

Artificial Intelligence Based Chatbot for University Students

Web Programming

Artificial Intelligence based web application

Abstract / Introduction

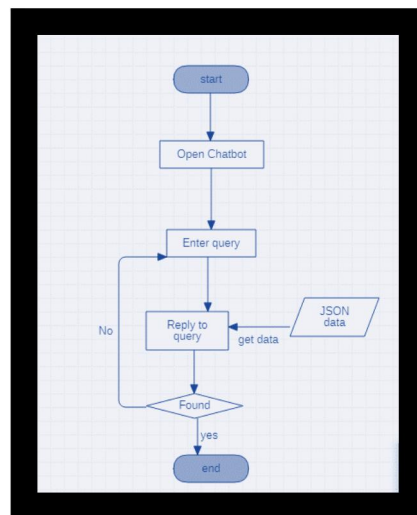
Artificial Intelligence is emulating humans in real life, for example, anybody can know weather forecast using system device (e.g., mobile phone, laptop, Tablet, Personal computer) via internet or you can search for a good restaurant that is nearer to you with the help of AI based software systems. Many AI-based software systems are already in the market and assisting human beings in reducing workload, increasing performance, and improving accuracy by solving different real-world problems. It is a need of time to develop such automated systems which could help human beings (that will be the user of system – University Students) in getting some useful information in the reply of any queries, search, or dialogue. Similarly, Chatbot is a technology which uses AI-based knowledge to reply to its users queries after necessary analysis on the asked queries, in a smarter way (like a human) e.g., Siri, Alexa. Now you will develop a web based Chatbot using AI technology **i.e., Artificial Neural Networks (ANN)** which is helpful for its users in a way that the proposed system will provide useful information to the university students.

Note:

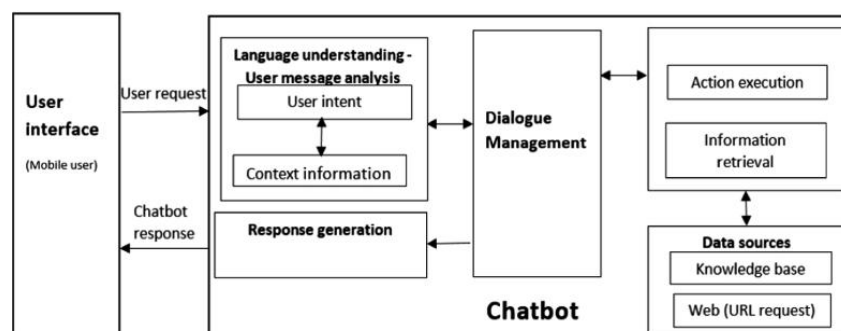
There are different types of chatbots that already exist online and assisting human beings in different disciplines. To get some idea/knowledge about different types of chatbots, please visit:

<https://www.engati.com/blog/types-of-chatbots-and-their-applications>

For the graphical representation of working, look at the flow chart:



The general architecture of a chatbot is:



Functional Requirements:

1. Users will be able to ask exam related queries via chatbot e.g., Date sheet queries, Exam rescheduling queries.

Other queries to be handled by the Chatbot are:

- i. Admission related queries e.g., Opening/Closing dates of admission, Commencement of Classes.
- ii. Registrar Office related queries e.g., Semester Freeze/Unfreeze, Study Program change
- iii. Directorate of finance e.g., Fee matters_MS, Fee matters_BS
- iv. IT department related queries e.g., Mobile app issues, LMS issues
- v. Examination related queries e.g., Conduct of examination, Datasheet queries.

Tools:

Visual Studio Code

Python/ PHP/ JSon

Flask Framework, SQLite, Long short-term memory

Suggestion: Student can adopt different development tool kit other than above given after prior approval of the supervisor.

Helping video on Chatbot:

https://www.youtube.com/watch?v=c_gXrw1RoKo

Example of an existing chatbot for online admission purposed:

<https://hellotars.com/chatbot-templates/education/HyCoZV/chatbot-for-educational-institutions>

How to Make chatbot?

<https://morioh.com/p/9ed6a9bd5ab7?f=5c21fb01c16e2556b555ab32&fbclid=IwAR38OgJUeoq6S15pcRHNoDwz6k-uOjiB8RO3EjdNdV5lyuGTUsGUMqXYOUs>

Helping video on Artificial Neural Networks is:

<https://www.youtube.com/watch?v=ZzWaow1Rvho&t=1s>

For the background knowledge and basic understanding of **LSTM – Long-Short Term Memory** architecture:

https://en.wikipedia.org/wiki/Recurrent_neural_network

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Detection of Cyberbullying using Machine Learning

Project Domain / Category

Data Science/Machine Learning

Abstract / Introduction

Cyber bullying is bullying that occurs with digital devices such as computers, cell phones, and tablets. It can be through online social media forums where people can view, participate, comment or share other people's content. This may include sharing personal or private information about someone else that may cause embarrassment, such as sending, posting or sharing negative, inaccurate, harmful material about someone else. As social networks provide a rich environment for bullies to use these networks as a threat to attacks against victims, therefore, it is important to find appropriate measures to detect cyberbullying from social media. In this project, we shall find the accuracy by applying appropriate machine learning techniques (e.g. Bayesian, Support Vector Machine, Tree and Random, etc.) on cyber bullying datasets. We shall also compare what techniques are better for detecting cyberbullying and why.

Functional Requirements:

Administrator will perform all these tasks.

1. Data-Collection

- For this project, you can collect data from any social media platform (such as Facebook, Twitter, or YouTube) to detect cyber bullying. Your dataset must contain at least 2000 comments. The dataset is shared in the link below. You can collect more data using the API or manually, and add the collected data to the shared dataset.

2. Data-Preparation

- After collecting the data, you need to prepare the dataset. In the process, you will label these comments in two classes: B (bullying) and NB (non-bullying). You will also need to remove punctuation marks and digits from the dataset.

3. Pre-processing

- As most of the data in the real world are incomplete containing noisy and missing values. Therefore you have to apply pre-processing on your data. In pre-processing, you will normalize the dataset, remove duplicate values, handle noise & outliers, missing values, and stop words.

4. Feature Extraction

- After the pre-processing step, you will apply the feature extraction method. You can use TF-IDF, Word2Vec, Uni-Gram, Bi-Gram, Tri-Gram, or Ngram feature extraction method.

5. Train & Test Data

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

6. Machine learning Techniques

- In this project, you will use minimum four classifiers/models (e.g. Naïve Bayes, Naïve Bayes MN, Poly Kernel, RBF Kernel, Decision Tree, Random Tree and Random Forest Tree) of four machine learning techniques/algorithms.

7. Confusion Matrix

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

8. Accuracy Evaluation

- Find the accuracy of all techniques and compare their accuracy.

- This project will also tell us which machine learning technique is best for detecting cyber bullying.

Tools/Techniques:

- Python (programming language)
- Anaconda (Python distribution platform)
- Jupiter Notebook (Open source web application)
- Machine Learning (Technique)

Prerequisite:

Artificial Intelligence, Machine Learning, and Natural Language Processing Concepts,
"Students will cover a short course relevant to the mentioned concepts besides SRS and Design initial documentation or see the links below."

Helping Material

Machine Learning Techniques:

<https://towardsdatascience.com/machine-learning-an-introduction-23b84d51e6d0>

<https://towardsdatascience.com/top-10-algorithms-for-machine-learning-beginners-149374935f3c>

<https://towardsdatascience.com/10-machine-learning-methods-that-every-data-scientist-should-know-3cc96e0eeee9>

<https://towardsdatascience.com/machine-learning-classifiers-a5cc4e1b0623>

Feature Extraction Method:

<https://towardsdatascience.com/feature-extraction-techniques-d619b56e31be>

<https://www.analyticsvidhya.com/blog/2021/04/guide-for-feature-extraction-techniques/>

<https://towardsdatascience.com/tf-idf-for-document-ranking-from-scratch-in-python-on-real-world-dataset-796d339a4089>

<https://www.analyticsvidhya.com/blog/2021/07/feature-extraction-and-embeddings-in-nlp-a-beginners-guide-to-understand-natural-language-processing/>

<http://uc-r.github.io/creating-text-features>

Dataset:

<https://drive.google.com/file/d/1AfUdn70MfnFirnb7NTu2DTS1AVasnofG/view?usp=sharing>

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Implementation of Deep Learning Method for Prediction of Cardiovascular Disease

Project Domain / Category

Artificial Intelligence: Deep learning

Abstract/Introduction

Cardiovascular disease (CVD) is a general term for conditions affecting the heart or blood vessels, world Health Organization (WHO)

[https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)).

The program will be implemented to predict the Cardiovascular Disease by using deep learning methods. In this system, it will be considered requirements that utilize UCI machine learning repository dataset for experimentation (particular Cardiovascular Disease dataset) as given below links provided.

Functional Requirements:

1. There are seven major tasks you will typically perform when developing a system. Tasks (2-7) should be implemented internally while developing the system.
 - i. Task 1: Define the problem and select the dataset as any type of Cardiovascular Disease
 - ii. Task 2: Data Analysis and Preprocessing
 - iii. Task 3: Feature Extraction
 - iv. Task 4: Prediction
 - v. Task 5: Build system
 - vi. Task 6: Test System
 - vii. Task 7: Tune System
2. The program should have a knowledge-based system according to select data (Structured or Unstructured data).
3. The program should have the deep learning algorithm to execute model prediction.
4. The program should evaluate the performance and update knowledge based on the requirement.

Note: Skype sessions must be attended to communicate with the supervisor about deep learning methods otherwise project will not be accepted.

Tools/language: Python language

DataSeT: <https://archive.ics.uci.edu/ml/datasets/heart+disease>
<https://www.kaggle.com/ronitf/heart-disease-uci>
<https://ieee-dataport.org/documents/cardiovascular-disease-dataset>

Prerequisite: Deep Learning Concepts, students will cover a short course relevant to the mentioned concepts besides SRS and design initial documentation.

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Social Finder Application

Project Domain / Category

Mobile Apps

Abstract / Introduction

In the past couple of decades there has been a lot of debate and discussions about social network and media platforms. Both of these platforms have revolutionized the way people share their thoughts, interest, activities and interact with each other around the globe. Applications like Facebook, Twitter, Instagram, what's app, LinkedIn, YouTube etc. are a medium for the people to use both of these social platforms. Student's task will be to develop a social app called "Intelligent social finder app". The app main focus will be to suggest friends to the users of the applications based on their activities, mutual/common hobbies, liking, interest, age group, background etc. This application will consist of three modules. Each module will have its own set of requirements. The main requirements of the application are shown below

Functional Requirements:

Module 1

- Application will provide the user an interface for creating his/her Account.
- The user will be able to login to the application after creating his/her account.
- Application will provide the user an option to Manage (update, delete) information from his/her profile.
- Application should have an option to change its theme, background colour, font, font size etc.

Module 2

- The application will provide an option to its user to search or view the profile of other users and send requests to them.
- The user can share content, videos, images etc on the Homepage of the Account. So other user can like react or comment on the shared content. (This requirement should be somewhat similar to what applications like Facebook, Instagram etc has)
- The application should also provide the user an option of having Instant Messaging with his/her friends.

Module 3

- The application will be able to suggest friends to the user based on his/her activities, mutual/common hobbies, liking, interest, age group, Study background etc.

Note: Students can also add more requirements into the app and customize it to make it more refined.

Tools:

Languages: Java, Kotlin, C#, Dart, Swift or any other programming language

Frameworks: React, React Native, Flutter, IOS or any other modern framework

IDE: Android Studio, Microsoft Visual Studio etc. **Database:** (Preferred One) Firebase etc.

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Synthetic Speech Detection by Deep Learning Technique

Project Domain / Category

AI/Deep Learning/Machine Learning

Abstract / Introduction

With the widespread usage of social media, the dissemination of fake content over the internet is a serious concern nowadays. There are numerous fake videos in which the audio/speech of the target speaker is manipulated by various means in order to defame or to perform illegal activities (e.g: <https://www.youtube.com/watch?v=oxXpB9pSETo>).

The speech of the target speaker is manipulated mostly by TTS (text to speech) method or by Voice synthesizer. First the voice/speech is extracted from the video and then the uttered words of the speaker are modified. Tacotron 2, Deepvoice 3, wav2lip are few of the speech synthesize applications that produce the almost natural voice/speech of the speaker.

As the synthetic speech can be used for illegal and fraudulent activities, hence its the need of time to detect them with AI methods. We will use Deep learning techniques to detect the artificially generated speeches/voices in a video. We will use the Fake audio data from the given dataset of FakeAVCeleb: <https://drive.google.com/drive/folders/1SYM544Z1W7rlrn0W7t-4LcPPusiBINEB>. The goal is to develop a model to detect the synthetic/fake audio/speech in the given videos of dataset.

Functional Requirements

The following are the functional requirements of the project:

- 1 The tool based application/software must download the given Dataset that contains the database of real and fake audio in videos.
- 2 The system must consist of a neural network model that contains hidden layers for the synthetic speech detection.
- 3 Whenever, any video is given as an input that contains the synthesized speech into the detection system, it identifies as real or fake as output.
- 4 The detection system must be able to detect the fake audio generated by any of the android apps such as MadLipz, speakr etc.

Tools

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

Pre-Requisite:

The basic understanding of deep learning concepts are required for this project. Following links may help the students who don't have basic understanding of deep learning and speech recognition:

1. Deep Learning Tutorial:

<https://www.youtube.com/watch?v=VyWAvY2CF9c>

2. Automatic Speech Recognition:

<https://towardsdatascience.com/audio-deep-learning-made-simple-automatic-speech-recognition-asr-how-it-works-716cfce4c706>

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Cash & Carry Billing System with Barcode Reading & Generation Mechanism

Project Domain / Category

Digital Logic Designing

Abstract / Introduction

Maintaining an inventory with a large number of items & serving a large number of customers with a slow tedious billing process in a busy retail shop will affect the success of the retail shop. In such a fast-paced environment, manual inventory management & billing might cause human-errors that are more frustrating. This is where barcode scanning would be helpful. A barcode scanner can help streamline and make the billing process quicker.

Barcode billing software or retail inventory management software allows you to generate and print your own barcodes. By integrating with barcode scanners, you can also read the barcodes already printed on the items by the manufacturers. If you have a retail store such as supermarket, grocery store, or business of packaging loose items, you can make use of barcode billing and accounting software to generate your own barcodes.

Functional Requirements:

- System Application
 - Application must have the capability to generate the barcodes for the products.
 - Customized design for Company Barcode label generator with changeable logos and other textual information.
 - Application must have a bill calculation, generation & printing mechanism.
 - Application can scan barcodes using Barcode Scanning Device for bill calculation & generation.
- Hardware Modules
 - A complete barcode reading/scanning device (self-made module or portable scanner).
 - Bill Printer.

Tools:

Open ended development. Student can use any software and hardware platform the complete the functional requirements.

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IoT enabled Door Bell & Home Security Device

Project Domain / Category

Automation / Digital Logic Designing

Abstract / Introduction

We live in the twenty-first century, where everything is faster, easier, and more automated. COVID has elevated the demand for contactless systems even more. In this case, we offer a contactless doorbell as well as a safety system based on IoT for automatic visitor recognition and house owner notification.

The contactless doorbell uses a Raspberry Pi controller in conjunction with a camera module, microphone and speaker. This system will inform the property owner who has arrived at his or her door and will also serve as a security system when the owner is not at home, alerting him or her to any robbery attempts. This Contactless IoT Doorbell & Safety System provides the following advantages:

- Automatic Visitor Recognition
- Voice Assisted Interface
- Instant Online Alerts on Mobile (Android or iOS)
- Ability to Sound Alarm at remote Location
- Monitor Activity Outside the House at any Time
- Fully Automated System

A fully autonomous doorbell system is possible with the Raspberry Pi system. The system's whole operation is controlled by a Raspberry Pi controller. We're going to employ a camera module to record video and photos of anyone who comes close. There is no need for the person to press any buttons. The camera detects anyone approaching the entrance and uses face recognition to determine whether or not the person is registered in the system. If the person is registered in the system, the doorbell greets them and sends an image to the owner via IoT. If the user is not in the system, the system displays a picture over IoT and allows the owner to ask a question or publish a reply by selecting one from the IoT interface. The doorbell system employs text to speech to ask/reply the person what the owner stated based on the Questionnaire option.

Also the system allows the owner to check live image of the door front anytime through a button press on the IoT interface. Also the system allows user to sound an alert/alarm at the door if owner senses any problem/break-in attempt to alert neighbors.

Functional Requirements

Hardware Module

- Raspberry Pi
- Camera Module
- Wifi Module
- Speaker
- Microphone
- LCD Display
- Ultrasonic Sensor
- Resistors

- Capacitors
- Buttons & Switches
- Electrical & Wirings
- PCB Board
- Diodes Transistors
- Connectors
- Screws and Fittings

Software Module

- Live Stream
- System Power Management
- Alerts
- 2 Way Audio

Tools

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

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

Supervisor

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Spatio-Temporal Analysis of Network Traffic

Project Domain / Category

Computer Networks

Abstract / Introduction

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

Functional Requirements:

Students will be required to decode the pcap files and investigate the spatial and temporal features of network traffic and develop an appropriate software solution to analyze the traffic from data sources given in this document.

The software application should be able to:

1. Read the pcap files and extract the header information such as timestamps, source/destination addresses, TCP port, Packet Size, Type of Packet and other relevant information.
2. Store the extracted header information in a persistent database or text file such as csv.
3. Allow the users to split the large size pcap files into smaller size based on file size and time duration.
4. Identify top flows (highest throughput) for user traffic and network control plane traffic based on followings
 - a. Source and destination with TCP port
 - b. application type
 - c. Session length
5. Measure the flow similarity across daily/weekly traffic captures.
6. Approximate data rate probability distribution for distinct flows for daily traffic.
7. Approximate interpacket delay distribution on daily traffic.
8. Produce analysis of at least one-week traffic captures of fifteen minutes from reputable internet traffic sources.

Tools:

Python/Java, C/C++ (other programming languages could also be used.)

And IDE of choice

Data Source: <http://mawi.wide.ad.jp/mawi/samplepoint-G/2020/>

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Urdu Health Recommender System (UHRS)

Project Domain / Category

Information Retrieval

Abstract/Introduction

With the advent of Machine Learning and NLP techniques, the quest for searching information over the Internet has been increased. Amongst wide-spread applications of online searching, the healthcare is amongst the top searched areas. For English and some other western languages, a plethora of techniques have been designed and developed to provide relevant information about electronic disease information (EDI) to the users and recommend them answers related to different diseases, their symptoms, Disease Type, Doctor Advices, and relevant doctor/consultant accordingly. Moreover, the delivery of accurate and complete information to the patients in an understandable format and language increases his/her knowledge and changes the way of thinking, which is usually referred as patient empowerment.

However, the existing medical related corpuses are in-sufficient for audience whose first language is other than English such as URDU, Arabic etc. Despite large number of URDU speakers around the world, such approaches for URDU language are either missing or inadequate. Thus, there is a need to develop a corpus and approach to provide the user's relevant, accurate and complete information to the users in URDU language. In this Project, we aim to develop and design URDU Health Recommender System (UHRS) System mainly targeting disease information which will be comprised of five attributes that are: disease, disease type, symptoms, precautions, doctor advices, and relevant consultant/doctor. As such, providing valuable information to users for health-related issues, based on their personal health profiles, in the form of suggestions, approved by their caregivers, can significantly improve the opportunities that users have to inform themselves online about health problems and possible treatments? In this context, the proposed project contributes URDU health recommender system that will provide the user with information related to disease like disease name, disease type, symptoms, and precautions as well as information of an appropriate consultant for the disease.

Functional Requirements

The application should be able to:

1. Retrieve data about different diseases that includes disease name, disease type, symptoms, precautions, doctor advices, and relevant consultant/doctor from various resources using mining approach
2. Annotate the retrieved data
3. Translate data into Urdu from other languages like English, etc. if it is in other than Urdu language
4. Store the annotated and translated (if any) data in the MySQL database.

Tools / Application Platform: **Python**

Database: **MySQL**

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Website Evaluation Using Opinion Mining

Project Domain / Category

Information Retrieval

Abstract / Introduction

Opinion mining, or *sentiment analysis*, is a text analysis technique that uses computational linguistics and natural language processing to automatically identify and extract sentiment or opinion from within text (positive, negative, neutral, etc.). Website Evaluation system that rates the website based on the opinion of the user. Stored website(s) will be evaluated based on factors such genuineness of the website, timely delivery of the product after online transaction and support provided by the website. User will comment about the website, based on the comment system will rate and rank the website. The system takes opinion of various users, based on the opinion; system will decide whether the website is genuine or not. The system uses opinion mining methodology in order to achieve desired functionality.

Application developer will use a database of sentiment based keywords along with positivity or negativity weight in database and then based on these sentiment keywords mined in user comment is ranked. The system contains keywords related to fraud, genuineness, timely delivery of the product and service parameters in the database. Based on these factors system will rate the website. With the help of this application user can easily find out which website will deliver the product in time, and also helps to find out website which will provide good support. This application helps to find out whether the website is genuine or not that is useful for those users who do online transactions.

The working of the system is follows:-

- The user logs in to the system he can view various websites posted by the admin and can comment about the website.
- User can see the comment of other user.
- System will rate the website based on the comment of various users.
- The role of the admin is to add various website to the system and to add keywords in database.
- So that system will match the comment with the keywords in database and will rate the website based on the sentiment analysis.

Functional Requirements:

Admin Panel:

1. Admin login's to the system/application by using his/her Admin ID and password.
2. Admin can post different topics/item discussion relevant to website.
3. Admin will also add various E-Commerce based websites for users.
4. Admin will add list of keywords in database relevant to "fraud, genuineness, timely delivery of the product and service" parameters.

User Panel:

1. User login's to the system/application by using his/her user ID and password.

2. User can edit his/her profile details along with display picture.
3. User will post comments on the topic/website posted by the admin.
4. User can also view comment of other users posted on some topic/website.
5. Users should be able to comment on stored website/topic only once. The system stores each comments of the users for further processing and find out the sentiments and their weightage and store it in database.
6. The stored comments of the users will be analyzed by the system. System will match the user comment with the keywords in database (students will use sentiwordnet dictionary only for this task) and will rate/rank the topic and website.
7. User can easily decide whether the stored website(s) provided by the admin/ system are good, bad or worst based on sentiment classification.

User Restrictions:

1. Users will not be able to comment more than once on any saved topic/ website by the admin.
2. Users will not be able to add any single topic/website (Only admin will add it).
3. Users cannot add any keywords in to the system.

Tools:

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

Note:

1. SentiWordNet Dictionary will be used for sentiment classification tasks only.
2. You may use any other platform for coding in which you have command, but make sure all the mentioned FR's should be completely implemented.

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Age prediction by Facial Features recognition using Yolo v4

Project Domain / Category

Image Processing

Abstract / Introduction

YOLO is an algorithm that uses neural networks to provide real-time object detection. This algorithm is popular because of its speed and accuracy. It has been used in various applications to detect traffic signals, people, parking meters, and animals. We will use yolo algorithm to predict age of persons based on different facial features.

The first step will be to label the images, for this purpose we can use different available tools like [Labellmg](#). Then we will setup environment and train our model and predict the age group.

Functional Requirements:

- First step is to select 500 images for each age group from the dataset total 7000 images, you can also select images from different datasets and generate a combined dataset.
- Following 14 age groups(classes) must be manually generated:

1-5	6-10	11-15
16-20	21-25	26-30
31-35	36-40	41-45
46-50	51-55	56-60
61-65	66-70	

- You can write script to automatically copy the images to respective folder so the images can be easily annotated.
- Next step is to annotate the images according to the different age groups in yolo format using [Labellmg](#).
- Once the dataset is annotated yolo environment will be set and model must be trained.
- You can set environment on your own machine or use google colab.
- Model must be retrained if desired accuracy is not achieved by enhancing dataset or changing training parameters.

Tools:

- Python
- jupyter notebook
- Yolo

DataSet:

<http://mmlab.ie.cuhk.edu.hk/projects/MegaAge/>

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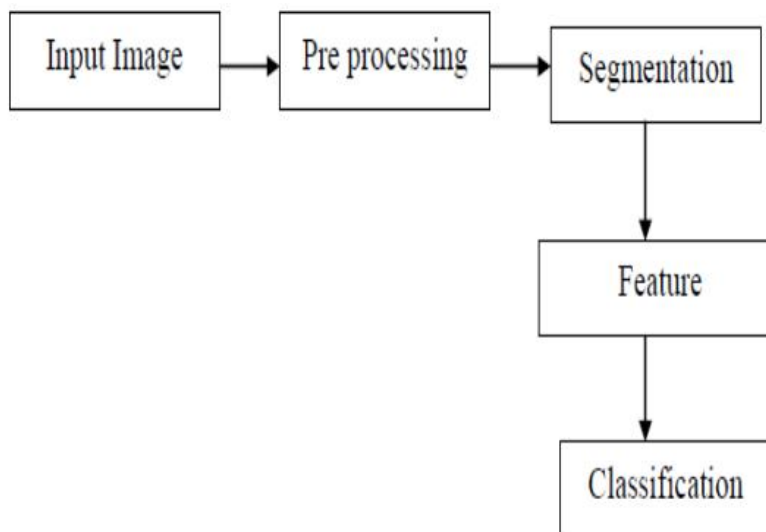
Breast Cancer Detection using Support Vector Machine (SVM)

Project Domain / Category

Image Processing

Abstract / Introduction

Early detection of breast cancer ensures the chances of survival. Now a days the best technique is mammography which uses x-rays to detect breast cancer at initial stages. The main objective of this project is to enhance the accuracy of the cancer detection and classify the women into different risks groups on the basis of physiological symptoms. X-rays images are used as input to Support Vector Machine (SVM) classifier. The steps involved in the cancer detection using x-rays are represented graphically:



Steps to perform classification

Functional Requirements:

Provide a bulleted list of functional requirements

1. Input x-rays images by creating web page.
2. Perform pre-processing to reduce anomalies and noisy data.
3. Apply segmentation.
4. Feature extraction using Gaussian function.
5. Classify data into different risk groups on the basis of symptoms.
6. Show results graphically and statistically.

Tools:

You can use any tool related to the project like MATLAB, Weka, C#, Java Python

Note: dataset will be provided later.

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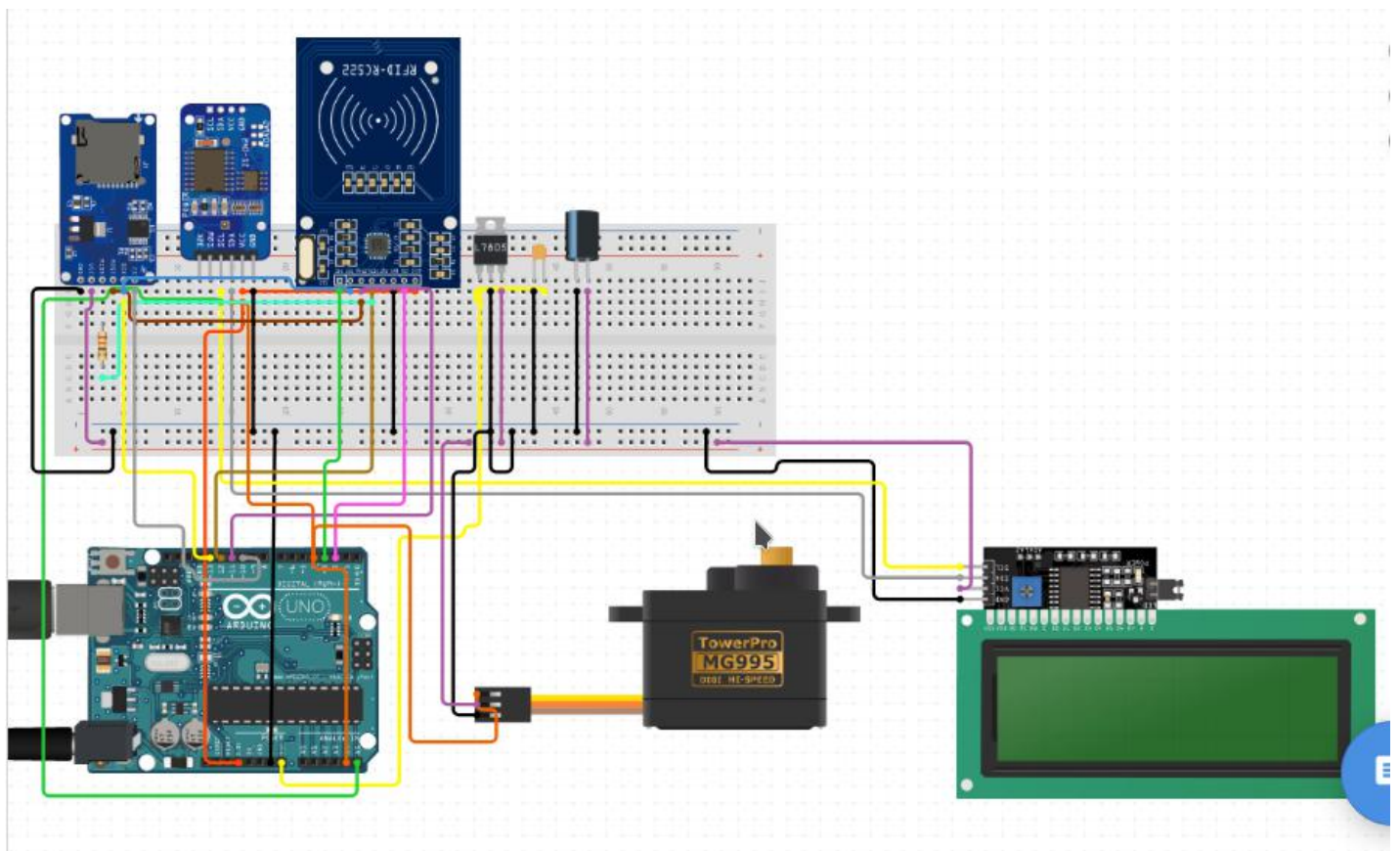
Contactless Attendance System for prevention of Covid-19

Project Domain / Category

IoT

Abstract / Introduction

Without a doubt, COVID-19 is effecting businesses around the Globe very badly. Hundreds of thousands of businesses have temporarily closed or have been forced to lay off employees due to massive reductions in sales. The revenues are fallen to a point where survival of most businesses is not possible. For most of the Businesses, marking attendance of their employees is such a crucial task during this pandemic. Many businesses does not afford remote working of their employees such as factories producing foods and goods. Such type of Businesses required to have a safe and contactless attendance management system which prevents the future spread of the coronavirus by not touching attendance machines. So, we proposed this project in which we have designed RFID Based Attendance Management System using Arduino and RFID. In this system, each employee is issued an RFID card as their identity card and their attendance is marked when they scan their card with RFID reader.



Functional Requirements:

Below are some main functions of the system.

1. Attendance check-in/check-out
2. Confirmation Beep on success
3. Display Name on LCD
4. Entry or Exit indication
5. Monthly attendance report

Tools:

Arduino IDE

Required Hardware:

- Arduino UNO
- RFID module
- LCD Module
- Connectors and Jumper wires
- Battery / Adopter
- Cards

Supervisor:

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Project Domain / Category

IoT

Introduction

A health Outbreak is caused by the COVID19 pandemic. The most powerful safety tool is wearing a face mask in public places and everywhere else. The COVID 19 outbreak forced governments around the world to implement lockdowns to prevent virus transmission. According to survey reports, wearing a face mask at public places reduces the risk of transmission significantly.

We are going to create a IoT-enabled smart facemask detector using machine learning which will help in lessening of this health outbreak. Our IoT-enabled smart facemask detector could be used at shopping malls, hotels, apartment entrance, etc. This device can help to organizations to improve the overall prominence for COVID19 protection by enabling the Internet of Things (IoT) technology.

Functional Requirements:

1. Face Mask Detection
2. Setting an alarm when intruder (a person without facemask) enters.
3. Create an interface for monitoring and keeping stats of person entering with mask and without mask.
4. Calculate Intruders peak time by monitoring daily stats and informing authorities of the intruder's peak time.

Required Hardware:

1. Raspberry Pi (Pi 4 is recommended)
2. Pi camera module
3. MicroSD card
4. Power supply/Keyboard/Mouse/Monitor/HDMI Cable

Tools and technologies:

Raspbian OS, Putty, VNC server and WinSCP etc.

Tensorflow, Keras, Open CV etc.

Supervisor:

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Android App for Location Based Services

Project Domain / Category

Mobile Application.

Abstract / Introduction

Many of our daily life activities are location based and we may forget to keep track of all the activities associated with a certain place. In order to keep track of all the activities associated with a certain place, this application will remind the users about any work when he is at a certain location. This application will require GPS (Global Positioning System) services of the mobile to keep track of the current user location.

User will add the tasks associated to a particular place in the application along with the location. Application will continuously monitor the location of the user and will generate a notification or alarm to intimate the user as he reaches at the task location.

This application will also allow the user to automatically change mobile sound (ringer) settings associated at a particular location like turning on vibration mode in Mosque. All data will be saved in the cloud storage so that you can get the same record even after changing your device.

Functional Requirements:

Following are functional requirements of this project

1. The users will need to register with the application using his/her email address for the first time use. These credentials will help him to store and retrieve his/her data on cloud storage. Users will be required to log into the application only once (for first use).
2. The application will show the current location of the user on the map and all the pending tasks pinned at the particular location associated with the task.
3. The application will provide an interface to add a task associated with a particular place and select the location of the task. The application will continuously monitor the location of the user and will generate a notification or alarm to intimate the user as he reaches the task location. It will also provide an option to set a reminder type either in the form of a notification or alarm ringer.
4. This application will also allow the user to automatically switch the mobile sound profile (i.e. Sound, Vibration, Silent, etc.) settings associated with a particular location. The user will

add a sound profile setting for a particular location. The application will provide an option to select a particular location from the map (i.e. mosque, office, etc.) and associate a sound profile setting defined in the mobile to that place.

5. The application will provide an option to automatically switch to the default sound profile or show a reminder to manually switch settings when the user leaves that location.

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

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

Supervisor:

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Android Car Buy & Sell App

Project Domain / Category

Mobile Application

Abstract / Introduction

This android app will provide an online C2C (Customer-to-Customer) platform to users for buying and selling their cars as well as the spare parts and related accessories. The users can search / find the vehicles based-upon their category, budget, make, model, cities and body types. Based upon such searching criteria, the app should display vehicle's details containing price, pictures, model, make, location, category etc. The app will display spare parts and accessories according to search criteria already defined for cars. It will be an online system where users can search and buy or exchange their vehicles.

Functional Requirements:

1. The system shall be able to register users as buyers and/or sellers along with their profile maintenance including name, contact information, address, location on Google maps, pictures etc.
2. The system shall be able to register vehicles along with their vehicle profile maintenance including name, make, model, type, category, budget, make, model, body type, pictures etc.
3. The system shall be able to register users as buyers and/or sellers along with their profile maintenance including name, contact information, location, pictures etc.
4. The system shall allow users to search / find the vehicles based-upon their category. The category includes 660cc cars, 1000cc cars, 1300 cc cars, Japanese cars, Hybrid cars, Small cars, Electric cars, Bank auction and local cars etc.
5. The system shall allow users to search / find the vehicles based-upon their budget e.g. like below 10 lac, below 15 lac, below 20 lac, below 30 lac, below 40 lac, and so on up to 100 lac.
6. The system shall allow users to search / find the vehicles based-upon their make. The make includes Toyota, Honda, Suzuki, Diahatsu, Nissan, MG, Hyundai, Kia, Faw, BMW, Audi etc.
7. The system shall allow users to search / find the vehicles based-upon their model. The model may contain Corolla, Civic, Mehran, Cultus, Prado, Hilux, Vezel, Swift, Land Cruiser, Bolan, Aqua, Pass, Mira, Alto, Liana, Centro, Ravi, Corolla Axio, etc.
8. The system shall allow users to search / find the vehicles based-upon their cities. The cities list contains Lahore, Islamabad, Karachi Peshawar, Quetta and some other big cities of Pakistan.
9. The system shall allow users to search / find the vehicles based-upon their body types. The body types may include Sedan, Hatchback, SUV, Van, Double cabin, Pickup, High Roof, Truck etc.
10. The system shall allow users to search / find the auto (or spare) parts and accessories of vehicles based-upon their category, make and model.

11. Apart from user search, the system shall display list of auto (or spare) parts and accessories along with their shipping details.
12. The system shall consist of online shopping cart for purchase of the auto (or spare) parts and accessories. The payment mode will be Cash-On-Delivery (COD).
13. The app should allow user to quote his/her offer (or price) against the demanded price (by owner).
14. The real-time communication among users (seller and buyers) will be offered by the app via chat, audio and video call.
15. The system should allow exchange offer to buyers against their existing vehicle.

Tools:

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

Supervisor:

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Android Based Tourist Guide

Project Domain / Category

Mobile Application.

Abstract / Introduction

Now-a-days there are many applications which helps user to provide solutions to many problems related to their daily life. Northern areas are one of the regions which have a potential of tourism in Pakistan. In recent holidays, over 2.7 million people visited Khyber-Pakhtunkhwa for the purpose of tourism. Due to the lack of updated information, tourists are not be able to visit all tourism attraction sites. Android Based Tourist Guide provides a solution to the problems that the tourists faced during their visit. Android Based Tourist guide replace the old way of tourism guide. Mobile based tour guide system allows them to get the needed information at any time, from anywhere. The main objective of this project is to replace paper-based tour guide with mobile application and to provide the information that they needed before and during visits without missing attractions.

Functional Requirements:

Modules in Application

1. **User Module:** Via user module, user can make account into the application and can use it for future purpose and also get latest updates thoroughly.
2. **Booklet Module:** In this module, all the information is viewed via this module and user can access this module through their account.
 - a. **Sub Module.**
 - i. Location of different sites
 - ii. Location of hotels
 - iii. Culture and values of the region
 - iv. Locate it on the map
 - v. Display full information about the sites
3. **Database Module:** This module contains all the data related to the system such as users that are registered into the system and so on. Time-wise update of the database will lead to timely updating of information in the user's account as well.
4. **Admin Module:** All the updates and addition and deletion of information related to places and other information are updated via this module. Only admin has the right to access this module.

Tools:

Android studio, SQL lite database, Google map, Apache web server

Supervisor:

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Project Domain / Category

Android Mobile Application.

Abstract / Introduction

BluetoothChat is an android based application that allows two users to chat via Bluetooth. BluetoothChat mobile app., will help you to send short messages and images using Bluetooth technology. You can chat with your friends if you are in the Bluetooth range and don't have access to the Internet. This mobile app allows users to discover other nearby users, limited to 100 meters, and create a peer-to-peer connection without any Internet or mobile data connection. You need to pair two Android phones using Bluetooth and start the chatting and sharing image files without the need of any internet connection. It's secure, fast, and easy to use. Bluetooth Pair helps you connect automatically to your most used Bluetooth devices by saving time. The app will manage all your paired and unpaired devices that you do not need any more. Also, you can filter search for Bluetooth devices.

Functional Requirements:

1. Create the User login
 - Giving the user's name and password
2. Create first activity and create the chat window and menu items (Search Device, Switch ON Bluetooth) and work on functionalities like search the devices and switch **ON** Bluetooth programmatically.
3. Scan Devices:
 - This will scan the all nearby Bluetooth devices. This function helps you to filter search Bluetooth devices. Like: other phone devices, etc.
4. Listing All Nearby Device:
 - Display all searched devices, recently paired and unpaired.
5. Paired Devices:
 - Paired the selected device from available devices list.
 - Display list of already paired or connected devices.
6. Available Devices:
 - Display list of all available devices
7. Connecting to a Bluetooth device: Select any available device to connect.
8. Start Sending and Receiving Messages and Images.
9. Maintain the chat history. (You can use any database tool)

Tools: Latest version of Android Studio installed on your PC or Laptop, Any database tool (SQLite, or Firebase)

Supervisor:

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Project Domain / Category

Mobile Application

Abstract / Introduction

If a person decides to purchase a vehicle, he/she will be overwhelmed by multitude of options – ranging from hatchbacks to SUVs. Decision making and final purchase is a hectic job, but the story doesn't end here; remembering pre-defined maintenance timeline and scheduled service is also quite cumbersome. Majority people don't know exact inspection and service deadlines and end up in a higher maintenance cost.

Easy Auto app will try to tackle these problems. It will not only assist in buying an ideal vehicle that fits to the requirements, but also help in after-sale services and maintenance tasks.

Functional Requirements:

Module I: Purchase Decision

M1.1: The app will provide the best vehicle(s) available in the market to purchase after taking input from the user on these factors (not limited to only these – you can add as well):

- Seating capacity
- Luggage/trunk space
- Engine size and technology
- Fuel type and advertised economy
- Driving modes availability
- Off road/on road driving (4- or 2-wheeler)
- Safety features

M1.2: The app will show all nearest dealerships/showrooms of the selected car based on the **current location** of the user.

Module II: Maintenance Services

M2.1: The app will have a comprehensive maintenance section which will have month wise or odometer-reading wise maintenance timetable which user can view.

M2.2: The app will notify the user of next upcoming maintenance activity (monthly or odometer-reading whichever comes earlier).

M2.3: The app will calculate total distance covered by the car using GPS. For accuracy, user will have the option to override this reading.

M2.4: After a particular maintenance service has been done, the app will take total cost incurred and will save it in a database for comparison purposes for the next same maintenance service.

M2.5: All maintenance services will auto update for their next schedule.

An example maintenance chart is available in this link:

<https://www.suzukipakistan.com/customer-care>

(click on Schedule Maintenance tab)

Tools:

Android Studio or Eclipse IDE or Microsoft Visual Studio with Xamarin
SQLite or Firebase database

Supervisor:

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Project Domain / Category:

Mobile Application

Abstract / Introduction:

Pharmacy is a challenging industry with thousands of companies competing for top positions. ePharmacy is a promising market for business development. Medicine is a necessity for every household, especially during these times of COVID-19 epidemic. Pharmacy delivery apps are beneficial for both customers and pharmaceutical manufacturers. Customers can use this app to order medicines. Searching for medicines is easy using the app. Customers can upload prescription to find their medicine. Customers can check the expiry dates of all their medicines before ordering through the app. Pharmacy stores are notified when orders are placed. Items are packed and delivered to the indicated address.

Functional Requirements:

1. Registration and Login:

First of all, the user will encounter the login screen which requires the user to login to the application. The login system for each user (Customer, Pharmacist, Admin, Driver/Rider) shows its dashboard correctly with appropriate functionality. 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. Using email, social media accounts or phone numbers, it should be easy for customers to register and login.

2. Profile management:

When customers create a new account, they should be able to add personal information, such as their name, credit card information, shipping address, etc. A 'forgot password' feature should also be available.

3. Add prescription:

Prescriptions should be added by the user so that pharmacists can verify them. It should be possible to upload different types of prescriptions, such as images from the device's gallery, PDFs, and other formats.

4. Search medicine:

It allows customers to easily find some medicines in a single store through this app. You can search for medicines by manufacturer and drug name.

5. Order medicine:

Customers should be able to place orders through the app. The date of expired medicines can be checked before placing an order through the app.

6. Pay for orders:

The App should provide an interface to pay for orders by using eWallet; provide add money (using debit/credit card) and/or Cash-On-Delivery (COD) and view balance options.

7. Order tracking:

Customers can track the location of their orders and check the delivery time of their orders.

8. Nearest Pharmacy:

Customers should be able to locate the nearest pharmacy via Google Maps by viewing the distance from their current location to the nearest pharmacy.

Tools:

5. IDE: Android Studio
6. Programming Language: Java
7. Database: MySQL, Firebase
8. Unified Modelling Language (UML): Microsoft Visio, IBM Rational Rose

Supervisor:

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Project Domain / Category

Mobile Application

Abstract / Introduction

Files keep moving in a big organization from person to person, from desk to desk. In case if someone requires that file, it becomes hard to find which person, desk or office has that file. If someone requires that file, it seems that his mind gets disturbed and sometimes causes hustle and bustle within the company. In the file tracker system, files will be registered and office employees will be registered too. So if a file moves from one person to another, the status of the file location will be updated. Every file will have a number, and it will be easily found which person is currently holding that file. So if someone needs it, he will search in the app and directly go to that person. For better experience, he can directly call or message that person within the app to get that file.

Functional Requirements:

1. User has to register in the app
2. Files have to be added in the app
3. User can add new file
4. User can search for a specific file
5. User can see the current person holding the file
6. User can ask the person holding file to forward it to him
7. User can track department-wise file(s) status
8. User can chat or call to the other registered users

Tools:

Database: Firebase or MySQL

Language: Java

Framework: Android

IDE: Android Studio

Supervisor:

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Project Domain / Category

Mobile Application

Abstract / Introduction

Taking out some time from your busy schedule to attend a gym daily for a workout seems difficult for working professionals & college students due to workload & studies. As a result of which many people prefer doing exercises or gym workouts at their home itself. However, a gym workout or exercise done without following the right procedure or positions and done without the proper guidance of a trainer can damage your muscles. Also, hiring a personal trainer may not fit everyone's budget. So, to tackle this issue you are required to develop an android based Gym Buddy application that will act as a virtual trainer. This application will guide the users on various body exercises with step-by-step positions with images. The users can keep a track of the data of day-to-day exercises. The Gym Buddy application contains a list of all exercises based on different types & categories (i.e., workout for chest, triceps, biceps, abs, back, shoulders, forearms, legs etc.). The users can also keep a track of how much sets or weights they used in one particular workout so that they can increase or decrease its capacity accordingly. Thus, this android-based gym workout application will act as a virtual guide to the users & will provide a user-friendly gym experience.

Functional Requirements:

In this system, the user will be able to view all kinds of exercises based on type or category. Each Workout or exercise is well explained in details along with 2 photos showing the start and end-pose, so that user can check his posture like in the photo and can imitate it properly. User can enter weight or set based on current date and can add multiple entries for each date. The system comprises of one major module with its sub-modules as follows:

User:

- **Login/Logout:** User will be able to login in the application by providing his username and password. After the use of application, he can be logout from the application by saving his workout progress.
- **Categories:** User will be able to select a category or type of exercises he wants, namely chest, triceps, biceps, abs, back, shoulders, forearms, legs etc.
- **Exercise:** Each exercise will have 2 photos showing the start and the end pose of it, along with a detailed description about the exercise which can consist of what kinds of muscle we are building and why is it important.
- **Progress Tracker:** Under each Exercise, the user can mark how much weights he used or how many sets he did on the particular date, so that he can refer and keep on increasing his mark.

Tools:

Android Studio

Java language

Database (SQLite or Firebase)

Supervisor:

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Health Monitoring Mobile App for Patients

Project Domain / Category

Mobile Application

Abstract / Introduction

It is an android based mobile application that will keep track of a patients' health. This mobile application will keep the personal profile and medical record of a patient. In this app, user will be able to add patient's personal profile, medical history, doctor appointments and vaccination records. It should provide an alert message to update the person about next appointment to the doctor and daily medicines. The patient can add his/her medical record like blood pressure, sugar level, pulse rate etc. and if these values are not in normal range, then it should alert a patient for emergency visit to the doctor. An alert message should also be generated if vaccination date is near or has passed or if appointment is due. Application must also provide the mechanism to keep track of a patient's medical record of illness and treatment (like what was illness like blood pressure, diabetes flu, fever, chest infection etc. and what was the medicine recommended by Dr. along with Dr. name and contact). There should be a facility to upload the image of prescriptions against illness records.

Functional Requirements

There are following functional requirements:

1. User will be able to add the personal profile of a patient.
2. User will add the record of medical history of a patient (like what was illness like blood pressure, diabetes flu, fever, chest infection etc. and what medicine was recommended by Dr. like Panadol, Rigix, Glucofage etc. along with Dr. name and contact).
3. User will be able to add vaccination record of patient.
4. It will give alert message in case of emergency visit to doctor if patient is not well.
5. It will give an alert message if vaccination date is near or has passed or if doctor appointment is due.
6. It will update patient about daily medicine.
7. There should be a facility to upload the images of prescriptions against illness record.

Tools and Languages:

IDE: NetBeans, Eclipse, JDK, Android Studio

Language: Java

Database: SQLite / Firebase

Note: Student should not generate Application using any web based/offline tools like "MIT Android App Inventor".

Supervisor:

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Labor Working Monitoring App for a Fish Pond

Project Domain / Category

Android app

Abstract / Introduction

Due to multiple businesses in different locations an owner cannot monitor the working of the labor/employees physically on all business places. Work-from-home mode is the best solution to manage all businesses remotely.

So the owner/ project manager needs such a mobile app that provides a new way to manage attendance, leave application and daily task in a quick and easy way.

You have to make an android based mobile application that could fulfill the need of the absentee owners of the fish farms, who couldn't daily monitor the care and the feed of the fish being raised in the ponds physically.

Functional Requirements:

Following are functional requirements for this project:

1. There must be a login process for administrator and authorized users to avoid unauthorized access to the software.
2. There must be a camera interface for the administrator/owner for watching of workers assigned routine tasks.
3. There must have a worker's interface to notify the owner on performing all activities.
4. The application shall monitor daily working of the labour force.
5. To perform each task worker shall add his starting and completion of the activity time.
6. On performing each activity by the worker owner must be notified on daily bases.
7. The application shall keep records of the feed give to the fish.
8. The application shall tell the growth of the fish.
9. The application shall tell about mortality of the fish.
10. The responsible worker of the fish farm shall provide the owner daily report of other indicators like oxygen deficiency syndrome disease etc.
11. For this, multiple cameras would be installed at the optimal areas to keep watch the actives of the workers of the fish form.
12. Application shall maintain a database to keep a back up record is being recorded through camera of the daily activities performed by the workers.
13. Owner must be able to watch the employees back up recorded video through camera interface.
14. The owner through other media like WhatsApp could also talk to the worker and direct them.

15. All system depends on the Wi-Fi connection.
16. The application must have Capability to receive and manage an online database of the data from Hardware Module
17. The application must have capability to compute the critical condition based on received data
18. Display Unit
19. GSM/Wi-Fi based Internet Connectivity Module
20. GPS Module Mobile Application (Android)

Tools:

IDE: Android Studio

Languages: Java, PHP for APIs

Database: MySQL, PostgreSQL , MariaDB, SQLite, Firebase

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

Supervisor:

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Meat On Wheels iOS App

Project Domain / Category

Mobile Application

Abstract/Introduction

During the COVID pandemic, people buy meat online, so they don't have to leave their homes. In the past few years, Covid-19 has changed the shopping landscape in many ways, the most apparent in the fact that many people now would instead buy meat and other food supplies online. Nowadays, we can purchase anything online. It's also possible to skip the queues at the supermarket or in the butchers and buy meat online.

With online butchers, you can get high-quality meat delivered freshly to your door. There's no reason to brave the crowded meat department in a grocery store or drive to the butcher shop to purchase dreary meat. When it comes to getting your meat, you should receive the best service.

The main idea of the proposed "Meat On Wheels iOS App" is to provide the customers easy access to the meat of their choice and get delivery of their favorite meat to their doorstep.

Main Roles of the system:

There will be five options in its side menu

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

Core Functionality:

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

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

The other Screens will work as :

- **Profile.**

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

- **Nearest Stores.**

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

- **My Cart.**

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

- **Feedback.**

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

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

Tools & Language:

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

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

Supervisor:

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Mobile Application for Marriage Hall Booking

Project Domain / Category

Mobile Application

Abstract / Introduction

You have to develop Mobile application in which user can book a marriage hall for valima ceremony or receiving baraat. The app should provide number of options and user can select options according to his or her need and requirements. The options include the seating arrangement and menu like mutton, beef, chicken, biryani, kheer, salad, raita, cold drinks etc. After registration to the app the user can book the marriage hall based on the available dates and pay the token money.

This payment can be made through a payment interface. This booking should be available to the admin which will be marriage hall administration. The marriage hall administration then can confirm booking and assign different task to the marriage hall employees to manage the event. On the day of the event the services should be available to the user for baraat or valima.

Two days before the event the user should pay the 80% of the amount. After the event the user pays the remaining amount of the event charges.

Functional Requirements:

1. User should register in the mobile app.
2. User should login to use the mobile app.
3. App should also show the available slots and booked slots.
4. App should provide an interface for booking.
5. Interface should provide options such as number of peoples, menus. Options in menu include such as mutton, chicken, beef, biryani, salad, cold drink etc.
6. After filling all the required fields, the booking should be submitted.
7. The admin of the marriage hall should check the requirements of the user. If no issue found then it confirms the booking and send message through email or phone call or SMS to proceed for token money.
8. If user confirms his bookings then interface for token money payment should be shown where user should made payment. The booking confirmation message should be sent to the user through email and mobile phone SMS.
9. After booking confirmation the admin should assign the responsibilities to the employees of the marriage hall like Procurement of the required material, cooking arrangement, seating arrangement, event management. On the admin side these assigned responsibilities should be shown to the admin.
10. Admin should enter the details of the employee while registering into the mobile app.

11. If user do not pay token money for two days then booking should be cancelled and interface should be made available to the other users for booking.
12. If user cancel booking before the event the token money should be with held and slot should be made available to the user.
13. After the event the admin should formally close the event.

Tools & Language:

IDE: Android Studio

Programming language: Java / Kotlin

Database: SQLite

Supervisor:

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Online Plasma Donation System (Android)

Project Domain / Category

Mobile Application (Android)

Abstract / Introduction

Although the governments around the world are carrying out COVID vaccination campaigns on a large scale. However, due to very large population, it is becoming increasingly difficult to manage this vaccination drive because number of vaccines available are not sufficient. As a result, saving lives of unvaccinated COVID contracted patients has become the matter of grave concern. According to the data provided by WHO, approximately 4.8 million people have died so far due to COVID whereas the total number of active cases have risen above 17 million. Although, vaccination is a good way to help protect the people from getting COVID. However, for critically ill COVID patients need other treatment to reduce the chances to losing their lives. One such treatment by which a COVID infected person can be treated and the death risk can be reduced is Plasma therapy. This plasma therapy is an experimental approach to treat corona-positive patients and help them recover. Plasma is a component of blood which is taken out from the body of a healthy person who is already recovered from COVID and injected into COVID patient to give a chance to recover.

Finding the right plasma donor for the patient is a key challenge and hence our proposed application will aim at connecting the donors & the patients through mobile. By using this application, the users can either raise a request for plasma donation or requirement.

The aim of our proposed application is to provide an online platform to users where both COVID patients and plasma donors can find each other and connect. This will be an android mobile application which will require internet connectivity through which the users will be able to communicate. This system is used if anyone needs a Plasma Donor. This system comprises of Admin and User where both can request for a Plasma. In this system there is something called an active user, which means the user is an Active member of the App and has recovered from COVID 19, only such people are recommended here for Plasma Donation. Both parties can Accept or Reject the request. User has to Upload a COVID Negative report to be able to Donate Plasma.

Functional Requirements:

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

➤ **Admin**

- **Login:** Admin can login into his account using id and password.
- **Active User:** Admin can view all active users.
- **Plasma Request:** Admin can raise request for plasma donation to an Active User.
- **User Request:** Admin can accept or reject donor requests on basis of user report.

- **View Requests History:** Admin can view the previous history of all the previous plasma donations requests and their status (Accepted/Pending).
- **View Profiles:** Admin can view all the registered users and the history of their previous activities on the application.
- **Block Users:** It may be possible that some users may be involved in fraudulent activity such as sharing wrong information. Admin must have rights to block such users and may even delete these users.

➤ User

- **Register:** User can register using personal details.
- **Login:** User can login into his account using email id and password.
- **Request for Plasma:** User can raise request for plasma donation.
- **Report:** User need to upload their report of been successfully recovered from COVID19.
- **Emergency Request:** User can raise request for plasma in emergencies.
- **Plasma Donation:** User can accept any request for plasma donation.

Tools and Language:

- Android Studio
- Cloud Database
- Java or Kotlin
- XML for front end

Important Note: You are strongly advised to carefully read all the functional requirements and do some research beforehand to make sure that you understand project requirements and are in the position to implement these requirements. Moreover, the university will not offer any financial assistance for using any paid APIs in the project implementation.

Supervisor:

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Orphanage Management App

Project Domain / Category

Mobile Apps

Abstract / Introduction

The Final Prophet (Peace and Blessings Be Upon Him) said, "The one who cares for an orphan and myself will be together in Paradise like this", and he held his two fingers together to illustrate. – Sahih Al-Bukhari (Vol: 8, Book: 73, Hadith: 34)

If a child has no parents because the parents died or lost custody, then the child is considered an orphan. An orphanage is a residential institution for the care and education of orphans. However, in orphanages, most of the tasks are performed manually, thus making it very tedious to organize, store and retrieve historical data for kids. This motivates to develop an application to ease the administrative activities for these kinds of organizations.

Orphanage Management App is an Android based application which has two types of login; Admin and Donor. Admin can perform administrative tasks, like; enrollment of a new orphan, modification in orphan's record and generation of notifications to donors for help in case of any shortage of food, cloth or money. While a donor can donate online, request for adoption and view orphanage details etc.

Functional Requirements:

Functional requirements are as follows:

I. **Users:** The app must support two types of users; Admin and Donor

1. Admin:

- Login
- Add/update orphans profile (*name, age, photo etc.*)
- Update orphanage details (*address, location etc.*)
- View online transactions
- View donor's feedback
- Schedule meetings (*for adoption process*)
- Generate notifications (*to get help from donors etc.*)

2. Donor:

- Register
- Login
- View orphanage details (*address, location etc.*)
- Manage E-Wallet (*for online donation*)
- Request for meeting (*for adoption process*)
- Give feedback
- Receive notifications

- II. **Authentication:** App should provide registration (*for donor only*) and login GUIs (*i.e. Graphical User Interfaces*) for both (*admin and donor*); store users' credentials at Firebase Authentication.
- III. **Databases:** Firebase Real-Time Database should be used as an online server for storing all data; use JSON format in this regard. However, for app internal storage, SQLite or Room database should be implemented.
- IV. **Google Maps:** Donor should be able to locate the orphanage via Google Maps.
- V. **Online Payment:** App should provide interface to pay donation online by using E-Wallet; provide add money (*using debit/credit card*) and view balance options.
- VI. **Orphans Profile:** App must provide GUIs to create a profile for each kid, where admin can add name, date of birth, gender and photo etc.
- VII. **Search Feature:** By using it, a donor can search about kids from orphans profile and request for a meeting for adoption purpose.
- VIII. **Notifications:** App should send proper notifications to donors with high priority so that the needy could be helped timely.

Tools:

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

Supervisor:

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Project Domain / Category

Mobile Apps

Abstract / Introduction

This app connects people who are willing to volunteer to care for patients/elderly people needing care. A person willing to volunteer will register in the app mentioning the number of patients he/she can look after and the area around his/her house within which he/she can look after patients. Now when a patient looking for care or his/her family member registers him/her in the app, the app automatically assigns a caregiver to the patient that is closest to the patient's location. If there is no caregiver available, then the app will display a suitable message for the patient. While registering a patient, there is also a need to enter the care the patient needs. The care that a patient needs may be reminder for a medicine, therapy or some other treatment at a particular time (set by the patient or family member while registering). The volunteer/caregiver will get reminder that his/her assigned patient needs to take medicine (or some other action) and he/she will message/beep/remind the patient through the app to do the needful. The patient may take the needed action (take medicine or other needed medical intervention) and will push a button notifying the caregiver that appropriate action has been taken. If a caregiver/volunteer does not get a notification from the patient after a few reminders, then he/she will go to the patient's location or contact some family member to get things done. Finally, the app keeps record of the duration and number of patients a caregiver is taking care of so that he/she may be given proper acknowledgement/recognition/reward for his/her services.

Functional Requirements:

1. A caregiver can register in the app mentioning:
 - a. The number of patients he/she can take care of
 - b. The area around his house where he/she can be assigned patient(s)
2. A patient (or family member) can register in the app mentioning:
 - a. The care needed (and the time of each)
 - b. Two family members/neighbors/friends who may be contacted if the patient is not responding
3. A patient may request for a caregiver.
4. The app assigns a caregiver to the requesting patient if it is available. The app exchanges the information of the caregiver and its patient with each other.
5. The caregiver receives notification through the app when a patient needs to do something.
6. The caregiver messages the patient to do the needful (either in a voice message, a text message or a beep).
7. If the patient has done the needful, he/she can notify through the app to the caregiver.
8. The caregiver will repeat reminders if he/she has not received any notification from the patient.

9. The caregiver will choose to either go to the patient personally or contact patient's family/friend/neighbor (which is registered with the app).
10. The app keeps track of the number of patients (and the duration) which are taken care of by a caregiver/volunteer.

Tools:

Android Studio (or any other mobile app development IDE)

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

Note:

Mobile app development normally requires systems with good computational power. See the exact system requirements for Android Studio in the following link:

<https://developer.android.com/studio>

You are advised to enroll in this project only if you have the needed computational resources.

If you choose any other IDE for mobile development, then please check its resource requirements before enrolling in the project.

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Project Domain / Category

Mobile Application

Abstract/Introduction

The application POS online Inventory and Accounts must be well designed engaged with the inventory control of different sales as shopping cart, purchase and production. The business can select workers permanent / daily wages for different jobs and can view their Inventory Control/production detail with complete Account book and report. This platform can be run as pure business purposes, so proper report required for inventory sales, purchase, production and accounts.

Functional Requirements:

1. Admin/system can add, modify, delete and search/view reports of cash sales by date and Type.
2. Admin/system can add, modify, delete and search/view shopping cart sales by date and Type.
3. Admin/system can add, modify, delete and search/view reports of credit card sales by date and Type.
4. Admin/system can add, modify, delete and search/view reports of Product inventory.
5. Admin/system can add, modify, delete and search/view reports of purchase inventory.
6. Admin/system can add, modify, delete and search/view reports of payments and transaction by dealers.
7. Admin/system can add, modify, delete and search/view reports of payments and transaction by vender.
8. Admin/system can add, modify, delete and search enterprise complete accounts with reports.
9. Admin/system can add, modify, delete and search staff permanent / daily wages by first name, Last name, CNIC, contact number, qualification, experience and salary / daily wage.
10. Admin/system can add, modify, delete and search/view reports of employee's job and payments record.
11. Customers can create their log in and profile by first name, Last name, domain, address, contact no and date of registration
12. Admin/system can add first name, Last name, Vender CNIC, vendor address, vendor contact no and vendors inventory.
13. Admin/system can add first name, Last name, Dealer CNIC, Dealer address, Dealer contact no and Dealers inventory.

Non-Functional Requirements:

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

Tools:

Android Studio / Eclipse / NetBeans

Programming language (Frontend: XML, Backend: Java)

Database (SQLite or any modern database language)

Supervisor:

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Poultry Management

Project Domain / Category

Mobile Application

Introduction

Poultry Management is an application for the management of Poultry farms in a simple, easy and convenient manner for all modes of education. This application helps farmers to store all the information about Poultry farming including the financial management in the shape of investment, expenses and profit. It also records meat and eggs production, and calculates it automatically, and helps the farmer to know the information of chicks along the breeders and their type.

Functional Requirements

- ➔ Leg bands must be applied by the breeder to help identify and keep track of every birds. This ring will be printed with a unique ID to store the birds information in database.
- ➔ The record of flocks should be managed with cage numbers and hatching date/purchase date.
- ➔ The application notifies the farmer vaccination time for each flock.
- ➔ The farmer should be able to record eggs production on daily basis, with identifies the eggs in Excellent, Good, and Bad conditions along the breed type.
- ➔ The farmer should also record the medications along with medicine name, formula, quantity according to bird or flock identifications.
- ➔ The application should maintain the stock of feed/medicines and notifies the farmer 3 days before the end of stock.
- ➔ The application should notify the farmer to clean the cage of every flock on the periodic basis.

Note: These are the basic requirements, The Good grade will be provided to only those students who will explore more farming requirements to build a professional type application. For this, Enrolled students can contact me on every Thursday Morning for a better guideline.

Tools:

- ➔ **Development environment:**
- ➔ Android Studio
- ➔ **DBMSs**
- ➔ MySQL, SQL-Lite

Supervisor:

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Project Domain / Category

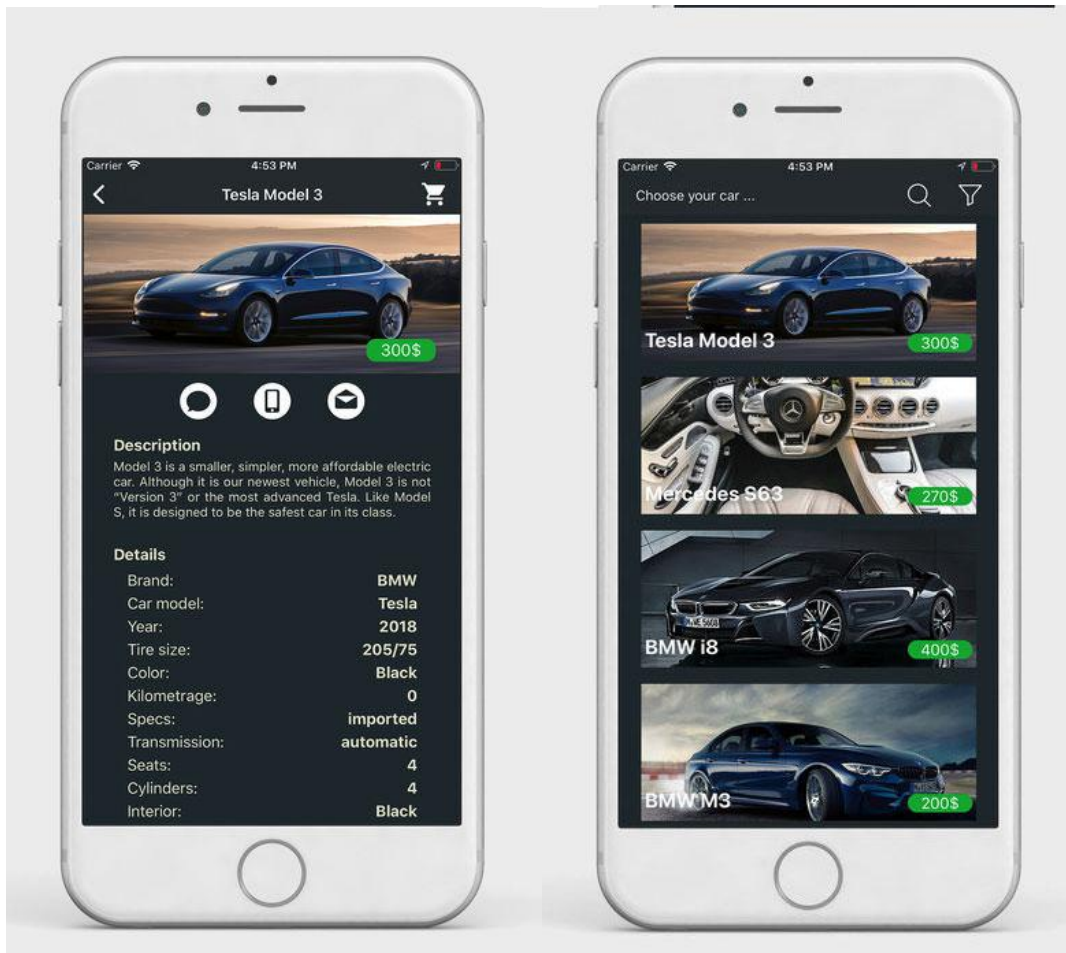
Mobile Application

Abstract / Introduction

The purpose of this android mobile app is to provide such a platform which will make the search for a car more efficient so that it can be rented by the user. Firstly, this platform will unite several rental companies together, and not every company can and is added to the platform, only those that are verified, and that have the right acts and are approved by an administrator. Thus, each company registered on the platform can place its cars here, and the user, when looking for a particular car, receives all the results from all the companies that meet the requirements, and he is already analyzing and selecting the most optimal variant.

Online payment is a necessity nowadays, because it is safe and much quicker and handy being in an online environment, being pre. However, the user also has the opportunity to offer a dealer note, so users who will be looking for cars at this dealer will be able to see how well it is noted and whether it is worth taking the car or not after the previous user experience, which is a plus in the safety of Internet services. Another service available on the platform is to position the car's location on the map as well as the dealer's office to get a more accurate guideline to reach the destination.

Functional Requirements:



1. Create a registration page for all users and each user should receive an activation code via email to access the app.
2. User can provide basic personal details for registration.
3. User must upload its national id card to use the app.
4. Create a login page for all users and each user should use app after successfully signing it.
5. Enable social media accounts login facility.
6. Display list of available cars to user in the mobile app view.
7. User can select rent a car with and without Driver option.
8. User will select the desired car for rent and click book now button.
9. Allows users to rent an online car, and performs the transfer using online payment methods.
10. Create a rental form that user will fill at the time of car booking.
11. User can see the history of his rental.
12. Use GPS for location tracking after car is issued to the user.
13. User can edit his profile.
14. Create a control panel to add companies, to add dealers and to manage cars and rental bookings.
15. Allows dealers / companies through the control panel to add, edit and remove cars within the platform.
16. Allows the dealers to see all bookings history of a customer and total bookings for the car in the control panel.
17. Allows administrators to add more cities to a more efficient location of car rental distributors.

Tools:

IDE: Android Studio

Programming language: Java

Database: MySQL / Firebase/ SQLite

Supervisor:

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Smart Travel Guide Mobile Application

Project Domain / Category

Mobile Application (Android)

Abstract / Introduction

Now a days mobile phone is a necessary part of the people's life. There is a continuous rise in number of mobile computing applications, centered on the people's daily life. Location dependent systems have been noticed as an important application. We propose Smart Travel Guide mobile application which will act as tourist guide system for tourists. Our system takes advantage of light-weighted mashup technology that can combine more than one data sources to create value-added services, while overcomes the limitations of mobile devices.

This is the basic information regarding the project idea. Students are encouraged to read the following research paper <https://ijecscse.org/papers/SpecialIssue/comp2/171.pdf> before choosing the project for better and detailed understanding of the proposed system.

Functional Requirements:

1. Find current location of the user.
2. Locate in Map (destination location)
3. Find distance between two locations.
4. Fetch weather forecast of destination.
5. Recommend famous attraction points of destination location.

These are basic Functional Requirements. The students are required to add additional functional requirements as per their research.

Tools & Languages:

Android Studio or any other

MySQL / Firebase/ SQLite database

Java / Kotlin

Mashup technology to combine information from different sources.

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

Supervisor:

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Tour Planner and Recommendation Application

Project Domain / Category

Android Mobile Application

Abstract / Introduction

Tourism is essential for everyone as it is the activity of people traveling or staying outside their busy routine of life and office environment for leisure. It refreshes the mind and makes people more creative in their social life and boosts their creativity level. Therefore, you are required to develop an application that will facilitate the tourist regarding tourism places and ultimately boost economic activities and industry revenues.

Functional Requirements:

1. Signup:

User can Sign up by using his name, username, email, password into the application signup interface.

2. Login:

Both admin can login the application with username/email and password after signup.

3. Admin Panel:

Admin can manage the application means it can add, update, delete and add tourism places.

4. Search Engine:

User can search for the places by using search engine in the application based on search keywords and search filters.

5. Search Filters:

User can filter out the tourism places based on number of days, time, location, hotel, transport.

6. Provide Place Suggestions:

Application will provide place suggestions based on user search history in the application. Must associate an image related to the tourism place which will help the user regarding the place selection.

7. Directions based on Google Map:

On successful place selection application will be able to view directions to the user based on user current location and the selected tourism place.

8. Logout:

After using the application both user and admin can successfully logout the application.

Tools:

Languages: Kotlin/Java, Design: XML/Material Design, Development Environment: Android Studio

Database: You can use any online or offline database

Supervisor:

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Monitoring System for Network Resources (MSNR)

Project Domain / Category

Networking

Abstract/Introduction

Monitoring System for network resources (MSNR), the purpose of this project is to observe, monitor and evaluate the CPU and RAM usage connected on a network. This is a system that administers the efficiency by assessing various resources against the people and programs that use those resources.

Functional Requirements:

- Monitoring System for network resources (MSNR), is a desktop application providing the below mentioned tasks:

Module:

User management

- This Monitoring system will have two ends
- One will be the “Administrator” to monitor the system
- The other will be “Simple user”

Communication Management

- This is all about exchange of the information among clients and server of application.

Resource Monitoring

- Observation and monitoring resources on connected net.

Report manager

- reports generated in the form of graphs

Tools:

- VB.net or JAVA, etc.

Supervisor:

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Gate Pass Management System

Project Domain / Category

Desktop Application

Abstract / Introduction

Gate Pass Management System manages the entry and exit of the vehicles of employees and visitors. This is an efficient system to keep track of each vehicle entry and exit. With the help of this system, you will be able to manage all incoming or outgoing transactions of your company. This system is defined as a gate pass security system, its main purpose is to secure the company from outside visitors, contractors, departments, company vehicle security, and material etc. It will help the organization as well as a visitor to manage the Gate Passes, those who are visiting frequently will have their record at the top which will make their entry or exit process easy.

Functional Requirements:

This application will have two major modules:

Administration Module:

This module is normally used by the admin staff who deal with the administrative work of guests. This system helps the staff to register their expected visitor online, process the visit, and pass on the information to security. Security department can view the reports of the visitors for the date range. The GPMS is used to define the allowed personnel authorized to allow access by car to guests. This means, there will be a record for every entry or exit.

Security Gate Module:

This module will help the admin staff at the security gate to register the visitor's arrival information with a photograph and arrival time/date and send the notification to the company head as well. The system can take in the data about the visitors, his/her co-visitors, and their belongings, Check-in time and also process check-out.

GPMS allows you to enter the visitors' details with all credentials of host (to who visitor is going to meet), it will be verified and after this security staff can access this data. By this system will have all the information about visitors, their purpose and their host as well. Admin can view any record at any time. Admin and report engine interfaces will be implemented based on SQL queries.

This application will have three actors, which are admin, manager and guard.

Admin:

Admin can add, update or delete a record of manager, Guard, approve a gate pass, prohibit the entry of any vehicle or person. Admin should keep track each Gate pass of vehicle and person entering into the company area to manage security of organization and will also be responsible for any error in the system.

Manager:

The manager will deal with guards will keep track of guards and areas under his supervision. The manager will have access to records of each gate entry, Guard details, approve a gate pass, and manage gate passes. If manager will see any uninvited activity, he can restrict the entry of a person or vehicle.

Guard:

Guard can view entry gate details, whether a gate pass is approved or not and allow entry only if the pass is approved. They can also restrict the entry of a person or vehicle in case of any unusual activity.

Your application must have following interfaces with the mentioned functionalities:

Login:

Login page, user have 'ID', 'password', and 'profile'. After successful login user can perform his/her tasks according to profile. Without authentication no user will be allowed to view any other interfaces.

After getting login user can also edit their information like name, address, etc.

Admin:

Admin can edit, update, delete and add a new manager, guard and can view all their details as well. Admin can view and approve the request of gate pass added by guard, manger or any other company member. Admin can also reject any gate pass entry if any suspicious person or vehicle wants to enter in the company's area.

Manager:

Managers will deal with guard and vehicle parking, guard duty, parking area, and will track the record of expiry of gate pass.

Guard:

A guard can edit their personal information, mark their duty place, view the gate passes, add information to gate passes, and report gate passes in case of any suspicious activity.

Gate Pass:

This interface will be used to request a gate pass. Gate pass required information like Person details, vehicle information, entry time, valid till, etc.

Tools:

Python, MySQL or SQLite.

Supervisor:

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Maternity Home Automation

Project Domain / Category

Desktop Application

Abstract/Introduction

Maternity Home Automation is specially designed for the purpose of fast and accurate results. As we know that there is only single type of patients and may be visited more than once where we need previous history of patients on priority basis. That's why we need a system where when patient visit hospital for the first time the record of the patient will be recorded in the patient history with patient id. Here we need ultra sound records also so ultrasound is also part of this system. The patient will be checked if there is a need to admit so patient will be admitted otherwise not admitted.

If the patient need to be admitted so according to patient condition bed will be allotted before allotment system check for an empty bed.

After admission according to the doctor prescription and ultrasound result the blood and all other requirements will be arranged for the patient.

This system will give us a complete record of a patient at every stage and if patient visit the Maternity Home once again so we have a complete record of a patient which will be beneficiary for both patient and doctors.

On the other hand patients don't need to carry reports for record. An efficient and robust Maternity Home Automation plays a vital role in day to day running of hospitals in today fast pace world.

For the aforementioned reasons students are assigned to develop a Maternity Home Automation with functional requirements mentioned below.

Functional Requirements:

1. Registration

- The administrator can create a new user (Doctor or Admin Staff).
- New user can login and logout.

2. Patient Entry/ Checkout

Admin Assign ID to patient

Doctor add, delete or modify the Patient details.

3. Ultrasound

- Doctor add, delete or modify the patient history on the basis of ultrasound.

4. Bed

- Doctor or Admin Staff can Allocate or DE allocate Bed for Patients
- Update Patient Information

5. Search

Doctor or Admin Staff can search for the required Patient detail based on name, id etc.

6. Report generation

Doctor and Admin Staff can generate report of Patient or beds on the basis of daily, weekly and early

Tools:

Python is mandatory.

Supervisor:

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Project Domain / Category

Desktop Database Application

Abstract/Introduction

Pakistan Post is the main source of communication for individuals, government organizations and business community. It provides many domestic and international services including mail, documents, packets and parcels, Money orders delivery etc. It provides these services in many categories, for example, ordinary mail, Urgent Mail Service (UMS) etc. in case of "Mail" and Urgent Money orders, Fax Money orders and Electronic Money orders in case of "Money Order". The idea is to develop a computerized desktop based application that can be deployed to any Post office or Mail collection point to replace their manual system.

Functional Requirements:

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

1. There must be login process for administrator and authorized users to avoid unauthorized access to the software.
2. The system must be able to store data about different services
3. The system would be able to store revenue generated from each type of service
4. The system would be able to store the records of each person who want to post the service (Mail, Money order, documents etc.)
5. The system would be able to store the records of each person who receive the service (Mail, Money order, documents etc.)
6. The system should be able to keep record of destination (Country, City etc.) of each service
7. The system would be able to print the report (weekly, monthly, yearly) of revenue
8. The system would be able to print the report of services based on categories
9. Any other report necessary for the problem domain

Note: Students are supposed to visit the problem domain and understand the problem and gather the functional requirements not understandable from the given above.

Tools:

SQL Server 2008, VB, VB.Net etc.

Supervisor:

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Voting System via Fingerprint

Project Domain / Category

Desktop Applications

Abstract/Introduction

The task of handling manual voting system is tedious and often led to rigging claims by losing candidates. In order to cope with this situation, we are proposing a system where the voter will be authenticated through biometric, i.e., through their finger print and they will cast only one vote in the mentioned election. This system will provide transparency and ease for conducting the election and the result of the election will be available instantly. It will be a desktop application have the following five modules/features:

1. Election Management
2. Candidates
3. Voters
4. Election
5. Result

There will be two users of the system, one is admin and the other one is presiding officer. The admin can use all the above five features (Election management, candidate management, voter's management, conducting election & results), however the presiding officer can view/use only two components of the application, i.e., only Election and Result.

1. Election Management

In order to use this system first, the details about the election needs to be entered into the system. Admin has the right to add election details into the system. The following fields are used for adding new election in the system:

ID -----(1)

Year

Topic

Start Date

End Date

Number of candidates contesting -----(2)

After adding new election, it is displayed on the same form in grid/table form. The admin can update or delete only new election(s) data. **Old election(s) data can't be updated or deleted.**

2. Candidates

The system will allow the admin to add candidates into the system against particular election. The admin can add/update/delete a particular candidate in the system. It is important to note that the number of candidates must be equal to the number of candidates specified in equation (2) of "1. Election management" section. For example, if 3 contesting candidates are specified in "1. Election management", then the admin can add only three candidates in this step and not more or not less. Following fields are used for candidate's management feature:

Select election (*Here mention election id from equation (1)*)

Candidate ID or CNIC

Name of candidate

Address

Photo

Party

After adding candidate, it is displayed on the same form in grid/table form with update and delete options.

3. Voters

The system will allow the admin to add voters into the system against particular election. The admin can add/update/delete a particular voter in the system.

Following fields are used for voter's management feature:

Select election (*Here mention election id from equation (1)*)

Voter CNIC

Name of voter

Address

Photo

Mobile Number

Finger Print ----- (3)

After adding voter, top 10 most recent entered/registered voters need to be displayed on the same form in grid/table with update and delete options. Also, the admin can search voter by CNIC on the same form in order to update or delete if required.

4. Election

The system will allow the presiding officer or the admin to conduct election. The election needs to be conducted on the due date mention for the election in "1. Election management" section. After the presiding officer login into the system, s/he will be allowed to use "Election" and "Result" features of the system.

The presiding officer will select the election id entered in equation (1), the topic, start and end dates of the election will be displayed on the form against election id (1).

The voter will place their finger on the fingerprint reader device and the presiding officer will click "Scan Finger" button, the voter record (like Voter CNIC, Name, Photo, Finger print) will be displayed on the form against finger print registered in equation (3) of "3. Voter" section.

All the contesting candidates are displayed on the form with their name and small image. The system will not allow the voter to vote two or more candidates. Also, the system will allow the user to vote for one time for a particular election.

After choosing one particular candidate the voter will click on "VOTE" button, the confirms dialog will confirm from the voter and upon approval the vote will be casted for the particular voter against the election id.

5. Result

The system will provide the result of the election instantly. First, they will choose the election against election id (1), the topic, start and end dates of the election will be displayed on the form against election id (1).

All the contesting candidates' names will be displayed in "Candidate" group on the form while in "Result" group, the count of votes against each candidate are mentioned along with the WINNER of the election.

Functional Requirements:

The System will be desktop-based application which will perform the following tasks:

1. Election management;
2. Candidates management;

3. Voters management;
4. Conducting election;
5. Result feature.

Tools:

You are free to use any tool for the project provided that **ALL the functional requirements** are met properly.

NOTE:

The university will not provide any biometric device for this project; you need to purchase the product on your own once you choose this project. The project will not be accepted without fingerprint reader device.

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

Managing air and noise pollution is still considered one of the most challenging tasks nowadays. Several contributing factors make it to get severe day by day. One of the most contributing factors for air and noise pollution is that most people depend on private conveyance.

“Car Pooling System” is an application that allows several individuals to merge in a single-car, in this way it reduces air and noise pollution. Moreover, all the participants also share the fare resulting in financial benefits as well. The carpooling system allows people to share their economy as they share their rides with every member in the car.

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 select one role i.e. either a car owner or passenger.
4. The car owner will be able to enter details about their cars i.e. model, seats available, brand, etc.
5. Car owners will be able to enter their daily route.
6. Car owners will be able to enter seat capacity available.
7. Car owners will be able to arrival and departure timing.
8. Car owners will be able to approve or disapprove a passenger's request.
9. Passengers will be able to enter their desired route.
10. Passengers will be able to enter their desired vehicle.
11. Passengers will be able to enter their desired arrival and departure timing.
12. Passengers will be able to send requests to car owners for booking rides.
13. A chatting option must be provided to passengers and owners for discussing other details.

Tools:

PHP, MySQL, Xampp, Notepad++.

Supervisor:

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Bike and Bikes

Project Domain:

Web Programming

Abstract:

This is an online bike purchase and rent a bike store that has listings of various bikes along with their features (company, color and model) and price. This system allows the user to buy a new bike by viewing inventory online. System allows a user to check various articles submitted by user and even comment on them. Credit card and cash on delivery payment facility is available.

This system also consists of **Rent a Bike** feature where user can ask admin for bike on rent. The visitor who visits the system must register himself by filling up personal details. After registration user can login to the system with his username and password in order to purchase or rent a bike. User can check various bike listing and can view each bike features. User may select a new bike and can add it to the shopping cart. User can make payment through credit cards by clicking on credit card payment option. User must register himself for posting a review about the bikes.

This application is a combination of both sales and inventory management of the bikes. User can easily purchase bike or rent a bike by using this system. User does not have to come to shop to purchase. User can view the bike in effective Graphical User Interface. User can view features of each bike and can compare with other bikes in order to purchase a better one.

Functional Requirements:

Admin:

1. Login.
2. Approve user.
3. Manages the inventory of both new and rent bikes.
4. Add, remove and update bike's company, models, colour and price.
5. Manages rented bikes, available for rent bikes and new bikes for sale. For this purpose on home page there should be an option to navigate for Rent a Bike and buy a new bike.
6. Bikes for rent and bikes for sale should be on different pages. Navigation for both the options should be on index page.
7. System should separately generate reports for both rented bikes and new sold bikes (reports should be daily, weekly, monthly, yearly).
8. On the basis of reports admin can calculate gross profit (separate for rent a bike and buy a new bike) for the month, half year and year.
9. Gross profit for the new bikes sold should be calculated by taking the difference in amount of retail price and sold price.
10. Database should be relational. You have to use primary keys and foreign keys to make database relational.

User:

1. Register using user register page.
2. User can buy a new bike.
3. User can rent a bike which is available.
4. User can give review on the bikes (for both rented and new bikes for sale).

5. When user clicks the specific bike which is available for rent it should be automatically marked as occupied (number of days of occupied should be also displayed).
6. For renting a specific bike user must give the details of rent like hours or days for occupying for rent.
7. User can buy a new bike using online portal and can add or remove to the cart.
8. After adding to the cart a user can use two modes of payments (cash on delivery and credit card) when checkouts.
9. User can search the bikes by company, colour, price, and model on each page.

Tools:

Languages: C#, Asp.net, SQL, PHP, CSS, HTML, JavaScript.

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

Database: Mysql, SQL Server, WampServer, Xampp.

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

Body weight is an important factor when it comes to good health and control on diseases. An abnormal weight is one of the key reasons that can deteriorate/improve our overall health. In order to have an ideal weight is both challenging and systematic. The Calories Calculator will calculate the daily required number of calories based on weight, height, and age etc. The user will also be able to enter the daily intake of calories provided by various foods thrice a day. The progress report will be generated by the application for a given period of time.

Functional Requirements:

Following is the list of functional requirements:

1. There is only one type of user.
2. Login for users.
3. After login, the user will enter the following details:
 - a. Gender
 - b. Weight
 - c. Height
 - d. Age
 - e. Life style:
 - i. Sedentary
 - ii. Lightly active
 - iii. Moderately active
 - iv. Very active
 - v. Extra active
4. The daily intake of calories will be calculated by the Harris-Benedict formula as follows:
Men BMR = $(10 \times \text{weight in kg}) + (6.25 \times \text{height in cm}) - (5 \times \text{age in years}) + 5$
Women BMR = $(10 \times \text{weight in kg}) + (6.25 \times \text{height in cm}) - (5 \times \text{age in years}) - 161$
5. The resulting BMR (Basal Metabolic Rate) will be multiplied by 1.2, 1.375, 1.55, 1.725 and 1.9 for sedentary, lightly active, moderately active, very active and extra active respectively.
6. For weight reduction, the user has to consume less calories in comparison to the calculated BMR.
7. For increase in weight, there should be more calories consumed in comparison to the calculated BMR.
8. The user will enter the names and calories of food items consumed for breakfast, lunch and dinner on daily basis.
9. The calories calculator will keep the record of daily, weekly, and monthly calories consumption.
10. A graphical report of total calories deficit or surplus will be generated for each month.

Tools: Python and SQL Server Only.

Supervisor:

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Project Domain / Category

Web Programming

Abstract / Introduction

In this era, when covid is all around everyone wants a hassle free appointment system for everything they do in a daily life. So, in Chop Chop, our website would allow you to book a nearby barber shop appointment.

You will be provided with all the nearby and distant barber shops along with their ratings and reviews so that it would be easy for you to decide, and you just don't have to blindly trust them.

Functional Requirements:

This system will have two users: Admin and customer.

1. Login/Registration:
Admin and customer can log in to the system
2. Add Barber Shop Information:
Admin will enter all the nearby and distant barber shop according to your city/area filters. And also will write about their services along with their payments.
3. Booking an appointment:
Customer can book appointment according to the services they need.
4. Payment method:
Customer can also pay online through our website and also by hand after their services.
5. Review:
After getting services from the barber shop, customer can also leave reviews on the website, on the basis of which other customers can select the barber shop next time.
6. Marketing:
If customer likes their services, they can also share their link directly from the website to their social media apps.

Tools:

C#, .net, Visual Studio, SQL Server

Supervisor:

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Project Domain / Category

Web Application

Introduction

During the current Covid-19 pandemic, you have been assigned a role to develop MIS to efficiently and effectively store the information of COVID-19 patients in all over the country. The MIS will be accessible from each registered hospital in the country which will keep the record of all the patients as well as of the complete staff of hospital. Moreover the system will load the data into National Database after every two hours regarding the current situation/condition of patients. 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.

- Receptionist
- Lab Technician
- Doctor
- Hospital Head
- City Head
- Country Head
- Admin

Responsibilities and functions of each user are given below:

Receptionist:

There can be multiple receptionists in a hospital however one particular receptionist can only belong to one particular hospital. These users are responsible to enter the complete information of all the patients who visit the hospital for the COVID test/treatment.

Lab Technician:

There can be multiple technicians in a hospital and one technician can work in multiple hospitals as well. This user is responsible to test the patient for COVID disease and enters the patients information into the system.

Doctor:

There can be multiple doctors in a hospital and one doctor can work in multiple hospitals as well. The doctors are responsible to admit/discharge the COVID patients as well as to treat them. They enters the necessary information into the system at the time of admission/discharge as well as during the treatment.

Hospital Head:

There can only be one head of a hospital. He is responsible to add/remove any doctor, lab technician, and receptionist. This user can access all the information which is accessed by doctor, lab technician, and receptionist.

City Head:

There can only be one head of all hospitals in a city. He is responsible to add/remove any particular hospital head, doctor, lab technician, and receptionist. This user can access all the information which is accessed by hospital head, doctor, lab technician, and receptionist.

Country Head:

There can only be one country in the system. He is responsible to add/remove any particular city head, hospital head, doctor, lab technician, and receptionist. This user can access all the information which is accessed by city head, hospital head, doctor, lab technician, and receptionist.

Admin

Admin is the power user of the system and will have the rights of all the users.

Proposed Tools: PHP, MySQL

Supervisor:

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Designing and Developing an Online College Management Web Portal

Project Domain / Category

Web Application

Abstract/Introduction

This project is an online college management portal which enables college management to effectively organize college activities. The project will provide a centralized interface to management persons for the monitoring of student's status and to manage student's fee related issues. Separate interfaces with limited access features will be provided to the students to analyze their progress in various subjects. Parents of the students have also access to this interface to see the performance of their son / daughter and fee history.

Admin Interface will be used by college owner / top management and its credentials will be shared with owner / top management. Through this interface, they can create / register various classes and sections, and register the students in corresponding classes and sections. Class teachers, student strength, student's fee and subject's information for each class will also be made through this interface. Afterwards, they will create User Accounts for each admitted student which will be shared with the corresponding students / parents. On **User Interface**, each student can view his / her class, section name, study progress in various subjects and other fee related information. Students / parents can also provide feedback through user interface regarding the grades / marks obtained in various tests / exams to the top management.

This college project website will be developed using ASP.NET / PHP as the front end and SQL Server / MYSQL as a back-end. The database will store all necessary information about the enrolled students and various other school related information.

Functional Requirements:

1. The systems shall have two distinct views: **Admin / College Owner View** and **User View**.
2. The system shall provide convenient interface for classes creation, sections creation, student registration, teacher registration, subject registration, and dues information.
3. **Admin User** have full rights and can create user accounts for students / Parents. They can create, update or delete information of any class or student. They can also create individual accounts for the students.
4. **User/Student account** have limited access features, i.e. they can view only their own progress with limited interaction facility. Furthermore, they can also view college announcements and other general information.
5. The system shall be capable to provide an interface to the Owner to inform parents / student about their progress / results on regular basis through email / WhatsApp / SMS.
6. The system shall be capable to provide an interface to the Owner to contact the parents of students whose fee is pending and send them reminder through email / WhatsApp / SMS.
7. The system shall be capable to provide an interface to the Owner to send custom message to inform all / selected parents / students about any activities or announcement through email / SMS/WhatsApp.
8. The system shall provide Password Recovery facility using Email.
9. The system should provide the interface to store the information of each class, section,

teacher and the test / exam.

10. There should be a search interface on **Admin View** which helps the top management to search any record conveniently.
11. The system should store and display picture of each enrolled student.

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

Supervisor:

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Easy Buy and Sale

Project Domain / Category:

Web Application

Abstract/ Introduction:

Due to Covid-19's outbreak, the whole world has gone into lockdown. People around the world are limited to their homes. The shops, banks, transportation, recreational centers, and educational institutes have been closed. The World has turned to technology for maintaining contactless communication. The Easy Buy and Sale system provides the customers fast, secure and reliable services on their door step.

Working mechanism: Any user can apply for registration and can buy and sale products including computer/ accessories, TV, Car, Bike, Fridge, washing machine, AC, Air Cooler etc. Two types of customers are managed by the website admin:

Customer:

Can only search and view the products over the website and can purchase any available product on discounted rates.

Registered Customer or Client:

Can buy and sale products on the website. In case he she wants to add his or her own product on the website the he or she will be charged 10% to 15% in dollars per transaction.

A costumer can select a product for purchase that will be added to the shopping cart as a customer Order. At this time more information will be asked form the customer like billing address, a shipping address, and payment option such as debit/credit card information or cash on delivery. Similarly a customer can apply for registration by paying certain registration fee.

Functional Requirements:

- Admin can take login
- Admin registers a customer
- Registered customer can take login
- Searching (by name, by price, by item color etc)
- Admin can add/ delete/ update/ search any number of products in the stock
- Admin can monitor transaction history
- Admin can cancel or approve customer's order
- The Customer will get 5-10 % discount on total bill
- Registered Customer or Client can add products on website
- Customer can check his/her order status (approved/Pending/Cancel/delivered)
- Customer can check his/her order history
- Customer can submit his/her review about purchased item(s) and can give feedback about website services
- After successful completion of transaction, user will receive confirmation message and a copy of the shopping receipt on his/her mobile number or in email (you can implement any method as per your easiness)

Tools:

Students can select any option for tool selection from the following categories.

Category 1: Python, MYSQL, SQLite3 (**Preferred**)

Category 2: PHP, MySQL, SQL Server, HTML, CSS, JavaScript, JQuery

Note 1: (Optional) for category 1, one of the IDE Jupyter, VScode, Spyder, Django, Pycharm can be used for writing and running python code.

Note 2: (Optional) for category 2, Dreamweaver framework can be used for writing and running php, html, CSS code.

Supervisor:

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Project Domain / Category

Web Programming

Abstract / Introduction

Now a days, there are a lot of electric appliances in our homes such as Air Conditioners, Electric Fans, Electric Air Cooler, Washing Machines, Dryer Machines, Refrigerator, Electric Heater, Electric Oven, Electric Juicer etc. When these electric appliances are used regularly, these machines often stop working properly and require some maintenance and repair work from time to time. In this scenario, many people face difficulty in finding the expert and professional electricians for repairing their expensive electric appliances quickly and efficiently. Keeping in view the above scenario, this project is focused to fulfil the needs of these people.

This application will help customers to quickly find the expert electricians from nearby locations and according to the needs and requirements of the customers. The system will also be beneficial for electricians as they can find their work easily. This system will reduce time and cost of both customers and electricians. In this application, customers can register, login and view all the available nearby electricians. Customer can filter and select an electrician according to his experience, expertise and previous rating etc. Similarly, electricians can also get customers by registering and logging into the website and setting up their profile. Admin can login, manage electricians, approve new electricians and can remove electricians from the system after unsatisfactory remarks and extreme low rating by the customers. Admin can also check for the registered customers.

Functional Requirements:

There will be three modules of this web application: Admin, Electrician and Customer. Each Customer and Electrician should be registered on the website before getting any service.

1. Admin Module

- ❖ Admin can login to the system.
- ❖ Admin approves the registered electricians.
- ❖ Admin can manage the electricians (add/ view/ update / delete).
- ❖ Admin can update the electrician details and manage login password.
- ❖ Admin can manage the customers (add/ view/ update / delete).
- ❖ Admin can check the rating given by customers about each electrician.
- ❖ Admin can check average rating for each electrician.
- ❖ Admin can check the remarks given by customers about each electrician.
- ❖ Admin can block an electrician in case of continuous poor rating.
- ❖ Admin can view the customer complaints and take appropriate actions.
- ❖ Admin can generate a report on a monthly basis for the total number of bookings and their successful handling.

2. Electricians Module

- ❖ Electricians can register and login to the system.
- ❖ Electricians make their profile including their name, work experience, expertise (checklist of machines on which electrician has expert knowledge and work experience), qualification, profile picture and their location.
- ❖ Electricians can view/ update their profile and can update password.

- ❖ Electricians can check the rating given by the customer.
- ❖ Electricians can check any remarks (if given) by the customer.

3. Customers Module

- ❖ Customers can register and login to the system.
- ❖ Customers can view/ update their profile and can update password.
- ❖ Electricians Search: Customers can search for all relevant Electricians by search filters such as location, work experience, expertise and rating etc.
- ❖ View Electrician: Customers can view all the details (work experience, expertise, rating, other customers' remarks, location etc.) of any available Electrician in a proper layout on the website.
- ❖ Book an Electrician: Customers can book an Electrician according to his/her needs and choice.
- ❖ Rate Electrician: Customers can give rating to the concerned Electrician after the completion of his required work according to his/her satisfaction.
- ❖ Remarks about Electrician: After the completion of the required work, customers can give any remarks and comments about the concerned Electrician.
- ❖ Complaint about Electrician: Customers can register complaint about the concerned Electrician to the admin, in case of any serious issues such as electrician's misbehaviour etc.
- ❖ Pay bill: Upon successful completion of the required work, customers can either pay the amount to the concerned electrician on the spot or can transfer the amount to the electrician's account number available on his profile.

[**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, Ajax, JQuery, Bootstrap, MS SQL Server

Supervisor:

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Project Domain / Category

Web Application

Abstract/Introduction

The purpose of this software is to keep medical records of the patients. Medical record may include personal information, medical history, medication, laboratory test result, allergies, radiology images and vital signs.

This software maintains data accuracy and captures the patient information time to time. Proper use of this software will eliminate the need of paper based medical record. Therefore, the risk of loss of paper record will be finished. Single centralized data storage facility will eliminate data redundancy. By using the search facility of the software, user would be able to extract medical data for the examination of possible trends and long term changes in a patient. Population-based studies of medical records may also be facilitated by the widespread adoption of this software.

Functional Requirements:

Some of these functions include, but are not limited to:

- Maintain patient record
- Manage patient demographics
- Manage patient-specific problem lists
- Manage medication lists
- Manage medical procedural/surgical, family history including the capture of pertinent positive and negative histories, patient-reported or externally available patient clinical history.
- Create, addend, correct, authenticate and close, as needed, transcribed or directly-entered clinical documentation and notes.
- Incorporate clinical documentation from external sources.
- Present organizational guidelines for patient care as appropriate to support order entry and clinical documentation.
- Provide administrative tools for organizations to build care plans, guidelines and protocols for use during patient care planning and care.
- Generate and record patient-specific instructions related to pre- and post-procedural and post-discharge requirements.

Tools/Language:

You can use any language which supports the development of web applications.

Supervisor:

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Project Domain / Category

Web Programming

Introduction

The online mode of a business facilitates its customers / clients to place order for the goods and services online without physically visiting the business centers and at their own convenient time. In view of the above, the proposed project aims to develop a website titled as “Fabrics Emporium-Online” that will serve its registered users (customers/clients) to buy the stitched and un-stitched clothes of different varieties. The website will display the available clothes, along with price category wise such as Stitched, Un-Stitched, Ladies, Gents, Kids, Bride, Grooms, Summer Collection, Winter Collection, Casual and Partywear etc. Besides, the clothes of different categories will also be displayed Brand / Company wise. A user will be able to purchase / make order against available clothes after performing registration on the website and passing through the payment methods. Payment method will be either through credit card or through cash on delivery. In addition, the website will provide interactive interfaces and rich search facility of finding the different types of clothes through different filters. Online order placing of the clothes through proposed website will remove the overhead of physically visiting the markets for this purpose.

Functional Requirements:

Following are key functional requirements of the proposed system:

1. User Registration/Sign Up, Sign In

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

- Visitor (Unregistered User)
- Registered user (Customer / Client)
- Registered user (Administrator)

Roles of the users will be as follow:

- Visitor will be able to visit the website to search his/her relevant clothes on the website.
- A user registered as a Customer/ Client will be able to place order on the website.
- The Administrator (Admin) will have all the rights/privileges of information management regarding the clothes, stock management, as well as user management. Admin will approve the registration requests from the other users (customers / clients).

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 Panel

There will be proper Admin Panel / Dashboard comprising of interactive interfaces through which the Admin will be able to add/ delete and update all information such as description, price, stock, images of Clothes. In addition, by using this Admin Panel, the Admin will be able to perform

category management as well as user management (accepting /rejecting the user registration requests).

4. Display of Information on the website

The fabric/clothing products name, quality, material, category, company name, thumbnail image, price and number of items available in stock, new Arrival, Sale (if any), contact us, complaints, feedback by the registered users etc. should be displayed on the website in proper design. On clicking the thumbnail, the website will maximize the fabric/product image.

5. Placing Order on the Website

The website will allow the registered user(s) to make order against their selected items. There will be proper interfaces on the website in this regard. The user will first have to select the item to put into the shopping cart, and then will have to pass through any of the payment method i.e. through credit card or cash on delivery.

6. Confirmation Email on transaction (Order Placing):

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

7. Search Facility

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:

- Fabric Type
- Brand / Company Name
- Category Wise
- Price Wise
- New Arrival
- Sale
- Best Sellers

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

8. Comments/Complaints/Feedback

The registered users will be able to submit feedback, complaints and comments against any product/item.

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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Find a Physiotherapist

Project Domain / Category

Web Application

Abstract / Introduction

Physiotherapy (PT) helps people to recover from injuries, reduce pain and stiffness, increase mobility. All this is done by adopting different methods such as massage, exercises, electrotherapy, heat therapy and patient education etc. PT helps to treat orthopedic, neurological, and cardiopulmonary disease conditions.

“**Find a Physiotherapist**” a web based application is proposed with aim to facilitate people to find physiotherapist online to get a treatment according to their condition. This App will help them to get appointments online. After appointment, they can get online consultation or visit physiotherapist in person in their clinics too. Patient will register on website in which patient record will be maintained through which patient can easily track all his data such as physiotherapist information, appointments’ record, lab reports, prescribed treatment etc.

The App will help people search physiotherapist name wise, area wise, experience wise, and based on physiotherapist rating etc. People can check other patients’ reviews and feedback given to a particular physiotherapist. They can also provide reviews and feedback to their physiotherapist.

The Admin will manage physiotherapists’ data, patients’ information and appointments schedule etc.

Functional Requirements:

Following are abstract level requirements of the project. Students are required to provide detailed requirements in SRS documents. Students can also add more requirements as per need.

1. There should be registration and login modules for Admin, Physiotherapist and Patients.
2. There should also be “Home”, “About Us”, “Terms and Conditions” and “Contact Us” pages.
3. Admin will maintain record of all registered physiotherapists, patients, and appointments schedule etc.
4. There should be an interface to search physiotherapists based on their name, location, and experience etc. Physiotherapists should also be listed down in order of their rating.
5. Add categories/areas in which physiotherapist will provide his/her services. Some of the different areas of physiotherapy are: cardiorespiratory, disability, mental health, neurological, musculoskeletal, orthopaedic, paediatric, pain and injuries, sports etc. (Note: You can also add more areas.)
6. Add treatment method such as massage, exercises, electrotherapy, heat therapy and patient education etc.
7. Service type such as online consultation, home service or clinic based should also be added.
8. For each patient, maintain record of each session and patient health progress report.
9. In case of online consultation, patients have to pay online via credit/debit card option.
10. The application should be able to manage all appointments, and payments etc.
11. The application should provide interface through which patient could provide reviews and feedback to their physiotherapist.

12. The application should be able to store information of all registered physiotherapists, patients, reviews/feedback, suggestions and complaints etc.
13. There should be Admin module for whole application management.

Tools:

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

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

Being healthy is the first thing to be kept in mind because most of the time our attitude depends on how we feel. It is hard to get admission in health club when slots are full. This project aims to automate gym and fitness admission process as the admission process in gyms and selecting a trainer is difficult. Sometimes it is difficult to get a desired slot timing. This health club management system will help to overcome such problems by booking the desired slot online and pay fees by electronic money transfer.

In this fitness club system, there is 3 entities namely, Admin, Member, and Trainer. Admin can login using credentials. Admin can manage packages by adding cost, discount and deleting old packages. Admin can manage member details by adding, updating and deleting. Admin can view the package details of an individual member. Admin can also view the member's attendance taken by the trainer.

Members can login using credentials. They can view their profile and list of trainers. They can also view the package and payment details. Members can give feedback on their trainers. They can make payments via card details. A trainer can log in using credentials. A trainer can set their profile. A trainer can take member's attendance daily.

Functional Requirements:

Admin

- Admin can login into system.
- Admin can delete/ edit information of member and trainer
- Admin can keep the track of members and trainer attendance
- Admin can make and update packages

Member

- Member can create account
- Member can log in into the system
- View and Edit Account information
- Can view package and payment details
- Search for trainer by name
- Can select trainer
- View Schedules
- Select schedule
- Rate trainers
- View members ratings
- Can make payments online

Trainer

- Create an account
- Log in into the system
- View and Edit Account information

- Select or reject students
- Can share schedule
- Can take members attendance
- Edit the services
- Can share diet charts for each student
- View ratings
- View/Print schedules

Tools:

PHP language, HTML, MySQL

Supervisor:

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Food Waste Management System

Project Domain / Category

Web Application

Abstract / Introduction

This Food Waste Management system will assist in collecting the leftover food from hotels & restaurants to distribute among those in need. NGOs that are helping poor communities to battle against starvation & malnutrition can raise a request for food supply from restaurants through this application. Once the request is accepted, the NGOs can collect the food from the restaurants for its distribution. In this way Food Waste Management System will help restaurants to reduce food waste and will help in feeding the poor and needy people.

Functional Requirements:

In this system, there are three main modules, which are namely Admin, Restaurant, and NGOs (Non-Governmental Organizations). Each module is interconnected to others. This system should be user friendly, secure and reduces the staff requirements. This system should also be best for communicating with the applicants.

- ✓ Admin can register using personal details.
- ✓ Admin can login in his personal account using id and password.
- ✓ Admin can Add/Register new Restaurant.
- ✓ Admin can view list all the restaurants available.
- ✓ Admin can Add/Register new NGOs.
- ✓ Admin can view all NGOs.
- ✓ Restaurant user can register using personal details.
- ✓ Restaurant user can login in his personal account using id and password.
- ✓ Restaurant user can view Profile/Restaurant details
- ✓ Restaurant user can also view orders history (Accepted, Pending and Confirm).
- ✓ Restaurant user can add new food items to restaurant.
- ✓ NGO user can register using personal details.
- ✓ NGO user can login in his personal account using id and password.
- ✓ NGO view restaurant requests
- ✓ NGO view Other NGOs Profile.
- ✓ NGO request food from restaurant.
- ✓ NGO assign employee for delivery of the food
- ✓ NGO can add new employee.
- ✓ NGO can update employee details.
- ✓ NGO can view restaurant history.
- ✓ NGO can also view Profile/Restaurant details.

Tools:

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

Supervisor:

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Hotel Property Management System

Project Category:

Web Programming

Abstract/Introduction

A Hotel property management system (HPMS) is a hotel management software that property owners and front desk workers use to manage their business by coordinating reservations, online booking availability, payments, and reporting in one central place. The HPMS streamlines operations for front office staff and guest services in a hotel business to check-in and check-out guests, see room availability, make adjustments to existing reservations, and even can have back-office functionality (schedule housekeeping or maintenance). With a central system, hoteliers can better manage and monitor the key metrics needed to run their business (e.g., average daily rate, occupancy etc.)

Functional Requirements:

User-friendly interface: The best PMS solutions today are self-service and help to streamline operations by enabling hospitality businesses to check in guests faster. Many modern platforms can even be operated from a mobile device via mobile app.

- Reservation management details in your HPMS solution.
- It includes total number of rooms, types of rooms, rooms charges and each room requirements etc.
- Check-in/check-out of guests
- Modify guest reservations
- Keep track of guest profiles and move them around as needed (room or hotel change).
- Record keeping of taxes, fees and policies - Customize taxes, fees, and cancellation policies in the combination that best suits your business.
- Government compliance with local tax reporting requirements and regulations.
- Guest communication - Improve the guest experience with automated pre and post-stay communications.
- Reporting suite - Generate detailed production and financial reports to improve business operations.
- Payment processing - Ability to take credit card payments in compliance with local and global regulatory standards.
- Staff management. It includes total number of staff, their status, salaries and duties.

Tools & Technologies Preferred tool and technology

C#, JAVA, Database –MySQL

Supervisor:

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Project Domain / Category

Web Programming

Abstract:

“**HSM Boutique**” is a fashion e-commerce website to facilitate the Customers to purchase ready to wear dresses. E-commerce is now an essential tool for the fashion industry. This site will help HSM’s fashion house to take their products world-wide with minimum investment of money. It will be used to promote and sell their eastern formal, party and wedding wears online. Multibillion-dollar global enterprise devoted to the business of making and selling clothes.

Although the fashion industry developed first in [Europe](#) and America, today it is an international and highly globalized industry. Internet has made the world a smaller place. It has facilitated long distance communication by making the process cheaper, faster and easier. Today, internet helps business houses to cater to a global audience without any major investment. The official “**HSM Boutique**” website will serve as its identity on the World Wide Web (WWW). The proposed system will be a great step to globally introduce the eastern fashion business in much more efficient way.

This web application will have following categories:

- Home Page
- Dashboard
- New Arrivals
- Luxury Pret
- Wedding Wear
- Occasion Wear
- Digitized Pictures of products
- View Details
- Size Guide
- Product Details
- Add to Cart
- Bill Calculation
- Customer Information/ Registration
- Shipping And Payment
- Order Confirmation Email
- Complaint
- About
- Contact
- FAQ

Functional Requirements

Modules:

Customer Module:

- View/Search: The user can view/search the categories without registration.
- Users can place order for any product.
- Users will register them before placing an order.

- Users can also give feedback about services provided.
- Users can also register complaints.
- System will show complete details of the product with price in pkr currency.
- System will calculate the record of remaining products available in catalogue.

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

Supervisor:

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Integrated E-Medicare Health Services(IEMHS)

Project Domain / Category

Web Application

Abstract / Introduction

Globally, the use of online health services have accelerated dramatically during the coronavirus pandemic. Technology meets health care services very well during the COVID 19. But still we donot have an online integrated service of healthm that provide every thing like book an appointment a doctor expert in specific domain,Home laboratory collection services,patient transfer service(ambulance),home nursing services and online pharmacy services under a single umbrella.

IEMHS is such an online integrated health care service providers that can provide all these services through a website. So, there is a need to develop an E-commerce website that helps different health care providers like hospitals /clinic ,pathology labs,pharmacies and ambulance service providers to get register on IEMHS. The core objective of the MHS project is to develop a website that facilitates the health care service providers to registers into this web portal and update regarding doctors ,screening test , quality medicines etc on compataitive and discounted rates with 24/7 medical care at home.

Functional Requirements

Administrator Panel:

1. Manage login process to allow the authentic user to access the admin, patient/customer, and health care service providers(like doctor,hospitals/clinic ,pharmacy,ambulance transport providers etc).
2. Create and manage their account.
3. Keep the record of health care providers (like name,doctor fee,fee of particular medicine or test, ambulance transport fare etc)
4. Keep agreement between health care providers and administrator on quality.
5. Add/update/delete specific health care provider record.
6. Record the patient/customer feedback
7. Keep the record of the customer.
8. Add/update/delete customer.
9. Keep the record of patient/customer order or request status.
10. Set the fee of doctor according to doctors qualification, experience and rating etc.
11. Manage the record of customers.
12. Manage customer history.
13. Manage the rating of health care providers.
14. Deliver the order to the customer/patient.
15. Receive the fee payment from a health care providers .
16. Send promotions to registered customers by offering discounts and promotions and also a rating of health care providers.
17. Manage revenue and expense records.
18. Inventory management record.
19. Keep a record of customer feedback.

Health care service providers panel:

The panel will do the following:

1. Create an account or register him/herself on IEMHS
2. A health care service provider will sign in.
3. A health care service provider accept MHS Terms and conditions.
4. Add/Update/Delete the service charges
5. Deliver the order to the customer/patient
6. Receive payment.

Customer panel:

1. Create an account or register him/herself on IEMHS.
2. View the health care providers
3. View the rates/prces
4. View the health care providers ranking.
5. Place the order by selecting the mode of payment.
6. Confirm the order.
7. Delete the order before confirming it.
8. Submit feedback.

Tools:

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

Supervisor:

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Project Domain / Category

Web Application

Abstract/Introduction

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

Functional Requirements:

1. Admin shall be able to manage users
2. Visitor should be able to register with website
3. Admin will approve the user registration request
4. Website should also give the facility of managing different vehicle categories, like motorcycle, car, jeep etc. so that buyer/seller can post ads or see ads under desired vehicle category
5. Latest add should be shown in right side of home page
6. All ads will be email verified.
7. Once a vehicle is sold, user can change its status to sold.
8. Ad should automatically be removed from website after 14 days from its post date.
9. Website should also provide the feature of power ad to the user, for example after posting ad an option is given to every user to covert this ad into a power ad against some cost. If user select this option then his/her ad should be on the top of the page every time for some specific days, like 15 or 20 days.
10. User can view ads by city wise, area wise, or by minimum and maximum range of price
11. Website should also show the trend of most demanding vehicles and this trend and information should available somewhere on home page.

Tools:

You cans use any langue like Python, Asp.net, PHP etc.

Supervisor:

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Online Exam Scheduling Application

Project Domain / Category

Web-based Application

Abstract/Introduction

This application will generate the exam schedule for the students enrolled in a semester offered by an educational institute. Usually, for every semester, an exam schedule is manually prepared keeping in view the students enrollment in different courses, available time slots, and examination halls.

It is also considered that if a student is enrolled in more than one course, then exam for those courses must not be scheduled on the same day in the same time slot. Similarly, an examination hall cannot be used for scheduling more than one course on the same day in the same time slot. In order to generate the exam schedule, user will be required to provide list of offered courses, list of students enrolled in those courses, available time slots and the list of available examination halls.

Functional Requirements:

Based on the user input, the application will be able to maintain the list of:

- Offered courses
- Students enrollment in the offered courses
- Available time slots
- Available examination halls

The application will:

- Generate exam schedule for each course and for each student considering the above mentioned lists and avoiding any clash/conflict
- Provide an option to save/export the generated exam schedule course-wise and student-wise

Tools: PHP, HTML, JavaScript, CSS, MySQL

Supervisor:

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Students Psychometric Assessment in eLearning Paradigm

Project Domain / Category

AI / Deep Learning

Abstract / Introduction

With the advent of latest technological trends in assessment modes, there is a need to develop such solution that would help institutions to evaluate students not only on the basis of summative assessment but on the basis of psychometric measurements, specifically in eLearning environment. The main requirement is to collect unique dataset of students studying in eLearning mode having assessed based on psychologist aspect after measuring their responses in active (during the virtual session) and passive mode (recorded session/after the session). The students' responses will be considered as text base, visual base for mapping those to the threshold you set for declaring optimal learning of any particular student or group. The challenging aspect of this project is to develop an application for evaluation of complete setup. The dataset is unique so it would only be generated using Python libraries or you may take help from (<https://www.kaggle.com/>). You will use CNN for managing visual database of student's behavioral responses to be mapped on the scale of their level of attentiveness. As attentiveness drives through to better assessment.

This is a challenging project; one should take it if really interested to complete it. You may need to study the in-depth of topics before deep diving into it.

Convolutional Neural Network:

<https://towardsdatascience.com/convolutional-neural-networks-explained-9cc5188c4939>

Deep Learning for Face Recognition:

<https://machinelearningmastery.com/introduction-to-deep-learning-for-face-recognition>

Functional Requirements

- The designed system must be followed CNN principles for the implementation of stated problem.
- The system will provide interface for student's assessment mechanism to scale attentive students based on their responses during and after the virtual session (Asking students quiz-based questions about the delivered content).
- The system should respond to the variant dataset for students belonging to different demography.
- The graphs show the learning curve of students with more attentiveness in the virtual classroom environment.
- Psychological aspect of students to be measured based on their thinking capability by posting students questions as per bloom's taxonomy.

Tools:

Python

Tensor Flow

Jupyter Notebook (Open-Source Web Application)

NumPy (Library for python)

Supervisor

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Project Domain / Category

Web Programming

Abstract / Introduction

Most universities these days have a number of faculties and departments and each department offer different degree/ study programs. Each study program has multiple batches enrolled and different courses are taught in a semester in different study programs. Since there are limited faculty members (course instructors), each instructor teaching more than one courses, and class-rooms are also limited. Therefore, a schedule is needed to accommodate the lectures of Instructors at provided time slots in such a way that their timings do not overlap and the schedule makes best use of all the instructors and class-rooms.

In modern educational institutions, there is a great need to have an automated lecture schedule generation mechanism, as such lecture scheduling is a very hectic job and can have a lot of clashes if done manually. Lecture scheduling done manually takes a lot of effort and time. While scheduling even the smallest constraints can take a lot of time and the cases are even worse when the number of constraints or the amount of data to deal with increases. Dealing with changes is very hard and it may lead to developing the entire schedule once again. Intelligent Lecture scheduling system is an easy web-based application that automates the process of lecture scheduling. Degree program-wise, instructor-wise and class-room- wise schedule can be generated in a .pdf format.

Functional Requirements:

Some of the functional requirements are:

- Login process/ authentication for administrator who will make /update the schedule
- The database should store the following data (submitted by the admin through a GUI):
 1. Department details
 2. Degree/study program details
 3. Instructors' details
 4. Courses details
 5. Lectures schedule allocation details / constraints
- Degree program-wise, instructor-wise and class-room- wise lecture schedule should be generated in a .pdf format
- Users will have open access to the schedule using a webpage/ internet link
- Some of the mandatory constraints are as follows:
 - All lectures of a course must be scheduled to a distinct slot and a distinct room
 - Any two lectures cannot be assigned in the same slot and the same room
 - Lectures of courses in the same study program or taught by the same instructor cannot be scheduled in the same slot, i.e., any slot cannot have an overlapping of students or instructors
 - For each lecture, the number of students attending the course should not be greater than the capacity of the class-room hosting the lecture

- All lectures of a course should be scheduled at the same class-room. If this is impossible, the number of occupied rooms should be as few as possible

-

Tools:

Server side programming language: PHP

Scripting and styling languages: HTML and CSS

Client side scripting: JavaScript and JQuery

Database: MYSQL

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

Local host Server: WAMP or XAMPP

Supervisor:

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Kids Toys Sales Management System using Chatbot

Project Domain / Category

Web Application

Abstract/Introduction

Chatbot applications streamline interactions between people and services, enhancing customer experience role in B2C (Business to Customer) E-Commerce applications by providing assistance to customers in purchasing the online products. Chatbots employs the Natural Language Processing combined with some flavor of Artificial Intelligence in E-Commerce environments.

The core aim of this project is to design a web-based Kids Toys Sales Management System using Chatbot. The users (customers) of this system will be able to place order for the wide range of toys for their kids' choice. Chatbot will assist the customers in selecting the toys and will recommend the suitable toys as per the age of their kids. It also recommends toys on the basis of parents' requirements (budget and toys characteristics/specifications) and demands. The application aims to provide effective business environment to the parents.

Functional Requirements:

Kids' Toys Sales Management System using Chabot is an illustration of B2C E-commerce domain. It facilitates the environment for parents to select the toys as per their choice. Chabot will provide customer support by showing list of toys like (automated/semi-automated) and adaptive guidance to specific customers.

The proposed system will have the following main users:

Admin, Sales Manager, Distributors, Customers.

1. Registration module: It will facilitate the registration process for all kinds of users. Admin will approve and perform activation of the different user's accounts and registration requests.
2. Login Module: After successful registrations, all types of the users will be able to login to the system using their registered email and password.
3. Pop up window should be displayed at the bottom right of the system by prompting the customer for any kind of guidance related to toys selection.
4. Customer will go for Toys selection module where the chatbot will assist the customers to select the kids' toys as per customer needs.
5. Geographical area allocation module: Admin will assign the different areas to distributors across Pakistan. Different sales manager will work under specific distributor for easy distribution of kids' toys in different areas of Pakistan as per the demands. Customers will be able to see the different sales manager in Google map to assess the fast and easy shipment of toys to the customer.
6. Conversation Flow module in chatbot is responsible to ask the question from users related to kids' toys, that will suggest the most suitable type of kids toy as per customer demand. To make conversation flow smooth and efficient, it's important to apply the best practices for developing chatbot. For this supervised Machine learning and deep learning algorithms be used, while taking into account of business objectives and customer' expectations.
7. After the conversation flow is completed, search result module will personalize merchandising of kids' toys, recommendations can help the customers to find specific toy specifications as per the age of the kid. After selection It will show the list of toys both

automated and manual toys as per customer demands. A conversational interface will allow the system to ask probing questions and understand the customers' intent better.

8. Search result module will display the list of kids toys like imported/local, price related characteristics and specification in case of electronic toy.
9. Discount module will be activated in case the customer may be looking for discount. In case customer falls into one of the given categories like (army officers, teachers).
10. Chatbot will assess the customer behavior and suggest the kids toys according to his budget and demands
11. Supervised Machine learning module for Chatbot should already be "taught / trained" common questions so that it will be able to answer customer questions related to specific kids toys and respond immediately to customer' queries.
12. Once the customer has selected the required kids' toy, the payment module should be activated; chatbot should properly guide the customer of different payment options. The system will facilitate the three payment options as per the user choice i.e., credit card, debit card and through cash on delivery.
13. The proposed system should have customer care module. It should guide the customer about the toys' guarantee in case of malfunctions for specific time period. Toys guarantee will fall under two categories like electronic toys and manual toys.
14. Customer care module should guide the customer about the guarantee for specific time period of different parts of electronic toys.
15. For successful human-like interaction, visual module is also used in chatbot for perfect tone and dialect. To achieve coherence, a character is used to effectively communicate in audio synced with the text to help out the customer for specific kids' toys.
16. There should be Frequently Asked Questions module to generate a chatbot's list of pre-programmed queries and responses.

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

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

Accessories are the things that can be added to something else in order to make it more useful, versatile, or attractive. In the Covid-19 situation, the purpose of this project is to provide a platform where users can buy different accessories online according to their needs and budget.

The goal of this web application is to put all the electronic accessories available on the website with all the necessary information like shop details or supplier details. Shop details will be helpful if a user chooses something online and want to test it first before purchasing the product at the shop.

At that portal, there will be 3 categories Laptop, Desktop PCs, and Mobile. Accessories will be added according to the given categories. More categories can also be added according to ease.

Functional Requirements:

1. User/Buyer Module:

- Users/buyers will be able to register themselves on the portal.
- Users/buyers will be able to log in from the login panel.
- Users/buyers will be able to add carts to their accounts.
- Users/buyers will be able to cancel their orders.
- Users/buyers will be able to see their purchasing records.
- Users/buyers will be able to see their personal information as well as edit their personal information.
- Users/buyers will be able to Logout from the site.

2. Supplier Module:

- Suppliers will be able to register themselves on the portal.
- Suppliers will be able to log in from the login panel.
- Suppliers will be able to post their products with the necessary information.
- Suppliers will be able to cancel the User/Buyers request or orders.
- Suppliers will be able to see all their pending or complete orders.
- Suppliers will be able to see their personal information as well as edit their personal information.
- Suppliers will be able to Logout from the site.

3. Admin Module:

- Admin will be able to log in from the login panel.
- Admin will be able to approve the User/Buyer account.
- Admin will be able to approve the Supplier account.
- Admin will be able to approve the Supplier product.
- Admin will be able to delete the Supplier or User/Buyer account.
- Admin will be able to Logout from the site.

Tools:

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

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

The purpose of this project is to develop a website to facilitate farmers. It will be like an e-store where farmers can buy their required products online and can get consultation. As farmers can get their products and suggestions on time, it will be great opportunity for them to increase their products yield. This website should have different categories of agriculture products like pesticides, fertilizers, seeds, equipment etc. under each category all related option (varieties of seeds, names of pesticides and fertilizers with brands, types and names of agriculture equipment) should be available.

A farmer will be able to search and view products by applying different filters but only register farmer can buy products after selecting product he/she will be able to place an online order. At checkout time, more information will be needed to complete the order. Usually, the customer will be asked to fill the basic details or select a billing address, a shipping address, and payment option such as debit/credit card information or cash on delivery.

Farmers should also be able to rent any machinery available in farming equipment category. This website should also provide facility for online consultation related to agriculture. For this purpose, expert can get registered. An expert can recommend any pesticides or fertilizers to the farmers. Farmers can also hire a consultant for physical visit.

Users of this website may be:

- Individual user
- Consultant
- Farmer

Functional Requirements:

Farmer/Company panel:

1. Any User can search/ view products by applying filters (name, price, brand name etc).
2. He/she should get registered to place an order.
3. He/she should be able to select and add products to the cart.
4. He/she should be able to select payment method.
5. The user should fill a form by providing his /her name, contact number, postal address, city, delivery and payment method (cash on delivery/online by using credit/debit card) at checkout.
6. He/she should be able to send messages to consultants and can view consultant's answers
7. He/she should also be able to view other's messages and consultant's answers.
8. He/she should be able to add review and feedback about various products and website.
9. The user can login and logout.

Consultant Panel:

1. Consultant should get registered for consultation.
2. Consultant can view user's messages and can answer messages.

Admin panel:

1. Admin can view orders.
2. Admin have access to monitor everything on the website.
3. Admin can add view and delete different products.
4. Admin can create, view and update categories.
5. Admin can add payment method.
6. Admin can add consultant and can view consultant information.
7. Admin can view farmer's reviews and feedback.
8. Admin will be able to generate a report such as sale and buy reports, profit and loss report on a monthly.

Tools:

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

Supervisor:

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Online Application for New PTCL Internet Connection

Project Domain / Category

Web Application

Abstract / Introduction

In this project, we will build a web-based application named as “Online Application for New PTCL Internet Connection”, in which the user/client applies for the new Internet connection and the admin allocates the connection PTCL number, issue date and processes the connection request. Similarly, the admin can generate the monthly bill and the user/client can pay the bill online.

Features of the proposed features:

Admin Panel features:

1. The admin can login and logout.
2. The admin can accept/reject user registration requests.
3. The admin can view and accept/reject the new PTCL internet connection requests.
4. The admin can generate the voucher for new installation charges.
5. The admin can assign the new PTCL internet connection with (Requested internet speed (6 mb, 8 mb or 10 mb) ,Package price, Customer name ,Customer ID, Customer address , Customer mobile #, Account ID, New PTCL number and issuance date.
6. The admin can generate the monthly internet bill for the user and upload it on the user account. In the generation of monthly PTCL internet bill summary, the admin must enter the (Total internet usage, Billing month, Amount due, Due date, Amount after due date, Arrears, Credit, Service tax and W.H.tax.
7. The admin can view the users/clients uploaded paid vouchers and paid bills.
8. The admin can view the users/clients' complaints and take appropriate actions.

User/Client Panel features:

1. The user/client will register by filling the provided registration form. In the registration form user related different information must be saved like, username, CNIC number, password, address, phone number etc.
2. The user/client can login and logout.
3. The user/client can apply for the New PTCL internet connection by clicking the button/link “New PTCL Internet Connection” and then fill the new connection form. The new connection form can contain different information such as, Username, CNIC number, Address, phone no, PTCL Internet connection speed (i.e. (6 mb, 8 mb or 10 mb) etc.
4. After applying for the new internet connection, the user/client can view the voucher for new installation charges.
5. The user/client can download the voucher.
6. The user/client can upload the paid voucher.
7. The user/client can view the new connection issuance summary such as, (New PTCL assigned number, Account ID, Connection speed, Package price, Customer name ,Customer ID, Customer address , Customer mobile #, Account ID, and Issuance date).

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

Tools:

XAMPP Server, MySQL, PHP language

Supervisor:

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Online Auction System

Project Domain / Category

Web Application

Abstract:

Auction is a term used to refer to types of sales where the price is neither set nor arrived at by negotiation, but discovered through the process of competitive bidding. Shopping online has widely grown after COVID 19; online auction system is increasing rapidly. Online auction is becoming more and more popular in electronic commerce and hence it should system must increase its quality and security. This project shall handle this issue by creating an online platform where a user will be able to post items online for auction. The items will accompany item name, their base price, and a picture presentation for the bidder to see. The bidder, if interested in the item, will auction for the product and will be able to inspect the item physically to approve the product then complete the business with the seller.

The system primarily has 3 types of users:

Seller module

A seller's primary concern on such a portal would be security against fraudulent buyers and random bids. The seller needs to know who got the product and needs to act accordingly. The seller must be able to check his product for bidding and should be able to add one easily. He should also be able to see the reviews about the product and communicate with the customers or bidders regarding any issue that arises.

Buyer module

The bidder should first see which product is been posted on the app which is to be auctioned along with all the needed information about it. If the bidder is interested to buy that product, then he can register for the auctioning and bid the amount. At last, at the end of the auctioning the bidder should get to know the result. The buyer or the bidder should be able to give a feedback to the seller or admin.

Admin module

The admin must be the one who controls the entire bidding process by deciding the expiry time of each bid. He must be able to add, remove or manage a category. Admin must be able to add or delete comments and take feedback from people regarding the processes going on in the portal.

The customer can be a buyer and a seller.

Functional Requirements:

- A customer will first sign up as a buyer or a seller and then login into the system.
- Different functionalities will be provided to both buyer and seller.
- System will allow sellers to post the ad for product they want to sell. They can also view their active bids (that are in progress) as well as expired bids.
- In order to create an auction, the auction seller will enter the title of the auction and its description.

- The seller will choose an auction type, enter the appropriate price and price increment if available. The seller will set a duration for the auction or set a custom start and end date and time for the auction.
- The user can upload a picture that describes the auction.
- The seller can then publish their auction.
- A seller cannot bid on his or her own auction.
- System list all auctions created by Auction Sellers.
- System will allow sellers to edit and delete auction they have added.
- The auction seller can still make changes to the auction even after publication.
- The seller can also delete any auction he has created.
- Users can also search and browse through various auctions in the application.
- System will allow user to search products that are available for auction.
- System will allow buyers to add/remove auctions to a watch list
- System will allow the bidder/buyer to bid on desired product.
- Buyer can view their purchase history.

Tools:

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

Supervisor:

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Online Auto Spare Parts Store and Consultation

Project Domain / Category

Web Application

Abstract / Introduction

The purpose of this project is to develop a website to facilitate common citizen. It will be like an e-store where users can buy their required products online and can get consultation. Users can get their products and suggestions well on time. It will be a great opportunity for the sellers to increase their products sale. The website should have different categories of auto spare parts products like car accessories, wheels, car care, batteries, equipment etc. under each category all related option (varieties of tyres, names of car accessories and batteries with brands, types and names of car's equipment) should be available.

A user should be able to search and view products by applying different filters but only registered user can buy products, after selecting product he/she will be able to place an online order. At checkout time, more information will be needed to complete the order. Usually, the customer will be asked to fill the basic details or select a billing address, a shipping address, and payment option such as debit/credit card information or cash on delivery.

This website will also provide facility for online consultation related to auto spare parts. For this purpose expert can get registration. An expert can recommend any auto spare parts to the user. Users can also hire a consultant for physical car inspection.

Users of this website will be:

- Individual user
- Consultant
- Admin

Functional Requirements:

User panel:

1. Any user can search / view products by applying filters (name, price, brand name etc).
2. He/she should get registered to place an order.
3. He/she should be able to select and add product to cart.
4. He/she should be able to select payment method.
5. The user will have to fill a form by providing his /her name, contact number, postal address, city, delivery and payment method (cash on delivery/online by using credit/debit card) at checkout.
6. He/she should be able to send messages to consultants and can view consultant's answers
7. He/she should also be able to view other's messages and consultant's answers.
8. He/she should be able to add review and feedback about product and website.
9. The user can login and logout.

Consultant Panel:

1. Consultant should get registration for consultation.
2. Consultant can view user's messages and can answer messages.

Admin panel:

1. Admin can view orders.
2. Admin can view reviews or feedbacks.
3. Admin can block any user.
4. Admin can add/remove categories or edit existing categories.
5. Admin can add view and delete different products.
6. Admin will be able to generate a report such as sale and buy reports, profit and loss report on a monthly.
7. Admin can add consultant and can view consultant information.
8. Admin can add payment method.
9. Admin have access to monitor everything on the website.

Tools:

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

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

Blood is the essential element of human body. Without blood humans can't survive. Scientists say that about seven (7) to eight (8) percent of human weight consists of blood. In conventional way blood is donated through some blood organization or Blood banks. Blood bank is thought to be the place where blood is collected from the donor and stored/preserved for a period of twenty eight days (8) maximum for later transfusion. Blood banks also do not support online blood donor database. The number of donors are increasing with increase in population of the country thus we need to have an effective system to have better control and management of data. Using traditional techniques of data entry by operator a lot of issues may happen, like the risk of outdated data, human boredom, error in data and cost etc. Owing to solve all the problems the study is done on an automated Blood bank. In the present traditional system the factors like gender, age, last date of blood donation, frequency of blood donation per year are not recorded which is given vital importance in this study and used as recruitment factors in blood donation. So the prime objective of the project is to find a more efficient way in blood donor database management and to create a medium for people to get connected with potential blood donors around the locality.

Functional Requirements:

Donor:

1. Registration
2. Login/logout
3. Modifying profile
4. Searching record
5. Requests for blood donation

Donee:

1. Registration
2. Login/logout
3. Modifying profile
4. Search record
5. Requests for required blood

Administrator:

1. Login/logout
2. Modifying profile
3. Add donor
4. Delete donor
5. Block donor
6. Send messages to registered donor or donee

Tools:

PHP, MySQL, Xampp Server.

Supervisor:

Name: Mukaram Shah

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Project Domain / Category

Web Application

Abstract / Introduction

In this era of technology, all over the world, many businesses are shifting towards the online mode. In view of this, the main objective of this project is to develop a website "Online Car Accessories Shop" through which the registered users (customers) will be able to buy different available Car Accessories items such as exterior (Door guards, stickers, side mirror etc.) and interior (mats, tissue boxes, sun shades etc.) from anywhere on discounted rates.

This website will contain the Car Accessories items in different categories. Any User can visit /search the available Car Accessories items, but only the registered users will be able to buy/place order. Admin will manage users, orders and information of the whole website. This website will be helpful for users to buy any Car Accessories items without physically visiting to Car Accessories shops. It will also be beneficial in terms that not only local users could be able to purchase the Car Accessories items but also the users from different places anywhere in the world can purchase it.

Functional Requirements:

User:

- User Registration
- User Login
- Search Facility (by name, by price, by item color etc.)
- User can add any number of Car Accessories items (available in the stock) in shopping cart and can proceed for order.
- The Customer will get 10 % discount on total bill between 3000 to 5000 Rs.
- The Customer will get 15 % discount on total bill between 5001 to 10000 Rs.
- The Customer will get 20 % discount on total bill between 20001 to 40000 Rs.
- The Customer will get 25 % discount on total bill of 100000 Rs and above.
- User can select any payment option (credit card or cash on delivery)
- User can check his/her order status (approved/Pending/Cancel/delivered)
- User can check his/her order history
- User can submit his/her review about purchased item(s) and can give feedback about website services
- After successful completion of transaction, user will receive confirmation message and a copy of Shopping Bill on his/her mobile number or via email (you can implement any method as per your easiness).

Admin:

- Admin will manage the stock of Car Accessories items on the website
- Admin can view list of registered users, Total bookings/orders, shipping orders, pending orders, Feedback etc.
- Admin can manage and change the percentage of discount rates
- Admin can Add/update/Delete item category
- Admin can Add/update/Delete Subcategories
- Admin can delete any existing user

- Admin can update information of any existing user
- Admin can check the complete history of orders
- Admin can approve or cancel any order
- When admin will approve or cancel any order, a message/email will be sent to the related user.

Tools:

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

Note: No any other language is allowed for this project

Supervisor:

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Online Children Vaccination System

Project Domain / Category

Web Application

Abstract / Introduction

In this project, we will build a web-based application named as “Online Children Vaccination System”, in which the parents will registered their babies and get a detailed plan of vaccination and get vaccinated accordingly and get certificate on completion.

The admin will provide all the details of vaccination and generate the completion certificate of vaccination on course completion.

Features of the proposed features:

Admin Panel features:

1. The admin can login and logout.
2. The admin can add, view, and edit the medical staff and health center details.
3. The admin will assign the medical staff or health center to the newly registered user.
4. The admin will provide the complete schedule of vaccination to the user. In order to develop the vaccination schedule, kindly visit the following link, you will find important information:
<https://www.youtube.com/watch?v=hLL3KmLWKU0>
5. The admin will assign vaccination day. Also provide all the details of vaccination such as which vaccine will be provided, which diseases will be prevented from the vaccine, etc. etc.
6. The admin will provide the next vaccination date to the user. The next date should be based on the date of birth and should be according to the plan given in the shared video link.
7. The admin can send message/email to the registered user before two days of the vaccination day.
8. The admin will generate vaccination completion certificate, when the user complete the vaccination course.
9. The admin can generate different reports by yearly, monthly, weekly such as vaccinated babies, total number of born babies, gender wise reports, city wise reports etc. etc.

Parent/User Panel features:

1. The user can login and logout.
2. The user register his/her baby for vaccination by providing all the relevant information such as: baby name, father name and CNIC number, mother name and CINIC number, gender, date of birth, address etc.
3. After the registration, the user have to select an option from “Vaccination at Home” or “Vaccination at Health Center”.
4. If the user select “Vaccination at Home”, then all the details of the medical staff should be visible to the user. For example, the medical staff name, CNIC no, contact number etc.
5. If the user select “Vaccination at Health Center”, then all the details of the health center should be visible to the user such as health center name, contact number, address etc.

6. After the selection of home or health center, the complete schedule of vaccination should be visible to the user.
7. The vaccination date should be visible to the user, similarly the user can view the vaccine name, diseases that it prevents, etc. etc.
8. On the mention date, the children will be vaccinated and once the vaccination is done, the next vaccination date should be assigned to the user.
9. The user can receive a message or an email two days before the next vaccination day.
10. The user can record his/her feedback after the vaccination.
11. After the completion of vaccination course, the user can download the vaccination completion certificate.
12. The user can update his/her profile.

Tools:

XAMPP Server, MySQL, PHP language

Supervisor:

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Online Clothes Collection and Donation Tracking System

Project Domain / Category

Web Application

Introduction

XYZ is a charity NGO that collects used clothes from persons that don't need them and donate them to the needy people. The NGO is considering to expand their services Nationwide and want to develop an online system where people can donate their extra clothes / wearables.

Using this system, donors will register on NGO's portal, then they would be able to enter their clothes pictures and quantity they want to donate. NGO's admin will approve their submission request.

Admin will issue them a courier address and coupon number. User would go to the courier office and by using their coupon number, they would be able to send their clothes to the NGO's office / head office. After submitting the clothes at the NGO office, user would be able to track the clothes in NGO's repository and also track the items that to whom or where the NGO would donate it.

Required Reports:

- Users will be able to generate report for their donated clothes status (rather it is in NGO's repository or donated to someone / somewhere)
- Admin will be able to generate report for their loyal / active donators (who donates twice at least in a year)
- Admin will be able to view complete repository details in terms of clothes types (pants, shirts, sweaters, jackets, shoes, socks etc)
- Admin will be able to generate a report of donated items along with details for a certain period of time (that is given in report criteria)

Tools:

HTML, PHP, MySQL, Xampp / wamp server, [PHP Report Maker](#) / [PHP Reports](#) / Any other supportive tool for Report generation

Supervisor:

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Project Domain / Category

Web Programming

Abstract / Introduction

ABC College is using an online platform for conducting examinations through websites. Developing an online examination system that works on a web-based platform can help in conducting exams from any location in a short span of time and students from any location can appear in exams. The examination system works as an online web portal, where students, admin, and lecturers can be part of this portal by registering with the application. Admin will add teachers and students can register with the application and view all tests available and take tests and view results and grades.

Functional Requirements:

There will be three modules i.e., admin, student and teacher.

Admin:

1. Admin can view students who are registered with the application.
2. Admin can add teachers based on department and view tests and marks of students.

Teachers:

1. Teachers can log in with a valid user name and password.
2. Teachers can upload test detail with questions and time for each test along with positive and negative marks for answers.

Students:

1. Students can register with the application.
2. Students can select a test and take the test.
3. Students can view marks, results, ranking, and history.

Tools:

PHP Language and MySQL Database for developing Online Grocery Shop.

Supervisor:

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Project Domain / Category

Web Programming

Abstract / Introduction

Compiler is a computer software that is used to translate the code written in high level language (like C++) into machine language instructions that can be understood by our computer. We have two types of compiler called desktop and web-based compilers. Desktop based compiler can be accessed through the system where it is installed. While the web-based compiler can be accessed through internet using any web browser installed on any device. OCL (online compiler and logger) is a web-based application that allows the users to write, compile and execute the program written in C++ language.

Functional Requirements:

You are required to create a web-based application called OCL that has two modules and fulfill the following requirements.

Front-end Module:

Following requirements should be fulfilled for front-end module.

1. There should be an interface on front-end for the users to write, compile and execute the code of C++ programming language.
2. Main interface will be divided into two sections called code section and output section.
3. Code section will be used to write the code of C++ program.
4. Output section will be used to display the output of program written in code section and compiled.
5. If there is any error in the code then output section should display error message(s), possible reason of errors and location of errors.
6. There should be user login/register system to keep record of all programs created by a user through OCL.
7. When users login into application, all of their created programs should be visible in the user dashboard. User can open any of already created programs, modify, compile and execute it.
8. There should be an option to save created program into ".cpp" format and download it.
9. There should be an option to upload a ".cpp" file into our application and load into code section that can be compiled for error checking and output. (Admin can allow or block this feature from backend).
10. User should be able to copy/paste any code into or from code section (Admin can allow or block this feature from backend).
11. If admin block the copy/paste of content to/from code section, then user can only type the code.
12. On writing or copy/paste of code into code section or compiling the code, a log will be maintained for each action performed by user. This log can be viewed by admin from back-end.

Back-end Module:

Back-end will be used to control the settings of our application and fulfill following requirements.

1. There should be option to control (allow or block) copy/paste in code section on frontend.
2. There should be option to control (allow or block) file uploading feature on frontend.
3. There should be option to see the log of code created by user. Log will show the keystroke, copy/paste and compilation detail.
4. Admin should be able to see the code of user generated from log. For this feature admin will select a user and a log file of that user.

Reference:

A similar application is available on the link given below but this application do not have some extra features (file upload/download, copy/paste blocking, log generation of every activity performed into code section and compilation) required in our application.

https://www.tutorialspoint.com/compile_cpp_online.php

Tools:

ASP.Net with C# or PHP

Supervisor:

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Online Movie Ticket Booking System

Project Domain / Category

Web Application

Abstract / Introduction

Online Movie Ticket Booking System, is a website to facilitate the users in collecting information regarding movies and TV shows. Users can also book online tickets for a movie. Users have to register for booking ticket(s) for movies. Users will select movie's date and time. When choosing the show, the user is given a seating layout so that he can select the seat(s) of his choice. Then he's redirected to the payment section. There he will pay with his Debit/Credit card. The user has the option to update his profile. The user will add all his details like (name, gender, age, address, phone number, card information, etc.).

Functional Requirements:

Registered user Module:

1. User will be able to register and sign in.
2. User can book multiple tickets at the same time.
3. User will be able to select movie's date and time.
4. User will be able to adopt any payment method (debit card, credit card).

Admin Panel:

1. Login availability.
2. Admin can accept user's registration requests.
3. Admin can view all user's details
4. Admin can update all movie's details.
5. Admin can update date and time for any movie (manage the schedule).
6. Admin can enter more movies and shows.
7. Seats which have been selected by any user will be automatically marked as reserved for other users.
8. Admin will manage all upcoming movies and TV shows details on the website.

Tools:

PHP, MySQL, Javascript, JQuery, CSS, Bootstrap, PhpStorm,

Supervisor:

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Online Used Cars Sale and Purchase System

Project Domain / Category

Web Application

Abstract / Introduction

Online used cars sale and purchase system is a platform where users can easily perform selling and buying of used vehicles. This website will allow sellers to add used vehicles with their particulars and vehicle details. Sellers can list the vehicle for sale to the buyers.

Buyers can register and login themselves on the website. They can view all used vehicles and can contact the seller. Admin will be responsible for different tasks such as approve/reject listed vehicle by the seller and approve/reject registration requests from sellers and buyers etc.

Functional Requirements:

This system will have four different users:

1. Administrator
2. Seller
3. Buyer
4. Guest

1. Functionalities of Administrator

1. Add/Approve/reject registration requests
2. Add / update /delete /Approve/reject listed vehicles
3. Add / update /delete car models
4. Add / update /delete vehicle categories

2. Functionalities of Seller

1. Registration/login to the system
2. Add/update contact details
3. List vehicle by providing all relevant details (Vehicle make, vehicle model, registration city, color, model year etc.)
4. Update listed vehicle information

3. Functionalities of Buyer

1. Registration/login to the system
2. Add/update contact details
3. Search listed vehicle by different parameters such as (Vehicle make, vehicle model, registration city, color, model year etc.)
4. View vehicle details
5. View contact details of seller

4. Functionalities of Guest

1. Search listed vehicle by different parameters such as (Vehicle make, vehicle model, registration city, color, model year etc.)
2. View vehicle details

Tools:

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

Supervisor:

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Book Recommender System

Project Domain / Category

Web Programming

Abstract / Introduction

Book Recommender System, recommends relevant book (s) to a buyer/reader, it basically works on the “reader interest”. The main aim of this project is to develop a module which can help any website or application and its readers while recommending relevant books to its readers/buyers. Buyer/reader will provide his/her interest in search bar or in his/her profile which saves time of the buyer/reader as the system will recommend books which are relevant to his/her interest.

Buyer can order a book, view the relevant book contents (which gives an insight to the reader), contact to support staff and admin. When a reader enters the name of a book e.g. Introduction to Computing in search bar, different types of available books recommendations will appear in the right slider of the application.

For the any type of inquiry, reader can contact to the support staff and for profile/password relevant issues, reader can contact to the administrator.

Administrator will verify the availability of the book in stock from the shopkeeper/dealer before entering the receipt. Moreover, buyer/reader 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 Book Recommender System

1. Buyer/Reader Module

In this module, buyer can search a Book according to his/her choice, add to cart the book, place order for book, view recommended book, select recommended book, 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 readers (buyers and support staff), approve /reject their feedback, etc.

3. Support Staff

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

4. Apply Filter

In this module reader can filter the books on the basis of the following criteria:

A: Author Name

B: Publish Date

C: Price

D: Field (e.g., Computer Science, Biology, Mathematics, History, English Literature etc.)

Note: Add minimum mentioned categories in the dropdown list of the Field

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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Introduction

www.carsbusiness.pk is an official website of a company operating in Pakistan which is offering up to 10% profit on invested amount on monthly basis. At the end of each month, the profit is calculated for all cars which are sold in a month. The profit is distributed on 60%-40% ratio. 60% profit goes with the company owner. Rest 40% profit gained is distributed among investors as per their invested amount percentage which will become nearly equal to 10% of the invested amount.

The company needs your services as a software engineer to help update the website both front-end and back-end and add some new features in it. You need to keep the following things in mind for the website update:

- 1) Website front-end should be user friendly and eye-catching with new styling features of this era instead of simple html design.
- 2) There should be an administrative side and a user side with a proper database.

Functional Requirements:

Functional requirements can be divided into two parts with respect to the roles of the users:

Admin

- 1) Admin can add / edit/ remove any member in any membership category like silver, gold or premium.
- 2) Admin can maintain the payments records (either investment or profit or loss) of each investor.
- 3) Admin can add / edit/ remove the details of the booked vehicles and show them to only those investors which he will choose to know.
- 4) Admin can add / edit/ remove the selling details of any vehicle. Again, the selling details will be shared to investors of the choice or membership category wise.
- 5) Admin can choose any investors to distribute profits/loss against a particular vehicle. This should automatically update the current status of amount against any investor.
- 6) Admin can distribute the profits acquired equally or can set the varying percentages of profits among investors.
- 7) Admin can generate reports of investments and profit / loss acquired against any investor in excel sheets.
- 8) Admin can see the details of the profit / loss earned in any period of time against any vehicle. Reports can be downloadable in excel sheets.
- 9) Admin can see the overall graphs for the progress of the business.
- 10) Payment records should be maintained properly.
- 11) Any change in policies should be catered easily.

CarsBusiness Members / Investors

- 1) Members can see the amount invested and profits or loss history.
- 2) Members can see the details of booked vehicles against which admin has chosen their investment to grow.
- 3) Members can see the profit percentage and all necessary details against the vehicles in which admin has involved their investment. Excel reports can also be generated on monthly basis.

- 4) Members can send their queries through inbox to admin.
- 5) Members can receive important notifications.
- 6) Members can request to withdraw amount (either investment or profit earned or both) prior one month notice from a separate interface. The overall investment records should be updated afterwards once approved by admin.

User

- 1) Website user should be able to fetch the website and general details of the business.
- 2) User can register and make an account any time.
- 3) Once any user pays the subscription amount (1 lac) his status will be changed to members.
- 4) User can interact with admin for necessary questioning via inbox.
- 5) The dormant accounts which have not applied for membership after 40 days will be removed automatically.

Note: The best project will get the opportunity to be deployed. VU will not pay anything at any stage for this project.

Tools:

Visual Studio (latest version) with .net Framework + SQL Server (latest version) or any other tool of choice.

Development Language:

C# (C sharp) with SQL or any other web development language of choice.

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

As the number of colleges is increasing day by day, it becomes hard for students to find a good college. Moreover, it is very difficult for students to visit and apply to numerous colleges without knowing their merit. College admission Predictor is a web-based application that predict student's admission in colleges. Students had not need to travel long distance colleges for the admission and his/her time is saved, because of this automated system. Only an internet connection is required to access this app anytime anywhere.

This app helps students to choose right college for themselves according to the merit. Students can register into the systems and add their result/marks. Based on marks and merit, system shortlists the colleges to which they can apply. Admin can add the colleges and the batch detail into system. Admin will manage the merits of colleges.

Functional Requirements:

Admin:

1. Admin can login into system.
2. Admin can add/edit/delete colleges and their details.
3. Admin can add merit for previous years to individual college.
4. Admin can add number of seats in each college.
5. Admin can view list of students registered into the system.
6. Admin can view feedback sent by student.

Student:

1. Student can register and login into system.
2. Students can add their marks.
3. Student can view colleges near him.
4. Students can view all the colleges based on his marks.
5. Student can send the feedback to the admin about the system.

Tools:

- HTML,CSS, JavaScript (Front-end)
- MYSQL (Backend)
- PHP (Server aspect programming)
- XAMP (Web Application Server)

Supervisor:

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Online Food Ordering System

Project Domain / Category

Web Application

Abstract / Introduction

Online Food Ordering System is a platform in which various partner restaurants will register, display their restaurant's menu and manage orders placed online. A registered customer will be able to search and order food of his/her choice. This web application will connect customers with restaurants that offer food delivery in their area and let them choose and order. After a customer orders a specific food item, the relevant restaurant will prepare the food and deliver the order to the customer's address.

Functional Requirements:

There are mainly four users under this system.

1. Administrator
2. Restaurant manager
3. Registered customer
4. Unregistered customer

1. Functionalities of Administrator

1. Add, Edit, Delete and View restaurants
2. Approve / disapprove restaurants' registration request
3. Add, Edit, Delete and View customers
4. Add, Edit, Delete and View Food categories
5. Add, Edit, Delete and View Food items
6. Add, Edit, Cancel and View orders
7. Add, Edit, Delete and View locations
8. Check order status
9. View restaurants' rating
10. View and reply customers' messages

2. Functionalities of Restaurant manager

1. Register
2. Login
3. Add, edit, delete and view restaurant's location
4. Add restaurant's menu with specific details such as Food item name, picture, price, delivery time etc.
5. Manage orders
6. Cancel orders
7. Update order status
8. View data of Today sales, yesterday sales, Last 7 Days sales and All-time sales data also.
9. View and reply customers' feedback
10. View and reply customers' messages
11. View own food items ratings by customers

3. Functionalities of Registered customer

1. Register

2. Login
3. Add, Edit, Delete and View contact details
4. Search and view restaurants
5. Search and view food items according to specific filters (Food item type, price, location and rating etc.)
6. Order food
7. Check order status
8. Send messages to restaurants and view replies
9. Send messages to administrator and view replies
10. Give feedback to restaurant after ordering and view replies
11. Rate a specific food item after ordering

4. Functionalities of Unregistered customer

1. Search and view restaurants
2. Search and view food items according to specific filters (Food item type, price, location and rating etc.)

Tools:

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

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Online Punjab Bar Council Election Management

Project Domain / Category

Web Application

Abstract / Introduction

Elections play a vital role in modern-day democratic nations in electing political representatives. Free and fair elections are required to maintain the true essence of democracy but almost all the elections have been blamed to be rigged in Pakistan. Furthermore, the issues like terrorism have impacted the turnout during elections, and caused problem in maintaining law and order. Therefore, a system was required to automate the election process, and Online Punjab Bar Council Election Management is proposed with the idea to enable all the registered lawyers of Punjab Bar Council to take part in electing their representatives.

This system will not only help in holding free and fair elections but also in maintaining law and order, and reducing the cost of holding elections. Chairman Punjab Bar Council can manage the candidates and voters. A voter can log into the system and cast his/her vote. System will count votes and thus declare winner in an election. It will also calculate voters' turnout.

There will be three types of users of this application.

- Chairman Punjab Bar Council (Admin)
- Candidates
- Voters

Functional Requirements:

Here is a list of functional requirements:

- 1) Chairman Punjab Bar Council (Admin) can manage (create, update, delete) all the users of the web application.
- 2) Chairman Punjab Bar Council will add the data of voters into the system.
- 3) Candidates can register themselves into the system. (A candidate/voter will be identified on the basis of Bar Council ID, only one user can register against any specific Bar Council ID.)
- 4) A voter can log into the system.
- 5) A voter can cast a vote.
- 6) A voter can add complaint and give suggestions.
- 7) System can calculate total votes (Casted for a certain seat).
- 8) System can calculate the percentage of votes for each candidate.
- 9) Admin can declare election results (Successful/Unsuccessful) through system.
- 10) System can calculate voters' turnout percentage.

Note:

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

Tools:

Microsoft Visual Studio, SQL Server, Asp.net;

Note: You are advised not to switch the tools. If you do so, you will handle the technical side yourself.

Supervisor:

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Online Scholarship Portal (OSP)

Project Domain / Category

Web Application

Abstract / Introduction

This particular portal is aimed to design a platform for the students who are in search of the scholarships programs offered in different disciplines like Undergrad, Masters, M.Phil. and PhD around the globe. Online Scholarship Portal (OSP) will include the effective and user friendly graphical user interfaces which will enable its registered users (students) to access their required information easily. User/Students will be able to search scholarship according to their need and requirement wise Country, University and faculty details such as name, department, courses, area of expertise, and professional interest etc.

OSP will also have information of the selection criteria and offered stipends:

1. Eligibility (Age, Nationality, previous degree)
2. Passing status of English proficiency tests (IELETS, TOEFL)
3. University/Professors recommendation letter
4. All records of previous qualification, jobs, research publications and projects
5. Valid Passport
6. Hosted Country professors acceptance letter
7. Offered stipends amount (hosted currency)
8. Due date of apply

There will be four categories of scholarships programs.

- a. University based Scholarships
- b. Country based Scholarships
- c. Funded Govt Project lab based Scholarships
- d. Professors based Scholarships

There are two main entities who will access this system i.e. admin and visitor/registered user.

Functional Requirements:

1. Visitor/Students

- a. **Scholarship List:** All the added scholarship details will be displayed to the visitor.
- b. **Refine / Search:** Visitor can search a specific scholarship details by different filters such as Name, University, Department, Courses, Area of Expertise, and Professional Interests etc.
- c. **Eligibility criteria:** Visitor will be able to go through and check the criteria.

2. Admin

- a. **Approve User/Student Registration:** Admin can approve the registration requests from students.
- b. **Manage scholarship information:** All the added scholarship details can be Viewed / Updated / Deleted by the admin.

3. User/Students

- a. **Registration and Sign In:** After the visiting the portal for the apply purpose student will register him/herself in the portal and will be able to login after the approval of registration request by the Admin.

Tools:

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

Supervisor:

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Online Vehicle Parking Management

Project Domain / Category

Web Programming

Abstract / Introduction

In large cities of Pakistan such as Karachi, Lahore, Rawalpindi etc. traffic congestion and traffic jam issues are increasing day by day. Each day people who have their own vehicles spend a lot of time to find a proper parking place for their vehicles. There is no proper parking mechanism in majority of hospitals, public parks, markets etc. The idea of this project is to develop an online vehicle parking management website which will help the people to find a proper parking place for their vehicles. Using this website, they will be able to know how much parking slots/space is available in a particular parking area.

Functional Requirements:

There will be three dashboards in this website.

- 1- User Dashboard
- 2- Super Admin Dashboard
- 3- Parking Area Admin Dashboard

1-User Dashboard

- User Management (Login, Register, Forgot Password, User Profile)
- User should be able to register his/her vehicle by providing all the details of his/her vehicle
- User should be able to see the list of all parking areas of the city in which he/she is currently present
- User should be able to see the remaining parking slots of a parking area.
- User should be able to send a request to parking area if it has free parking slots
- User should receive confirmation notification/email when his/her parking request is accepted or cancelled by the parking area management
- Upon checkout, user should be provided a digital receipt of parking charges

2-Super Admin Dashboard

- Super admin will be able to see all the registered parking areas, their staff and all registered users
- Super admin will approve the registration of a parking area
- Super Admin will be able to see how much revenue has been earned by a particular parking area.

3-Parking Area Admin Dashboard

- User Management (Login, Register, Forgot Password, User Profile)
- Parking Management (accept or cancel the parking requests)
- Staff management (Add /Delete/Update) to run the parking operations smoothly
- Revenue management (All the payments must be entered into the system)
- Real time parking slots updation
- Digital receipt should be provided to the user when parking time ends (Payment will be cash based)

- Admin should be able to view the revenue report (daily, weekly, monthly) of the revenue earned by his/her parking area.
- Admin should be able to manage more than one parking areas if he/she has more than one parking areas.

Tools:

- Server-side programming language: PHP
- Framework: Laravel, CodeIgniter or any other framework of PHP
- Scripting and styling languages: HTML and CSS
- Client-side scripting: JavaScript and JQuery
- Database: MYSQL IDE: PHP Storm or NetBeans or any one of your choice
- Local host Server: WAMP or XAMPP

Supervisor:

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PDF file conversion to audio file

Introduction

Reading pdf files that contains 100s of pages may cause the problem in a professional life. For example, irritation in eyes or getting bore while continuance reading. Something new should develop that give comfort to reader. He do not need to stick with computer screen for long hours to read pdf files.

So, you are required to develop pdf file conversion to audio file. Reader do not need to stare long hours to read. He may convert pdf file in audio file and start listing. Reading demand full attention, so a reader cannot perform any other task. However, through this application, he can do multitasking. Moreover, visually impaired people may also get benefit from this application. This application will handle only a pdf file having paragraphs written in English.

Functional Requirements:

- Registration/Login Page
- Upload PDF File
- Pdf file conversion to audio
- Listen PDF File
- Download Audio File (.mp3)
- Logout

Software Requirements

- Windows
- HTML
- CSS
- Java script
- Python

Note: Student may use any tool to develop this web based or desktop application.

Supervisor Details

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REAL ESTATE ADVISOR SYSTEM

Project Domain / Category

Web Based Project

Abstract / Introduction

Real Estate advisor system shall be the comprehensive tool to manage the entire quality property investments for the clients as well as the free consultancy as per user requirements on sale/purchase depending upon the trends. The proposed system shall be a web-based application which will convert the old methods of property dealing into a modern online approach. The system includes real time access to all kinds of property to simplify the day-to-day process of property administration and can support a database of multiple properties and users.

This website shall provide a platform offering wide array of quality property investments and divide the property into three different categories as agricultural land, residential and luxurious to commercial options. It includes apartments, villas, homes, and flats, farm houses in residential lands/plots and commercial lands/plots, shops in markets and plazas in different cities throughout Pakistan. In this website any buyer/seller/renter shall easily visit all types of property and then will select the advertised property.

Functional Requirements:

Admin:

1. Login/Logout
2. Change password/retrieve lost password
3. Edit Registration details
4. View/Edit/Delete site details
5. Manage properties (View/Edit/Delete)
6. Categories property
7. Property Details
8. Search properties on the basis of different criteria
9. Advertisements
10. Biding Handling
11. Reports
12. Manage client Request
13. Must provide best options as a consultant

Buyer/Renter:

1. Login/ Logout
2. Change Password/Retrieve lost password
3. View/Edit Registration Info (Personal Details)
4. View property categories
5. View property details
6. Search property Listings
7. View agent's info.
8. Buy/Rent/the property
9. Participate in biding
10. View Reports

11. Can get best options to buy from the Admin

Seller:

1. Login/ Logout
2. Change Password/Retrieve lost password
3. View/Edit Registration Info (Personal Details)
4. View property categories
5. View property details
6. Search property Listings
7. Sell property
8. Upload property details
9. Different properties will be stored in different categories and will be managed
10. Sell property on lease
11. Organize bidding process
12. View reports
13. Can get best option for the sale from Admin

Visitor:

1. View static Pages
2. About Us
3. Privacy Policy
4. Terms and Conditions
5. Contact Us
6. Search property Listings according to different categories
7. View property Listing Details
8. View agents details
9. Register as User/sign up
 - Visitor should provide personal details for registration request
 - All the requests will be verified by the system
 - System can Accept/Reject/Temporarily waive the requests
 - In case of Acceptance Login Info (password, ID) will be sent through email to visitor

Tools:

Language: Python (Preferred One), or WAMP server, PHP, MySQL, HTML editors (Dreamviewer, Notepad++).

Databases: MySQL, SQLite, XAMMP, WAMP, Oracle or any other modern database

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Student Registration System

Project Domain/Category

Web Programing

Abstract / Introduction

Managing students' records using a manual system is tedious and takes longer to generate different types of reports. Especially when it is time for new admissions, the manual registration process is a time-consuming and challenging task for students and employees. Different tasks like search and update take too much time in manual systems. To overcome this problem, we will develop a web-based application for the student registration process to increase the availability and efficiency of the process.

Functional Requirements:

1. The system should have a user registration process in order to get login into the system.
2. The system should send a four-digit verification code to the user's mobile number to create a user account.
3. The system should have a detailed personal information form.
4. The user should be able to add his passport size image in the personal information form.
5. The system should have a detailed educational information form.
6. Users should be able to view the eligibility criteria of different programs.
7. Users should be able to view admission instructions for different programs.
8. Students will select a short course like C, C++, and Java or diploma like DIT and DAC or a complete program like MCS and MIT, etc.
9. The system should have three short courses, two diplomas, and two complete programs and their details.
10. Users will be able to view the duration and fee of all the programs mentioned in point no 9.
11. Admin should be able to add, update, and delete any information regarding courses, diplomas, and complete programs through a user interface.
12. Admin should be able to add, update, and delete all students' records.
13. After completion of the registration process, the system will send a successful message to the student along with the registration id.
14. All the information should not be static; it should be maintained dynamically through programming.
15. **Reports:**
 1. Detail report of a student comprised of personal information, educational information, and selected program.
 2. List of all students (course wise).
 3. List of all programs along with duration and fee.

Tools & Technologies: Preferred tool and technology: Java, MySQL

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THE HOUSE RENTALS

Project Domain / Category

Web Programming

Abstract / Introduction

This application will be offering to the customers to rent a house/apartment in any city they want. It's often seen that the people need to move in different cities due to their jobs, meetings or family gatherings. These house or apartments can be ready to shift (furnished).

A person can rent a house / apartment in any city. There will be many options available with respect to room capacity, city, area and rent. The user can filter the search results on the basis of the capacity, city, area and rent.

The customer would be able to give reviews of the facility they had.

If an apartment/house is already in use, it should not be displayed in the available items.

Functional Requirements:

Admin Module:

Login/Logout:

The admin can login and logout.

Add a new User:

The admin should not be able to sign up. But a main admin will add another admin.

Add available cities with area:

The admin can add new cities and specific areas.

Add a new house / Apartment:

The admin can add the information of a new house/apartment.

Manage house / Apartment:

The admin can edit or delete any exiting records.

Reply Contact Us Queries:

The admin can reply the Contact Us queries on the customer/visitor's mentioned email address.

Customer Module:

Login/Logout:

The customer can login and logout.

View House/Apartment:

The customer can see all the available houses or apartments with logging in to the website.

Booking:

The customer can add to cart any house or apartment.

Contact Us:

The customer can send their queries using Contact Us form

The complete website should have the following features:

- The website needs to be responsive.
- Home Page with a main search bar.
- Each page with the search bar in the navigation bar.
- About Us Page/Section
- Contact Us Page / Section

Tools:

Back end: PHP, MySQL, Xampp

Front End Design: HTML, CSS, Bootstrap

Editor: Sublime/Notepad++

Supervisor:

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Timetable Management System

Project Domain / Category

Web Programming

Abstract / Introduction

All educational institutes are offering a number of different disciplines these days and each discipline has a number of subjects. There are limited faculty members in all educational institutes therefore each faculty member has to teach more than one subjects. Also, there are limited rooms for classes and lab activities for different batches. We have to schedule a timetable for effective resource utilization. This timetable should ensure that there is neither an overlapping of faculty member nor class room. Timetable scheduling is a very hectic job which takes a lot of time and effort. Any updation or correction may make this task cumbersome if done manually. There is a need to automate this task with the help of an online system which generates a timetable. This Timetable management system will be a web-based application which can schedule timetable according to classes, subjects and faculty members.

Functional Requirements:

Faculty Member:

1. The faculty member shall register/signup in the system.
2. The faculty members have different role like Dean, Section head, Head of department, Class in-charge etc.
3. The faculty member shall be able to login to system.
4. The section head will generate timetable of different classes. (System will ensure that every lecture should have a distinct time slot and room. Any time slot cannot have an overlapping of class, subject or faculty member.)
5. The faculty member shall be able to view/download timetable from the system in .pdf format.
6. The faculty member shall be able to view/download timetable class wise.
7. The faculty member shall be able to view/download timetable subject wise.
8. The faculty member shall be able to view/download timetable class room wise.

Student:

1. The student shall register/signup in the system.
2. The student shall be able to login to system
3. The student shall be able to view/download timetable from the system in .pdf format.
4. The student shall be able to view/download timetable class wise.
5. The student shall be able to view/download timetable subject wise.
6. The student shall be able to view/download timetable class room wise.

Admin:

1. Login availability.
2. Admin shall be able to accept/ reject user's registration requests.

3. Admin shall be able to update all users' detail.
4. Admin shall be able to view all registered users' detail.
5. Admin's dashboard has overall functional rights.
6. Admin should be able to approve/reject the timetable generated by faculty member.

Tools:

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

Supervisor:

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Toy Land

Project Domain / Category

Web Application

Abstract / Introduction

Toys are the basic playing item for kids. According to age, different types of toys are available in market. But kids insist to go out for shopping their toys. In current situation of COVID it is risky for kids to go in markets without masks.

So, it is required to build an online “Toy Land” that should have toys of each age group, and kids can choose their toys by watching their images and demo videos. In this way kids will also learn to use applications and their capabilities to search, select and decide will also be improved.

Toy Land will be a website having variety of toys. An example website is:

<https://www.shopperspk.com/category/toys/>

Functional Requirements:

1. Home page of website should have a professional website like interface with attractive items having following sequence:
 - I) Title and related image on top.
 - II) A sort option (on the basis of age group, Product type, Price).
 - III) Search, tracking order and cart images having their web pages links should be there.
2. Create, Register, Approval or rejection of registration and login pages to add Admin, customers' record in data base with fields (Username, Password, Email Id, Contact No, and Address).
3. Customer can order product in two ways:
 - I) As a member by logging in his/her account
 - II) He/She can directly order items as guest.
4. Menu bar should contain tabs having toys types like 3D Puzzles, Learning Toys, Baby Teethers, Musical Toys, Baby Crib Toys, Baby Push Toys, Baby Rattles, Baby Blocks Toys, and Stuffed Toys.
5. By clicking on a toy type tab, it leads to a next webpage having all items of this category.
 - I) Above page should contain a proper name of toy, its price, demo video and drop down to select “Quantity”. There must be an “Add to Cart” button to put selected items in cart.
 - II) The description of item should contain the fields like.
No of items in a set:
Material:
Size:
Color:
6. By clicking on cart, a list should be visible for selected items and their quantity, price, delivery fee, and total amount. There should be a quantity increment or decrement button and a remove button against each item.
 - I. Continue Shopping, Update, and Check Out buttons should be there at the end of cart.

- II. Payment methods (Pay viva Visa card, Cash on delivery) must also be shown using radio buttons.
- III. Confirm order and show summary of order with successful message when customer click on confirmation.

Tools:

Choose any combination of tools from these tools

Visual Studio / Xamp / Wamp

C# / PHP

Sql / mySql Database

HTML

CSS

Java Script

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Project Domain / Category

Web Application

Abstract / Introduction

Managing logistic transportation is still considered one of the most challenging tasks now a days due to the fact that logistic companies strives to improve their supply chain performance against the challenges of rising fright rates, truck capacity and increasing customer requirements.

Managing the financial details has already been a challenging job for different logistic transport companies. Due to the complex financial software available in the market, it is not easy for companies to successfully manage the details of their trips, expenses, profit and other details. This software will help logistic companies to easily manage details about their vehicles, drivers, monthly trips, their expenses and easily produce reports on a schedule or when required. Moreover users will be able to inquire about the fright details, book logistics and make online payments to the company.

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. Administrator will be able to enter details about vehicles registered with the company.
4. Administrator will be able to enter details about drivers registered with the company.
5. Administrator will be able to add details of the trips a driver has made.
6. The trips details will contain details such as vehicle details, starting point, destination, distance covered, charges per trip etc.
7. Administrator will be able to enter different expenses.
8. The expenses will include fuel expenses, maintenance, driver's salary etc.
9. Administrator will be able to add all income details.
10. Administrator will be able to produce reports by mentioning a period for which total income and deductions will be calculated
11. The reports will be calculated based on a schedule i.e. at the end of each month or on demand.
12. Administrator will be able to produce a print of the report generated.
13. Users will be able to check fright details and book logistics.
14. Users will be able to make online payments for a selected trip.

Tools:

PHP, MySQL, Xampp, Notepad++

Supervisor:

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