

Project Domain / Category

Mobile Apps

Abstract / Introduction

Algorithms Encyclopedia is a nifty little tool that gives you information on all about algorithms, with details on their history, working detail, real world examples and time & space analysis, right at your fingertips.

Algorithms Encyclopedia is an Android based application which aims to provide a wide set of fundamental topics in Algorithms, beneficial for beginners and as well as advanced users. All algorithms are categorized into groups; including graph algorithms, dynamic algorithms, greedy algorithms and sorting algorithms etc. Each algorithm contains all the relevant information (*i.e. history, working detail, pseudo code, examples, time & space analysis, benefits & drawbacks and references etc.*). The visual illustration along with explanation is provided to make learning in a really simple and lucid manner that makes it easier to understand.

Functional Requirements:

The functional requirements of Algorithms Encyclopedia app are as follows;

1. Completely Offline App. No Internet Connection needed.
2. Offline database (*i.e. SQLite*) to store all data.
3. Category wise Algorithms listing.

Major categories;

- I. Data Structures
 - Lists, Arrays, Stacks, Queues, Hash Tables and Heaps etc.
- II. Searching
 - Linear Search and Binary Search etc.
- III. Sorting
 - Bubble Sort, Selection Sort, Insertion Sort, Heap Sort, Merge Sort and Quick Sort etc.
- IV. Dynamic Programming
 - Longest Common Subsequence, Matrix Chain Multiplication, 0-1 Knapsack and Assembly Line Scheduling etc.
- V. Greedy Algorithms
 - Huffman Encoding and Fractional Knapsack etc.
- VI. Graph Algorithms
 - Breadth-First Search, Depth-First Search, Kruskal's Algorithm, Prim's Algorithm, Bellman-Ford Algorithm, Dijkstra's Algorithm and Floyd Warshell Algorithm etc.
- VII. Miscellaneous Algorithms

- Prime Factorisation, Tower of Hanoi and Euclidian Algorithm etc.

4. Pseudo/working code of all algorithms.
5. Simulation/Animation for visualizing the working of algorithms.
6. Manual values from user for the visualization.
7. Time & space analysis in a comparison mode.
8. Copy, Search and Share text features.
9. Support bookmarks option along with read and unread indicators
10. Settings option for customization the app; like syntax style, text colour, font size and simulation speed etc.

Tools:

1. IDE: Android Studio
2. Programming language: JAVA
3. Database: SQLite
4. UML: Microsoft Visio, IBM Rational Rose

Supervisor:

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Project Domain / Category

Information Retrieval

Introduction

The media are essential to democracy, and a democratic election is impossible without media. A free and fair election is not only about the freedom to vote and the knowledge of how to cast a vote, but also about a participatory process where voters engage in public debate and have adequate information about parties, policies, candidates and the election process itself in order to make informed choices. The media have traditionally been understood to refer to the printed press as well as radio and television broadcasters. In recent years however, the definition has become broader, encompassing new media including online journalism, and social media. Citizen journalism is widely gaining traction, including in countries where traditional media is either controlled or strictly regulated.

The Web keeps growing and huge amount of new information are being posted on it continuously. Weekly, tens or hundreds of Megabytes of news stories can be added easily to the news archive of any newswire sources online. At the same time containing some influencing knowledge, this news archive may also be holding many uninteresting or trivial news. This makes difficult to obtain an aggregate sense of the big picture of the society. When several political actors such a politicians, bloggers, activist and foreign governments are interested to influence the political arena of a volatile society, several conspiracy theories (both meaningful and absurd) originate with each new point of view expressed in the news items. The widespread adoption of media for political communication creates unprecedented opportunities to monitor the opinions of large numbers of political actors. However, without a way to distinguish between users of opposing political alignments, conflicting signals at the individual level may obscure partisan differences in opinion that are important to political strategy. The focus of this project is to classify sentiment of political actors as “anti” or “pro” towards specific issues regarding Pakistani politics using their statements.

Functional Requirements:

System should be able to:

- 1) Analyse the political orientation of political actors such as journalists, politicians, activists and external factors
- 2) Analyse and identify the prevailing, political orientation in Pakistan such as anarchist, communist, conservative, liberal, nationalist, religious extremist etc.
- 3) Decipher the hidden aspects of the news items reported in Pakistani news media.
- 4) Investigate commenter's *sentiment patterns* towards political news articles, and predicts the political orientation from the sentiments expressed in the comments.
- 5) Investigate and analyse the hot topics of Pakistani media in the light of political orientations.
- 6) Give choice to user to select time frame along with list of topics.

7) Retrieve the required result relevant to the user query/demand.

Tools:

Development Environment

- ❖ C# Dot net 4.0
- ❖ Searching Tools – Apache Lucene 3.0.3
- ❖ Stanford NLP – POS Tagging
- ❖ SentiWordNet

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Android based Blood Bank Network system

This project acts as a significant role in saving life of human beings and which is also its main aim. The project Android Blood Bank network system is developed so that users can view the information about registered blood donors such as name, address, and other such personal information along with their details of blood group and other medical information of donor. Thus this application helps to select the right donor online instantly using medical details along with the blood group. The main aim of developing this application is to reduce the time to a great extent that is spent in searching for the right donor and the availability of blood required. Thus this application provides the required information in no time and also helps in quicker decision making.

Functional requirements:

- **User login:** This allows only the registered users to login in order to use this location tracking application.
- **Donor details:** This module helps the donor to insert all the necessary details that is personal information and medical information plus the blood group which together helps to select a donor.
- **Procurer details:** The android mobile user can view all the donor details and select the required donor on the basis of the donor's information.
- **Contact Donor:** on selecting a donor, the application should send a message to the selected donor about the request, along with details of the requester. Similarly, the donor should be able to respond to the request. All this should happen in real time. Furthermore, the requester can contact donor by other means (if he/she thinks appropriate) e.g. direct phone call etc.

Non-Functional requirements: Security, usability, performance.

Tools required: Android Studio

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Project Domain / Category

Web Programming

Abstract/Introduction

This is an online Bike and bike parts store that has listings of various bike along with their features. The system allows user to buy bike, bike parts and inventory online through credit card payment. 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 access the system. User can check various bike listing and can view each bikes feature. User can also check features of the bike as well as inventory parts, and accessories. User may select the product and can add the product to shopping cart. User can make payment through credit cards by clicking on credit card payment option.

Functional Requirements:

The functional requirements for the project are listed below:-

1. User management
2. Bike and bike parts listing and management from admin panel
3. Rent a bike module
4. Sell bike feature
5. Credit card payment

Tools:

ASP.NET Web Forms, ASP.NET MVC, Microsoft Visual Studio, PHP, MySQL, Microsoft SQL Server

Supervisor:

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Project Domain / Category

Network Based Project

Abstract / Introduction

The rapid progress of Internet in the digital world today, the security of digital images has become more and more important. The prevalence of multimedia technology in our society has promoted digital images to play a more significant role, which demands a serious protection of users' privacy". To fulfill such security and privacy needs in various applications, encryption of images is very important to minimize malicious attacks from unauthorized parties.

This project is intended to the people who need privacy for their confidential images. It was most suitable in the networking Systems. Although there are many image encryption techniques none of them are suitable for the networking systems. So the main scope of this project was to provide security for the images in the networking systems. This project provides safe ways of means to transfer images between the networking systems confidentially.

Existing System

There are traditional image encryption techniques like DES, Triple-DES and IDEA. These image encryption techniques have some Limitations such as:

- Requires large data size
- long computational time
- High computing power
- Not suitable for practical image encryption and for online communications

Proposed System

The proposed system aims to explore the possibility of using chaotic or chaos-based encryption techniques to protect remote sensing satellite images and provides high level of security in efficient and reliable way.

Chaos based cryptographic scheme provides

- High security level.
- Less computational time and power in reliable and efficient way to deal with bulky, difficult and intractable data.
- More suitable for multimedia data, especially for images.

NUMBER OF MODULES

In Chaotic Image Encryption Techniques, there are mainly three modules:

- 1) Administrative
- 2) User
- 3) Encryption Module
- 4) Decryption Module
- 5) File Transfer Module

Administrative Module

- Maintains the user accountability

- Controls the user activities

User Module

The people who use this system for providing security for confidential images are users. There may be different set of users for this system.

- The users just load an image to encrypt.
- Enter the destination systems IP address to transfer the image.
- User can view the status of the network for the sent image.

Encryption Module

- Selects the image
- Providing key for Encryption

Decryption Module

- Enter the key for Decryption

File Transfer Module

- Provide the view of the entering IP address for file transfer module

Functional Requirements

1. User login
2. Select image for encryption
3. Encoding image
4. Generation of encryption technique window with output path location and encryption password
5. Status of the Encryption Mechanism
6. Entering IP address of receiver
7. Conforming the host system
8. Status of the sending image in network
9. File Status at receiver side
10. Decrypting the Image
11. View of the original image

Tools:

SOFTWARE REQUIREMENTS:

Operating System : Windows
IDE : My Eclipse
Frontend : J2EE, Coding Language : Java
Backend : My SQL, Other Technology : Tomcat Server

Supervisor:

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Project Domain / Category

Web Based Application

Abstract/Introduction

Classifieds Online is in a form of marketing, used for advertising the goods and services using *Internet*. By using this service, users now can advertise anything they want to sell online. The key benefits will be radically availability of ads online, accessible anywhere from world as compared to local advertisement in printed form.

Functional Requirements:

- 1- A simple user (unregistered user) can only view ads and explore all categories on home page GUI .
- 2- To view or search a category/item, simple user can apply different filters on home page.
- 3- To post an ad, a simple user must register him/her self with this website.
- 4- Categories should be available so that each ad is advertised in respective category.
- 5- A register user can view ads, post ads, delete his ads; update his ads in his login page interface.
- 6- Admin of this website will manage categories for the ads, filters for searching, manage users and their ads. Admin can generate reports like activity of a user, number of ads posted on daily, and weekly or monthly basis using admin panel interface.
- 7- Ad format: The required information to post an ad are following;
 - a. 3 different images of the item to be advertised
 - b. Details of the item to be advertised
 - c. Name and contact info of the advertising person

[Note: Requirements can be enhanced/updated as pre need]

Tools:

PHP, MySQL, HTML, CSS, JavaScript

Supervisor:

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Project Domain / Category

Data warehouse Application by using data mining and Artificial Intelligence (AI) technique.

Abstract/Introduction

Building Clinical Decision Support System (CDSS) is used to improve the quality and efficiency of healthcare. Improving the quality of healthcare, reducing medical errors and guarantying the safety of patients are the most serious duty of the hospital. Electronic Health Record (EHR) is used to achieve above goals. Electronic Health Record (HER) includes XRays, ECG, MRI reports etc. An electronic health record (EHR), is the systematized collection of patient and population record that is electronically-stored in a digital format. These records can be further shared across different health care sites. EHR has a very large data source that can guide and improve the clinical decision making process. Clinical Decision Support System (CDSS) satisfies the compatibility, interoperability, and scalability. The CDSS will take advantages of Electronic Health Record (EHR), data mining techniques, clinical databases, domain experts' knowledge bases, and available technologies and standards to provide decision making support for the healthcare personnel. Clinical Decision Support System (CDSS) contains a set of knowledge bases (one in each hospital). It can be extracted offline from domain experts. CDSS only depends on these knowledge bases. It can be inactive and will become not applicable. The solution is to continually update these knowledge bases to make CDSS more active. At each site, new knowledge will be discovered and added to knowledge base and new expert knowledge will be discovered. Data mining engine will be connected to local Electronic Health Record EHR and clinical databases. This action will make CDSS more active by including the most recent knowledge from active databases.

Functional Requirements:

The distributed system will be co-operative and is integrated knowledge bases. Each knowledge base in each hospital will be in specific domain. At each hospital, CDSS will build patient profile from patient's medical history and current diagnose, and will be used as its local knowledge base to make decision. The goal of this distributed CDSS is to perform following activities.

- In an on-line operation, Healthcare personnel enters patient Universal ID (UID) which identify the patient nation-widely, and enters subject data or current diagnose (i.e., healthcare data that needs decision making).
- If the patient has record then the service returns message indicating the patient record. It indicates the last N visits, visits within specific period and specific disease's related data, etc.
- The returned records will be collected and filtered to produce the patient profile.
- CDSS which makes inference of diagnose and determine the correct medicines.
- CDSS can be programmed by any AI methodology as artificial neural network. It can access, query, and interpret the data and knowledge.
- This way CDSS will take decision based on the initial physician diagnose, EHRs, and knowledge from its local Knowledge bases (KB) and other Knowledge bases KBs. Knowledge base (KB) contains the most recent knowledge. Each KB will be specialized in specific domain.
- Build co-operative knowledge bases from different domain experts' knowledge and most recent academic researches.

- The final results will be displayed to healthcare personnel or physician according to the level of automation in CDSS.
- You can standardize knowledge into XML format before storage.
- Connect CDSS to EHR (Electronic Health Record) and clinical databases to continuously mine the most recent and applicable knowledge and adds it to local knowledge base.
- CDSS can consult specialized knowledge bases in other institutions for other relevant knowledge.
- Before starting to take decision, CDSS collects all patient EHRs from all sites, integrates it with current diagnose and then standardizes it.

Tools: Oracle BI Enterprise Edition, SQL server 2008, IBM InfoSphere.

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Project Domain / Category

Computer Networks / Desktop Applications

Title: Transforming Biometric Attendance system to Centralized Computer Based Biometric

Abstract/Introduction

Biometric Attendance systems are being installed across Pakistan in different offices to ensure employees attendance by storing thumb, finger, Iris images in database and then later comparing it. Keeping in view the extra hard ware and cables require for installation and running of biometric systems; in this project it is expected from students that they will transform the same system to computer base Biometric Attendance system that will save time, resources and will have economical benefits to organizations

Functional Requirements:

1. Central Server database for storing Thumb/Finger expressions
2. Central Server for maintaining attendance records
3. Backup server incase central server fails
4. Client software at each station for recording and transferring attendance records

Tools: Sql, Visual Basic

Supervisor:

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Project Domain / Category

Web based Project

Abstract/Introduction

This project is web based context aware library management system. This web based context aware library management system will provide an online interface to perform different operations for library management like keeping records of library members, issuance of books, search a book, keeping records of books and their status like available or borrowed and location of the required book based on the current context of the library user.

Functional Requirements:

1. This application should keep record of its users and books.
2. Keeps record about the status of the books like “book available” or “not available”
3. The user’s previous history or session record should be maintained inside the application. The clustering algorithm can be used to get knowledge about the user preferences.
4. The library books are identified with RFID (Radio-frequency identification) Tags .These Tags are very helpful in tracking the location of the book in the library.
5. The library user’s gets system updates like about the arrival of the new book based on their interests using lustering algorithm.
6. The application will generate an automatic message to the user if the book has not been returned timely.

Tools:

PHP or ASP.net , GSM Modem

Supervisor:

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Context-Aware Digital Watch Mobile Application

Project Domain / Category

Mobile Apps

Abstract/Introduction

There is a context aware “Digital Watch” mobile application which provides users about current time keeping in view the environment using sensor/s. Let’s consider Design sketches that illustrate time visualizations in different contexts. (a) For users running to catch a bus, making it easy to see the minutes in large fonts. (b) For boring lectures and meetings, showing a countdown to the end, with some information to engage the user. (c) Visualization giving only a very coarse idea of the time, similar to information you get from the sun, to use for example when hanging out with friends – when time does not matter.

Actually application provides a list of nearby restaurants list to user application provide an interface to user by saying” although you are in a meeting now, if you get free soon, do you like to see list?



Functional Requirements:

- (a) There should be different display profiles for different types of environments.
- (b) For example for users running to catch a bus, making it easy to see the minutes in large fonts there should be Bus Catching Profile, and user must select it while catching a bus.
- (c) For boring lectures and meetings, showing a countdown to the end, with some information to engage the user.
- (d) (c) Visualization giving only a very coarse idea of the time, similar to information you get from the sun, to use for example when hanging out with friends – when time does not matter

Tools:-

- Android Studio\Eclipse
- SQLite

Supervisor:

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Project Domain / Category

Web Based Development

Abstract/Introduction

In every society, everyone is bound to live by certain laws. Any violation of the given laws is a crime and a society cannot be completely free from it. Upon filling First Information Report (FIR) by the complainant, the record of accused will be entered in the Crime Management System (CMS). The system should hold information regarding criminals and users of the system. There will be three types of criminals,

- i). Arrested
- ii). To be arrested
- iii). Escaped

There are four types of users,

- i). Station House Officer (SHO)
- ii). Additional Superintendent of Police (ASP)
- iii). Superintendent of Police (SP)
- iv). Inspector General of Police (IGP)

The process starts with FIR mentioning the victim, criminal and investigation officer assigned to the particular case.

Functional Requirements:

Following are the functional requirements,

- i. Creating accounts for different users with different access privileges
- ii. User login validation
- iii. Filling FIR mentioning the victim, criminal and investigating officer assigned
- iv. Storing and retrieving the record of criminals and specific crime incidents
- v. Search mechanism for crimes and criminals
- vi. Monthly FIR reports
- vii. Reports generation based on specific level of access
- viii. Generation of complete criminals report.
- ix. Report generation for any specific city
- x. Report generation for the whole province
- xi. Students are supposed to visit the problem domain in order to get more functional requirements and understand the system thoroughly.

Tools:

PHP, My SQL

Supervisor:

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Project Domain / Category

Web based Project

Abstract/Introduction

Research proposal/synopsis is a very important document for the research student. This is a document in which student describes research problems which he/she shall address in his/her research work.

Functional Requirements:

This said document has various information/ sections which must be provided like following:

1. Title of synopsis
2. Student Name
3. ID
4. Semester
5. Supervisor Name
6. Supervisor email id
7. Name of supervisor committee members
8. Email ids of supervisor committee members
9. Starting date of the research
10. Research Duration

Beside these information research proposal have following sections, in which student write detail text

1. Abstract
2. Need of the project
3. Review of literature
4. Material and method
5. Literature cited

Currently student writes the above information/description in MS Word document. After writing this document, same document is submitted to supervisor for review and further approval from the department research committee and then from the Dean of the faculty. After necessary approval, notification is issued to the supervisor, student, and department to continue research on the proposed topic.

- It is required to automate all this process and provide Web based solution, so that student could write his/her proposal using web pages.
- Once it is completed then student could submit it to the supervisor.
- Online software should provide the provision to the supervisor/supervisory committee to give their remarks and forward to the higher authorities for approval.

Tools:

PHP, MySQL, ASP.net using C#, SQL Server

Supervisor:

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Designing and Development of Train Seat Booking System

Project Domain / Category

Web Application

Abstract/Introduction

A train seat booking system is a project that allows users to check for available seats in the train and can even book them at the same time. It happens on festivals when people go for a ticket purchase on railway station and they return in disappointment due to great rush of people there. Hence the project is intended to overcome this situation by automating the manual booking system, online.

Users can make prior bookings for desired seats for their desired train at desired time with cost. The system provides additional optional things like food packages, discounts etc. It also calculates all the associated charges incurred in booking the ticket and the items. This is an advanced booking system that makes user customize their show according to their needs.

Functional Requirements:

1. The system shall provide convenient interface for User Registration. A guest user can only check the availability of seats. The user must be able to update his profile later on.
2. The system shall require a user to register, in order to carry out any transactions with it except for checking the availability of seats. It will ask the user for the following information at the least - a user id, a password, first name, last name, address, phone number, email address, sex, age, preferred credit card number.
3. The system shall provide Password Recovery facility through customer email id.
4. After logging in a user (either a registered user or a guest), the system shall request him to enter the following details - origin city and destination city. The system should also check if there is any ambiguity with the names of the cities.
5. After the origin and destination cities are confirmed, the system shall now access the train schedule database.
6. There can be several trains between two cities and all of them will be listed for the particular date that the user wants to depart from the Origin City. In case, the user has entered a range of dates, the system shall display all the trains for all those dates in the range. The user is now asked to check one of the boxes reflecting a choice of a train name and time.
7. The system shall now display the price of the booked seat for the trip. This will be the sum of the prices for all the seats of the travel
8. The system shall also list any rules regarding the cancellation of seats - what percentage of the price will be refunded within what date ranges. This will be displayed as a table.
9. After checking availability, the system will now ask the user if he / she wishes to reserve the seat/buy the ticket. If yes, and if the user has been a guest, he will have to first register and become a registered user and then log onto the system.
10. If the user is already a registered user, and if he has logged on already, he can reserve seat(s)/buy the ticket, but if he has been acting as a guest, he will have to log on.

11. Then the system should be able to confirm the user about his seats regarding his / her seats.
12. If the user wants to buy ticket right now, then the system shall be able to provide him a printable ticket after all calculations.

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

Supervisor:

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Project Domain / Category

Android Application

Abstract/Introduction

The main concept is divided in two parts the first part consists of face recognition and face detection algorithm using opencv library and the second part on which one picture will be clicked from mobile of whole class whose attendance has to be taken and then the picture will be send to the network then picture will be processes using face recognition and face detection algorithm. Automated Attendance System (AAS) can be made into smarter way by using face recognition technique, where we use a CCTV camera to be fixed at the entry point of a classroom, which automatically captures the image of the person and checks the observed image with the face database using android enhanced smart phone. Firstly, marking attendance for student by comparing the face images produced recently and secondly, recognition of human who are strange to the environment i.e. an unauthorized person. For verification of image, a newly emerging trend 3D Face Recognition is used which claims to provide more accuracy in matching the image databases and has an ability to recognize a subject at different view angles.

To overcome the drawbacks of the existing system, the proposed system has been evolved. This project aims to reduce the paper work and saving time to generate accurate results from the student's attendance. The system provides with the best user interface. The efficient reports can be generated by using this proposed system. It is trouble-free to use. It is a relatively fast approach to enter attendances highly reliable, approximate result from user with best user Interface, Efficient reporting of system. The proposed system also allows the teacher to interact with the students using the android application. It also allows the students to check their attendance.

Functional Requirements:

1. Client can register him/herself.
2. There must be a login process for admin and clients to avoid unauthorized access.
3. System should save all the necessary information of the clients.
4. Clients can change any of their requirements any time.
5. System should record the order details.
6. There must be a list of all types of services the company is dealing with the available themes.
7. System should display list of available properties.
8. System should ask for Deal type, Property type, Different price ranges, location, and other necessary information related to property.
9. There website should display the photographs of the properties held by company.
10. Clients can provide feedback about services.

Non Functional Requirements

- 1- In the standalone application.
- 2- Face was captured by the webcam cameras and the detected faces are stored in folder.
- 3- For matching the captured images with the database, Eigen faces methodology was used.
Observance of Eigen faces method
- 4- Gallery images must be of same size.
- 5- Requires full frontal face to be presented for each time.
- 6- Does not endure to the variations of brightness effect, pose and different expressions of face.
- 7- Effective only for low dimensional structure of face patterns.
- 8- The image which doesn't match with database is given by error message.
- 9- Where the instructor has to take manual attendance to those unmatched student images.

Tools:

Android Application

Database

(Any modern language tools)

Supervisor:

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Project Domain / Category

Web Application

Abstract/Introduction

Nucleotide (DNA or RNA) sequences are usually stored in the IUBMB standard codes. For most of in-silico analysis biological data, DNA sequence is required to be in different formats e.g. Plain sequence format, FASTA format, FASTQ format, EMBL format, FASTA format, GCG format, GenBank format, IG format etc. To provide an easy to use sequence format converter to researchers and scientists, the aim of this project is to develop a web based tool which will accept sequence data in any of the above formats and convert it into user required format.

Functional Requirements:

The System must have the following functional requirements:

1. The proposed web application should accept sequence data of length approx. 1000 bp long.
2. The system should accept that data in any format given above.
3. The system should convert the data in user required format (user may select multiple formats for output).
4. The system should generate output on same screen as well as separate file on user requirement.

Tools: [Microsoft.Net using ASP.Net, C#](#)

Supervisor:

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Project Domain / Category

Web Based

Abstract/Introduction

“E-EXAM” is a web based Exam Management System for XYZ University. 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.

- Instructor
- Exam Coordinator
- Result Manager
- Controller Examination

Responsibilities and functions of each user are given below:

Instructor:

1. There are multiple instructors. Each instructor can teach multiple courses but one course can only be taught by one instructor.
2. Instructor can access and browse the courses in the system which he teaches. He will enter the result of assignments, mid-term and final exam for each course.
3. Course records which an instructor can access include 4 non-editable and 3 editable contents:
 - a. Non-Editable
 - Student ID
 - Student Name
 - Degree Program
 - Course ID
 - b. Editable
 - Assignment Marks
 - Mid-Term Exams Marks
 - Final-Term Exam Marks

Exam Coordinator:

1. Exam Coordinator is responsible to publish the datasheet of exams.
2. Course records which the exam coordinator can access include 4 editable and 3 non-editable contents:
 - c. Editable
 - Student ID

- Student Name
- Degree Program
- Course ID

d. Non-Editable

- Assignment Marks
- Mid-Term Exams Marks
- Final-Term Exam Marks

Result Manager:

4. Course records which the result manager can access include 8 non-editable contents:

- Student ID
- Student Name
- Degree Program
- Course ID
- Assignment Marks
- Mid-Term Exams Marks
- Final-Term Exam Marks
- Total-Marks
- Grade

3. Moreover Result Manager is responsible to view the complete result of each student. He can view the print screen of transcript (Print-view) and can print the transcript.

Controller Examination:

4. Controller Examination is the power user and has the rights of each user. He can add/remove any instructor, exam coordinator and result manager.

Proposed Tools: Java, Dotnet Framework, MySQL, SQL server etc

Supervisor:

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Email Reply Planner

Project Domain

Mobile Application

Abstract

With the hectic life, people are afraid to forget some important activities. Professionals are especially worried about important emails that need to be sent to a recipient or a group of recipients. Moreover, which is to be addressed and who are to be kept informed by putting their address in cc/bcc. There are chances that if emails are drafted run time then there might be some drafting error or some recipient may be skipped. To cater this requirement, a tool/application of email reply planner will be beneficial. Aim of this project is to develop a tool for planning and scheduling of emails to facilitate professionals.

Functional Requirements:

- **Email contacts and groups:** Application will enable the user to enter email addresses. User will also be able to create different groups and enlist email addresses in those groups. An email address can be listed in many groups.
- **Intellisense:** Intellisense will be an intelligent agent that will suggest the user before sending any email about other emails/groups to also include in loop of this email.
- **Email organization:** emails will be organized group wise i.e. whenever an email is received from any user, the email should automatically be assigned to a group (group can be selected on the basis of the person who has sent email. (In case, if sender is listed in more than one groups, priorities can be defined). Similarly, user should also be able to assign "Sent" emails to different groups.
- **Email scheduling:** in case (of manual send mode) if user drafts an email for later sending, application should remind the user at least 12 hours before specified time to send the email. A message should also appear on the screen at exact schedule time to remind the user about the email. In case (of auto send mode) application will automatically send email to specified target at specified time. Note that in case of group, the email will be sent to all addresses listed in that group.

Non-Functional Requirements:

This system provides stability of interface on all devices, security, user friendly interface and quickly response of any type of information retrieval.

Development Tools

Android Studio

Supervisor

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Email Scheduler

Project Domain / Category

Web Application

Abstract/Introduction

The basic aim of this project is to develop an application that can schedule and plan emails to be sent on scheduled date. The tool will provide the mechanism to define email contents and groups, schedule and organize them. This could be elaborated with the scenario that, User want to send an email on 25th Oct 2017 to the group of friends, when the scheduled date/time activates email must be sent automatically and user is notified that email has been sent successfully.

Functional Requirements:

1. User is secured with registration number (password) so that can easily navigate.
2. Scheduler also keeps the record of emails that have been sending so that these emails can be reused.
3. This application could both be easily accessed on desktop and on mobile.
4. The system should allow user to check for availability of scheduling dates.
5. The system should allow user to cancel/withdraw their scheduled emails.
6. The system should make a reminder notice that email schedule date is about to reach. So that user can do any changings in email if required.

Tools: [Microsoft.Net](#), [Java](#), [PHP](#), [C#](#), [SQL](#), [SQL Server](#)

Supervisor:

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Events Information Management System

Project Domain / Category

Web Programming

Abstract/Introduction

Events Information Management System (EIMS) is a web application that will allow its users to view, add, and search for the details of events/tours/trips scheduled to be held in future and already held in past as well. User will also be able to subscribe on the website for any latest updates regarding the events.

The application will provide its users with the facilities of searching for an event with different parameters such as

- Dates
- Location (by province or city)
- Charges range
- Number of days

The user will be provided with the relevant event(s) information according to the search parameters in a properly structured form.

User will also be provided with a subscription facility, in which user will provide his/her email address along with other necessary information so that the user may be informed via email whenever a new event is generated or an existing one is updated.

The user will also be able to add an event which will be subjected to be approved by the admin. Only after the approval by the admin, the event added by the user will become part of the system.

Functional Requirements:

Interface Requirements:

The website interface will have the following Menu items (with submenus)

- Home
- Submit an event
 - Tour event
 - Conference
 - Workshop
- Search
 - By Date
 - By Location
 - By Charges
 - By Number of Days
- Subscribe
- Contact Us

Note: You can add any relevant additional menu item as well (Blog, Sitemap, About Us etc)

- Do not use very bright background colors or images. Color scheme should be compatible and text should be clearly visible

- The search results should be properly structured in the tabular form with relevant images.
- You should display the company banner on the home page and the company logo on every page of the website
- Other than menu items on the top of the website, you should also provide a fixed navigation panel on the left side of the website. This navigation panel could include names of destinations, upcoming events or any relevant option that you think may fit into it.
- The web pages will have fixed headers and footers for every web page where header may refer to the logo and the menu items, and footer may refer to the contact us, facebook, twitter, about us links etc.

This web application will have two main modules:

Admin:

- The admin will be able to add event details in a structured form. The event details will include:
 - Start date and time (Including day of the week)
 - End date and time (Including day of the week)
 - Venue
 - Participation charges (Per person)
 - Relevant Images
 - Day wise details (Pick up time, First destination, Stay and then leaving for 2nd destination etc)
 - Services included (Breakfast, Lunch or Dinner etc)
- Admin should also be able to modify or remove any event information from the application's database
- Admin will have the privilege to grant or revoke subscription of any user
- Approve or reject an event added by the user

User:

- User will be able to view all the information available on the website
- User will be able to search the information for events with different parameters
- User will be able to add an event
- User will be able to subscribe for the events and updates

Tools and Languages:

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

Supervisor:

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Image Based Password to Avoid Shoulder Surfing

Project Domain:

Web or Mobile application

Abstract

Textual password schemes are easy to detect and vulnerable through different ways. There are many textual image based schemes which have been proposed but none of existing scheme is efficient and secure. To overcome this issue, a simple image based textual password scheme should be developed using colors.

The proposed image based scheme involves three phases, the registration phase, verification and the login phase, which can be described as in the following:

Registration Phase:

User need to set textual password with maximum 8 alphabet characters plus digits and one color from 8 colors. Other 7 colors will be decoy colors. Initially, first 8 characters (case sensitive) and 8 digits can be used as passwords. Registration process should be completed in a shoulder surfing free environment. User must enter valid email address to re-enable the password. User password should be store in password table in an encrypted form.

Login Phase:

User request to login the application, and the application display a circle composed of 8 equally sized sectors. The arcs of 8 sectors should present with different colors and each sector is identified by its arcs color. Password-color can be moved through anti-clock wise and clock wise buttons and each sector divided in outer orbit and inner orbit. User enter password using outer and inner orbit buttons.

Functional Requirements

Registration Form: Name, Email, Username, Password, color selection, Contact, Address, Reset and Submit button

- Username must be unique and case sensitive
- Password contain at least single numeric digit

Verification Form: contain email text field and confirm button. User must verify password after registration. Else student should not allow to login.

Login form: Username, password, color selection and required buttons

- A circle divided into 8 equal sectors, sector's arc should contain unique color.
- Sector's arc color can be changed clock and anti-clock wise through arrows button.
- Circle's sector contains 8 alphabet characters and 8 numeric digits randomly placed inner and outer orbit of circle.
- User will be able to enter password in password filed using inner and outer orbit buttons.

Development Tools:

Php, MySQL DotNet or java, Adobe Photoshop etc

Supervisor

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Accelerometer Based Graphical Step Counter and Health Profiler

Project Domain / Category

Mobile Apps

Abstract/Introduction

These days everyone is very keen and very particular when it comes to health and health is directly proportional to diet and Exercise. This system will make profile of user's health using 3 main features step counter, sleep intake and water intake. While registering into the system, the user needs to enter his age, height, weight and gender to determine BMI and calculate the sleep and water intake per day. Here in this scenario the Step Counter uses the accelerometer sensor to get the input for counting the steps and shows a graph to users of their daily steps. While in water and sleep intake the system generates the amount of sleep and water the user should have per day. The user can edit his physical attributes and when they are changed the sleep and water intake also changes accordingly.

Functional Requirements:

- This application doesn't need internet nor pedometer sensor
- **Registration:** The user has to register into the system with his physical attributes and other details.
- **Login:** The user has to sign in and will be signed in till he signs out.
- **Profile:** The user can update his physical attributes in the profile tab.
- **Step Counter:** The steps are counted in the background and shown in the form of line graph of the entire month.
- **Sleep Intake:** The system tells the user about his daily Sleep intake considering his physical attributes which can be changed.
- **Water Intake:** The system tells the user about his daily Water intake considering his physical attributes which can be changed.

Tools:

- Android Studio\Eclipse
- SQLite

Supervisor:

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1.1 Project Domain / Category

Web based application

1.2 Introduction

This system will allow users to search and select personal trainers online. Trainers will provide their info like specialization, their location and fee. Administrator of the program will have an overview of complete system. Users will be able to see specialization, price, location and experience of any trainer before selecting him/her.

1.3 Stakeholders

1. Administrator
2. Personal Trainers
3. Users (who will search for Personal trainers)

Functional Requirements:

1.3.1

1.3.1.1 Administrator:

1. Administrator will have an overview of all system.
2. He will generate error logs, if something happens in the system which is an error it will be viewed here.
3. He will have the rights to Add, Edit, Update, Delete other type of stakeholders.

1.3.1.2 Personal Trainers:

1. They will register in the system and will provide following info which will be must before completing the registration. System will make sure that following info is added by each trainer.
 - a. Add their specialization.
 - b. Add their price.
 - c. Add their location.
 - d. Add the Gyms they are associated with or if they are willing to go to any gym.
2. They must have the right to 'Update' their record.
3. They must have an option to see list of their customers.
4. They must have a feature to see their Calendar for upcoming classes.

1.3.1.3 Users:

1. Register in the system.
2. Set a goal like weight loose, muscle building etc.
3. See a list of personal trainers depending upon price.
4. Sort and filter the list.
5. Contact the personal trainer.
6. Alerts for upcoming sessions.
7. Review for personal trainer.
8. Update their information.

1.4 Tools

- PHP Based
 - WAMP/ XAMPP server, MySQL, Html Editors (Dream viewer, Notepad++)
- .Net Based
 - SQL Server / Azure server, Visual Studio

Supervisor:

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Fitness Walk Run (FWR)

Project Domain / Category

Mobile Apps - Android

Abstract / Introduction

Fitness Walk Run (FWR) will be android-based mobile application to track your fitness activities including walk and running. This app will use GPS and Google Maps for tracking your location and physical movements. After taking personal information, app will calculate Body Mass index (BMI) at start. You can set your personal fitness goals and start fitness activities. The app will track and log them using text as well as graphical techniques. Overall, the purpose of this app will be to help maintain and fit yourself, stay motivated and energetic physically, achieve and track personal fitness goals in an entertaining way.

Functional Requirements:

1. Calculate BMI of user and show results.
2. Set user daily fitness goals based upon steps, times, distance and calories burned.
3. Maintain complete log for walk and running for steps, times, distance and calories burned.
4. Develop and shows fitness goals and activities log / statistics in graphical way like including (but not limited to); pie chart, line graph, bar chart, multiple bar chart and similar ones.
5. Chart user progress and motivate by using a (dedicated) graph of how he/she is improving over a period of time; like one week, one month, quarterly and yearly.
6. Include news feed updates about fitness and health worldwide.
7. Share user progress, activities summary, statistics or related graph on Facebook.

Tools:

1. IDE: Android Studio 2.3 (or later) for Windows
2. Programming language: JAVA
3. Database: SQLite / any other DB you like
4. Unified Modelling Language(UML): Microsoft Visio, IBM Rational Rose

Supervisor:

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Flow chart to code (F2C) converter

Project Domain

Desktop Application

Abstract

With the penetration of computers in every field of life, we have seen the same increase in number of students in domain of computer science. A significant portion of the students opt for programming as their first step in professional career. However, majority of students find it difficult to absorb the concepts and develop the logic due to their non-computer background. We need a visual application that could help students develop the logic and create code for them. Flow chart to code converter is a desktop application that will help students develop simple and complex programs in the form of flowcharts and the application will convert the flow chart in C++ code.

Functional Requirements:

1. Application will provide an interface to create flowchart. Note that instead of manually drawing flowchart, you will just select the node option (e.g. if-node, loop-node, create-variable-node etc.) from the toolbox and interface will create/update flowchart accordingly.
2. On clicking the "Generate Code" button, the source code of the flowchart will be created in C++.
3. User will be able to copy/paste the code or directly save in the form of ".CPP" file from interface at specified location.
4. All the basic code structures e.g. variables, if-else, switch-case, loops, structs, class etc. will be provided.
5. User will be able to edit any node of flowchart.
6. For any node user should also be able to specify all the related data e.g. variables, operators, comments etc. Suppose, if user creates "if-node", he/she will be able to specify the variables, operators, values and comments regarding that if-node.
7. A sample can be seen at: <http://www.athtek.com/flowchart-to-code.html>

Non-functional requirements:

User friendly, accuracy.

Tools:

C# OR JAVA

Supervisor :

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Project Domain / Category

Web Programming, Artificial Intelligence

Abstract/Introduction

Expert course evaluation system is an Artificial intelligence based web application in which expert system will be built by using the fuzzy logic algorithms for evaluating the course performance of E-learning student automatically. In this system, it will be considered these parameters: Skype session attendance, internal course activity marks, mid and final term marks to evaluate overall academic performance of students. The fuzzy rules will be generated according to course parameters.

Functional Requirements:

- The application should have graphical user interface which have admin and student interface.
- The Admin should be login with valid username and password.
- Admin should be able to insert proper details of course activities of registered students.
- The student should be registered with basic details for student account
- The student should be Login with valid university ID and password
- Student should be able to view his/her academic performance based on course activities with the passage of time.
- The application should be used fuzzy knowledge based to generate report efficiently.
- The admin should manage and view all student records
- The admin should view the performance of e-learning student and update knowledge based on requirement.

Note: Skype session must be attended to communicate with the supervisor about fuzzy algorithms otherwise project will not be accepted.

Tools: Microsoft .net Framework and SQL Server

Supervisor:

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Project Domain / Category

Desktop programming

Abstract/Introduction

An information management system for a hospital will report all daily operations of that hospital in addition to the daily operations of patient's personal information, their diseases, prescriptions, laboratory tests, and pharmacy operations

A patient has to go to the information desk to get the appointment. Information desk officer issue the ticket number after entering the record of a patient in the system and the doctor name. After that that patient is treated by the designated doctor. After checkup patient go the information desk to receive its medicine prescription and medicine, which patient can collect after submitting doctor fee.

Functional Requirements:

1. Medical Superintended is the administrator of the hospital and should have the right to see the entire user's detail.
2. Medical superintended has the right to register a doctor in HMIS and assign him/her an employee ID.
3. If the patient is not registered with the system then he/she should first register with the system this registration should be performed by information desk officer before meeting with any doctor.
4. The patient should assign a registration number once registered with the system.
5. Patient history should be searched with this registration number or patient mobile number.
6. Doctor name and patient registration number should be printed on the system generated ticket that should issued by the information desk officer.
7. Once doctor checks the patient, he/she should feed the record of the patient in the system. And that record consists of prescribed medicine and about its current health situation.
8. If the doctor suggests some kind of medical test to the patient then Laboratory section should have the interface to enter the result of a medical test into the system and that test result should also visible to the doctor.
9. Patient medicine record should also be visible to the pharmacy section, based upon which pharmacy section should ready the medicine for the patient.
10. The system should keep all the history of the patient, its total visits record and medicine record that is prescribed by the doctor.

Tools:

Oracle

Supervisor:

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Android Home Monitoring

Project Domain / Category

Android based development

Abstract/Introduction

Wireless surveillance network using not wireless webcams, but wireless smartphones. It is an application that will make your smart phone a surveillance system by connecting another smart phone or tablet having internet connected camera.

The main goal of the project is to build your own home security system using the Android platform. Two smart phones are connected through internet, and one of these (at home) will be accessed, where the camera is on and giving you live video of your home monitoring point.

Your home smart phone can use any video streaming applications that uses DirectShow API e.g. Skype or VLC Media Player or any other.

Functional Requirements

- Home mobile is accessed by using pin protection mechanism. When you enter the specified pin, it will show you required area covered by camera mobile.
- The application is able to send snapshots time to time in an email. Email address and time management will be done by you through interface, where you will be able to change both time and email address when you want.
- Your application should allow you to record the surveillance area using any recording tool (vlc, flv etc). This recording should be both audio and video.
- Your application has an option to zoom in/out required covered area,

Non-Functional Requirements:

- Both devices should be android phones
- A good internet connection has enabled on both devices.
- All operations performed with the help of a device will remain private and secure.

Tools:

Any modern tool and technology set used for developing android based applications.

Supervisor:

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Project Domain / Category

Web Programming

Abstract/Introduction

A home remedy is a treatment to cure a disease or ailment that employs certain spices, vegetables, or other common items. Home remedies have become increasingly popular as the expense and hassle of conventional medicine continues to rise. Beyond the convenience, home remedies have found favor with a public that wants to take a more holistic approach to its ailments. Today herbs are catching a lot of attention due to their very nature of cure: simple, no side effects, no chemicals, inexpensive, plus the ability of being able to cure yourself. This trend for resorting to home remedies is not new. In fact, they have their origin in ancient times.

The goal of this web application is to build up a website which facilitates the people to find the home remedies of their problems at one place.

Functional Requirements:

1. Classify the home remedies into categories and sub categories like Beauty, Health and Home etc. Beauty can be further sub classified into Hair, Face, Lips, Body etc. Other categories are also divided into sub categories.
2. Provide the list of the categories. User can check any list and sub list. Each category must have a list of remedies.
3. Remedies can be in any form, text, audio and video etc.
4. There are three users of this application Admin, Member and User.
5. Admin and Member require a Username/ PW to login into the system.
6. To get registered, members have to fill a form asking for the required information.
7. Admin is the focal person who is managing the whole website. He/she also approves the membership.
8. Admin and member can post remedies in any category.
9. While adding a new remedy, ask for the main category and sub category. For example, if a member wants to add any home remedy for the long hair, main category for this is "Beauty" and sub category is "Hair". You can provide the list of main categories and sub categories. Also provide separate interfaces to add required ingredients and actual home remedy.
10. Member can also add a new category/ subcategory.
11. Admin can delete/update any remedy.
12. Member can only delete/update his/her own remedies. No member can delete/update any other member's post.
13. Members can view all the remedies available on website.
14. User can only view and add comment about the remedies
15. User can also ask for a home remedy if he/she does not found any relevant solution of against the problem.

Tools:

Dot Net Framework using C# and Microsoft SQL server.

Supervisor:

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Lahore Metro Route Finder

Project Domain / Category:

Android Application

Abstract / Introduction:

Thousands of people use public transport in Lahore on daily basis. With the development of new feeder (Speedo) routes for metro bus service, users are facilitated to have cheapest rates for travelling through main areas of Lahore. But, it is problematic to find the exact route for your desired destination. It is the need of the hour to have an application which will provide you the most suitable route to your destination. Lahore Metro Route Finder is an android application which provides a platform for its users to find the most suitable path to their desired destination based on time and fare.

Functional Requirements:

1. This application contains all the available metro and speedo bus service routes of Lahore.
2. Application will be able to find the precise location of the user through GPS.
3. Based on the current location of the user, application will find the nearby stations based on user destination.
4. Application will take the input for destination and calculate the distance and estimated time for all the possible routes for the selected destination.
5. Application will also calculate the fare for all the possible routes.
6. Application will also notify the user about any transfer station where they need to switch to some other vehicle (route).
7. Application will track the journey of the user by providing the statistics related to their remaining track (remaining time and distance).

Tools and Languages:

Database: SQLite

Language: Java

IDE: Android Studio

Helpful Resources / Tutorials:

<https://developer.android.com/guide/index.html>

Supervisor:

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Project Domain / Category

Mobile Apps

Abstract / Introduction

The objective of the project is to allow users to stay informed either about the location of his/her friend and family or whether or not the friend/family is moving. A user may have two types of friends:

1. One with whom user wants to share its exact location and he/she in turn will share his/her location with the user. When the user selects one of his/her friend/family then its location will be shown to the user on the map.
2. Second type of friend is the one who will share the information whether or not he/she is moving at a particular moment with the user and in turn user will share the same information with him/her. When a user selects such a friend/family, it will receive information whether or not that person is moving.

Functional Requirements:

1. A user must be able to get registered in the application.
2. The application must allow searching for friends and family from the list of registered users. Users must be able to search their friends and family (who are also registered users) through names, location, age etc.
3. A registered user must be able to send friend request to some other registered user. A user may send two types of requests:
 - a. location sharing request (sharing the exact location on map with each other)
 - b. movement status sharing request (sharing with each other whether or not one is in motion)
4. Upon receiving a friend request (from some other registered user), a user must be able to accept/reject the request. If a user accepts the location sharing friend request of another user, he/she will be able to view the exact location on map of his/her friend. On the other hand if a user accepts the movement status sharing friend request of another user, he/she will be able to view at any time whether or not his/her friend is in motion. The friend of the user will also be able to view the same information about the user at any time.

Note: A user must be considered in motion if its location is changing by 5m/sec (or 50 m/10 sec). otherwise the user will be considered not moving.

Tools:

Android

Supervisor:

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Project Domain / Category

Mobile/Android based Application

Abstract/Introduction

This is an innovative System for any user mostly targeting the aged population as a medical helper. The user or anyone behalf of the user can enter the medicine reminders such as tablet color, name, quantity and when it should be taken with a reminder. The reminder helps the user to look into the details of tablets that he or she has to take and will also speak out the details. This is advance application where a doctor himself can enter the details for the patients helping him or her to remind the user. The System also helps the user to click picture of medicines or make use of OCR (Optical Character Recognition) where the system will make use of the camera and print the text on the screen and the user has to tap the text to save them. The System uses Mobile Vision API for Implementing OCR. This can also be a way of not typing the name of a medicine while using OCR instead saving lot of time. This system can be useful for a person where he has many tablets to intake. Thus the system named medical helper.

Functional Requirements:

- ✓ System should able to use the mobile camera to take the picture of medicine.
- ✓ System should abstract the detail of medicine from the picture that has been taken by mobile camera and save the information in a repository.
- ✓ System should monitor the time of medicine when to take.
- ✓ System should help the user to take medicine by display text and speak the text. Or System displays the pictures of medicine on the specific time with any alarm.
- ✓ System should allow the specific doctor to add/modify the prescriptions of his/her patients.

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

Tools:

Students can use any IDE to develop this Android application. i.e Eclips My SQL.

Supervisor:

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Project Domain / Category

Android Mobile Application

Abstract / Introduction

In today's fast life, finding and applying for a suitable job is getting difficult by the technicalities associated with the job search process. Usually when a job seeker wants to apply for a job, he/she has to search the newspapers/ job portals to search for any suitable job, design & post CV to the employer and wait for the call of job interview. This is a lengthy process and cause unnecessary delays while applying for jobs. The purpose of designing this application is to provide the job seekers a platform on their smart phones for finding a right job according to their qualification and experience. This application will also provide opportunity to employers to post job openings for the job seekers using their smart phone. Whenever a new job is posted by the employer, application will notify the relevant job seekers regarding new job postings.

Functional Requirements:

By using this application, job seeking candidates can:

- Register with the application as job seeker.
- Post and update their resume in form of word / pdf file.
- Search for job postings by job title, company and location.
- Apply for the job.
- Add/remove job posting to their favorites list.
- Keep track of his/her short-listed/favorite and applied jobs.

By using this application, an employer can:

- Register with the application as employer.
- Enter profile of their company.
- Post and modify one or more job postings.
- Search the resume database related to posted jobs.
- Filter candidates based on their skills and experience.
- See the candidate(s) applied for the posted job(s).
- Call the shortlisted candidates for the interview.
- Add and remove resumes to their favorites list.

Note: These are basic requirements of the application. Students may add further functionalities in both job seeker and employer sections to make the application more useful.

Tools:

Android Studio, MySQL

Supervisor:

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Project Domain / Category

Networks / Desktop Application

Abstract/Introduction

In a business enterprise, managers always want to keep track of the day-to-day work. These days, enterprises are wired enough to make their employees use computers and the Internet.

But, from the other end, use of IT makes the job of managers and analysts more miserable because they have to check what their employees are doing with their computers. For instance, an accounts clerk may be surfing the Internet all the time.

The system will be multi-tier, network software. It will be implemented for PCs running under Microsoft's server class operating systems. It should be a system with a small footprint. The socket interface will be used to connect client and the server. Server will be multi-threaded. TCP packets must be used to send compressed images to the server at a certain frequency. MPEG-1 stream can be used but will require CBR (constant bit rate) and more bandwidth. It might be considered as an addition to the system later.

The **daemon** running on the client must be well aware of the activities performed and must use a XML protocol to send that information to the server. The server might be able to store its logs and the stations' logs in a database or in files.

Functional Requirements:

The proposed Network Sniffer Server will be a multithreaded server implemented as a windows application using MFC. It will use TCP/IP suite to communicate among the clients and the server. It will have a standard windows interface and will be user-friendly. It will have a user's manual and a help system. It will have a TCP socket interface to send and receive packets. In addition, the architecture of the server is component based.

The important tasks of the server include:

1. Receiving compressed image of client from its TCP port.
2. Rendering client's image to icon/full-screen.
3. Broadcast messages to all active clients.
4. Get client's machine hardware information.

The proposed Network Sniffer client will be a special agent running as a service in the client workstation when it boots up. No one except administrators can remove or control this service. In other words, it, is like a daemon process.

The important tasks of the Client include

1. Capture screen's bitmap image. Compress it using Jpeg, Jpeg 2000, PNG or GIF compression. Package it into a TCP datagram. Locating server on the network. Send it to the port on the server at optimal frequency.
2. Capture its machine hardware information and send to server.

Tools:

Microsoft .Net framework, Visual C++. NET, Microsoft Visio

Supervisor:

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Project Domain / Category

- Network Systems

Abstract/Introduction

Virtualization of various network functions is indeed vital journey towards software defined networking (SDN). Network Function Virtualization (NFV) is supposed to allow network enabled applications to control or interact various functions and resources on the network devices as per their requirement. This project requires an implementation of virtual environment that will provide certain network functionality to be configured on demand and as required. White box is term used to refer to a physical machine that can be deployed on network function demand (DONFD).

Functional Requirements:

Project requirements are divided into two phases:

Phase -1

1-Project team needs to conduct research to understand SDN, NFV and other network related virtualization techniques.

2-Team needs to identify various network functionalities that can be visualized or can be configured on demand (COD)

3-Team Needs to identify what technologies or platforms solutions can be used to implement White-box

4-Team shall deliver a research paper on above

Phase-2

5-Team shall choose one of the their favorite option to implement and demonstrate the Network White-box.

6-Vital Network Functions under this project are

- a.DHCP
- b.DNS
- c.HTTP
- d.FIREWALL
- e.L3 Router

Tools:

Student can use any platform of choice, any software tools of choice, however these needs to be documented in the project documentation.

Example:

Virtualization Tools (OCI/VM/Kubernetes/rkt etc.)

Operating Systems: Linux/Unix/WIN (Debian, Ubuntu/Kubuntu , etc.) Unix Systems

Programming: C/C++/Any

Server side programming/Scripting language: PHP/ASP/ SHELL/PERL/PYTHON/JS/ANY Scripting
and styling languages: SHELL/PERL/PYTHON/JS/ANY

Client side scripting: JavaScript/JQuery/Any Database: MYSQL/MSSQL/Any

IDE: ECLIPSE/Any

Local host Server: LAMP/WAMP/Any Custom Setup

Supervisor:

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Project Domain / Category

Networking

Abstract/Introduction

XYZ is an NGO working for IDPs healthcare, food and shelter. This organization has its main office in Islamabad and sub office in Peshawar. Field Officers and workers collect data of the IDPs. The data is provided to sub office which is shared later on with main office. Both the offices maintain site to site vpn for security reason.

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

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

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

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

Functional Requirements:

1. Installation and configuration of Network and servers
2. Installation of Domain Controller and Additional Domain Controller
3. Installation and configuration of workstations printers and other necessary equipment
4. User accounts
5. Policies Implementation
6. A suitable level of security and access control for the network.
7. Installation and configuration of VPN server
8. Email server(Exchange Server) to manage employee emails
9. Installation and configuration of the DNS Server for active directory
10. Installation and configuration of the web server
11. Installation and configuration of the ftp server
12. Taking Backups of the network and email server(Exchange server)
13. Configure a mapped network drive for each user (must reflect each user's directory on the server)
14. Install client operating system
15. Enabling Admin to login to the system
16. Enabling users to login to the system
17. Enabling each user to have access to their mapped network drive
18. Allowing the client workstation to administer the server (i.e. access Active Directory Users and Computers, Group Policy, etc.)

19. Enable the client workstation to access Group Policy.
20. video conferencing

Project requirements:

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

Tools:

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

Supervisor:

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Project Domain / Category

Mobile Apps

Abstract / Introduction

It is an observation that misuse of official work stations is a common practice among the users of many work environments where proper monitoring mechanism does not exist. It results in wastage of resources and in not meeting the overall objectives of an organization. So, to achieve the maximum and desired results in a work environment, it is much needed to have an effective mechanism through which the Administrator can monitor and control the work stations under the use of employees. The purpose of this project is to develop Android based application which will serve the Administrator with on demand remote surveillance and controlling of work stations of work place. The project will involve the development of two applications, one will run on work stations and the other one will run on the mobile phone of the Administrator. Both these applications will be connected through Wi-Fi. The implementation of such mechanism will make the Administrator not only to have an eye on the activities of users but also will make him/her able to remotely control the specific work station(s).

Functional Requirements:

- **Applications:**

There will be two applications in this project:

1. Client / mobile Application
2. Server Application

Server Application:

You are required to develop a server application which will continuously run on each work station in work place. This application will be connected with the Client Application through Wi-Fi connection. It will take the screen shot of user activity on demand of the administrator and will transfer the same to Client/mobile application. This application will interpret and execute commands received from Client/mobile application.

Client / mobile Application:

You need to develop a client / mobile application using Android. This application will run on Administrator's smart mobile phone and will provide effective interface through which the Administrator will be able to connect it with the Server Application. Through this application, the Administrator will be able to instruct the Server Application to take the screen shot(s) and send to this application. Through this application, the Administrator will also be able to control any work station and perform the activities such as sending message, turning work station into sleep mode and shutting down any work station etc.

- **Sign In and User Registration:**





Client / mobile Application will provide User Registration interface through which user will be registered as Admin. The application will provide proper interface for Sign In through which Admin will login to the application by entering user name and password.

- **Screen Shot taking and sending to Client / mobile Application:**

Server Application will take screen shot(s) of user activity on any work station on demand of Administrator through Client/mobile Application. Screen shot(s) will be transferred to Client /mobile application.

- **Controlling Work Stations:**

Administrator will be able to control any work station through sending commands.
Administrator will be able to perform:

-  Sending message to work station
-  Turning the work station into sleep mode
-  Locking the work station
-  Shutting down the work station

- **Logout**

Administrator will be able to terminate the connection between Client / mobile application and Server application through logging out from the application.

Tools:

[Microsoft.Net](#), [Visual Studio](#), [Android Studio](#), [Eclipse](#), [SQL Lite](#), [SQL Server 2008](#)

Supervisor:

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Project Domain / Category

Web Based

Abstract/Introduction

Virtual Academy is an online academy providing in-depth curriculum to students of different grades anywhere in Pakistan. Access to the application is through registration. Subscribers become part of online learning platform held by different subject specialists.

System will offer coaching for regular courses as well Ideal for students who want to enhance their skills through short courses . Virtual Academy will provide lesson modules of Science subjects and Arts subjects like history and Social studies.

It will effectively promote student learning and can increase student knowledge in specific subjects and topics through targeted components detailed in modules. It will aid in increasing basic academic skills and assist in the process of evaluation. It will Include study guide, lesson problems, activities, extended learning, resources, vocabulary and self-assessment and graded quizzes.

Functional Requirements:

- System will maintain record of number of subject specialists/teachers
- System will manage list of short courses and semester subjects details
- System will allow students to register for course(courses)
- Teachers will manage course outline , roadmap and will manage course contents
- Students will be able to see details/testimonials of teachers and will be able to select teacher for a course
- Teachers will be able to upload virtual books/notes and web based tutorials on main concepts.
- Teacher will be able to upload audio lectures
- E-library will maintain a list of links to interactive educational sites
- Teacher will be able to conduct surprise quiz
- Lesson Problems solutions will be uploaded by teacher
- Students will also be able to attempt Self Assessment Quiz
- Students will be able to download helping material
- Teacher will be able to check students' progress report

Tools:

.Net Framework

CSharp /PHP

Supervisor:

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Project Domain / Category

Web Application

Abstract/Introduction

The primary and big motive of this system will be to enable students to apply from anywhere. It will overcome multiple barriers which irritates students whether male/female or disabled person, like personally going to apply in any case, standing in row waiting for his/her turn in hard weather conditions etc. The system will be user friendly so that the applicant would not come across any kind of inconveniences to apply for admission to any discipline.

The proposed web application will make students online profile and download VU Challan form.

You can check further details in Admission link given on VU website.

Functional Requirements:

1. Create your user account i.e

Sign Up

- First name
- Last Name
- Choose your user name
- Create password
- Confirm password
- Date of Birth
- Gender
- Cell number
- Location
- Current email address

Sign IN.

- User Name/Mobile Number/NIC Number
- Password
- Enter Captcha Code

2. Create your personal profile such as.

- Dreams and Goals:
- Interests and Values:
- Skills
- Experience
- Other experiences (CBI, courses, extra-curricular):
- etc.

3. Enter your academics details.

4. Enter challan form no.
5. And finally submit your form. An email will immediately be send to the given email address. After submission form a text file will also be generated, this contains the entered details of the very student
6. The student will stipple the generated text file and original challah form along with his/her academic credentials and photos as per requirements of the University and will send on the mentioned address.

Tools:

PHP, MySQL

Supervisor:

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Project Domain / Category

Web Application

Abstract / Introduction

Alumni are the former students who have graduated from the college/university. Keeping track of alumni is crucial for an educational institute to maintain contact with its graduates. Therefore, a college/university requires management of the records of its alumni. This project requires developing an online alumni management system which should be able to: manage the records of alumni, search alumni on the basis of different criteria like degree program, batch etc.

Functional Requirements

The application should have the following functional requirements:

- The admin should be able to manage records of the alumni
- The alumni themselves should be able to update their record information like current occupation, contact information, social networking info. etc.
- All other users should be able to search the alumni information database on the basis of different search criteria.

Tools

ASP.Net, SQL Server, PHP, MySQL Server etc. or any Web development tool and its relevant DBMS

Supervisor

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Project Domain / Category

Web Application

Abstract/Introduction

Online shopping is getting popular because it facilitates the customer to buy desired product online. The main reason of online shopping emergence is that it saves time by providing the facility to place order online whatever is required and receive it on the door step easily. In order use online shopping facility require a platform which is called a website. By using these websites we can easily buy products by visiting the website and can order the products online and make online payments of these products.

Online shopping system helps in buying products like garments from the listed products. Different categories of garments can be listed on the website for shopping.

Functional Requirements:

This list below should contain all the functional requirements of the project. They should be detailed and comprehensive. The project should be clear and precise. Very small or very large list of requirements is not recommended.

5. Navigation through the pages should be easy.
6. Secured payment methods.
7. Admin can add delete or modify the website according to the available products.
8. Admin can also keep the record of sale products, in order to watch their total income or loss.
9. Customer can only view the available and upcoming items.
10. Customer must register before any order placement.
11. This application could both be easily accessed on desktop and on mobile.

Tools: Microsoft.Net, Java, PHP, SQL Server, MySQL etc.

Supervisor:

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Project Domain / Category

Web Programming

Abstract/Introduction

In this project, we will build a web-based application named as “Online Hostel Management” for a private organization where Students, teachers, professional and job holders can select rooms online. This application will be used by the visitors, registered users, and administrator user.

The visitor users can only see the available rooms information and their further information like 1 seater room, 2 seater room, rent charges etc.

The user must first register on the website. Based on the information provided in the registration process the user can login and logout from the website. Once the user is registered then the user can select a room based on the room availability. The registered user can check all information such as Mess charges, Billing information, Electricity charges, Gas charge, Rent paid and Rent Due etc.

The administrator user will be responsible for managing different administrative tasks such as Room types, Room availability, Room rent, Mess charges, each user’s individual accounts Information etc.

The main purpose of this project is to allow users to allocate rooms online and administrator can manage them online.

Functional Requirements:

Provide a bulleted list of functional requirements

1. The administrator user can login and logout.
2. The administrator user can add available room and mess plans information.
3. The administrator can add and edit the available slots.
4. The administrator can manage the account/billing information.
5. The administrator can create a monthly receipt for each registered users according to the selected room + mess expenses + electricity charges + Internet charges.
6. The administrator can supply the required equipment on the registered user request.
7. The administrator can manage the mess expenses.
8. The administrator can generate the income reports and expenses reports on monthly/yearly/when required based.
9. The registered user can login and logout.
10. The registered user can create an account by providing all the information and make sure that without uploading the user picture, his/her account could not be created.
11. When the registered user login, he/she can select a room from the available slots.

- 12.The registered user can select a mess plan from the given plans.
- 13.When the registered user required any equipment or any other services, then he/she will send a request to the hostel administration online by filling the required form.
- 14.In case of any complaint, the registered user can submit his/her complaint online to the hostel administration.
- 15.The user can only visit the website and can find the information of the available rooms and different mess plans.

Tools:

PHP, MySQL, Xampp

Supervisor:

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Online News Management System

Project Domain / Category

Web Programming

Abstract / Introduction

The Online News Management System will help a news agency to post news using web application. It will facilitate users to read news online and provide their feedback on posted news. The users can read news without registering themselves on the website of news agency. The users will be able to see news category wise e.g. national news, international news, breaking news, popular news, politics, sports, job, business, entertainment, crime, health, science and technology, miscellaneous news etc. The system will not only provide latest news to people but they can view news archives as well. The system will also allow users to register on the website to subscribe for news receive email and desktop notifications.

Functional Requirements:

User's Requirements:

- FR1.** The system should allow users to select news category.
- FR2.** The system should allow users to view news.
- FR3.** The system should allow users to give their feedback on posted news.
- FR4.** The system should allow customers to get registered on the website and subscribe for news receive email and desktop notifications.
- FR5.** The system should allow users to contact with news agency to give suggestions and ask queries.

Admin's Requirements:

- FR6.** The system should allow admin to add, update and delete news.
- FR7.** The system should allow admin to maintain date and timing information along with each news.
- FR8.** The system should allow admin to put news in news archive based on its date and timing information.
- FR9.** The system should allow admin to give “read only view” to users so that they can only view the posted news and not make any changes in it or delete it.
- FR10.** The system should allow admin to keep track of registered users, their suggestions, feedback, and queries etc.
- FR11.** The system should allow admin to keep record of how many users viewed a particular news and put a particular news in “popular news” category based on this information.

Non-Functional Requirements:

- NFR1. Reliability:** System behaviour should be correct.
- NFR2. Availability:** System should be available 24/7.
- NFR3. Usability:** System should provide user friendly interface.

NFR4. Robustness: System should be able to behave normally, roll back or commit processing/transaction in case of system failure or crash.

NFR5. Performance: System should produce results quickly.

Tools:

Visual Studio (C#.Net) and SQL Server

Supervisor:

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Project Domain / Category

Web-based Application

Abstract/Introduction

The application will provide an interface through which teachers can post weekly detail of their available free time. This information will then be visible to the students and they can reserve a slot of 30 minutes for the meeting. Before reserving the meeting slot, it is made sure that no other student has reserved same slot. A slot cannot be reserved on the same day or after that. Teachers can view the list of upcoming and previous meetings.

Functional Requirements:

Three types of users will be using this application.

Admin:

- The application will provide Login interface.
- Admin can add/update/delete Teacher and Student information.
- Admin can assign students to teacher. A teacher can have many students but same student cannot be assigned to two teachers.
- Admin can view the list of all reserved meetings.

Teacher:

- The application will provide Login interface.
- Teacher can post weekly detail of available free time. It should be of upcoming weeks.
- Teacher can view the list of students under his/her supervision.
- Teacher can view the list of upcoming and previous reserved meetings.

Student:

- The application will provide Login interface.
- Student can view the list of available free time and can reserve meeting slot of 30 minutes. A slot cannot be reserved on the same day or after that. It should be taken care that same time slot on a particular day for a particular teacher is not assigned to two or more students.
- Students can view the list of upcoming and previous meetings reserved by them.

Tools: PHP, HTML, JavaScript, CSS, MySQL

Supervisor:

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Pharmacy Inventory System of Elite Medical Dispensary

Project Domain / Category

Web Programming

Abstract/Introduction

The Pharmacy Inventory System is specially designed for Elite Medical Dispensary which will be able to record orders, sales and their deliveries to their clients on a daily basis. It would allow pharmacists to immediately check stock quantities, when to reorder supplies, track expenses, and providing the right amount of inventory on hand along with clients. Any person can use it very easily and no training is required for non-IT person to operate it in dispensary. Sales and purchase will become easier and there would not be any kind of loss of medical stock.

Functional Requirements:

1. A Pharmacist is able to login with a valid username and password.
2. He can able to look up for the transactions on daily basis.
3. He can able to add the new categories of the medicines very easily.
4. He can record the daily sales and purchase of the medicines.
5. He can track the previous purchases of the medicines alongwith their prices.
6. He can view correct prices of the medicines and their availability in the current stock.

Tools:

PHP Language and SQL Server Database for developing Pharmacy Inventory System of Dean's Medical Dispensary

Supervisor:

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Project Domain / Category

Android Game Programming

Abstract/Introduction

It is an addicting and challenging game play in which 3D jumble letters are shown based on user luck. User will create meaningful words with those letters at hand. At each stage, there is a specified time limit to create a valid word. The game will end at any stage if the user cannot make any valid word in the time limit defined. If the user makes the word within the time limit, the remaining time left will be added up in the next word time limit so the user will get more time for the next word creation and so on.

Each letter carries some points as well. Scores for a correct word will be calculated by adding up points of each letter of which the word is made up of. The shorter words with high points letters in it leads to high scores. Similarly, it is likely that the longer words with less worth of letters in points will give the higher scores. Strive for high scores!

Open source dictionary API can be incorporated with the game to check validity of words or back-end dictionary of minimum 1000 letters should be maintained.

Functional & Non-Functional Requirements

There will be three levels in the game (easy, moderate, hard).

For all levels 3D jumble letters will be displayed on the screen. User will choose the letters to make meaningful words. Screen is divided into two portions. Upper portion has light background which will be used to display jumble letters. Lower portion has dark background having horizontal 3D board on which letters will be displayed in the order in which the user chooses from the upper portion. When the user chooses any letter from jumble letters, the letter should be disappeared from the jumble letters and should appear on the board. The chosen letter sequence should be maintained on the board.

The jumble letters have more than one possibility of valid English words. For example, user can make the word **eat** or **tea** with 'a' 'e' 't' letters so both words are valid. The program should check constantly that remaining letters can / cannot be used for making a meaningful word. The level will end up when there are no options left to create words from remaining letters.

Each letter is associated with some points. Score for a valid word will be calculated by adding up the points of each letter.

There will be a time limit to make each correct word. Difficulty in levels is introduced by decreasing time limit for word creation at higher levels. If the user makes correct word with in the defined limit, the remaining time limit will add up in next word time limit creation and so on. The game will end if the user will not make any word in that time limit.

Free source dictionary API can be incorporated in the program for words validation or the dictionary of minimum 1000 words should be maintained.

Level 1 (easy)

The user will make words from 8 jumble letters. Light music should be played at the background which can be switched off if user wants. Time limit for making a word is 2 minutes.

Level 2 (moderate)

The user will make words from 24 jumble letters. Moderate music should be played at the background which can be switched off if user wants. Time limit for making a word is 1 minute.

Level 3 (hard)

The user will make words from 36 jumble letters. Fast music should be played at the background which can be switched off if user wants. Time limit for making a word is 30 second.

Tools:

Unity 2017.1

Development Language:

C# (C sharp)

Supervisor:

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NOTE:

VU will not pay for any license of the software, the libraries used in it or any sprite for this project.

1.1 Project Domain / Category

Mobile Application

1.2 Abstract / Introduction

It is a common practice that common medicines are kept at home, but often at the time of need we are unaware if a certain medicine is available at home or not. Sometimes required medicines are found expired. The purpose of this mobile app is to facilitate user to search particular medicine from home.

It is an android based mobile application which will assist mobile users to search medicine available at his/her home from mobile efficiently. It will keep the updated list of medicines according to manufacturing date, expired date, name of medicine, company name, disease in which this medicine can be used and side effects of such medicine. It will give Pop up message when any medicine expires and user will have to remove such medicine from home inventory and then update the medicine list. The mobile user can search and filter results based on medicine name, company name and medicines for a particular disease.

Functional Requirements:

There are following functional requirements:

- User will add the medicines based on manufacturing date, expired date, name of medicine, company name, disease in which this medicine can be used and side effects of such medicine.
- It will give Pop up message when any medicine expires and user will have to remove such medicine from home inventory and then update the medicine list.
- User will keep the updated list of medicines.
- Mobile user can search and filter results based on medicine name, company name and medicines for a particular disease.

Tools:

NetBeans IDE, JDK, Android Studio

1.3 Supervisor:

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Project Domain / Category

This project belongs to Database category.

Abstract/Introduction

Manual record keeping is a time consuming job, while it is also difficult to keep books record of students and faculty as the rules for both are usually different. College Library System (CLS) is a computer base library system which keeps record of the books in the college library. The system maintains the record of students and faculties who have borrowed books from the library.

Functional Requirements:

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

1. The administrator will be able to enter books information like, book Title, category, reference number etc.
2. The system will maintain record of the students who have borrowed books from the library.
3. The system will maintain record of the faculty who has borrowed books from the library.
4. The rules of books borrowing from the library are different for students and faculty members. For example, the student will pay some fine if they do not return book within the specified period while the teachers do not have such fine.
5. The system will be able to display the report of all such books which have issued to students currently.
6. The system will also be able to display the report of issued books for a specific period.
7. The system will be able to display the report of all such books which have issued to faculty members currently.
8. The system will be able to generate a report of such students who have not returned the books within its specified period and are liable for fine.
9. The time to return a book for faculty member would be an entire session (Semester or Year) while that for students is a month.

Students are supposed to visit the problem domain to get more functional requirements and understand the problem.

Tools:

SQL Server (2000, 2008, etc) VB.Net.

Supervisor:

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Project Domain

Web Application

Abstract

With rapid shift to web-based application development, most of the programmers are converting to this regime. However, writing manual code is not only the hectic job but wastes time as well. We need a Rapid Web Page Designer (RWPD) tool that could not only design web pages for us and create style sheets but also produce source code accordingly. RWPD is such an online application that lets developers design web page through visual interface. Application will also enable programmer to attach CSS styles and create the final HTML source code as well. Creating web pages, in this way will result in performance and efficiency of the web developers.

Functional Requirements:

- ✓ RWPD will provide online toolbox through which user will be able to select any of the HTML tags. Note that all HTML tags (element) e.g. <Div>, <P>, <H1>, , <TABLE> etc. will be provided in the form of tools.
- ✓ Once a tool (html element) is dragged on the design window, the effect will be visible on design window. Selecting any element on design window should properties window. Two separate properties windows will visible. One to change the tag attributes and other to apply CSS styles.
- ✓ User will be able to edit the attached CSS style visually e.g. size, color, font-width etc.
- ✓ Any modification in style or tag attributes immediately applied to element and shows the effects of change on design window.
- ✓ Options will be given to user to create in-line styles or in separate CSS file.
- ✓ There should be option to see actual design by clicking "Show Design Output".
- ✓ Publishing the design will use code generated by our application and create an html file along a CSS file. If user will select inline style option then only HTML file will generated which will contain CSS properties inside each HTML tag.
- ✓ Application will separately show the tag hierarchy i.e. the containers and contained tags in the form of tree.

Tools

PHP, ASP.NET, JSP

Supervisor

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Remote Controlling of PC via Android Based Keyboard and Mouse

Project Domain / Category

Android based Application

Abstract / Introduction

Use of smart mobile phones is increasing day by day and smart mobile phones are becoming most using gadgets these days. The purpose of this project is to develop Android Based Application that provide its user the facility of soft Keyboard and Mouse through which the user can control his/her PC without using physical keyboard and mouse. After installing the proposed application on smart mobile phone, the user can control PC Keyboard functions and mouse operations remotely through mobile phone.

The application requires a Wi-Fi connection between the PC and Mobile Phone. Thus, a user can remotely access the computer instead of sitting beside it. This application overcomes the limitations and cost of a physical mouse and keyboard.

Functional Requirements:

There are two components first Client/Mobile and second desktop server.

➤ **Sign In and User Registration:**

Client / mobile Application will provide User Registration interface through which user will be registered as Admin. The application will provide proper interface for Sign In through which Admin will login to the application by entering user name and password.

➤ **Client/ Mobile application:**

You are required to develop an application Client/Mobile application which will run on user's android mobile phone. This application will provide the user interfaces for mouse and keyboard. You need to design standard Keyboard and Touch Pad.

➤ **Connection between client/Mobile and server application:**

Both applications will be connected with each other through Wi-Fi. Whenever a user will want to control PC via Mobile phone using this Application then a connection will be established first between Server and Client/ Mobile Application.

➤ **Server Application:**

You are required to develop Server application which will run on PC. This application will receive commands from client /mobile application and will provide control of keyboard and mouse to the user.

Tools:

Microsoft.Net, Visual Studio, Android Studio, Eclipse, SQL Lite, SQL Server 2008

Supervisor:

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RDIF Based Door Lock System

Project Domain / Category

Digital Logic Designing / Automation / Embedded System Programming

Abstract / Introduction

In the present days automated systems or embedded systems have fewer manual actions. They are much more flexible, reliable and much accurate as compared to our manual systems. Due to increase in demand of such reliable and flexible systems, we prefer an automated control system. In this project, we are required to design a Door Lock Mechanism which uses RFID based authentication system. Whenever, an employee or student or any frequent user wants to enter a certain room/location. He or she must have to authenticate his/her entrance through a RFID based card.

Our system will scan the information from RFID card and will compare it with it's own authentic record and on approval, will allow that specific door lock to open.

The whole project will be done on a complete embedded system hardware (with microcontroller or any other kit like Arduino etc.).

NOTE: This is a complete hardware based project

Functional Requirements

- System must have an RFID based card system completely interfaced with your main controller module.
- System must have an interfaced LCD to display the status of your lock and will indicate the approval or disapproval.
- System must have capability to record new authentic users.

Tools

- Microcontrollers (Intel 8051/8052 series)
- Arduino
- C/C++ Programming Language
- Assembly Language
- Circuit Designing Software (OrCAD, Proteus, Workbench)
- Keil Embedded Development Kit
- Microcontroller Burner Kit
- Circuit Components (Resistors, Capacitors, oscillators etc.)
- LCD

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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Project Domain / Category

Web Programming

Abstract / Introduction

Vehicles purchasing is a diligent work for which you need to visit a lot of show rooms and people simply to discover and get a dream vehicle for you and your family. This can be very costly and time-consuming. Consequently, Vehicle sale-out is also a very hectic task.

“Sale/Purchase Vehicles Online” is a platform to fulfil users’ personal and commercial needs. This platform will be able to keep a database of different vehicles of almost all types available in Pakistan. It will hold a large selection of vehicles models such as from famous brands to local cars (Mercedes, Honda, Toyota and Suzuki etc.). This single platform will allow users to buy/ sale anything from cars to bikes to any other type of commercial transport.

The search refiners will allow the user to choose the specific kind of vehicle along with its price range, the brand, the make, the build (year), condition (new or used) and the mileage as well as the region, city or area you are in. Users will be able to compare Vehicles (of different brands) of the same type based on its price and features.

Functional Requirements:

- Login process/ authentication for administrators and customers (Seller and Buyer) (Sign up and Sign in/ Sign out) to avoid unauthorized access.
- Administrators can add, remove and approve vehicles’ ads along with details.
- Owner/Seller can add vehicles’ ads, remove and manage ads added by them only.
- Buyers can search for vehicles according to its type/price/city/category.
- Buyers can contact the vehicles’ owners after sign in (authentication) only.
- Users will be able to search/filter vehicles along with its details, i.e. price range, brand, make, build (year), condition (new or used), mileage and city etc.
- Users will be able to compare vehicles (of different brands) of the same type based on its price and features.
- List of favourite vehicles (hot deals) based on customers’ search (frequently searched vehicles).

Tools:

Server side programming language: PHP

Scripting and styling languages: HTML and CSS

Client side scripting: JavaScript and JQuery

Database: MYSQL

IDE: PHP Storm

Local host Server: WAMP

Supervisor:

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Salesman Tracking System Based Mobile App

Project Domain / Category

Mobile Apps

Abstract / Introduction:

This is a salesman tracking system based on android mobile app. A Salesman can login from the android device (tablet / mobile allocated to him) to access the Mobile app only, he may not able to login from any other tablet/mobile even. If Salesman is at 14-Lawrence road and login to the mobile app and makes entry in the invoice form, then user exact location and time & date should be saved in the database. There should be clear difference between the two places if they are far 10 meters at least. And salesman goes 10 meters far away and his location must change and saved.

Also When Salesman enters a new shop/customer in the customer form and adds its address, then at that time also the exact coordinates of the sales man /shop /customer should be saved in the database to be viewed on Google maps latter by manager. Track each salesman navigation and sales records via GPS tracking. Sale Restriction via company registered android device only.

Functional Requirements:

The functional requirements of this mobile app can be divided into following points.

1. Each Salesman will be allocated a region (area) inside city / town to sale company products.
2. The area allocation will be managed by the manager. A manager can create new salesman, can create new area and can allocated or de-allocate area to salesman.
3. The login functionality to the android app by salesman will be dependent on the allocated area/region of the salesman. If salesman is not inside the allocated area then mobile app will not allow him to login into the system.
4. A salesman should be able to place sale order of any marketing product to the customer by selecting the Customer Name using android app. The system will save the salesman exact geo coordinates at the time of each sale order transaction.
5. Manager will check the salesman sales history with geo location on Google maps with the accuracy of 10 meter if two customers are located at two different locations at the distance of 10 meters.

6. At the day end manager will be able to see the daily sale report, with different filters like date wise, salesman wise, area wise, customer wise.

Tools: **Android / Xamarin Studio + Java / C# / PHP + MySQL / SQL Lite / Fire Base**

Hint Note: Google Maps API licensing will be required after certain per day hits or usage of Google maps (25,000 approximately). So you need not buy this for this project testing. Free up to 25,000 map loads per day. And if daily loads increases by 25,000 then \$0.50 USD / 1,000 additional map loads, up to 100,000 daily, if billing is enabled. No additional cost for enabling the billing.

For Further details of Standard and Premium Google Maps services you may check the given above details reference at the link below

1. <https://developers.google.com/maps/documentation/distance-matrix/usage-limits>
2. <https://developers.google.com/places/ios-api/usage#enable-billing>

Supervisor:

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Project Domain / Category

Database application

Abstract / Introduction

The project titled School Management System is School management software for monitoring and controlling the transactions in a School. This project will handle whole the activities of the school. SMS has most of the facilities that a modern school requires to computerize its day-to-day jobs. It provides facilities to keep the records of student, fees, teaching and non-teaching staff with all their required details along with all required transaction handling. It has facilities to generate various types of reports, which are required by the management during normal business operations to operate the business effectively. "School Management System" is a windows application designed to help users maintain and organize School. Our software is easy to use for both beginners and advanced users. It features a familiar and well thought out, an attractive user interface, combined with strong searching insertion and reporting capabilities.

Functional Requirements:

1. Students/Staff Registration
 - The administrator can create a new Students/Staff.
 - New Students/Staff can login and logout.
2. Students/Staff
 - Admin add, delete or modify the details of the Students/Staff.
3. Search
 - User can search for the required information needed.
4. Fee
 - This form provides the option to the administrator of the system to add, delete, modify and search the information of the fee deposited by the student.
5. Salaries
 - This form provides the option to the administrator of the system to add, delete, modify and search the information of the staff salaries.
6. Result
 - This form displays the options for the administrator to add, delete and modify the details of student related to the marks.
7. Report generation
 - Depending upon the organizational needs following reports can be generated
 - Yearly based report of pass and fail students
 - Yearly based report of students fee
 - Weakly & Yearly based report of staff salaries

Tools:

- C #, Java
- Visual studio
- Sql Server

Supervisor:

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Secure and Encrypted Short Message Service using AES Encryption Algorithm

Project Domain / Category

Mobile Application.

Abstract / Introduction

This is an advanced Encryption and decryption System targeting the SMS for Android Users for both sending and receiving. The User can send an Encrypted message while he can decrypt an encrypted message. The System makes use of the SMS that you see in the inbox, but this system filters out the one which are encrypted and shows it in their Personal Inbox in the Application. The Shared private Key is already defined in the application and one has not to insert anything but the user id which is by default encrypted in the message. So whenever the user is sending a message he should know the receiver's id as the id is also appended to the message so that while the receiver logs in to the system the message is already decrypted if he is the desired recipient. The Id is Auto generated and cannot be changed but for the users ease the system allows the user to save the recipient's id in a separate column as Favorites saving his Id, Name and Mobile No. The Login is necessary here as a single user can have multiple accounts with different ids so that he can maintain each account for different purposes and not clubbing them. This System makes use of AES Encryption Algorithm to encrypt and decrypt the messages. This App uses Android Studio as its front end and SQLite as back end.

Functional Requirements:

- **Registration:** The user has to register himself into the system to generate the Unique Id.
- **Login:** The user has to login into the system providing his username and password keeping all the data secure.
- **Inbox:** The user gets to see a list of messages which were encrypted and only sent to him i.e. to his account.
- **Message:** The user is allowed to view the complete message which is already decrypted as he selects the messages from the Inbox.
- **Favorites:** As the recipient's Id is difficult to keep in mind the system allows the user to save the recipients Id, Name and Mobile Number for future messages.
- **Send Message:** The user can send messages which will be encrypted once he sends it, here the user should add mobile number and the recipient id or he can make use of the data saved in favorites.

- **Sent:** The user can view the messages that he has sent i.e. only the encrypted ones in the sent folder.

Tools:

- Android Studio\Eclipse
- SQL Lite

Supervisor:

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Project Domain / Category

Mobile Apps

Abstract/Introduction

This App enables you to carry Java programming Tutorials in your android phone. The tutorial is a comprehensive guide to learn Java programming language. This tutorial is based on number of modules and each module provides the description of different terms of java with programming examples. After completing each module a test will be taken to examine your knowledge once you learn in module.

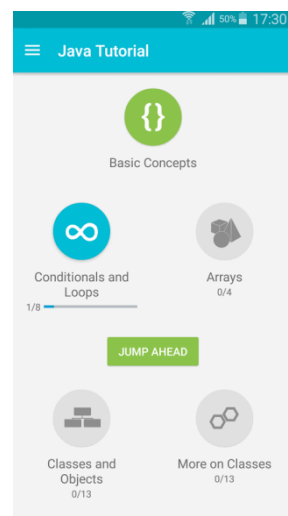
Moreover, this app has a very simple user interface and the contents can be easily understood by the users. Users don't need an internet connection to his/her device while practicing of Java quiz and also for learning Java tutorials and programs.

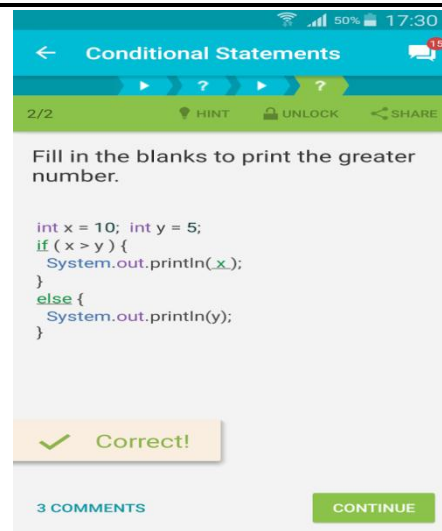
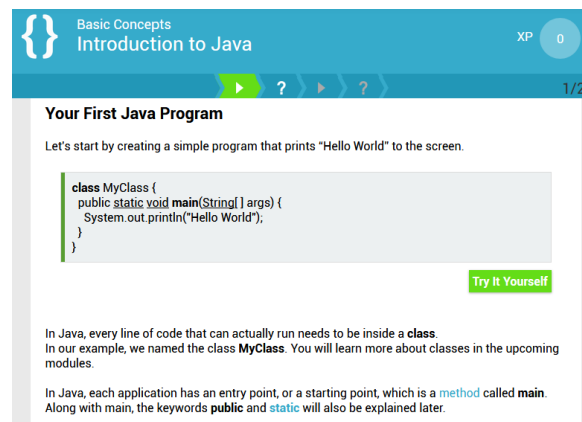
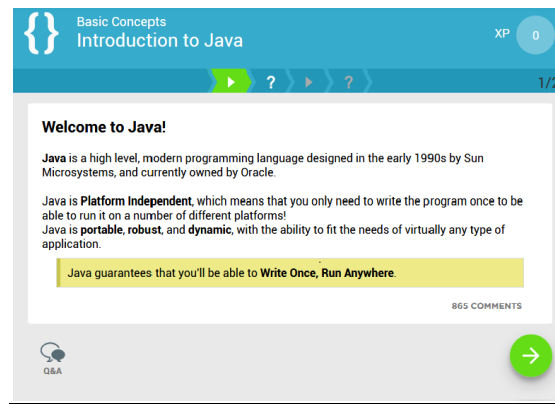
Functional Requirements:

Following are the functional requirements:

1. The user creates their profile that shows his/her status, their level or module and achievements.
2. Tutorial based on different modules Like Basic concepts, conditional & Loops, Arrays, Classes & Objects, Exceptions, Lists, Threads and Files.
3. Each module contains the description of the terms with programming examples.
4. At the end of each module there is a test, based on the content that learned in the module.
5. A test based on the objectives, true & false, blanks, programming questions.
6. Next module is only activated when first module is completed means without completing the test and module you cannot move to the next module.
7. Allocate the number of points to user on completing the test. On completion of each test user ranking / achievements are increased.
8. When completing the all modules a certificate issued to the user.

Sample snapshot:





Tools:

Development environments / IDEs for Android application

Android SDK

Java and xml

Any Database tool

Supervisor:

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Project Domain / Category

Android Development

Abstract / Introduction

Android devices are very popular nowadays as many people use android smartphones and tablets for browsing the internet, watching videos, and sharing files. File sharing is an important feature of all android systems; people constantly need to connect with each other to gain access to each other's resources. SmartFTP client project is implemented with the aim of developing an android app which is used as a file transfer software in computers to transfer files or data from local system to servers.

Using the proposed android app, one can transfer files to multiple servers by connecting to them at a time. This sort of connection can be done using this app via three mediums: WiFi connection, particular IP address, or hotspot. SmartFTP client provides additional facilities such as resuming while uploading data to server and downloading files from server to client's system.

Functional Requirements:

- Files can be stored at a particular location through settings.
- Connection to server can be made by either WiFi, IP address, or hotspot.
- Resume feature can be enabled and disabled while uploading as well as download files.
- Appearance and visibility settings can be customized.
- Hidden files, if permitted by the server, can be searched.
- Search can be done by selecting keywords, extension and file type.

Tools:

Visual Studio

Eclipse

Supervisor:

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Project Domain / Category

Web Programming

Abstract/Introduction

We are currently living in the modern age of photography where the profession now hardly draws comparisons to primitive arts such as sculpting and painting. Unlike the primitive arts, photography is advancing at an astronomical rate courtesy of massive and rapid developments in the field of technology. Spectra Online photography website will provide all the services at a one place.

Functional Requirements:

Spectra Online photography company website has following features:

- Provide the list of event to be covered
- Provide the list of Services you are offering
- Details of packages of you are offering, Packages can be like this
 1. Basics Package
 2. Standard Package
 3. Premium Package
- Client should get registered before placing order.
- Take order online, while booking order you have to ask following question.
 1. How many shots will you need?
 2. When/where will the shoot take place?
 3. What is the concept?
 4. Who will provide art direction?
 5. If needed, who is the stylist?
 6. If needed, who will retouch?
 7. What is the deadline for the finished photos?
- Client has to pay 50% advance of total amount via bank transfer.
- In payment section you have to provide following details:
 1. Your creative fee/photographer day rate
 2. Post production editing time
 3. Digital technician or photo assistant fees
 4. Equipment rental
 5. Usage fees
- Provide portfolio
- When client login into system, he/she should view details about their schedule.
- Admin can also view all information of client and their booking.

- Website should have About section
- Website should have Contact Us form.
- Website should have FAQ section and Feedback form.

Tools:

PHP, MySQL or any modern language, tools and technology.

Supervisor:

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Speech Synthesizer Application for Blinds (SSAB)

Project Domain / Category

Web Application

Project Technology

Microsoft .Net Framework

Introduction:

Technology is being used by humans of every age and even with disabilities so the proposed system is for blind people to take notes of lectures and their conversations. The system would also enable them to send these notes (speech to text conversion) via email and also able to listen their received emails (Text to Speech conversion).

Functional Requirements:

- The idea is to create a class in .Net with .Net SMTP option Voice Authentication.
- Microsoft Speech SDK is integrated with the programming Language.
- Set of Commands are reserved like "start","subject","matter","send","delete". Activate Dictation mode not command mode.
- Try to generate event when user speaks these words to perform certain actions e.g. taking notes, sending email, composing email etc.
- Create a simple Text Box editor. When user speaks, they get typed over here.
- A push Mail interface to read from your email account.
- When you say "Read", should fetch the mails in List box and read sender and heading.
- Bonus Features: Operations on selected segment of text i.e. with Up and Down command you can select a particular mail its body will be spoken out.

Tools:Microsoft .Net Framework + Microsoft Speech SDK

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Smart Profile (SProfile)

Project Domain / Category

Mobile Apps

Abstract/Introduction

Smart Profile (SProfile) is a powerful profile management and mobile customization app for Android that

vows to be the ultimate solution for your device's profiles. It's just not allow customization it also automates it. Smart profile provides location-based profile automation .Once you setup things then you don't have to worry about it.

It is the application which is made for those people who need different profiles for different locations. For example office, college, school, mosque etc. So basically user will have option to create customized profiles based on location. The application sends message to defined number on activation and deactivation of profile. This helps the user to inform his family member about his current location. The customized profile has option to create a blacklist. The contacts in black list are blocked when profile is activated. This enables the user to block unnecessary calls. User will have option to start and stop the application services anytime when he wants.

Similarly application will help user to remember different tasks according to time or location. Another feature of this application is that user can set sleeping hours, which ensures that user is not disturbed during sleep hours as phone is put in silent mode during these time intervals.

Functional Requirements:

Profile Activation:

The application shall get the location update every two minutes and change the user profile on the basis of location coordinates.

Call Block

The Application shall block the incoming calls on the basis black list of selected profile. If a black list is selected the number in the list are blocked and all other numbers are allowed.

New Profile

The Application shall allow the user to create new profile for any desired location. On clicking new profile button a dialog is appeared where user can customize the profile .User can assign a name to profile and can choose other settings. User can also add black list according to his requirement and can choose WIFI status.

Manage Profiles

View Profile

The Application shall allow the user to view, edit and delete the list of profiles created.

Add Reminder

SProfile also provides the feature of reminder. This option helps the user to remind him performing specific task according to location and time. User can add time based or location based reminders. The application gives user an option to select time based or location based reminder; after that user can enter a message and tab save.

Manage Reminders

The Application shall allow the user to view, edit and delete the reminder/s added by the user.

Message Notification

User should be able to add message and number to a profile .This message is sent on the given number on the activation and deactivation of the profile.

Current Location

The Application shall get the current location of the user using GPS services and show user's current location on map using Internet. A marker is added on the map at current location for better visibility.

Maintain call Log

The application shall allow the user to view the call log and clear the call log if it is outdated.

Profile Activation Notification

The application should generate notification when a profile is activated telling user the name of the profile. User can turn on/off these notifications in the settings menu.

Sleeping Hours

The Application shall allow user to manage sleeping hours. User can set start and end time. During these hours the mobile is put in silent mode so that the user is not disturbed while sleeping.

Tools:

Hardware Requirements

Device: Android Smartphone with internet connection

Memory required: 15MB of free space

Software Requirements

Operating system: Android

Version: 4.1 and above

Development Platform: Android Studio

Programming Language: Java and XML

Database: SQLite, Shared preferences

Supervisor:

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Project Domain / Category

Web based Project

Abstract/Introduction

Manually maintaining different types of tailoring data in today's busy world is a very tiresome job. To reduce the load of maintaining bulk of data and to provide facility to record the relevant information of customers and employees, we will create a web base application. The aim of this application will be to automate the tailoring business and to provide paper less environment. This project will be suitable for tailors and fashion designers.

Functional Requirements:

The system should have the following features:

- The system should have a user registration process in order to get login into the system.
- Admin should be able to create a customer account and add customer's basic information like name, address and contact no etc.
- Tailor should be able to add measurement details of the customers.
- Admin should be able to add orders of customers.
- Customer should be able to view his order status online.
- System should be able to send SMS to the customer on completion of order.
- Admin should be able to set different types of measurements with images for different types of garments.
- Admin should be able to add/update staff, monthly salary and designations.
- Admin should be able to add/update income and their categories.
- Admin should be able to add/update expenses and their categories.
- **Reports:**
 - List of all customers (Date wise, garment wise)
 - List of all orders (Date wise, complete orders, cancel orders)
 - Option should be available to print Receipt of the orders.
 - Report of income between two dates.
 - Report of expenses between two dates.

Tools & Technologies

Preferred tool and technology –JAVA, Database --MySQL

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Vehicle Back Distance Calculator using Infrared Sensors

Project Domain / Category

Digital Logic Designing

Abstract / Introduction

While using reverse gear in vehicles it is commonly observed that we normally don't have full view of backside. For this purpose we use back view camera in order to have a full view of back side of the vehicle but back side camera is not incorporated with distance measurement sensors. With this project we will be able to use an infrared sensor which will give us the distance measurement in analog format and we will convert it using comparator. Infrared sensors are normally used for hurdle detection and with it also provide the exact remoteness of an object in analog format which can be converted to digital format using Analog to digital converter and the result can be displayed on LCD.

Functional Requirements:

1. Hurdle measurement
2. Conversion from analog to digital form using a convertor
3. LCD interfacing
4. Displaying result on LCD in digital format
5. Alarm system
6. For output less than 4 feet; the alarm must go off alarming the driver
7. Distance sensor must be used to calculating distance in analogue form
8. Comparator (ADC0804) can be used for converting analogue to digital form
9. The distance can be displayed in digital form in the feet
10. Student are supposed to visit the proper domain to gain more knowledge about the system thoroughly.

Tools:

- Microcontrollers (Intel 8051/8052 series)
- C/C++ Programming Language
- Assembly Language
- Circuit Designing Software (Orcad Pspice, WorkBench)
- Keil Embedded Development Kit
- Microcontroller Burner Kit
- Circuit Components (Resistors, Capacitors, oscillators etc.)
- LCD Module
- ADC Component module
- Sensor module

Supervisor:

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Project Domain / Category

Mobile Application

Abstract / Introduction

This mobile app uses the pedometer or accelerometer sensor to count number of steps that you take every day and measure other routine activities like eating and exercise. Nowadays everybody is exceptionally sharp and extremely specific regarding health and health is straightforwardly relative to your eating routine and exercise. So we develop a system which deals with user health by observing three distinct parameters of your activities:

1. step counter,
2. rest admission
3. water consumption

During registration into system, you have to enter age, height, weight and gender to calculate BMI (Body Mass Index) and ascertain the rest and water usage every day. In this scenario the Step Counter uses the accelerometer sensor or pedometer sensor to get the count of the number of the steps and demonstrates a graphical presentation to you of your daily steps. While measuring the current water intake and rest time of the user, the system produces the measure of rest and water the user to have. Additionally the user can alter his physical ascribes to as a when they are changed. All the data of his mobile app should be stored in a database. Furthermore a web application is also developed if user want to check his data online through web and he can also take backup of this app.

Functional Requirements:

Provide a bulleted list of functional requirements

1. System can register a new user or login existing user.
2. Set and reset password.
3. Get the data from user like age, height, weight and gender to decide BMI (Body Mass Index) and determine the rest and water intake every day.
4. Mobile App will use pedometer sensor or accelerometer sensor to count number of steps
5. Shows a graphical representation of the steps.
6. If steps count, water intake and rest is lower as per BMI then system continuously remind user by alarm and message.
7. The system stores all the data in a database.
8. Web app should also be developed so that user can check his mobile app data online.
9. Both mobile app and web app data should be synchronized.
10. Web app should also be protected by password.

Tools:

Indicate development environments / IDEs / Any other tools required in this project

Android development (Android studio and Android SQLite Database),PHP and MySQL for web app.

Supervisor:

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Time Sensitive Search Engine

Project Domain / Category

Information Mining and Retrieval.

Abstract/Introduction

The purpose of a search engine is to extract requested information from the huge database of resources available on the internet. Search engines become an important day to day tool for finding the required information without knowing where exactly it is stored. The present search engines like MSN, Yahoo and Google hits millions of records against a single query. It is very difficult and time consuming for the users to find the relevant information. These search engines search information based on key words mentioned in the query. Time sensitive search engines have the capability to give priority to the times mentioned in the query. It will consider only time mentioned inside the text (page contents) and not the time on which page is updated, created or published.

Student should be very careful while crawling web for creating indexes and taking of times from contents that mentioned in the contents because they may have different formats. There is need to handle all form of times and times references and convert them to ISO standard (ISO-8601) like “hh – mm – ss”. Student need to maintain a list or local data base for storing times and offsets at which they occur in document.

Students are required to select/specify a particular dataset to test and evaluate their project.

Functional Requirements:

This project has the following basic modules:

1. Web Crawler:

Web search engines work by storing information about many web pages, which they retrieve from the html itself. These pages are retrieved by a Web crawler which is an automated Web browser which follows every link on the site. The contents of each page are then analyzed to determine how it should be indexed.

2. Front end for query processing and their results:

The front-end presents a search bar for users and the query processor parses the request and executes the search. The results are displayed by the front-end.

3. Data base:

- i. Maintaining a list or database for storing time specific information.

- ii. Data about web pages are stored in an index database for use in later queries. The purpose of an index is to allow information to be found as quickly as possible.

Tools:

The following tools can be used for developing the above project.

1. Microsoft.Net, SQL Server
2. Java, SQL Server/MySQL

Supervisor:

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Unlocking and Locking car using Arduino and Android smart phone application

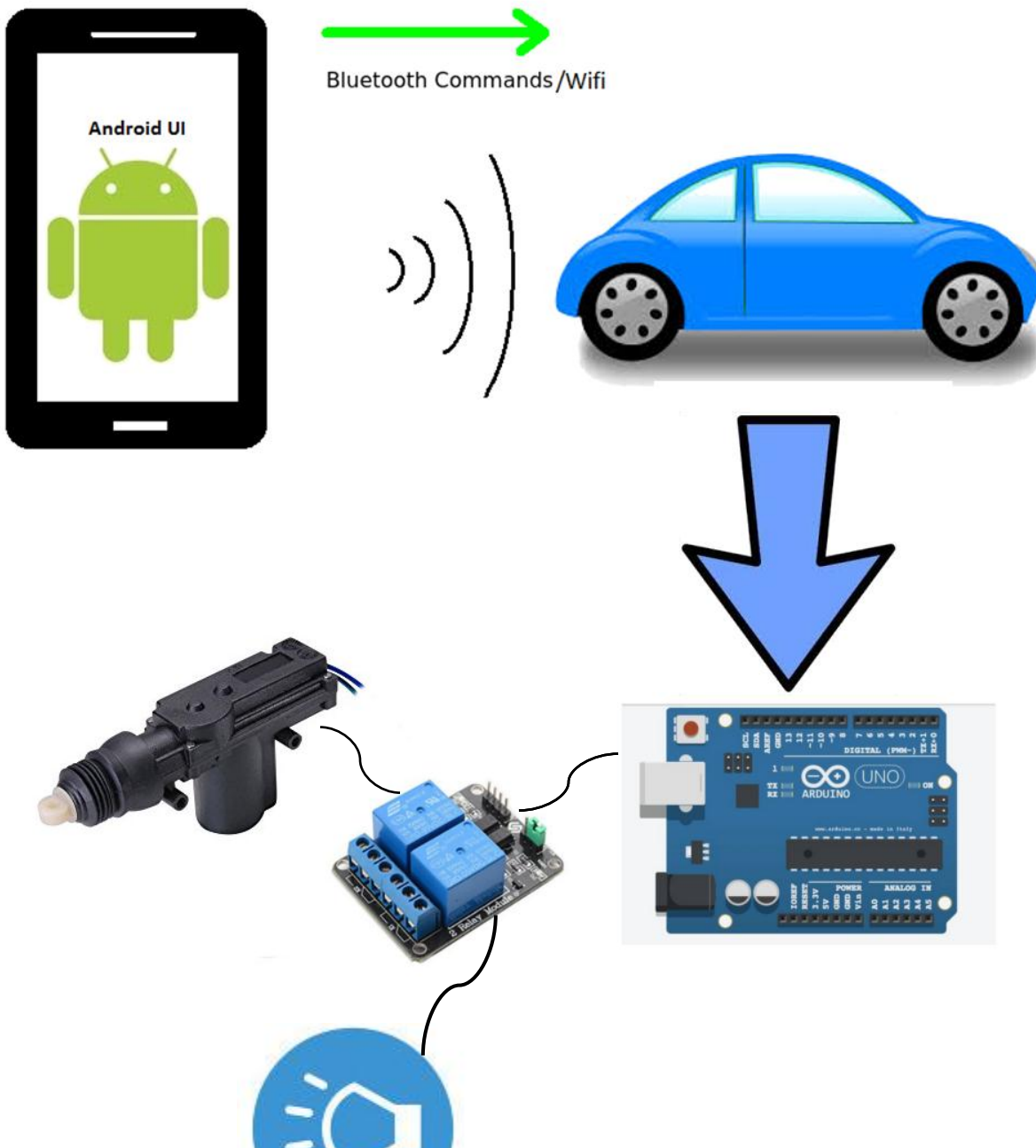
1.4 Project Domain / Category

Digital Logic Design & Mobile Application

1.5 Abstract / Introduction

In this project students will be required to access the car using Android phone and Arduino. Students can add other features like controlling parking light, side indicator lights etc. Basic idea behind this project is opening doors of car using android application. Students will use Bluetooth module to communicate between Car and mobile

Project will comprise of two parts hardware and software part. In hardware interfacing part student will write the code for arduino and setup the relay modules, motors and board. For software part student will write an application for arduino, student will be required to work on these parts simultaneously. You are not required to implement it on a real car. You can just use a door opening motor and a light.



1.6 Functional Requirements:

1.6.1 For Application

1. A fully functional android application capable of communicating with arduino (Via Bluetooth)
2. Application will show a button to unlock/lock car doors.

1.6.2 For Hardware

1. Arduino board setup along with code to control the door locks and lights.
2. Relay modules properly setup.
3. LCD to display status of devices (Optional)

1.7 Important Notes:

1. Students will buy his/her own hardware. Virtual university will not provide hardware or financial assistance to buy hardware.
2. Students will not implement it on a real car; instead they can use a model of car made of paper/hard board etc ,
3. C code will be used for arduino and Java for the mobile application.

1.8 Tools:

NetBeans IDE, JDK, Arduino IDE

1.9 Supervisor:

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Online Complaint Registration Portal

Project Domain / Category

- Web Application

Abstract/Introduction

The objective of this project is to develop an online system for complaint (FIR) registration and management to facilitate the citizens as well as police department. This portal will not only save the time of citizens as well but will also help in eradicating the corrupt practices which citizens often experience in the manual FIR registration. This will be a web based application through which the police department can register the complaints of the citizens. The application will provide a user-friendly interface to the representatives to register the complaints. There will be a centralized database server where the records of all the complained registers in all the police stations will be saved. It will provide the higher authority to check the status of all complains registered in any police station along-with the other related data and to check the performance of police stations.

Main Users: Administrator, Registered User, Guest (citizens)

Functional Requirements:

1. The key user of this portal will be the police station representative (PSR) who will login to the system before registration any complaint. The account for the representative will be created by the administrator.
2. Each registered PSR will be representing the police station and will be allowed to registered complains on behalf of that police station. A police station may have one or more representatives.
3. The administrator will be responsible for the overall operations of the system such as users account creation/updating/deletions.
4. The administrator which also act the database administrator to add information in to the database. This information will be required before registration of any complaint.
5. A PSR can log in to the portal by using his login details which will be shared with him by the administrator after the account is created.
6. The portal will provide the PSR a complaint registration interface where he/she can enter information such as the Complainant Name, Photo, CNIC, Address, Contact Number, Type of complaint and other additional details about complaint being registered. The registration interface will also have the fields to enter any available information about the accused against which the complaint is being registered such as Name of the Accused, Appearance, and Address etc.
7. The portal will automatically generate the FIR number and add it in the registrations form include other details such as the name of the police station representative, police station name, address of the police station, the time at which the complain was registered and

finally the status of the complaint (Pending, Closed). Once the complaint is registered, it will be considered as an online FIR.

8. The portal will provide the citizens an interface where they can enter the FIR number of their CNIC to track the status of their complaint submitted.
9. The higher ranked police officials will be able to log into the online portal to check the status of registered complaints, any actions taken on them by the respective police stations and can even issue further actions on the registered complaint.
10. The portal will allow the officials to search the complaints by using search parameters such as Police Station, Complainant Name/CNIC, Name of the Accused Person etc. It will also help them to generate reports on the basis of searched records which will help the officials to assess the performance of any police station.
11. The portal will also enable the citizens to lodge a complaint against the misbehavior of any specific police station. These complaints will only be viewed by the higher ranked police officials and government officials. For that purpose, the complainant will not be required to give his personal information.
12. The details of the accused mentioned in the registered complaint will be made part of details of the offenders after the complaint is found to be true after the investigation and the action is taken place.
13. This record will help the police department to keep the criminal history of the citizens.

Note: These are just some of well known features of the complaint registration portal. As a part of project related activities, students are required to elicit further requirements from other sources as well. Requirement elicitation will be an important part of project evaluation.

Tools:

C# with ASP.Net framework, SQL

Supervisor:

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Project Domain / Category

Web programming

Abstract/Introduction

A computer is a helpful device which can improve every day work of our life. Since the sequence of operation is changing day by day, it has great importance in business to change our business style. In every aspect of life, its use has brought great changes to us. It has not only solved complicated problems of modern life but also has its impact on the development of business and industry. For solving big problems, computerized system will be a correct choice for lengthy information, difficult calculations and logical operations.

The main objectives of the system are

- To reduce the extra paper work.
- To retrieve the desired information quickly.
- To reduce the number of documents and registers.
- To convert the manual processing into the computerized processing.

Functional Requirements:

1. The main purpose of this project is to design a web based inventory management system for Raja Rani shoes.
2. This system will be able to track the order and payments easily.
3. This system will also provide number of services to choose and check the
4. This system will make it easy to get price of relevant information about all the items.
5. This system will provide important information of all other branches of the store.
6. This system will also provide help in generating useful report about the data.
7. The system will help workers to place the item on order list in the stockroom.
8. This system will provide powerful searching mechanism.
9. The presented inventory system will be designed to facilitate and realize the customer's requirements, fulfill their demands, provide general comfort.

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

Supervisor:

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