the make-up products.
4. Admin can verify all the orders details.
5. Admin can view the available and sold make-up products.

Customer:

1. Customer has to register himself by sign up
2. Customer can view the different make-up products such as Lipstick, Nail Polish, Powder, Mascara, Eye liner from the available categories, select and the 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 etc. and select the cash on delivery method to checkout from the shopping cart.
4. Make-up products will be delivered to the customer address within the 7 working days.

Tools:

1. PHP Language and MySQL Database for developing Online Make-up Store.

Supervisor:

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Online Mobile Load Balance System

Project Domain / Category

Web Application

Abstract / Introduction

Online Mobile Load Balance System is a web-based interface to load amount/balance in mobile phones. This project aims at providing an easy and reliable interface to load amount / mobile balance of any telecommunication company online without buying physical recharge/calling card. The registered users of the system can put balance to their prepaid mobile phones or can pay their postpaid mobile bills from anywhere at any time.

The objective of the proposed system is to automate the procedure of loading balance/amount to the mobile phones. It eliminates the use of physical calling card or manual recharging the mobile account and presents a new online procedure for this purpose.

The Online Mobile Load Balance system is helpful to both the admins and users. By using the online interface, the admin can add new operators i.e. Jazz, Warid, Ufone, Telenor, Zong etc., tariff plans, offers and update or modify the existing tariff plans. It helps the users in creating their account, and then recharging the mobiles phones at any time.

Functional Requirements:

The system comprises of 2 major modules following with submodules:

3. Admin Module

- Add Operator (Jazz/Warid/Ufone/Zong/Telenor)
- Add Balance
 - For mobile balance of all the operators, insert dummy values in the database
- Add Plans
- Add Offers
- View Users
- View Transactions
- View / Edit Operators
- View User Feedback

4. User Module

- Register
- New Recharge (Select Operator, Select Plan / Enter Amount)
- Purchase balance (Integrate a payment gateway such as jazz cash for purchasing balance (optional))
- View Past Transactions
- View Offers
- Give Feedback

Tools:

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

Supervisor:**Name:** Rehan Ahmed**Email ID:** rehan@vu.edu.pk**Skype ID:** rehan.vu

Online Rent A Car System

Project Domain / Category

Web Programming

Abstract / Introduction

The main objective of this project is to develop an interactive and effective website design for the needs of the customers who do not have access to their own personal vehicle or don't own a vehicle at all. The Online Rent a Car System will provide a car reservation service that can be used temporarily by a customer for a period of time with a fee. The website focuses to display several car listings on the website and it contains sophisticated search feature for customers to search for cars listings specific to their needs and choices. Customers are free to choose any car of their choice based on their need and availability of such car.

The searching feature not only provides an easy and convenient way to search for listings but also displays the entire list of available cars in a customized format. Customers can view the complete specifications and details of each car listing with its features, description and photographs etc. and can easily make the car booking online. The main emphasis lies in providing a user-friendly searching for effectively showing the desired results on the GUI. The system is hence useful to provide excellent car renting services to customers and managers to easily manage the Rent a Car services and activities.

Functional Requirements:

- **Sign In and User Registration**

There will be three categories of Website users:

- Guest (Unregistered User)
- Registered User
- Administrator (Admin)

There will be Sign In interface for registered users and Sign Up interface for guests (unregistered users) to register on the website. Guest user will be able to just view the available cars for rent and can search the available cars according to his/her search criteria on the website. Registered user will have the privileges to request for booking a car on rent that is available on the website. Administrator is the super user of the website who can manage everything on the website.

- **User Module:**

View Available Cars: Any registered user or guest can view information of available cars and can view the complete details of any of the available cars.

Search cars according to some criteria:

All users can search for any specific available cars on the website. User can search for desired car by its company, model, engine capacity (cc), engine transmission type (Automatic/Manual), category,

seating capacity, AC/Non-AC, colour, price and other features etc. The user can select the car according to his/her requirements. If user's requirements meet, then system will show result in proper format.

Send Car Booking request: A user must have to login successfully to the website in order to book a car for rent. A registered user can view all of the available cars and can send booking request to admin for any car of his/her choice by selecting a date and time from calendar for car reservation. Customers are free to choose any car of their choice based on their need and availability of such car at the time of reservation.

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. Only the registered users can login to the website.

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.

- **Admin Module:**

Admin can manage available cars:

Admin will be able to change what cars are available for rent. Admin will have the rights to make a car available for rent or hide it (make it unavailable).

Admin can manage cars details:

Admin will be able to edit, update any information and details of any car on the website. Admin will be able to modify the details of any car. Admin can also add a new car on the website and can remove/delete any car from the system.

Admin can manage cars categories:

The rental cars are categorized into different categories such as economy, compact, compact premium, premium and luxury etc. Admin can edit, update any category and can create any new category of cars. Admin can move any car to its type of category on the website.

Admin can manage rent: The Admin can manage the rent so that the user can see the rent and book the car. Admin will have the rights to easily change the rent price of any car at any time as per needed.

Approving/Disapproving request: The car booking requests are directly sent to admin account by the system. Admin can view all the requests along with respective user details and therefore can make decisions for cancelling or approving the requests.

Admin Dashboard: Admin can view the detailed summary of everything such as count of registered users, registered user details, total bookings, total available cars of each category, total unavailable cars etc.

- **Payment Module:**

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

Once payment will clear, receipt of payment will be generated automatically and this receipt as well as a payment notification will be sent to Admin and a confirmation email will be sent to the customer. After receiving the payment notification, Admin will make the car ready for the customer on its reserved date and time.

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

Tools:

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

Supervisor:

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Recommendation Based Online Grocery Shopping Store

Project Domain / Category

Web Application

Abstract/Introduction

This project is a web-based E-commerce application providing a platform for online shopping of grocery products. Online Grocery Shopping refers to the use of retailer's websites for purchasing grocery products.

Customers can make order of their choice after viewing the available products, where they will be just one click away from their desired products. Registered customers can obtain benefits from membership discounts, other customers' reviews and products suggestions based on our recommendation system.

This project aims to develop a recommendation system for online grocery shopping by incorporating two additional considerations, i.e., product replenishment and product promotion. The proposed recommendation system will provide customers a better recommendation list to fit their consumer expectations, needs, and budget considerations and will finally boost online shopping experience.

Functional Requirements:

- Login process/ authentication for administrators and customers (Sign up and Sign in/ Sign out) to avoid unauthorized access
- Administrators can add and remove products along with product details
- Administrators can manage the sale/shipment/payment processes and return/exchange
- Customers can search products (along with details), select and de-select products (to/from shopping cart) online
- Customer can make payments online via debit/credit card or cash on delivery
- Product searching criteria (for customer) based on customer's interest/ shopping history and our recommendation system
- Special Offers Products Management

- Gifts Management (in case of lucky draws)
- Product Recommendations based on customer's interest/ shopping history and product replenishment and product promotion

Tools:

Server-side programming language: PHP, HTML and CSS

Client-side scripting: JavaScript and JQuery

DBMS: MYSQL

IDE: PHP Storm or anyone of your choice

Local host Server: WAMP, XAMP

Supervisor:

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Smart Online Multistore Point of Sale System

Project Domain / Category

Web Application

Abstract / Introduction

Smart Online Point of Sale (POS) is an online based point of sale system for multi-store businesses. By using Smart Online POS, you can easily maintain your all kinds of products and sales records online. You can store customer and supplier's information. You can easily see your daily, weekly, monthly and yearly reports. You can sell products and manage inventory. All data is stored in online server. There are three types of users- Admin, Manager and Staff. Also have user access limitation. You can manage your sales smartly from anytime anywhere.

Functional Requirements:

1. Admin user can set up multiple stores with different locations in the web application.
2. Inventory & accounting information is kept separately for each business.
3. Manage all of the stores at the same time.
4. Stocks, Purchases, Sales can be tracked differently for locations.
5. Powerful user and role management system
6. Create customers and suppliers information.
7. Create product information with image.
8. Edit product information.
9. Classify products according to Brands, Category and Sub-Category.
10. Get stock alerts on low stock.
11. Easily add purchases from different suppliers.
12. Add purchase for different locations.
13. Create a simplified user interface for selling products.
14. Different options for payments like Cash/ Credit/Card.
15. Manage expenses easily by creating expenses categories.
16. Analyse expenses based on category and business locations with expenses report.
17. Generate Reports for Purchase & Sale, customers, stock, Expense and Cash Register Report.

Tools & Technology:

ASP.net/Java/PHP and MySQL/MS SQL server for database.

Supervisor:

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Visual Arts

Project Domain / Category

Web Application

Abstract / Introduction

You are required to develop a simple user-friendly website “Visual Arts” which will facilitate its registered users to shop online artifacts like painting, calligraphy, abstract art paintings and antique decoration pieces etc. All users of the website will be able to view different art pieces according to their types/genre along with their prices. However, only the registered users will be allowed to place order on the website. Buyer (the registered user) will add the selected items to cart and will be able to checkout to purchase from passing through any payment method” Cash on delivery”, ” Credit card” and ”Debit card.

Functional Requirements:

Registered User Module:

1. User can add the selected items to cart.
2. User can Checkout to purchases cart items.
3. User will be able to sign up and sign in.
4. User will be able to adopt payment methods (cash on deliver, debit card, credit card).

Admin Panel:

1. Login availability.
2. Admin can accept/ reject user’s registration requests.
3. Admin can view all user’s details
4. Admin can update all users’ detail.
5. Admin can view all sales detail.
6. Admin can enter more categories and artifacts if required.

Tools:

PHP, MySql, Javascript, JQuery, CSS, Bootstrap, PhpStorm,

Supervisor:

Name: Komal Saleem

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Skype ID: komalsaleem123

Web Based Exam System

Project Domain / Category

Web Application

Abstract / Introduction

“Web Based Exam System” will auto-generate Exams for every student. This application will have a question bank created by the subject teacher and random paper will be generated for students. Teacher would be able to mark the questions online. The proposed system will facilitate to conduct the online exams in nearby campuses or at home using Internet and will eliminate the paper usage.

Functional Requirements:

The proposed system will consist of following modules:

Admin Module:

Login:

Admin can login to the Exam system using his/her ID and password.

Add new Subject:

Admin can add new subjects.

Assigning Subjects to Teacher:

Admin can allocate subjects to teacher.

Add new Teacher:

Admin can add new teachers.

Logout:

Admin can logout from the Exam system.

Subject Teacher Module:

Login:

- Teacher can login through ID and password.

Question Bank Management:

Teacher will choose one of the assigned subjects:

- Teacher can add new question.
- Teacher can edit existing questions.
- Teacher can delete existing questions.
- Teacher can view all the created questions.
- Questions can be of MCQ type, 3 and 5 marks questions.

Paper Criteria Management:

Teacher will decide the criteria of the exam:

- Total marks of the Exam
- Time for Exam
- MCQ's and their strength in paper
- 3 Mark Questions and their strength in paper

- 5 Mark Questions and their strength in paper

Note: System should validate the Total marks.

Exam Checking:

- Teacher can view the exams of the students by clicking on his/her student ID.
- When teacher will click the student ID, student's attempted paper will appear and teacher will mark the questions.
- Obtained marks will be calculated and the result will be saved and student ID will be marked as "checked".

Result Declaration:

- Teacher can declare the result or schedule the result declaration.

Student Module:

Sign Up and Login:

Student can sign up and login for the Exam Portal.

Conducting Examination

- Paper will be shown to the student after the successful login.
- Student will attempt the questions in the mentioned time and submit the paper.
- If not submitted within the given time, the exam will automatically be submitted.

Tools:

Bootstrap3 or 4 (front-end)

Java Script/ jQuery or any other JavaScript framework for validations and calculations

Xampp Server, MySQL Server for DBMS

PHP/Laravel (Back-end)

Supervisor:

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Web based Fitness Management System

Project Domain / Category

Web programming

Abstract / Introduction

Keeping track of how many calories you eat in a day will be helpful in planning out your physical exercising. Regular exercise and physical activity promote strong muscles and bones. It improves respiratory, cardiovascular health, and overall health. Staying active can also help you maintain a healthy weight, reduce your risk for type diabetes, heart disease, and reduce your risk for some cancers. Fitness can be described as a condition that helps us look, feel and do our best. Many people join gym to remain physically fit. This website will help people to get registered and choose the trainer.

Functional Requirements:

In this system there are three entities which are namely Admin, Member and Trainer. Each entity is interconnected to each other. This system should be user friendly, secured and reduces the staff requirements. This system should also be best for communicating with the members

- ✓ Admin can login using credentials.
- ✓ Admin can add new member.
- ✓ Admin can delete the members who left the gym.
- ✓ Admin can add new trainer can be added.
- ✓ Admin can unwanted trainers can be deleted.
- ✓ Admin will modify data of members.
- ✓ Admin will modify trainers shift.
- ✓ Member can login using credentials.
- ✓ Member can pay money by using electronic transfer.
- ✓ Trainer can login using credentials.
- ✓ Trainer can mark attendance of the members.

Tools:

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

Supervisor:

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IoT based Smart Door Lock System (Biometric & GSM)

Project Domain / Category

Automation / Digital Logic Designing (Hardware/Android Based Project)

Abstract / Introduction

In today's world be it offices, laboratories, school or home the first thing which concerns is security. In order to make your data, money, premises and personal belongings safe and secured from unauthorized persons. We will develop a fingerprint recognition biometrics system based on a real-time embedded system that will provide a complete security solution and making unable to access unauthorized people. In comparison to the other methods of authentication through RFID, passwords security this method has proven to be most efficient and reliable. Unauthorized access will be strictly prohibited by designing this system. The system stores the fingerprint of authorized people and only giving access to them. Fingerprint recognition is done by a sensor which can be connected with your main controller to validate for authentication. If the user's fingerprint has a positive match the door will open otherwise the GSM module gets triggered and the registered user gets a message and the buzzer connected will be initiated to alert the people or the security official in the surroundings.

The system will also have the capability to be operated through an SMS, the authenticated user can send an SMS to the door lock module, after justifying the authentications and other hardwired rules, the door lock can be controlled through a remote android device.

In simple words, in our project, we will have the following functional units:

- Biometric-based Smart Door Lock.
- GSM module for remote communication to control lock.
- Android application on a remote device (specifically a mobile phone) to control the Door Lock.

Functional Requirements

Hardware Module

- Biometric Sensing Module
- Mechanical Door Lock
- Display Unit
- GSM / Wi-Fi based Internet Connectivity Module

Mobile Application (Android)

- Capability to receive and manage an online database of the data from the Hardware Module
- Capable to control the Mechanical Door Lock system remotely
- Capable to get the door lock status

Tools

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

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

Supervisor

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IOT based Smart Garden with Weather Station System

Project Domain / Category

Digital Logic Designing (Hardware/Android Based Project)

Abstract / Introduction

Internet of Things (IoT) consists of devices that connect to the internet and communicate with each other. It enables these devices to collect and exchange data with a consumer. Through this project, we will develop an IoT-based Smart Garden with Weather Station system, which can be used to monitor the growth of plant every day and predict the probability for raining.

Why this IoT-based device is been created? Many people are interested in growing the plants are always forget on watering the plants. Hence, in this study, the device is equipped with a water pump, where it can be monitored and controlled by using a smartphone. In addition, the devices also consist of four main sensors, which are Barometric Pressure, DHT11 Temperature, and Humidity Sensor, Soil Moisture Sensor and Light intensity module sensor.

The Soil and Light Intensity sensor used to measure the value by percentages. Besides, two actuators, which are the water pump and LED light can be used remotely or by using a button on the devices. The LED is purposely to replicate the sunlight and make the plant grow faster. System will have the capability to get the rain prediction and control the water supply through a remote android application.

This IoT-based Smart Garden with Weather Station System can record the data and send the result to user through the smartphone application. This project is beneficial, and the system can be easily managed by all users such as gardener or farmer, and any other common human being.

The proposed IoT device also will be implemented with a weather station sensor, where it can monitor and predict the pouring rain every day. Hence, the user can switch off the automatic watering for reducing the water usage. The weather station sensor can determine the dew point, humidity of the air, air pressure and light index. It will beneficial the user, who are interested in researching about their plant growth. The collected data can also be shared through online mobile applications.

Functional Requirements:

Provide a bulleted list of functional requirements

- Hardware Module:
 - Barometric Pressure Sensing Module
 - Temperature Sensing Module
 - Humidity Sensing Module
 - Soil Moisture Sensing Module
 - Light Intensity Sensing Module
 - Electromechanical Water Pumping Module
- Mobile Application:

- Will receive and display all sensed details from the hardware module
- Can control the water pumping mechanism
- Can control the light intensity

Tools:

- Raspberry Pi or Atomic Pi (single board computer).
- Sensing Modules / Sensors:
 - Temperature.
 - Barometric Pressure.
 - Humidity.
 - Soil Moisture
 - Light Intensity
 - Electromechanical Water Pump
- Analog to Digital Conversion modules.
- Android Application Development.
- Database development / management.
- Python Programming.
- Controller Based Programming (if needed) generally in C/C++ or Assembly.

Supervisor:

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Smart Contactless Sanitizer Dispenser System

Project Domain / Category

Automation / Digital Logic Designing

Abstract / Introduction

In this current situation across the world, COVID-19 has just changed the thinking and living approach of a normal human being. Use of sanitizers became very common at 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 Hand Sanitizer bottle can lead to the spread of this COVID-19 virus. When an infected person presses the bottle trigger, the virus may spread from this hand to sanitizer bottle as well.

We can solve this by using Automatic hand sanitizer dispenser. Automatic means, no need to trigger with our hand. Just place your hand near the bottle. the bottle will automatically be triggered to dispense the liquid from the container. The whole project will consist of a Sensing module, which will sense the presence of human hands near the bottle opening. On a valid sense, using an electro-mechanical pump governed by a controller will dispense the sanitizer liquid from the bottle.

Functional Requirements

Hardware Module

- Human Hand Sensing Module
- Electromechanical Pumping Module

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.)
- Electromechanical pump
- Servo Motors

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

Supervisor

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Email Spam and Non-Spam Classification

Project Domain / Category

Data Science/Machine Learning

Abstract / Introduction

Email becomes a powerful tool for communication as it saves a lot of time and cost. It is one of the most popular and secure medium for online transferring and communication messages or data through the web. But, due to the social networks, most of the emails contain unwanted information which is called spam. To identify such spam email is one of the important challenges.

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

Functional Requirements:

Administrator will perform all these tasks.

1. Collect Data Set

- Gathering the data for Email spam contains spam and non-spam messages

2. Pre-processing

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

3. Feature Selection

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

4. Apply Spam Filter Algorithms.

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

5. Train & Test Data

- Split data into 70% training & 30% testing data sets.

6. Confusion Matrix

- Create a confusion matrix table to describe the performance of a classification model.

7. Accuracy

- Find Accuracy of all algorithm and compare.

Tools:

- Python
- Anaconda

Prerequisite:

Artificial intelligence Concepts, Machine learning.

Supervisor:

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Etherum Smart Contracts Security improvement using machine learning techniques

Project Domain / Category

Machine Learning

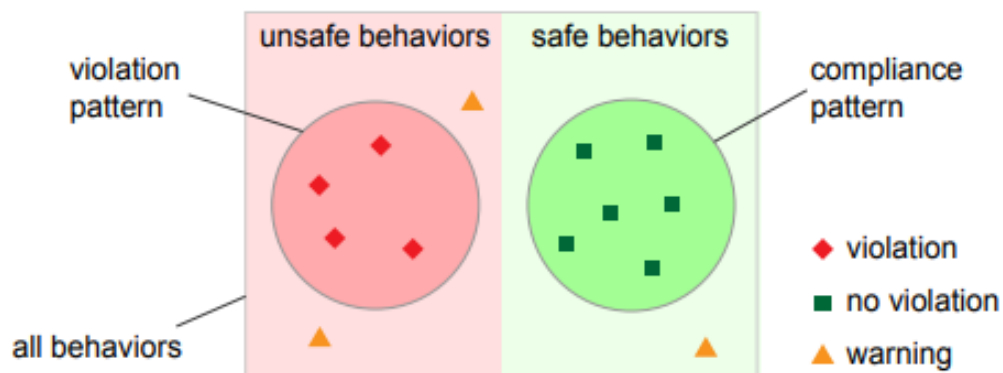
Abstract / Introduction

Ethereum is a decentralized open source blockchain featuring smart contract functionality. Ether is the native cryptocurrency token of the Ethereum platform. It is the second-largest cryptocurrency by market capitalization, behind Bitcoin. Smart contracts are code files written in programming language named solidity, as the block chain is based on smart contract, so the security of smart contract is very important and vital to the security of blockchain system itself. Smart contracts can have many vulnerabilities like recursive calls, unpredictable ether flows, Suspected input, transaction reordering and insecure code patterns. Our goal in this project is to detect these vulnerabilities.

Functional Requirements:

1. The system must be able to analyse a complete solidity code file (smart contract).
2. System will use machine learning techniques to check for vulnerabilities in the smart contract submitted.
3. System can check any 3 vulnerabilities from the given data set.
4. Deploying smart contract on etherum network is not required.

The following flow can be followed to classify unsafe code (vulnerable code) and safe code of a smart contract.



Tools: Any Modern programming tool (Python recommended)

DataSet:

<https://github.com/smartbugs/smartbugs/tree/master/dataset>

Supervisor:

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Project Domain / Category

Web Application/Android Application, Artificial Intelligence

Abstract/Introduction

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

Functional Requirements:

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

5. The admin should manage and view all backup records.
6. The admin should view the performance of crops weekly basis and update knowledge based on the requirement.

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

Tools: PyCharm (Python language)

Prerequisite: Artificial intelligence Concepts

Supervisor:

Name: Saima Munawar

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Supervised Learning Based Recommender System for Online Clothes Shopping

Project Domain / Category

Web Application/Artificial intelligence

Abstract / Introduction

A substantial increase in the web services like eBay, Facebook marketplace, YouTube Amazon etc. made the recommender systems more important in our lives. From e-commerce to online advertisement (suggest users the relevant contents, matching their preferences) recommender systems have become inevitable in online journey. A recommender system helps users, discovering new and relevant items. In general, recommender systems are a class of algorithm aims at suggesting relevant items to the user (items include products to buy, movies to watch, text to read, and many other tangible entities).

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

Functional Requirements:

Modules:

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

1. Admin:

- Login: Admin can login in his personal account using id and password.
- Add Clothes products : Admin can add clothes item
- View/Manage User: Admin can view and manage all information about the user.
- Admin can check feedback of the intended visitors by notification online
- Admin can view/ update the visitors profile and can update password
- Visitors can get their feedback response notification online.
- Admin can get the user purchasing/buying history

2. User:

- Login: User can login his account using id and password.
- View Products: User can view the products.
- View Product on search: User can view the product on basis of the searches.
- Buy Products: User can buy the Clothes by providing his/her card details.
- View Recommends: User will get the recommendation of the Clothes Shopping items.
- Visitors make their profile including their Name, Age, contact # and Address

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

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

- <https://www.analyticsvidhya.com/blog/2018/06/comprehensive-guide-recommendationengine-python/>
- <https://www.youtube.com/watch?v=Eeg1DEeWUjA>
- <https://tryolabs.com/blog/introduction-to-recommender-systems/>

Tools:

Language: Python (Preferred One)

Frameworks: Django or Flask, Bootstrap.

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

Databases: MySQL, SQLite, Postgresql. etc.

Supervisor:

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Recommendation for Clothes of E-commerce Site for Online Shopping

Project Domain / Category

Web Application / Artificial Intelligence

Abstract / Introduction

In today's modern age, the Lifestyle of people is very different from those who used to be in the past. People in the past feel uncomfortable and time-consuming going to crowded markets for shopping. The term "E-commerce" has emerged ever since the IT Boom has taken place around the world. The use of E-commerce shopping has saved people a lot of time as they can do online shopping with it. Online shopping is a process by which consumers can buy products, goods, services, etc. directly from the seller without any intermediate service over the internet. The consumer can visit web stores from the comfort of their house and shop as by sitting in front of the computer. Online stores are usually available 24 hours a day and many consumers have internet access both at work and at home. So it is very convenient for them to shop online.

In the last few decades, there has been a substantial increase in web services like YouTube, Amazon, and Netflix, etc. Due to this rise, recommender systems have taken more and more places in our lives. From e-commerce (suggest to buyers articles, products that could interest them) to online advertisement (suggest users the relevant contents, matching their preferences) recommender systems are today unavoidable in our daily online journeys. Companies like Amazon, Netflix, LinkedIn, and Pandora leverage recommender systems to help users discover new and relevant items. In general, recommender/recommendation systems are a class of algorithm that aims at suggesting relevant items to the user (items include movies to watch, text to read, products to buy, and many other tangible entities). The main objective of this E-commerce website for online shopping will be implemented in two modules. In the first module application will facilitate the user such an interface in which he/she can buy online clothes from the web application reliably and efficiently. In the second module, the application will recommend the user, clothes based on his/her buying history.

Functional Requirements:

Module 1:

- 1) Users will be able to log in to the system using his/her **Id** and **Password**.
- 2) Users can view the products.
- 3) The system should provide an option to the user from which he/she can search the products of his/her choice.
- 4) The system should provide the user an interface through which he/she can buy the products by providing his/her card (debit/credit) details.
- 5) The system should organized the products in such a way that, Winter and summers products (clothes) should be under separate sections.
- 6) Admin should be able to log in to the system using his/her **Id** and **Password**.

- 7) Admin should be able to add the Products (clothes) item to the list, which will be viewed by the user.
- 8) Admin will also be able to manage the information of the user.

Module 2:

- 1) The system should be able to recommend the products to the user based on his/her buying history.
- 2) For implementing the recommendation functionality in your Project you have to use AI (Machine Learning) based Approach. Rule based approach will not be acceptable for this functionality.
- 3) To implement the recommendation feature you can either use collaborative or content based filtering technique in your application. Most preferable one is to use the collaborative technique.

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

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

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

Tools:

Programming Language: Python (No other programming language is allowed except python)

Frameworks: Django, Flask, Bootstrap, etc.

IDE: Visual Studio Code, Pycharm, or any other Modern IDE

Supervisor:

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AEN Trader's Financial System

Project Domain / Category

Web Application

Abstract/Introduction

You are required to develop an accounting system for "AEN Traders". In this system, business accounts will be managed. This system will help in managing financial transactions for a small business. It will save huge time and present clear status of the profit and loss. Moreover, it will help in accurate decision making and forecasting.

Functional Requirements:

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

1. Manager Accounts
2. Accountant

Responsibilities and functions of each user are given below:

Manager Account:

Manager account can add, delete and update anything in the system.

Accountant:

Accountant only can enter data.

Detail of the system

Student will be given an excel sheet that contains complete accounts that are need to developed. These accounts will help to make a financial system. All accounts (excel sheet contain all required formula) you are required to develop these accounts accordingly. Sheet name will be form name in the system.

You are required to generate following reports and integrate in the system as well.

1. Trial Balance
2. Debtor and creditor report
3. Sale report
4. Purchase report
5. Cash and bank report

Excel sheet link: <https://drive.google.com/file/d/1j2hlgCzI5J0FJVL2jT2rwt-5I60mQfm5/view?usp=sharing>

Proposed Tools: PHP, MySQL

Supervisor:

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Courier Management System

Project Domain / Category

Web Application

Abstract / Introduction

Courier Management System is the simplest solution for Courier & Cargo Tracking Business. Courier managers are responsible for scheduling order deliveries, assigning them to couriers, overseeing operations while couriers are in the field, and suggesting strategic improvements for future planning. Using this system a customer can easily register and place orders by entering some details afterwards his/her parcel will be picked up from pickup point and will be delivered to the destination; meanwhile customer can check the status of his/her parcel.

Functional Requirements:

This system will have following users:

1. Administrators
2. Office Managers
3. Customers

The functionality of each user is given below:

1. Administrator

- a. Login
- b. Admin can manage & update whole data
- c. Update Profile
- d. **Manage Offices**
 - i. Add Offices.
 - ii. Edit/Update Offices
- e. **Manage Office Managers**
 - i. Add Managers(for the recently created Branch/Office)
 - ii. View/Edit/Update Managers
- f. **Manage Shipment**
 - i. Add Shipper info, Receiver info and Shipment info.
 - ii. Edit/Update Shipment
 - iii. List all Shipment
 - iv. Search By Consignment Number
 - v. Update Status
- g. **View Reports**
 - i. Report of all customer
 - ii. Report of all consignment
 - iii. Report of all pickup Date/Time
 - iv. Report of all status
- h. Approve/Disapprove Customers

2. Office Managers

- a. Login
- b. **Update Profile**
- c. **Manage Shipment(their Own Branch Customers)**
 - i. Add Shipper info, Receiver info and Shipment info.
 - ii. Edit/Update Shipment
 - iii. List own Shipment
 - iv. Search By Consignment Number
 - v. Update Status
- d. **Reports of their Own Branch Customers**
 - i. Report of their own customer
 - ii. Report of consignment
 - iii. Report of all pickup Date/Time
 - iv. Report of all status

3. Customers

- a. Login
- b. Register
- c. Place orders
- d. Users can check status of their product after placing orders.

Tools:

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

Supervisor:

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Cross Platform Mobile application for Quiz/Survey Development

Project Domain / Category

Mobile Application

Abstract / Introduction

You have to develop a cross platform Mobile application in which user can create quiz or survey. Cross platform means that this application can run on android and iPhone as well. Furthermore applications that look and feel truly native on any platform from one code base are called cross platform applications. Application should provide an interface to the user in which he can add question and possible options. Developer should provide user with the option that whether he can add radio buttons or text box or drop down list or check box for answer of the question. Each correct answer should be assigned marks.

User can set time to the whole quiz. User can also set the number of times a user can take the quiz. Time taken by each user in solving the quiz or survey should also be recorded. Admin side of the application can see the marks, time taken by the user, summary of the results, detail results. Make sure that this will be a dynamic application in which user can create quiz or survey of his choice. So provide as much options as you can.

Functional Requirements:

Provide a bulleted list of functional requirements

1. User can create quiz or survey or questionnaire.
2. Application should provide an interface to the user in which he can add question and possible options
3. Developer should provide user with the option that whether he can add radio buttons or text box or drop down list or check box for answer of the question.
4. Each correct answer should be assigned marks.
5. User can set time to the whole quiz.
6. User can also set the number of times a user can take the quiz.
7. Time taken by each user in solving the quiz or survey should also be recorded.

8. Admin side of the application can see the marks
9. Admin side of the application can see time taken by the user
10. Admin side of the application can see summary of the results
11. Admin side of the application can see detail results.
12. Admin side of the application can group students based on results.
13. Make sure that this will be a dynamic application in which user can create quiz or survey of his choice and can set as many options as he can.

Tools:

Flutter SDK, Ionic SDK.

Supervisor:

Name: Muhammad Anwar

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Skype ID: lovelyanwar@skype.com

Designing and Development of an Online Computer Mart(CMart)

Project Domain / Category

Web Application

Abstract/Introduction

This project is an online computer mart that allows users to check for different laptops and all computer related accessories available at the online mart and then purchase online. The project provides a list of computer products displayed online in various models and designs. The user may browse through these products as per categories. If the user likes any product, he / she may add it to his shopping cart. Keeping the features of an e-commerce site, online computer mart software project acts as a central database containing various computer related electronic products in stock along with their price, model and design. This project provides customers online computer shopping facility from their homes.

A customer can sign up for free, login to his / her account, can browse any electronic product of his / her own interest, and can view prices and other details of selected product, place that product into shopping cart and can select from payment options. User needs to register on the site before checking out so that, he / she can login using same ID and Password next time. User can select any payment option that he / she wish to, like Fast Cash, Credit / Debit card or Cash on delivery.

This website project will be developed using ASP.NET / PHP as the front end and SQL as back-end. The SQL database will store information about the laptops and its related electronic products and other details.

At checkout time, the items in the shopping cart will be presented as an order to the customer. At that time, more information will be needed to complete the transaction. Usually, the customer will be asked to fill a form containing information about shipping address and other details, and payment information such as credit card number for order confirmation. An email notification will also be sent to the customer as soon as the order is placed / confirmed.

Functional Requirements:

1. The system shall provide convenient interface for User Registration, Product Search and Payment.
2. A guest user can only view electronic products related to computers. For any kind of shopping he / she must have to register.
3. The system shall be capable to generate invoice bill and Customer shall be able to pay it online.
4. The system shall provide Password Recovery facility through customer email id.
5. The customer shall be able to trace his / her order later on. Administrator shall also be able to trace any order easily.
6. The search interface shall be convenient to search any Product.
7. Every order shall be allocated a unique identifier (ORDER_ID) which the user shall be able to copy to the account's permanent storage area.
8. Both admin and customer shall have different views. i.e. Administrator View and User View.
9. Customer shall be able to get notifications on his / her email id.

Tools: .NET Technologies, PHP, SQL Server, MySQL, CSS, IIS.

Supervisor:

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District School Management System

Project Domain / Category

Web Application

Abstract/Introduction

It is a web based school management system for XYZ district. The aim of this system is to manage the students' academic record from all the schools in XYZ district. 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.

- School Clerk
- Subject Teacher
- Primary Section Head
- Middle Section Head
- High Section Head
- School Principal
- District Education Officer
- Admin

Responsibilities and functions of each user are given below:

School Clerk:

There is only one clerk in each school, who is responsible to enter the data of Principal as well as all the teachers in the school. The information which a clerk can access/modify includes following:

- a. Teacher's Name
- b. Teacher's NIC No
- c. Principal's Name
- d. Principal's NIC No
- e. Teacher's Attendance
- f. Principal Attendance
- g. Teacher's Leave Record
- h. Principal's Leave Record
- i. Subject detail
- j. Students detail

Subject Teacher

There can be multiple teachers for one subject in one school. Each subject teacher can teach multiple related subjects. The information which a subject teacher can access includes following:

Non editable information:

- Name
- Employee ID
- Courses Assigned
- Salary

Editable information

- Class results
- Student attendance

Primary Section Head:

There is only one primary section head in one school. The primary section head assigns the particular subject to any subject teacher. This user can access/modify following information:

- Names of primary teachers
- Subjects assigned to primary teachers
- Attendance of students from primary section
- Attendance of teachers from primary section
- Results of students from primary section

Middle Section Head:

There is only one middle section head in one school. The middle section head assigns the particular subject to any subject teacher in middle section. This user can access/modify following information:

- Names of the teachers in middle section
- Subjects assigned to teachers
- Attendance of students from middle section
- Attendance of teachers from middle section
- Results of students middle section

High Section Head:

There is only one high section head in one school. The section head assigns the particular subject to any subject teacher in high section. This user can access/modify following information:

- Names of the teachers in high section
- Subjects assigned to teachers in high section
- Attendance of students from high section
- Attendance of teachers from high section
- Results of students from high section

School Principal

There is only one Principal in one school. He has all the rights of School Clerk, Subject Teacher, Primary Section Head, Middle Section Head, and High Section Head.

District Education Officer

There is only one District Education Officer in the system. He can view the executive reports like attendance of teachers/students or results of students from any class in any school.

Admin

Admin is the power user and have the rights of all other users. Moreover He can add/remove any subject as well as any user in the system.

Proposed Tools: PHP, MySQL

Supervisor:

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E-Books Store Management System

Project Domain / Category

Web Application

Abstract / Introduction

This online e-book store will offer a wide range of books to buy online. You are required to develop a website that facilitates users to search required books and add to the cart. User can pay through Easy paisa or cash on delivery. This website will contain all information regarding steps to buy and pay in the shape of a flow chart for new users.

Following key functionalities must be developed:

1. Meaningful icon on the left side of the website.
2. Contact Us page placed in the header on the right side.
3. Frequently asked page (FAQs) placed in the header on the right side
4. Login and Registration link placed in the header on right side
5. Social Media Pages icon placed in the header on right side
6. Shopping cart and total price on the top right side of the page.
7. A category list after the header of the website. User may click the category list to open a particular page containing all books of that category. For example, Islamic, historical, educational, etc.

Functional Requirements:

Admin module:

- Registration and login process for admin.
- Admin will be able to add, delete, or modify books categories.
- Admin will be able to manage the stock of different books.
- Admin will be able to view newly posted orders.
- Admin will be able to approve or reject any order.
- When the admin will approve or reject any order a message will be sent to the related client via email.

- Admin will be able to view, add, modify, and delete any customer details.
- Admin will be able to Add order status as approved, pending, delivered, etc.
- Admin will be able to generate sale and purchase reports.
- Admin will be able to generate profit and loss reports.
- Admin will be able to generate an order receipt.

Client module:

- Client can view different existing books categories.
- Client can get registration by the sign-up process.
- Client can place order.
- Client can check the ordered status.
- Client can post reviews/feedback.

Tools:

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

Supervisor:

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e-Classifier (A website for free online advertisement)

Project Domain / Category

Web Based Application

Abstract / Introduction

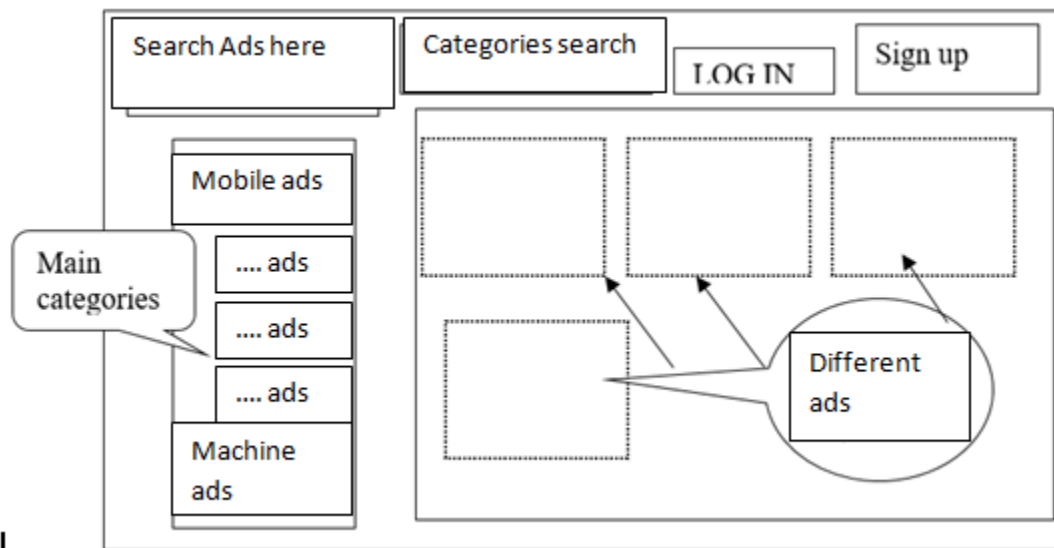
e-Classifier is website used to advertise the goods and professional services using *Internet*. By using this service, users will advertise anything they want to sell online to intended individuals. The key benefits will be radically availability of advertisements online, accessible anywhere from world as compared to local advertisement in printed form.

Functional Requirements:

GUI:

GUI interface:

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



NOTE: Above design is for demonstration purpose only.

Visitor:

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

Advertiser (user):

- 1- To post an ad, a simple user must register him/her self with this website.
- 2- Categories should be available so that each ad is advertised in respective category.
- 3- A register user can view ads, post ads, delete his ads; update his ads in his login page interface.

Administrator:

1. Updates categories information
2. Generates reports from system
3. Manages categories of ads
4. Admin of this website will manage categories for the ads, filters for searching, manage users and their ads. Admin can generate reports like activity of a user, number of ads posted on daily, and weekly or monthly basis using admin panel interface.

Advertisement format:

The required information to post an advertisement, are following;

- a. 3 different images of the item to be advertised
- b. Details of the item to be advertised
- c. Name and contact info of the advertising person

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

Tools:

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

Supervisor:

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Skype ID: abdulmajidkk

e-Interactive Book (eIB)

Project Domain / Category

Web Application

Abstract / Introduction

Book is the important part of student life. Books are one of the primary sources to deliver knowledge. Conventional books comprise of the papers in hard form and contents printed on these pages. Books in this form have their own worth, however, the problem with these books is that they are physical in nature taking space, are bulky, and difficult to port from one place to other. With passage of time and invent of new technologies, the problem has been solved up to some extent. Now different digital books in e-format are available. Examples include digital books in PDF, Word, and RTF format etc. The problem with these formats is that the books written are not interactive. E-Interactive Book (eIB) will be an online application that solves the problem by providing interactive books i.e. students can read the contents, watch relevant videos and he/she she can take quizzes all at the same place. Similarly, the book may contain animations (in gif format) as well.

Functional Requirements:

The tasks provided by eIB can be categorized at three (03) levels.

Admin tasks: Admin is a high-level user that will manage the entire eIB application. Management of the application includes creating/editing/deleting Instructor logins, creating/editing/deleting subjects and assigning these subjects to the instructors. For example, an admin can create an instructor user (e.g. user with name "Ali"). Now he can assign "Ali" as many subjects as needed.

Instructor Tasks: Instructor is very important role in eIB application. An instructor can create as many books as he wants about any subject. For example, he can create three books on "Fundamental of Algorithms" all with different names and contents.

To create a book, instructor needs to provide relevant information including Book Name, pre-text and any meta information required. Once a book is created, he will have to provide the contents of the book. Contents include:

- **Textual contents:** Textual contents include written text about the topics e.g. topic name, definitions, details, examples, tables, pictures etc.
- **Animations (In the form of Gif images):** For the sake of this applications, the animations can be provided in the form of GIF images or any other image format which supports animations.
- **Interactive quiz:** An interactive quiz about the topic along with key of the quiz and evaluation mechanism will be provided. So, if a student takes quiz, the application will mark the quiz as per key and marks will be shown to the students.
- **Further readings:** Links for further readings will be provided in the forms of hyperlinks. The links may include online URLs of the resources, tutorials, books etc.

Relevant interfaces will be provided to Instructor for creating all the above-mentioned functionality. Note that "Table of contents" will automatically be created for the entered topics. Clicking on any topic name will take student to that topic.

Student Tasks: A student can open any book. Name of the books will appear on the main page of application. Once student clicks on name of a book, the “Table of Contents” page of that book will open. Now student can click on any topic name to go to that topic. Once the topic is opened, student can read the topic, watch the lecture or any relevant video (embedded in the topic contents) and take quiz. Similarly, “Further Reading” links will be provided for each topic. Relevant interface should be created for this purpose.

Note: Logins should be created only for Instructors and admin i.e. both admin and instructors require user login to login the application. Student does not require any login to view the books. A sample content page is shown below (The shown page is just one sample, videos, static images, animated images, quizzes and further reading links can be placed anywhere within the contents depending on appropriate location).

Sample Page Template

Topic Name:

Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here.

Video here

Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here. Textual contents here.

Animated image(s)

Some more contents here. Some more contents here. Some more contents here. Some more contents here. Some more contents here. Some more contents here. Some more contents here. Some more contents here. Some more contents here. Some more contents here.

Quiz:

Q1: Statement
Option-1
Option-2
Option-3
Option-4

Q2: Statement
Option-1
Option-2
Option-3

Option-4

Q3: Statement

Option-1

Option-2

Option-3

Option-4

Submit

Further reading links

Tools:

Php/ASP.Net, MySql, SQL Server etc.

Supervisor:

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E-Lawyer

Project Domain / Category:

Web Application

Abstract / Introduction:

The aim of this project is to develop a web-based system named as “E-Lawyer” through which the client will be able to get the information of Lawyers and courts which helps for case proceeding. This system provides the facility to search Lawyers online and book their appointment. Due to the busy schedule of life and the Pandemic situation of COVID-19, there is no need to visit physically the lawyer's office. This system converts the lawyer manual system into an online system that facilitates lawyers to get the computerized result of the case proceedings. This system also provides up-to-date information related to the proceeding case and hiring date. This system also categorized the court (i.e., Civil court, Senior-Civil court, Session court, High court, and Supreme Court) and add lawyers accordingly. This system also suggests the court according to the nature of the case. This system also helps to search for a case file through a client ID. This system reduces the paperwork of the lawyer and client.

Functional Requirements:

Client panel:

1. The client can register through this portal. (i.e., Name, CNIC, Email, Mobile, Picture etc.)
2. The client can login and logout.
3. The client can edit information.
4. The client can search for lawyers based on their requirements.
5. The client can bid on the lawyer profile to pursue the case. Information related to lawyers will be there on the website where customers can view their profile before contacting them.
6. The client can see all details of their cases and remember all the dates of case hiring through notification.
7. The client can book a schedule for a meeting with a lawyer.
8. The client pays all the fees of the lawyer through this portal.
9. The client can request to the admin for the change of Lawyer through this portal for further proceeding.
10. The client can download all the proceedings and the documents of the case.

Lawyer panel:

1. The Lawyer can register through this portal.
2. The Lawyer can login after approval of the admin.
3. The Lawyer can add their information and cases.
4. The Lawyer can approve/reject the client case.
5. The Lawyer can accept/reject the request for meeting.
6. The Lawyer can add the case to the related court.
7. The Lawyer can check the payments of the client through client ID.
8. The Lawyer can add the fees according to the case.
9. The Lawyer can add all the documents and proceeding.

10. The Lawyer can close/open the status of the case.

Admin panel:

1. The Admin can login and logout.
2. The Admin can add different categories of court (i.e., Civil court, Senior-Civil court, Session court, High court, and Supreme Court)
3. The Admin can approve/reject the request of the client. (For change of the Lawyer)
4. The Admin approves the Lawyer Profile after verification
5. The Admin can charge the service fee on the Lawyer profile.
6. The Admin also apply the CRUD operation on the Lawyer's profile.
7. The Admin also apply the CRUD operation on the Client's profile.

Tools:

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

Supervisor:

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E-Learning for Kids

Project Domain / Category

Web Programming

Abstract / Introduction

The aim of E-Learning application is to provide good quality content of different subjects to all children around the world. All information will be available free of cost. This app will also be beneficial for those children who cannot go to school due to many reasons and so they are not getting any kind of education. Parents and teachers can also get different materials for their kids and students respectively. The website will allow them to search material subject wise and topic wise. It will also provide content of different subjects such as Mathematics, Science, English etc. grade wise. In addition to this, the app will also provide lessons on language skills and art skills. At the end of each lesson, students can assess their learning through some interactive activity or quiz.

Functional Requirements:

1. Learning material should be divided into different sections i.e. for parents, kids, and teachers.
2. Content of different subjects should be organized in such a way that it can be accessed both by grade and by subject.
3. Topic wise search should also be provided.
4. Language skills and art lessons should also be provided.
5. You should make good use of graphics to make lessons interesting.
6. Quiz or interactivity activity should be added at the end of each lesson and feedback should be provided to students.
7. There should be registration facility for kids, parents and teachers.
8. There should also be "About Us", "Terms and Conditions" and "Contact Us" pages.
9. There should be Admin module to manage all above activities.

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

Tools:

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

Supervisor:

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Skype ID: umra.naeem

Entrepreneur Mums Home Kitchen Poverty Demotion Program (EMPDP)

Project Domain / Category

Web Application

Abstract / Introduction

Currently we are facing the problem of COVID 19, due to this pandemic food demand as well as income are declined day by day that leads to poverty. Entrepreneur can't establish his/her own business in this situation physically. So, there is a need to develop an E-commerce website that help new entrants to start their food business in order to satisfy the needs and wants of their customer. The core objective of EMPDP project is to develop a website that facilitates the new food entrants to introduce their food menus /offers and help customers to place orders online. EMPDP simplifies the ordering process for customer as well as food providers.

Functional Requirements

Administrator Panel:

1. Manage login process to allow authentic user to access the admin, customer and food provider panel.
2. Create and manage their account.
3. Keep the record of customer.
4. Add/update/delete food providers.
5. Keep the record of order status.
6. Keep the record of menus with rates.
7. Keep the record of food providers.
8. Manage the record of customer.
9. Manage customer history.
10. Manage the rating of food providers.
11. Get the food from food providers and made payment.
12. Deliver the order to customer.
13. Receive the payment from customer.
14. Send promotions to registered customers by offering discount and promotions and also rating of food providers.
15. Manage revenue and expense record.

Food provider panel:

Food provider will do the following:

1. Create an account or register him/herself on EMPDP.
2. Food provider will sign-in.
3. Food provider will upload the menu list by accepting EMPDP Terms and conditions.
4. Add/Update/Delete the menu list with rates.
5. Receive payment.

Customer panel:

1. Create an account or register him/herself on EMPDP.
2. View the food providers with menu list.
3. View the rates.
4. View the food provider ranking.
5. Place the order by selecting mode of payment.
6. Confirm the order.
7. Delete the order before confirming it.

Tools:

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

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

The web application must be well design to serve the needs of an engineering company, so that they can easily manage their:

- Products/services and project.
- Clients and employees.
- Sales and purchase of products and parts.
- Stock of products/parts.

Any client can visit website without registration, he can view the details of previous products and projects, other clients reviews about product/services or projects, also send message to get more details about any products/ services. Clients can get registration to become regular customers of company, after getting registration they post orders by filling the order details form.

Company may want to add details of their completed and ongoing projects, for this purpose they can also add videos of completed projects. Company also wants to mange stock of their products and engineering parts. So, it will benefit both client and the company.

Functional Requirements:

Admin module:

- Registration and login process for admin.
- Admin will be able to add, delete or modify products/services and projects details.
- Admin will be able to mange stock of products/ engineering parts.
- Admin will be able to view newly posted orders details.
- Admin will be able to approve or reject any order.
- When admin will approve or reject any order a message will be sent to related client via email.

- Admin will be able to view products reviews and feedbacks.
- Admin will be able to view, add, modify and delete any client or employee details.
- Admin will be able to view client's messages.
- Admin will be able to Add order status as started, partially completed, completed, delivered etc on daily weekly or monthly basis depend on project type.
- Admin will be able to generate sale and purchase reports of products/parts inventory.
- Admin will be able to generate profit and loss reports for any ongoing or completed project.
- Admin will be able to generate loss or profit reports on monthly basis.
- Admin will be able to generate an order receipt and send it to client via email.
- Admin will be able to add other employee's details.
- Admin will be able to handle payments and agreements with clients.

Client module:

- Client can view different existing products/services, projects.
- Client can view reviews/feedback about products/services, projects.
- Client can send message to get more details about any products/services or projects.
- Client can get registration by sign up process.
- Client can place order by filling order detail form.
- Client can check ordered product/project status.
- Client can post reviews/feedback about services and products/projects

Tools:

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

Supervisor:

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Email ID: Ammara.rasheed@vu.edu.pk

Skype ID: Ammaratouqeer409

Food Recommender System

Project Domain / Category

Web Programming

Abstract / Introduction

Food Recommender System, recommends relevant food item(s) to a customer/user, it basically works on the “user interest”. The main aim of this project is to develop a module which can help any website or application and its users while recommending relevant food items to its customers. Customer will provide its interest in search bar or in his/her profile which saves time of the customer as the system will recommend food items those are relevant to his/her interest. Customer can order a food item, view the relevant food items recommendations, contact to support staff and admin. When a user enters the name of a food item e.g. burger in search bar, different types of available burgers/fast food items recommendations will appear in the right slider of the application. For the any type of inquiry, user can contact to the support staff and for profile/password relevant issues, user can contact to the administrator. Administrator will verify from the physiotherapist before entering the receipt. Moreover, customer can submit his/her feedback about the application, support staff and services e.g. provided recommendation was helpful or not?, etc.

Functional Requirements:

Here, following Minimum modules for Food Recommender System

1. Customer/User Module

In this module, customer can search a food item according to his/her choice, order item, view recommended item, select recommended item, search for more recommendations and pay money through credit card, cash on delivery, through online banking, generate payment receipt, submit feedback, Contact to support staff etc.

2. Administrator Module

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

3. Support Staff

Support staff can track order, contact to delivery boy, provide assistance to the customer, etc.

Note: It is advised to attend Sessions for better Guidance and details.

Tools:

Java J2EE, JServlets, JSP, JSF

HTML, J Query, CSS

IDE Netbeans

MS Visio

My SQL

Supervisor:

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Skype ID: shafaqnisar1

Online Restaurant Management System

Project Domain / Category

Web Application

Abstract / Introduction:

Online “Restaurant Management System” will serve as the platform to provide service facilities to restaurant management and its customers. It will help the restaurant staff to keep track of restaurant details like Restaurant Menu, Order Details, Chef Details, Table Reservations from customers, Collection, and Expense details (daily or monthly). The application will also provide users an easiest way for online orders. The system will help the management to reduce manual efforts involved in keeping record of transactions. Also, the application will aid in maintaining food quality and orders easily on the basis of customers’ feedback.

Functional Requirements:

The admin is responsible for creating table, menu, orders, price details, and chef details. The user can view the menu, orders or, today’s offer and can order the food. The chef master can view the today’s order ordered by the users and set delivery time.

The user interface module is classified into three types: Admin, Chef and Customer.

Customer can login through our website and access the service offered by the restaurant.

1. Administrator Module:

- Admin can view profile details, update his/her profile and password.
- Admin can update the website information, which can be viewed by the End-User.
- Admin is responsible for creating restaurant menu with Prices, Today’s Special dishes, Deals and Discounts etc.
- Admin is responsible for creating chef details and provides them with username and password to access.
- Admin is responsible for online Table reservation/booking from customer, on the availability of tables.
- Admin can view the orders placed by the customer.
- Admin can view daily or monthly collection details.
- Admin can view the feedback report from the table customer.

2. Chef Module:

- Chef can view profile details, update their profile (according to their specialties) and password.

- Chef can view the today's order placed by table user along with the quantity and description.
- Chef is responsible for setting up delivery time for each other.
- Chef is responsible for updating the delivery status as delivered for delivered orders.

3. Customer Module:

- User will register and login the website.
- User can view the menu and place the order.
- User can view the popular items and today's special dish.
- User can view the popular deals and discounts.
- User can view the delivery status time for the order set by the chef master.
- User can post feedback for service, taste of the dish.
- User can do the payment either through debit/master card, or it will be cash on delivery.

Tools:

Eclipse/NetBeans for Java

Microsoft Visual Studio for C#

PHP

MySQL (Backend)

XAMPP (Server)

Supervisor:

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Smart Canteen

Project Domain / Category

Web based Application

Abstract / Introduction

Now a days, people don't have a lot of time to waste in the canteen waiting for the waiter to take the order. Many customer visits the canteen in their lunch break and recess so they have limited time to eat and return to their respective offices and colleges etc. So, this Web based Application will help us to save time and order food whenever they want without calling the staff again and again.

Functional Requirements:

The system comprises of four major modules and their sub modules as follows:

1. Admin Module:
2. Manager Interface:
3. Customer Interface:
4. Head Chef Interface:

Admin Module:

As Admin is authorized to perform CRUD operations on Staff Members, Menu Items and Inventory Items. So, the admin module will have following:

- Admin Login
 - First you'll need to create a user who can login to the admin site.
 - Enter your desired username and press enter.
 - You will then be prompted for your desired email address:
 - The final step is to enter your password. You will be asked to enter your password twice, the second time as a confirmation of the first.
 - The system gives ability to the admin to add, edit and delete staff members. Using this feature an admin can add chefs, waiters, and managers.
 - Admin will assign each role for other staff, with the list of permissions needed. If they need extra permissions grant them.
- View Order/details
 - Bill Print
 - Add/ Remove Food Items
 - Add Offers
 - Update Inventory
 - View Sales for each day and month
 - Sales of individual item for the day
 - Total Earnings
- **Order placed by Customer:**
 - The system will give customers the ability to place their orders using our product.
 - It will display a list of available and unavailable dishes in the menu where unavailable dishes will be grayed out.
 - Customer will be able to select multiple dishes and their quantity for a particular order.

Manager Interface

- Manager will have a screen where he will get notification whenever an order is completed. System will notify the manager about the order number and table number.
- Manager also has a screen where all orders are listed, and status button to mark the order as paid.
- Moreover, he also has an interface screen to see and the status of tables in the restaurant as free/available.

Head Chef Interface

- In head chef interface, system will show all the current orders in detail i.e. all the dishes of a particular order.
- In each order, there is a button which will be used to mark that dish cooked. Moreover, when customer wants to remove a dish from his order, system will show head chef a notification to approve the removal of the dish.

Customer Interface

- The customer interface will contain three interfaces /sections. All three interfaces/sections will have a consistent layout.

Place Order

- In this, system shows a list of cards (UI Elements) of dishes. Each dish will have an image, its price per serving.

Timer and Edit/Cancel Order

- After confirming the order, the user will be shown a timer screen. In this screen customer will be shown “Edit Order” and “Cancel Order” buttons and a timer which shows the completion time of the order. There will also be a button to request for bill.

Bill Payment & Feedback

In feedback interface, at the top right corner, a button for “Request Bill” will be shown. Customer can pay bill through any method such as Cash on delivery, Debit Card or Credit Card. Beneath this, button we will display a form which will have different multiple-choice questions to take feedback and a submit feedback button.

Tools:

- Python Web framework Django
- Django officially supports the following databases, PostgreSQL, MariaDB, MySQL, Oracle, SQLite.
- Code editor (Pycharm, Sublime3)

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University Recommender Website

Project Domain/Category:

Web Application

Abstract / Introduction:

Students often find it difficult to select the best Universities for them as there are numerous universities. This website will help the students to know about all the details of different universities according to the locations and preferences. Moreover, it will also let them know about the aggregate, fees, admission criteria and other facilities of various universities etc. This will help them to choose the best University according to their marks and chosen domain/field.

Functional Requirements:

Administrator (Admin):

- User management (user registration requests approval / rejection will be performed by the admin)
- Admin can Add/Update University details like Aggregate, Fee, Programs etc.
- Admin must update the admission criteria periodically to ensure the data authenticity.
- Admin should add/update university admission deadlines in the system.

Registered User/Student:

- Students can check admission requirements of all universities.
- System should show previous aggregate/minimum marks for each domain/program.
- Student(s) can create predefined search list, that can be used in future to easily search for same parameters.
- A merit calculator should be added to check which domain/program can be taken by student.
- Student(s) would be able to check Program Fees structure of all universities.

Non-Register User/Student

- Any unregistered users /Student(s) will be able to see or search all the information on the website; however, to create the search list, they must have to register on the website.

Tools:

- PHP, JavaScript, jQuery
- CSS, Sass, Less, Bootstrap
- MySQL, Firebase, NoSQL
- PhpStorm, NetBeans or any other PHP IDE.

Supervisor:

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Get Physical Trainer

Project Domain / Category

Web Application

Introduction

Get Physical Trainer is an online portal which will help users to search, join and keep in touch with trainers online. Trainers will get registered on the portal with the required information. Users will be able to search a trainer through different filters like fee, location, experience and timings.

User will be able to sort the trainers through their ratings. User can contact a trainer through built in system chat so they will be able to communicate without the involvement of other applications. User will also get benefit of receiving physical health tips from their trainers. Administrator of the application will have an overview of all the system.

Functional Requirements:

Administrator:

1. Administrator will have an overview of all system through dashboard.
2. Administrator will be able to update and delete registered trainers/users.

Trainers:

1. Register in the portal with their personal details and some other information like their fee, location, experience and working hours.
2. Update their information.
3. List of their joined users.
4. Send physical health tips to all joined users.
5. Contact their joined users through chat system.

Users:

1. Register in the portal with personal information.
2. See a list of trainers depending upon fee, location, experience and working hours.
3. Contact a trainer through chat system.
4. Join a trainer.
5. Give and update review for their trainer.
6. Update their information.
7. Receive physical health tips from their trainer.

Tools:

- PHP
- WAMP/ XAMP server
- MySQL
- Notepad++ / Visual Studio or any other editor

Supervisor:

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Online Charity Management System

Project Domain / Category:

Web Application

Introduction

Charity is an act of kindness, in which financially stable people provide help to those who are underprivileged or needy. The majority of NGOs do not get enough funds to support their organization. Finding a sponsor was a difficult task, and it was a big challenge for NGO has to deal with sponsors. This charity management system will help NGOs to find sponsors easily. This system has three modules such as Admin, NGO and Sponsor. Admin can log in using credentials and manage the request raised by NGO by approving or rejecting it. Request will be approved by admin, after verifying the NGO documents uploaded by NGO. Admin will get the report of NGO's who get donations. NGOs can register and raise a request by uploading NGO documents. After approving the organization, they can log in to the system using credentials. The organization can request the registered sponsors for funds. Sponsors can view the previous events list and donation report. The sponsor can easily register him/herself and log in using credentials. Sponsors will receive notification of the request raised by NGOs for donation. They will need to fill the details regarding each donation on approval of the request. The sponsor can donate the funds online using easy paisa or online banking. They can also view donation history of their own and other donors as well.

Functional Requirements:

The application comprises the following major modules:

- Administrator
- NGO
- Sponsor

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

NGO:

1. NGO can register into the system
2. NGO can login into the system
3. Can Add / Edit his information(Upload documents)
4. NGO can request the sponsors for funds
5. NGO can accept the funds
6. NGO will upload the full donation history

Sponsors:

1. Sponsors can register into the system
2. Sponsors can login into the system
3. Sponsors can delete/ edit personal information
4. Sponsors can approve fund request
5. Sponsors can donate funds
6. Sponsors can view donation history

Tools:

PHP language, HTML, MySQL

Supervisor:

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Online Job Hunting Portal

Project Domain / Category

Web programming

Abstract/Introduction

Online job hunting portal is a kind of classified website, on which we allow users to search different jobs and place different jobs. An employer can post their jobs on it, but to post their jobs employer have to setup a free account. Employer can post a job for specific requirement under the different categories like IT, teacher, Management, Marketing, freelance etc. User can see different jobs without login, but to apply for jobs he/she must have to registered with portal.

Functional Requirements:

1. Admin shall be able to manage users.
2. Both employer and job seeker should have to registered with portal to post a job or apply for a job.
3. Site should also give the facility of manage different job categories, like IT, education, marketing, SEO, developer etc. so that an employer can post jobs under the required category.
4. Latest jobs should be show in right side of home page.
5. Job seeker can search job under the required categories which are mentioned in the FR-3.
6. Interface for post job should include all the required detail like salary, job position, post name, age, gender if specific and job requirements.
7. Interface for apply job should include all the data like name, father name, CNIC, city, country, address, experience, required salary, etc.
8. Job seek should have the facility to upload a CV against the required job and that facility should include in FR-7.
9. Users have also the facility to change their passwords and in case of forget password user should also have the facility to reset the password.

Tools:

Asp.net

PHP

Adobe Photoshop

Supervisor:

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Sports Event Management System

Project Domain / Category

Desktop Application

Abstract / Introduction

In this project, we will automate sports activities being held in different schools/colleges or universities. This system will make the process of managing different sports activities easy. Instead of entering the manual details, we will now have an automated version details of all the sports activities along with the students taking part in specific games and also it will contain the details of a teacher who will be supervising a certain game. This whole system will be managed by Admin and teacher.

Functional Requirements:

This system will have two users: Admin and Teacher.

1. **Login:**
Admin can login into a system using credentials.
2. **Manage Sports:**
Admin will add the detail of all the sports by categorizing them like indoor or outdoor.
3. **Manage Students:**
Admin will add the details of all the students who are interested in a particular sports activity.
4. **Manage Teachers:**
Admin will also assign a teacher who will conduct the particular sports activity.
5. **View Results:**
Admin can also view the results of sports event.
6. **Attendance Management:**
In teacher's panel, teacher will take attendance of all the students, who are registered in a particular sports activity.
7. **Enter Results:**
Teacher will enter the result of their respective sports activity and will also mark the winners according to their score in each round.
8. **View Winners:**
Teachers and admin can also view the 1st, 2nd, and 3rd standings of student's name for the particular sports event.

Tools:

C#, Visual Studio, SQL Server

Supervisor:

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Android App for Stock Management of Confectionery Items

Project Domain / Category

Mobile Apps

Abstract / Introduction

This application will provide an interface for business owners of confectionery food items to manage their stocks and sales efficiently through their mobile. They will be able to make suitable decisions related to their business by checking the stock and sales report. They can manage their products data, customer (shops) records, orders, bills, employee data and salary records through this application more effectively and efficiently.

Functional Requirements:

1. Business manager will login to the app using their login details as Admin of the application.
2. Admin will be able to add new items (products) and delete/block any item in case, the item is discontinued. All the related information like purchase price, sale price, producing factory, packing details etc. should be included.
3. Admin will manage Buying and Selling records and will be able to add order records of both the parties (i.e. stock purchased from the Sellers and orders delivered to the buyers).
4. Admin will be able to view stock, sales and purchase reports for specific day, month or year. Admin should be able to view sales report against each customers as well.
5. Admin should be able to set a lower limit to stock items and system should add an alert the Admin related to low stock of any items.
6. System should update the stock items automatically, whenever an entry is made.
7. The system allows the admin to enter stock return entries and the reason for return. The system should automatically update the stock numbers automatically.

Note:

It is appreciated to use ledger based sales and stock management.

Tools:

Android Studio/Eclipse or every other suitable IDE supportive for Android
SQLite or Firebase or any database your like

Supervisor:

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Smart eClass LMS Mobile App

Project Domain / Category

Mobile App

Abstract / Introduction

Smart eClass LMS mobile app permits teachers from everywhere throughout the world to spread information. Students can take courses largely as a means of improving skills.

Your online class is the place clients can either desert things in the passageways or end on a positive note. With eClass, student can buy your courses whenever it might suit them. eClass comes with features to help you connect your audience with the right learning. It is the most easy eClass platform for building your online learning platform. With eClass become the leading global marketplace for learning and instruction.

Functional Requirements:

1. There should be Secure Login & Change Password option for all users
2. Admin user can create and manage three level Categories
3. There should be both option in GUI for Grid View & List View
4. There should be a Notification section to publish notifications for students.
5. There should be Course Progress for each student.
6. There should be Course Search facility.
7. Students should be able to do Course Rating.
8. There should be integrated Zoom Meetings facility in each course.
9. There should be Embedded Video Link Support
10. There should be Instructors Profile Page view facility for each student.

Tools & Technology:

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

Supervisor:

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Android Car Manager

Project Domain / Category

Mobile Application

Abstract / Introduction

Android Car Manager will be an android application that helps mobile users to control fuel, refuel, maintenance and expenses including registration and fines. This app is a finance manager for your car, either for your personal use or for professional drivers. The productivity of this app includes the car maintenance record and along with vehicle expenses. This app will facilitate users to view and manage their vehicle data using graphs, pie charts etc. The user may save money by keeping track of the car mileage, services, reminders, trips and expenses etc.

Functional Requirements

1. The application shall consist of simple and easy to use interface.
2. The application shall be able to record expenses of car including maintenance, fuel, purchase of spare parts, service / cleaning, engine tuning etc.
3. The application shall be able to capture and upload odometer, trip meter, multiple receipts for fill-ups, services, and expenses at the time or later.
4. The application shall be able to use various statistics and graphs to show car expenses, maintenance and milage records. All statistics should be in numbers as well as in graphs.
5. The application shall be able to compute fuel consumption including average, cost per km or miles etc. that will be useful for driver.
6. The application shall be able to add notes and reminders, add photos to your vehicle album.
7. The application shall be able to search any particular expense or maintenance record according to its name, date etc.

Tools:

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

Supervisor:

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Android Employee Tracker

Project Domain / Category

Mobile Application

Abstract / Introduction

The system is a combination of web as well as android application. User will be using the android application and web application will be used by admin as well as HR. The application will be designed for field work Employers. The Employee will have this application in his android phone, when the user will login to the system his image will be captured and his GPS location will be sent to the admin where admin will view image and GPS location in web application. As the employee login, GPS location of the employee will be tracked automatically by the system and send to the admin after every 5 minutes .On logging out, system will again capture the image which will be sent along GPS location to the admin. In order to keep track of the attendance as well as payroll of the employee, this system plays a major role. The role of the admin is to add new employee by entering his personal details and admin will provide the employee with identity number and password to the user so that he can access the application in his android phone. Admin can view the GPS location of the employee by entering Employee Identity Number as well as Date. Admin can check the salary of the particular employee by entering date and employee ID.

Functional Requirements

1. By using this application Admin will access the system with admin ID and password.
2. By using this application Admin will add new employee by entering employee personal details.
3. By using this application GPS location of the particular employee by entering employee ID and date..
4. The application shall be able to use view latitude and longitude of the GPS location of the employee.

Tools:

5. Visual studio 2010
6. Android Development Toolkit(ADT)
7. Database: MySQL.

Supervisor:

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Project Domain / Category

Mobile Application (Android)

Abstract / Introduction

Reading is a very good habit that one needs to develop in life. Books can inform you, enlighten you and lead you in the right direction. There is no better companion than a good book. Reading is important because it is good for your overall well-being. Once you start reading, you experience a whole new world. In this project, we are going to propose a mobile application which provides a way for book readers community to gather at one platform and share their opinions and fan theories about books of their interest. It also allows the fan base of popular books and book series to discuss as well as publish fan-written stories. Finally, the proposed application allow book enthusiasts to have a platform where they can exchange, borrow and sell pre-owned books.

Functional Requirements:

Provide a bulleted list of functional requirements

1. User Registration

Before using the application, each user needs to register in the application and by using his/her registration information such as Email Address and other personal details. After verifying through email, the user account will be created. The user can also delete or deactivate his/her profile.

2. Create/Modify Profile

After successful registration, the user will log into the system and will create his/her profile by selecting the book genre(s) of his/her interest. The user can also modify his profile such as changing password, adding/removing book genres, changing personal details and lock/unlock their profile so that other users can contact in chat. In the profile, the user can also mention the books he/she likes so that he may see the posts related to those books or genres of his/her interest.

3. User Home Screen

On home screen, the user will be able to see the posts related to the books or genre of the interest.

4. Book Exchange/Buy/Sell Corner

This module will be provided to the intended book sellers to either offer their books for exchange or sale. The intended book buyers can also search their desired book to find any existing offerings for book exchange or buying. This module will allow the users to search any books being offered for exchange or sale.

5. Chat Module

In the chat window, the book reads can contact each other for sharing their opinions on different books of common interest. It also allows to negotiate the book exchange or buying/selling.

6. Discussion Forum

In this discussion forums, users can talk and share their opinions and theories about a certain book as well as their fan fiction. Users can talk share their thoughts with people of similar interests. In the discussion forums, the users can create a new topic about any book or book genre and also post their comments in the topic related to the book of their interest/genre.

Tools:

Android Studio

Java or Kotlin

Firebase or any other database

Any APIs for implementing chat and discussion forums

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.

Supervisor:

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Budget Expense Tracker

Project Domain / Category

Mobile Application

Abstract / Introduction

We can see that today everyone seeks towards his/her savings. They want that in this era of inflation how they can control their expenses and save money for future use. Obviously, they are seeking towards such an application which guides them how they can meet their expenses in efficient manner and also save their money for future use. So you are required to make such an application which helps everyone to maintain their expenses on daily basis and they can easily see their expenses detail in a graphical format. You can check the status of budget that how much you have been used or how much is remaining.

After making this application, user will be able to manage his/her expenses and save money for future use. In this application, the user will be able to add his/her budget and expenses. In this way, users will be able to manage their expenses according to their budget. This application will cover almost all kind of daily base expenses which are almost a total headache for everyone to manage like expenses on home, education, transport etc. So, it will accommodate the people to manage their expenses.

Functional Requirements:

Following are the functional requirements:

7. Signup/Login/Logout operations

- ➔ User will create account to register himself with application.
- ➔ After successful account creation, user can login to the application.
- ➔ User can be logout from application after using it.

8. Add Budget

- ➔ User will add budgeted amount for his expenses.
- ➔ Then user will enter the amount for savings.

9. Add Expenses

In this screen, there should be four options and user will add his/her expenses.

- ➔ Home Expenses (like food, utility bills etc.)
- ➔ Education (like tuition fee)
- ➔ Travelling (expenses of transport)
- ➔ Miscellaneous (like medical, outing, clothing etc.)

10. Show Status

There should be two options in this screen:

- ➔ **Status of budget:** It will show graphical representation of budgeted amount in form of pie chart (like 40% amount used and 60% amount remaining). When remaining amount will reach to 10% then it should show the alarming message.
- ➔ **Status of expenses:** It will show graphical representation of expenses in form of pie chart (like 35% spent on home expenses, 15% spent on education, 10% spent on travelling and so on).

11. Savings

It will show the total amount which you have been saved.

Tools:

Android Studio, Database SQLite

Supervisor:

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Employees Monitoring App

Project Domain / Category

Mobile Apps

Abstract / Introduction

This app lets employers monitor the location of their employees during a specified time period (duty hours). The app allows an employer to add employees to its account. These employees will also have the app installed on their devices. Employer will define a particular location on map where employees should remain during a specified time period (duty hours). Employer will define the maximum distance an employee is allowed to move around the specified location. Once an employee moves out of the specified area around the specified location during the specified duty hours, employer will receive a message mentioning that a particular employee is out of its designated area during duty hours. The app will also send message to the concerned employee that you are out of the designated area and show him/her the location on the map where he/she should be during duty hours.

Functional Requirements:

1. An employer must be able to register in the app.
2. An employer can add employees (their names and designations) working under him/her.
3. An employer can specify the following for a particular employee:
 - a. The duty hours of the employee (from Time1 to Time2)
 - b. The designated location of the employee on map
 - c. The maximum distance around the specified location in which employee can move during duty hours
4. If an employee moves out of the designated area during duty hours, a message will be sent to the employer mentioning that a particular employee (his/her name and designation) has moved out of the designated area.
5. If an employee moves out of the designated area during duty hours, a message will be sent to that employee mentioning that you have moved out of the designated area and the app will show him/her the location on the map where he/she must be during the duty hours.

Tools:

Android Studio

SQLite, Firebase or any database for android apps

Supervisor:

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Healthy Smile IOS App

Project Domain / Category

Mobile Application

Abstract/Introduction

Life is becoming too busy to get medical appointments from a doctor and to maintain proper health care. There is a need to set up online communication between a doctor and a patient, so that the patient can take initial advice from a doctor and can maintain his/her health.

The main idea of Healthy Smile App is to provide ease and comfort to patients while taking advice from doctors and resolve the problems that the patients have to face while visiting doctors for taking medical advice. The iOS application Healthy Smile acts as a client whereas the database containing the doctor's details, patient's details, and communication details are 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 app.
- 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 his personal information, the User will need to answer a few basic questions, regarding his health, the user may also need to upload pictures of his body parts in case he/she has surgery or dental issues.

The other Screens will work as :

- **Status.**
Status screen will show the status of the user's query.
- **Profile.**
Profile Screen will show the user his/her details.
- **Messages**
This screen will show the user's communication with the doctors
- **Records**
Records screen will show user's images records he has provided, user can also edit his records in this screen

There will be a need for a backend web api which will handle all backend tasks such as managing all patients requests, the replies of doctors, taking care of patient's records etc.

Tools:

- IDE: Xcode on macbook
- 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.

Supervisor:

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Learning Application

Project Domain / Category

Android

Abstract / Introduction

Learning application offers a variety of courses to interested learners in the form of images and text in digital form rather than the conventional system where you have only option that is textbooks and paper/notes.

Application will offer relevant lectures in a category and end user will be able to read them to learn. This application can have multiple fields like C++ programming, database, Information technology, Algorithm, Data Structure, etc. Each subject/category offering a list of topics.

Functional Requirements:

1. Application lock to prevent unnecessary use by others (on start-up)
2. Password recovery question (enter you age/ favourite subject etc.)
3. Track of studied topics (like: 20% completed subject wise)
4. Recent (list of previously studied subjects for quick access show on top of list)
5. Subject categories
6. Dark/light mode (for eye protection)
7. Feedback/suggestion (via mail)

Tools:

Android Studio, SQLite or Any database you like

Supervisor:

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Online meat shop and production unit App.

Project Domain / Category

Mobile Application

Abstract/Introduction

The application must be well designed to serve the needs of online meat shop and production unit app, Built for efficiency designed for fast paced meat shop. The order work flow allows you to track the progress of the order. You can view, edit, and process your orders directly with a simple click of buttons.

Online meat shop and production unit app, can be run as pure business purposes, so proper report required for inventory sales, purchase, all dishes and product production and organize them into categories, create single and combo or pack items, allow different prices for specific customers, add images, text and videos etc.

Functional Requirements:

- Enable online ordering with delivery date and time.
- Promotions and fast price change.
- Support text, images and video for fresh and frozen items including different measurements.
- Allow the client to add purchase order number and delivery notes.
- Manage your orders from multiple locations.
- Allow payment by invoice or credit card.
- Take orders by online through Mobile app, whatsApp, Tweeter, face book and Instagram pages.
- Factory production management interface for admin/system.
- Wholesale pricing and multi-tier discount by promotions.
- Create production reports with multiple location capability.
- Frozen item current stock status with expiry date.
- Build a database of customer data for marketing.
- Integration with leading accounting systems and payment gateways.
- Stock (Mutton, Beef, Chicken, Chicken Dasi, Fish), Sale, purchase and inventory control with data base.
- Staff detail database.
- Admin/system can add first name, Last name, Dealer CNIC, Dealer address, Suppliers/Franchise contact no and Suppliers / Franchise inventory.
- Admin/system can add, modify, delete and search/view reports of cash/ credit sales by date and Type.

- Admin/system can add, modify, delete and search/view reports of Product/ purchase inventory.
- Admin/system can add, modify, delete and search/view reports of payments and transaction by dealers / Franchise/ Client..
- 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 Production unit / cold storage complete accounts with reports.
- App can select staff permanent / daily wages for different jobs and can view their production detail with complete Account book and report.

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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Pet Care App

Project Domain / Category

Mobile Application

Abstract / Introduction

The final prophet of Allah (Peace Be Upon Him) said, "A woman entered the (Hell) Fire because of a cat which she had tied, neither giving it food nor setting it free to eat from the vermin of the earth."
– Sahih Al-Bukhari (Hadith: 3140)

Pet Care App is an Android based mobile application, which offers everything you need for the best care of your playful dogs, cuddly cats, cute rabbits, beautiful parrots, lovely fishes and other adorable animals in the most efficient way. It cares for all your pet needs, whether you need reminders for cat care, help managing your dog's injections, or simply organize your animal's health. It truly provides that second hand we all look for when caring for our furry friends.

Functional Requirements:

Functional requirements for this app are as follows:

- I. **Users:** The app must support three types of user
 1. Admin User: Admin can manage user accounts, create categories of pets, and add/update some basic caring information related to them.
 2. Guest User: Guest or unregistered user can view categories of pets and their basic information only. S/he is NOT allowed to set reminders, create photo albums, or add information related to his/her own pet in the app.
 3. Registered User: Registered user can create pet profile and get access to all features of the app as mentioned below.
- II. **Authentication:** App should provide registration and login GUIs (*i.e. Graphical User Interfaces*) for all users; store users' credentials at Firebase Authentication.
- III. **Pets List:** Admin would create categories of pets (*like Dogs, Cats, Rabbits and Birds etc.*) and add some basic pets caring information (*like pet name, description, feeding, grooming, handling, housing, sleep needs and photos etc.*) in JSON format at Firebase Real-Time Database. After fetching, it would be displayed to all users in a list form.
- IV. **Pet Profile:** App must provide GUIs to create a profile for each pet, where registered users can
 - Add pet details like, name, date of birth, gender, and breed etc.
 - Add important care notes for a pet to be taken.
 - Create photo album for pets.
 - Set To-Do list for pet related events.

- Keep track of pet's medical history.
 - Track events in a pet's life like walks, injuries, weights, training, etc.
 - Set reminders for pet important care like vaccination, veterinary or pet care clinic visits etc.
 - Get notified for small pet care like nail clipping, bath, exercise, groom, take for a walk etc.
 - Instantly see upcoming reminders for the next day/week/month/year.
- It is needed to store profile data in app's internal database (*i.e. SQLite/Room*).

- V. **Search Feature:** By using it, a registered user can search any information from pet profiles stored in app's internal database (*i.e. SQLite/Room*). It is also needed to provide voice search feature as well.
- VI. **Pet Community:** Registered users should be able to share their pet's pictures or moments and can post, comment, and get connected with any pet lover through this feature; Firebase Real-Time Database must be used for this purpose.
- VII. **Backup Feature:** App should fascinate registered users by giving backup option; all pet profiles can be stored/retrieved to/from Firebase Real-Time Database in an encrypted form.

Tools:

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

Supervisor:

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Plasma Donor Recipient Connector

Project Domain / Category

Mobile Application (Android)

Abstract / Introduction:

World is facing a pandemic in the form of COVID-19 and we have not found any vaccine yet. The only solution we got is precautionary actions or plasma therapy. If a person is fully recovered from COVID he/ she can donate plasma to the infected person which will help the patient in his/her recovery. We are proposing an application which will help in connection donors and recipients. This application will consist of two modules. Admin and User. Admin can view active users. Admin can raise request. Admin can add donor. User can add his information for donating plasma.

Functional Requirements:

Admin Module:

Admin can login to the system.

Admin can view active users.

Admin can raise request.

Admin can add donor information in the list.

Admin shall be able to search donors on the basis of location.

User Module:

User shall be able to register.

User shall be able to login.

User shall be able to respond to the admins request.

User can add information regarding donation that is name, contact number, blood group and pinned location from map.

User shall add his/her location so that it should be easy to find a donor.

User can delete his/her information.

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.

Supervisor:

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Rabbit Farming Management

Project Domain / Category

Mobile Application

Abstract / Introduction

Rabbit Farm Management is an application for the management of rabbit farms in a simple, easy and convenient manner for all modes of education. This application helps farmers to store all the information about rabbits farming including the financial management in the shape of investment, expenses and profit. It also records pollination, delivery, and weaning, and calculates its records automatically, and helps the farmer to know the information of bucks and does along the litters.

Functional Requirements

1. The application notifies the farmer vaccination time for each rabbit.
2. The record of rabbits should be managed with cage numbers etc.
3. Every rabbit can identify with its breed name, color, gender.
4. The farmer should be able to record the successful meeting date of doe and buck to calculate the delivery time.
5. The farmer should also record the nest box date, kindling date, the number of babies on delivery time, weaning date, then record the number of bucks and does.
6. The application notifies the farmer 3 days before the delivery time of each doe.
7. The application should calculate and show the age of rabbit when required.
8. The application should be able to record the weight of rabbit on the respective date and notify the former to weight again after a periodic time.
9. The application should notify the farmer to trim the wool of rabbits when require.

Tools:

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

Supervisor:

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RFID based Public Transport Ticketing System

Abstract/Introduction

The “RFID based Public Transport Ticketing System” is the development and implementation android based mobile phone application. This application will facilitate users (passengers) to avoid standing in lines for booking the tickets and after that carrying the tickets is a curdled and hectic process. Moreover, the passengers can easily book the tickets online directly from their mobile phones and a message is sent to their phones, which is enough for traveling the desired distance. This app will provide a more effective and simpler ticketing system. The payment modes of the system include 1) passengers can pay using their wallet and 2) passengers can request a ticket checker to transfer some amount in the wallet.

Functional requirements:

1. The app shall provide an effective and simpler interface to passengers and system admin.
2. The app shall provide registration and login functionality to the passengers and system admin.
3. The app shall provide a ticket validation facility at the source and deletion at the destination.
4. The passenger is allowed to add money into his wallet using his Debit or Credit Card or can request a ticket checker to transfer some amount in the wallet.
5. The app shall be able to store user information in the database.
6. The system should allow the ticket checker to search for the user’s ticket with the ticket number in the database for checking purposes.

Tools:

1. IDE: Android Studio
2. Programming languages: Java
3. Database: SQL Server

Supervisor:

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Smart Smoke and Gas Leakage Detection System

Project Domain/Category:

IoT/Embedded system programming

Abstract/Introduction:

Gas detectors have been widely used in the industry depending on their characteristics. Such that which type of gas they can detect like LPG (in case of cylinders), any other hazardous/flammable gas or they can be used to detect the poisonous gas etc. Also, the gas detectors can be fixed or portable means they can be able to move around in the space where required. They can be applicable on a large scale like in industries; hospitals etc. or they can be miniaturized to be used in home security such as in kitchen or in any other room. Our idea is to develop a smoke and gas leakage detector that can detect the leakage of natural gas used commonly in almost every house in stoves in Pakistan.

An IoT based smart sensor system must be developed to overcome the above-mentioned issue. We will use Arduino Uno that will serve as a microcontroller. The IDE aids in programming the instruction written as C++ code for the Arduino board. It can relate with the LEDs, motors, buttons, Wi-Fi module etc. As soon as the fire is detected, the signal will be sent to the micro-controller which will then send appropriate data to the LCD and the GSM/Wi-Fi module.

The notification about the smoke/gas leakage is then sent to the user or the neighbors via a mobile application. So, an android based mobile application needs to be developed for this purpose.

Functional Requirements:

Hardware Module:

Smart smoke and gas leakage detector will be mainly composed of the following components:

- Arduino UNO
- Buzzer
- MQ 5 (smoke and gas sensor)
- Node MCU
- 2 channel Relay module
- Vero board
- Jumper wires

Mobile Application (Android):

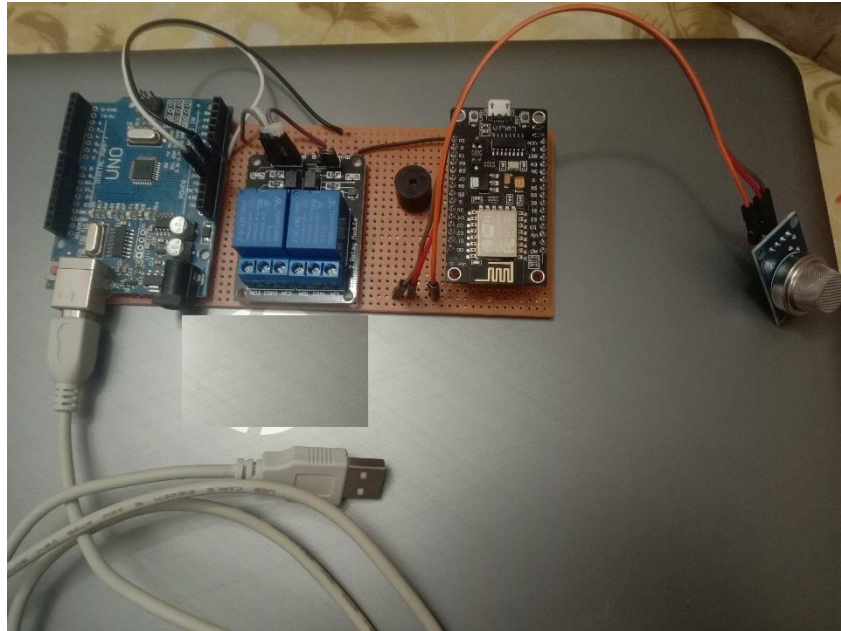
- The application must be able to generate alerts to the user and/or the neighbors, so that appropriate action must be taken.
- Alerts must also be sent to the Rescue team through SMS & Voice Call (Automated Call recording)

Tools:

- Arduino UNO kit or any other single board processor (e.g. Raspberry pie)
- Circuit components (as given in functional requirements)
- Smoke/Gas sensor

- GPS module
- GSM/Wi-Fi module
- Android Studio
- Web APIs
- C/C++ programming.
- (Arduino.cc) IDE may also be used.

Actual Figure of Hardware:



Important Note:

The university is not liable for providing the hardware / software for this project. You are required to arrange / purchase them by your own. Be safe and trying experimenting or testing this app very carefully. The university and project supervisor are not responsible for any damage / loss in any case.

Supervisor:

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Smart Travel Guide Mobile App.

Project Domain / Category

Mobile Application

Abstract / Introduction

This mobile app is a travel guider mobile app that provide the information about the point of interest around us in the form of text, pictures and videos. This app provides the information of main tourist points in Pakistan and its major cities.

The main objective of this Android project is to provide rich and relevant travel related information to users on the move. The idea is to create a smart travel guide app that users can access anytime and from anywhere.

While visiting new places, tourists often have a complaint that they cannot access and obtain travel information timely and on-the-go. This smart travel guide app seeks to solve that problem by generating feature-rich texts, pictures, videos, and any other guidance-related details requested by the users so that they can explore tourist destinations better. Modules of the app include find the current location, locate in Map, video search about any place, weather forecast, and calculate distance between two Cities or places.

Functional Requirements:

Smart Travel Guide Mobile App include the following all functional requirements:

1. Create a user account
2. A tour planner is added in which source to destination places are added to get the complete information about the visiting points / places come between the source and destination cities in the form of text or pictures.
3. Set the tour according to your point of interest.
4. A search engine is also added for search the information about a specific place, city or any point of interest like (restaurants, shops, viewpoints, beaches, parks etc.).
5. Google map connected for searching the current location and destination.
6. The video search feature is also added to search the videos about the specific place or point of interest.
7. A picture gallery also added to show the pictures of search places.
8. Add weather forecast feature to search the weather information about the point of interest place.

9. Make the database and add the information of main tourist points in Pakistan and the main cities in database.

Tools:

Android Studio

Programming Language: Java

Database: SQLite

Supervisor:

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Women Safety App.

Project Domain / Category

Mobile Application

Abstract

Women's safety is a biggest concern for their families now days. Women safety matters a lot whether at home, outside the home or working place. Now, mostly females carry their smartphone with them, so it is necessary to have at least one the personal safety apps installed. Such a security app for ladies will definitely facilitate in a way or the opposite.

This is user-friendly application that can be accessed by anyone who has installed it in their smart phones. The intention of this project is to provide the fastest and simplest way to contact nearest help.

Functional Requirements:

1. Female user must get registered on installing this app.
2. During registration, user should feed contact details of three(3) people from friends and family.
3. The sequence of the people, while entering data, should be from highest priority to lowest.
4. All three persons should receive a message of confirmation.
5. User must feed the relationship with the entered person details along with mobile number etc.
6. GPS will be used for location identification and also GPRS for sending information of the location to the database.
7. There must be an alarm button on application. When the alar button is pressed, a message is sent to the persons feeded in database indicating the location of the victim.
8. A voice/video message can also be sent.
9. Along with message, call should also be auto directed to highest priority person.
10. One by one call should be directed to all three contact details.

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

Tools:

Android Studio

SQL lite

Supervisor:

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Bakery Management System

Project Domain / Category

Desktop Application

Abstract/Introduction

Bakery management system is specially designed for the purpose of adding Bakery item's detail. The system elaborates the basic concept for storing and generating Bakery item's detail. These items will be distributed in different categories for example there is different type of cakes in the bakery i.e. Simple cake and Ice cake so we can search it easily under the appropriate label and inform the customer about their price, weight and quantity 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 Bakery Management system is easy to use for every type of users because a lot of shops have salespersons which are not very qualified. Whereas, in our application there is a facility of report generation which gives detail information about Bakery item's sell and purchase and make staff possible to get hard copy of related reports.

Functional Requirements:

1. Registration
 - The administrator can create a new user.
 - New user can login and logout.
2. Bakery Item's
 - Admin add, delete or modify the details of the Item's.
3. Search
 - User can search for the required Bakery Item's based on name, id etc.
4. Sell Bakery Item's
 - The sold Bakery Item's need to be deducted from the available stock
5. Purchase Bakery Item's
 - The purchased Bakery Item's need to be added to the available stock
6. Report generation
 - Depending upon the Bakery 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 Bakery Item's 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.

Supervisor:

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Detection of Covid 19 using X-Ray Images

Project Domain / Category

Image Processing

Abstract / Introduction

Covid-19 is widely spreading disease now a days. Many researchers are working on discovering the treatments to cure this disease. Covid-19 test kits are very expensive and available in limited quantity. So, to detect covid-19 at early stages using alternative ways is very important task in this pandemic situation.

Covid-19 disease symptoms are very closely related to the pneumonia patients. To detect covid-19 quickly at early stage we will use pre-trained convolutional neural network (i.e. ResNet50). The convolution neural network will work on the chest X-rays of the pneumonia affected patients. The image dataset will be classified as Covid 19 affected healthy, viral pneumonia and bacterial pneumonia.

Functional Requirements:

1. Take input as X-rays images
2. Load any pre-trained neural net
3. Calculate the performance matrices i.e. true positive, true negative, accuracy, precision, recall, F1.
4. Show the results in tabular form and graphically.

Tools:

Python, Matlab

Any tool according to the requirement of the project

Note: Dataset link will be provided later. For more details and discussion contact your project supervisor.

Supervisor:

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Bone Images Analysis System for Fracture Detection

Abstract/Introduction

Medical imaging to analyze and detect different diseases and problems now a day an emerging field. In this project we will design automated techniques and methods to analyze and detect bone fracture from X-ray images. X-ray images when examined manually it is time consuming and prone to errors. So our proposed system is able to detect fracture more accurately. Images are a crucial resource for assessing the severity and prediction of bone injuries caused by trauma or accident. Fracture detection in long bones is a very challenging task due to the limited resolution of the original X-Ray images, as well as the complexity of bone structures and their possible fractures. So our proposed automated bone fracture detection system will work on these aspects.

Functional Requirements:

The system should have the following features:

- Image Datasets are maintained.
- Image is selected for examine.
- Image is shown as real image and then focused or noise removed image
- Noise is removed from the image and image is transformed to clearer image so that system can easily detect fracture
- Clearer image is used to detect fracture
- System detects fracture based on the type of fracture. major fracture 2. Minor fracture 3. Dislocation etc
- System display the bounding box around the fracture.
- Number of cracks are displayed on screen
- Dislocation is measured
- Bone high and width is measured
- System save the image with all these diagnosis for further usage.

Tools & Technologies Preferred tool and technology

Python

Hardware:

- i3 Processor
- Operating system: Windows 7 and above
- http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=6726590&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D6726590

Supervisor:

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Vehicle number plate Recognition

Project Domain/Category

Image Processing

Abstract / Introduction

Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it. There are a lot of applications of image processing in different fields like medical, security, industries, remote sensing, pattern recognition and video processing etc. In this project we will create an application which will recognize vehicle number plate. This application can be used in different fields especially for car parking and toll plazas.

Functional Requirements:

1. User should be able to read vehicle image.
2. Vehicle number plate should be dominant in an image.
3. System should have a template of alphanumeric.
4. The template should be consist of all alphanumerics (A to Z , a to z and 0 to 9) images.
5. The template should have a separate and clear image for each alphanumeric.
6. System should be able to detect vehicle number plate form the input image.
7. System should be able to read number plate characters from the detected number plate.
8. System should be able to match detected number plate characters with corresponding template characters.
9. System should be able to display the final detected number plate characters from the input image in a notepad file.
10. You should use different built-in functions of MATLAB for image processing like `imread()`, `rgb2gray()`, `im2bw()`, `imcrop()` and `edge()` etc.

Tools & Technologies:

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

Supervisor:

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Digital Library Management System for College

Project Domain / Category

Web Application

Abstract / Introduction

Digital library management system is a comprehensive web system to manage the library and digital resources (Audiobooks, eBooks). An account will be issued by the Librarian to Student and Faculty members. Users can search for books and resources and request them. The system would be able to issue books, resources at the request of students or faculty. The system will provide daily, weekly, and monthly reports of resources issued.

Functional Requirements:

- User management system with authentication.
- Forget password option.
- Account will be issued by Librarian
- Login to request a book / resource.
- Assets Management to manage books and other resources.
- User Interface for Librarian, Students, and Faculty.
- Search based on the resource type.
- Resource issuance Management.
- Daily, Weekly, Monthly Reports.
- Limits for issuance of books is three for students and for faculty five. Upon reaching the limit, no request should be processed by system, it must give an error message.
- For some resources, only online reading option with limited time, so when this time limit expires it must be notified to member.
- Audio books download is unlimited.
- Details of every book must be mentioned, like publisher, volume, year, pages etc.
- Email must be sent to each member on issuance of book.
- Title for "Reader of the month" and "Reader of week" assigned to the member, who have issued maximum books.
- Keep records of all digital resources.
- Without login download of any resource is not allowed, only search is allowed.

Tools:

PHP, MySQL or any other modern language or tool.

Supervisor:

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Event detection system in real time streaming data for traffic control in smart cities

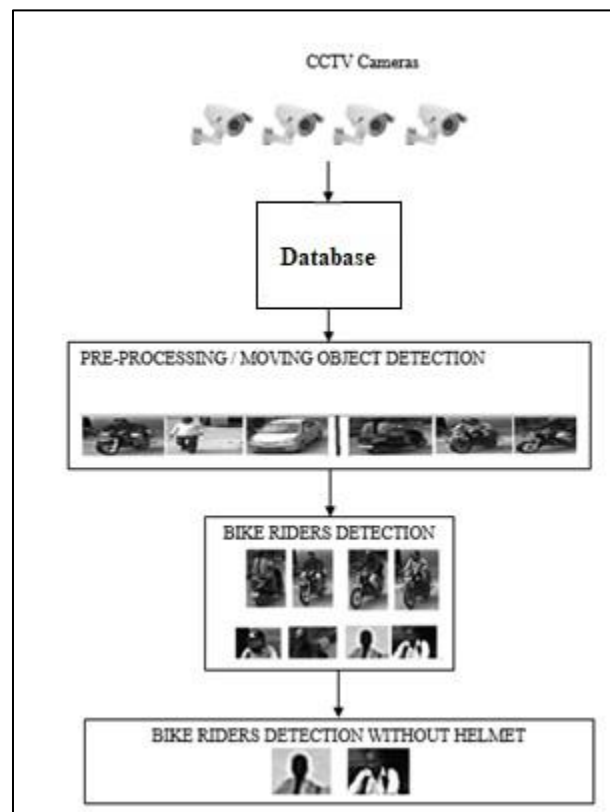
Project Domain / Category

Desktop application

Abstract / Introduction

With the increase number of vehicles on a highway, it becomes very difficult to control and supervise the traffic on a highway in smart cities. About 85% of lives lost and 90% of disabilities are due to traffic accidents. The majority are due to violation of traffic rules, as it is difficult to monitor and enforce traffic rules on such high traffic in real time. These problems can be addressed by developing an application for better supervision and enforcement of traffic rules.

The system detects the presence of bike rider's helmet from real time streaming data via CCTV camera, which will help out the law enforcement agencies to detect bike riders without wearing helmet. It will enable the traffic police to monitor and take necessary steps in case of violation.



Functional Requirements:

The functional requirements for the project are listed below: -

1. Capturing of real time steaming videos. You can use any video camera (CCTV or even laptop built in camera).
2. Storing videos from real time streams inside the database.
3. Pre-processing of stored videos.

4. Bike rider's detection from video(s).
5. Detection of biker riders without helmet.

Tools:

Any version of Microsoft Visual Studio with C#.NET and Microsoft SQL SERVER for database. Any 3rd Party API / library compatible with .net can be used.

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

Supervisor:

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Fine-tuning 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-tuned 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 GNU PLOT command (for drawing graphs).

References:

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

Intended Outcome

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

Required Skills

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

Supervisor:

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City School Network Automation

Project Domain / Category

Networking

Abstract/Introduction

City schools are a renowned educational project having various schools for kids in the country. This project is controlling and monitoring kids schools and have many branches. Its main branch is in Islamabad and sub branch is in Peshawar, Lahore, Queta. All the branches communicate with each other for information sharing like sub-branches send reports to main branch and vice versa. Branches maintain site-to-site VPN for security reason.

The Main branch has Domain Controller while the sub branch Peshawar maintains Additional Domain Controller. Other sub-branches are joined to Domain Controller. User accounts login and access rights are managed by Domain Controller. Users of main branch can have the facility to login with his/ her user name and password in sub-branch and vice versa.

Data Communication is done via different platforms like email server, video conferencing, FTP server and web server.

Employees emails are handled by organizations own email server (Exchange server latest version)

Develop a complete functional and secure network for all the branches for the given scenario. The network environment should have a suitable level of security and access control.

Functional Requirements:

1. Installation and configuration of Network and servers
2. Installation of Domain Controller and Additional Domain Controller
3. Installation and configuration of workstations printers and other necessary equipment
4. User accounts
5. Policies Implementation
6. A suitable level of security and access control for the network.
7. Installation and configuration of VPN server
8. Email server (Exchange Server) to manage employee emails
9. Installation and configuration of the DNS Server for active directory
10. Installation and configuration of the ftp server
11. Configure a mapped network drive for each user (must reflect each user's directory on the server)
12. Install client operating system
13. Enabling Admin to login to the system
14. Enabling users to login to the system
15. Enabling each user to have access to their mapped network drive

16. Allowing the client workstation to administer the server (i.e. access Active Directory Users and Computers, Group Policy, etc.)
17. Enable the client workstation to access Group Policy.

Project requirements:

Windows Server 2012 R Operating System, powerful desktop machine is preferred for email server(Exchange Server) having RAM 32 GB, Hard Drive 200 GB and processor core i7.
PCs, routers, switches, cables.

Tools:

Any networking tool or simulator that fully supports your project requirements.
Some optional tools are GNS3, Virtual Box, VM Workstation, NS2

Supervisor:

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Network Load Controller

Project Domain / Category

Networking

Abstract / Introduction

Now a days computer networks are following protocols and practices based on data plan and control isolation. This allows centralized control and consolidation to have better service performance and better network control plans. OpenFlow is a famous protocol that allows management and demarcation of isolated/distribute control plans on NW devices such as switches, routers firewalls etc. This project will require the design of a network load controller with OpenFlow providing GUI interface to Network Administrators/IT officials. The data from interface will be provided to Load Controller which will then coordinate with existing nodes to manage all the routes to server. This GUI will contain classified client nodes having various requirements of bandwidth at different times. This will be 4 periods with different distribution of bandwidth. Students will need to select best suitable distribution themselves. There will be 48 client nodes and 4 servers nodes. Students can implement this project using any modern simulation tool or OpenFlow libraries. Build the custom load balancer using OpenFlow libraries.

Functional Requirements:

This project requires to study the fundamental principles of OpenFlow, Networking, networks and devices configuration as well as it requires basic to mid level programming skills in the C/C++ in Linux environment. Students are required to prepare a presentation on OpenFlow networks and Linux system programming as part of the first project deliverable i.e. SRS document.

The core functional requirements of package are to:

1. To customize OpenFlow Based Controller.
2. Develop GUI Interface for network admins to configure the controller
3. Customize the Network Topology
4. Measure Performance and Utilization Statistics as following:
 - a. Throughput
 - b. Delay
 - c. Utilization
 - d. Load Distribution
 - e. Response time

Tools:

Linux Environment , Eclipse, OpenFlow Libraries

Supervisor:

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Doc2Vec Based Scientific Articles Recommendation System

Project Domain / Category

Web Application + Information Retrieval

Abstract / Introduction

The rapid growth of scientific articles is creating a problem of information overload for the researchers. Due to which both novice and expert researchers find it very difficult to find relevant articles of their interest. Therefore, there is a need for an application that will be able to recommend similar articles to the researcher. To overcome this problem, we will develop a web-based scientific articles recommendations system that will recommend scientific articles of user interest based on text classification Doc2Vec modeling scheme and cosine similarity measure.

Functional Requirements:

1. SignUp:

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

2. Sign-In:

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

3. Manage Users:

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

4. Add Scientific Articles:

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

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

5. Pre-Process Data and Building Doc2Vec Model:

Pre-Process the data to make data ready for model training. You can search for pre-processing measure like lowercasing, tokenization etc. used for doc2vec algorithm. Now you are required to build Doc2Vec (Distributed Memory) model from articles abstracts stored in database and save the model.

6. Recommend Scientific Articles Using Cosine Similarity Measure:

Create a webpage which will take article abstract which is not added yet in the system as input by the user and on clicking generate recommendations your application will infer user

article vector. Then it shows articles recommendations by computing cosine similarity between user vector and already added article vectors in descending order.

Tools:

Programming Language: Python

Framework: Django or Flask

Database: Any database can be used.

Supervisor:

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E-Commerce Product Rating Based On Customer Review Mining

Project Domain / Category

Information Retrieval

Abstract / Introduction

If you have a physical store, you are limited by the geographical area that you can service. With an e-commerce website, the whole world is your playground. Additionally, the advent of m-commerce, i.e., e-commerce on mobile devices, has dissolved every remaining limitation of geography. It is no longer about pushing a shopping cart to the correct aisle or scouting for the desired product. On an e-commerce website, customers can click through intuitive navigation or use a search box to narrow down their product search immediately. Some websites remember customer preferences and shopping lists to facilitate repeat purchase.

It is not unusual for customers to travel long distances to reach their preferred physical store. e-commerce allows them to visit the same store virtually, with just a few mouse clicks. e-commerce facilitates comparison shopping. There are several online services that allow customers to browse multiple e-commerce merchants and find the best prices. There are many users who purchase products through e-commerce websites. Through online shopping many e-commerce enterprises were unable to know whether the customers are satisfied by the services provided by the firm.

So we need to develop a system where various customers give reviews about the product and online shopping services, which in turn help the e-commerce enterprises and manufacturers to get customer opinion to improve service and merchandise through mining customer reviews. We will track and manage customer reviews, through mining topics and sentiment orientation from online customer reviews. In this system user will view various products and can purchase products online. Customer gives review about the merchandise and online shopping services. Certain keywords mentioned in the customer review will be mined and will be matched with the keywords which are already exist in the database based on the comparison, system will rate the product and services provided by the enterprise. The System takes review of various users, based on the review, system will specify whether the products and services provided by the e-commerce enterprise is good, bad, or worst. We use a database of sentiment based keywords along with positivity or negativity weight in database and then based on these sentiment keywords mined in user review is ranked. This system is a web application where user will view various products and purchase products online and can give review about the merchandise and online shopping services. This system will help many e-commerce enterprises to improve or maintain their services based on the customer review as well as to improve the merchandise based on the customer review.

Functional Requirements:

FR1: Users should be able to share his/her view about the merchandise and online shopping service.

FR2: Users should be able to rate the merchandise and online shopping services.

FR3: The system takes review of various users, based on the review; users can easily decide whether the products and services provided by the e-Commerce enterprise are good, bad or worst.

FR4: With positivity or negativity weight in database and then based on these sentiment keywords mined in customer review, users will be able to see the ranked products and services provided by the e-commerce enterprise.

Tools:

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

Supervisor:

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Performance Analysis with OAI and NS3

Project Domain / Category

Networks / Network Simulation

Abstract / Introduction

OpenAirInterface(OAI) is an open source software implementation for 5th generation cellular/mobile network. OAI can be run over commodity hardware and supports wide range of Linux distributions such as ubuntu, centos etc. For 5G the OAI can be used to setup enhanced Node Bs and Evolved Packet Core. This project aims students to get familiarized with the 5G and basic principles to create test environment to measure general performance parameters such as maximum achievable throughput, latency, packet loss with different mobility patterns and speeds.

Functional Requirements:

1. A Presentation on 5G and OAI
2. Setup suitable Linux environment with containers support
3. Install OAI stack and create 4 eNodeBs and one EPC
4. Create a set of mobile users (at least 8) and a webserver
 - a. Connect Webserver with EPC
 - b. Mobile users should associate with B
5. Setup Mobility Patterns using NS3
6. Create a simple connectivity scenario as shown in the figure 1.

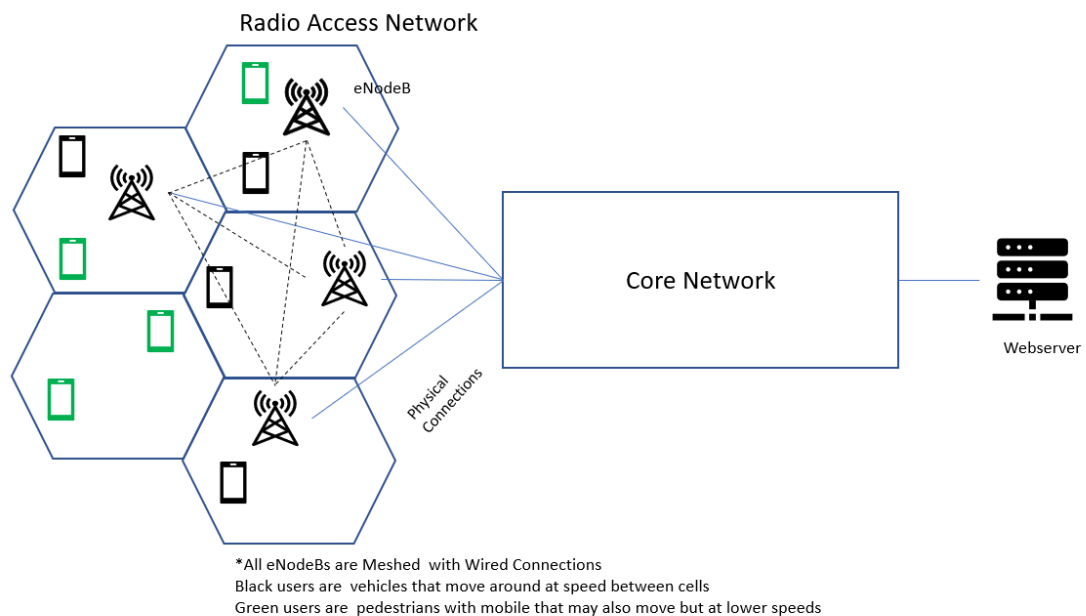


Figure 1 - Network Scenario

7. Measure Performance parameters (throughput, Latency, Jitter, Mobility)

Tools:

Linux , Ubuntu/Centos

Docker Containers

OAI (https://www.openairinterface.org/?page_id=25)

NS3 (<https://apps.nsnam.org/app/nr/>)

Shell Scripting /Python /AWK

Supervisor:

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Flip eBook Creator (FeBC)

Project Domain / Category

Desktop Application

Abstract / Introduction

Flip eBook Creator (FeBC) is a desktop application that lets you create digital interactive books, i.e. reader can read the contents, watch the relevant videos and play an animation/simulation. The interactive eBook lets us enhance the understandability of the reader with the helping of supporting material at same place. Furthermore, related material can also be referenced through provided links where user can find more relevant stuff about the current topic.

Functional Requirements:

The required application should fulfill the following requirements.

- **Using exiting file:** Our application can use an existing PDF file as source to initiate interactive eBook creation process.
- **Standalone Project:** The application should also allow to create an interactive eBook from scratch.

- **Content of interactive eBook:**

Following are contents which can be placed inside the interactive eBook.

- **Textual contents:** Textual contents include written text about the topics e.g. topic name, definitions, details, examples, tables, pictures etc.
- **Animations:** For the sake of this applications, the animations can be provided in the form of GIF images, flash or simulation.
- **Videos:** Any uploaded or YouTube video can be placed anywhere in interactive eBook.
- **Further readings:** Links for further readings will be provided in the forms of hyperlinks. The links may include online URLs of the resources, tutorials, books etc.

Relevant interfaces will be provided to Instructor for creating all the above-mentioned functionality. Note that “Table of contents” will automatically be created for the entered topics. Clicking on any topic name will take student to that topic.

- **Publication of the contents:** The user of application will be able to publish the completed eBook in any of the following formats:
 - **PDF format:** In PDF format all the textual contents and images will be exported and will be available for students. Note that animations and videos may not be present in PDF format.
 - **EXE Format:** In “EXE” format a single “EXE” file will be produced that can be distributed to the students. Executing the “EXE” file will open the book along with all the functionalities.

- **HTML Format:** in HTML format, the books will be provided in the form of web pages which can be opened in any web browser. Book will contain all the contents (including videos) in HTML format.

Note: User of created eBook will be able to read book in any of the above-mentioned formats. Similar application is available at the following link:

<https://www.flipbuilder.com/flip-pdf-pro/>

Tools:

C#.Net / Java or etc.

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Mega Mart Automation

Project Domain / Category

Desktop Application

Abstract / Introduction

Mega Mart is a super store providing services for customers by selling different products. Customers visit the mart for purchasing products. Several members in the mart are serving for keeping /taking items in or from the relevant cupboards to facilitate customers. The staff members are responsible for the management of information of items, company, sales and stock.

Working mechanism: Customer picks different items as per requirement and put in basket. If the customer is unable to find a specific item in the store then staff member can help him or her in finding the desire item by searching in the store or by typing the name of the item in search bar to find the location or rack where it resides. After getting all the items in the basket, it is forwarded to the admin. The admin performs entry of all item(s) in computer for calculating prices which are stored in database. The system automatically calculates the bill against the item(s) entered by admin. The admin tell the total amount of the required item(s). The customer pays the bill. The admin take the printout of the bill and provides the receipt to the customer. The system then balances record of the remaining quantity of item(s) in stock. The admin prints the bill having the details about purchase id, time, date, and price of individual item, quantity, total amount and the discounted amount.

In case a particular customer returns the item(s), the stock quantity should be brought to the previous state as before. Upon return the total quantity of same item(s) should be updated and the amount should be deducted from the total amount.

Functional Requirements:

Provide a bulleted list of functional requirements

1. Admin log in
2. Password recovery
3. Adding various items in stock
4. Searching various items in stock
5. Updating record or item info
6. Bill calculation.
7. Displaying all items
8. Viewing detail of a specific item or order
9. Interfaces validation check for entry, update, delete, search etc.
10. Keep track of all the information of items(s)

11. Printing bills
12. Calculate Total Cost of all items
13. Calculate total profit
14. Deduct amount from total sales if the customer returns medicine(s)
15. Report generation

Tools:

Python programming (mandatory)

Supervisor:

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Online Shopping System

Project Domain / Category

Web-based Application

Abstract/Introduction

The application will provide an interface through which users can easily search and add different products to the shopping cart. Each product should be available under a specific category. There are three types of users in this application: Admin, Registered User and Unregistered User. Admin can manage (add/update/delete) all the application-related data. Unregistered user can search and view all the information. Registered user can search, view and add products to the shopping cart.

Functional Requirements:

Three types of users will be using this application.

Admin:

- The application will provide Login interface.
- Admin can search/view/add/update/delete any information, like product, category and user.

Registered User:

- The application will provide Registration interface.
- User can search and view all the information.
- User can add/remove available product(s) to/from the shopping cart.

Unregistered User:

- User can search and view all the information.
- In order to add the products to the shopping cart, user must first register.

Tools: PHP, HTML, JavaScript, CSS, MySQL

Supervisor:

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QB and Paper Generation System

Project Domain / Category

Database (Desktop Base application)

Abstract/Introduction

Every examination system need transparency in the conduct of its exam and the problem of questions leakage or paper out is a common issue nowadays. To overcome this issue, the idea of Questions Bank (QB) has introduced which is a pool of questions for different courses (subjects).

This QB is used to generate papers for individual students or individual college/campus/area depending upon the requirements of the examination system. You are required to develop a system collecting (storing) questions for different courses and create papers on demand.

The questions entered in this system must have a number of properties like Question ID, Question Marks, Question type (MCQ or descriptive), Difficulty level, budgeted time, chapter/lecture number etc. You further need to make sure that the questions in this QB are of different courses and each course belong to one or more study program.

Functional Requirements:

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

1. There must be login process for administrator and authorized users to avoid unauthorized access to the software.
2. The system must be able to add new questions in the Question Bank (QB).
3. The system must be able to add the course information.
4. The system would be able to create paper of any course in MS word format.
5. The questions selected from QB for any paper must be random and there should be minimum repetition.
6. The system would be able to ask for number of questions included when it creates a paper.

7. Each paper created must contain certain percentage of different types of questions.
8. The system should calculate the time allowed for paper from the budgeted time of each question.

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 an educational institution including, school, college, university or any test conducting organization.

Tools:

SQL Server 2008, VB.Net etc.

Supervisor:

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