Department of Computer Engineering
Faculty of Engineering
UNIVERSITY OF PERADENIYA

CO225: Software Construction
Project

Instructions:

You are required to design and develop a mobile application for one of the project ideas given. When you are designing and developing the application, you are expected to apply the following concepts of Software Construction effectively.

- Collection, OOP, I/O, Exception Handling, Event Handling/ Event-Driven Programming, Concurrency, Sockets.

The application should be built according to the requirements given under the allocated topic. You can add new features (which are not mentioned in the application description) or you can extend already mentioned features to get bonus points (upto 5 marks from 30). You have to use a version control system and maintain project wiki up to date. At the end, you also have to provide the user guide of the application.

Evaluation:

- Milestone 01 (10 marks)
    - Application Content
    - Solution Architecture (including details of now the software construction concepts are going to be used)
    - Project Plan
    - Technology Stack
    - Start using Git (Version controlling, Maintaining documents)

- Milestone 02 (20 marks)
    - Application Demonstration
    - User Guide
    - Testing (Test plan, Test cases)
    - Additional Features (Bonus Marks)

Project Idea 01: Cryptocurrency Auction Management System

The aim is to implement a mobile application to bid for cryptocurrency in the market.

In the given csv file, over a thousand top ranked cryptocurrencies are listed. Each item (cryptocurrency) has a symbol, name, and rank. Administrators of the application should be able start auctions according to their desire with start date time and end date time.

When an administrator starts an auction, users can start bidding for any of the cryptocurrencies listed in the file. When a user select the cryptocurrency for the first time in the auction for bidding, the system should extract the current price of the selected cryptocurrency via an available API (Example: cryptoCompare, coinGecko, etc.) and set that price as the initial value of that cryptocurrency throughout the auction. When users try to bid for the same currency, they should be able to see this value as the initial value. Users should be able to bid until bidding time is over.

Administrators should be able to stop the auction anytime if needed, before the scheduled end time. When the auction is closed, the users who bid for each currency with the maximum amount wins the relevant cryptocurrency. We'll keep the bidding size of the currency as one (fixed for all biddings). As an example , Let's take BTC (Bitcoin) currency. Users can only bid for 1BTC . Therefore, Users can't bid for variable sizes like 0.05BTC, 0.002BTC,10BTC etc.

Project Idea 02: Student Results Management System

The aim is to build a mobile application to manage and analyze undergraduate students' marks.

This application will be used by undergraduate students themselves. There isn't any involvement of supervisors, lecturers, etc. The student batch administrator for each batch or student field administrators for each field of the batch register the courses (with course code, name, credits, etc.) to the application .

Then students enter their total final confirmed marks or grades through the application. These marks will be saved, but students cannot see others' grades. The students should be able to calculate their current GPA. The system can calculate the necessary grades for each semester to achieve expected GPA in upcoming semesters, when the user enters the expected GPA.

When continuous assessment (quizzes, assignments, projects) marks are entered for a particular course, students should be able to get a calculated required exam marks for the expected grade of that course. According to the confirmed marks entered, the system shows the rank of the student of the batch and field.

Project Idea 03: Baby Development Tracking System

The aim is to build a mobile application to track and help to manage the development of babies (0 to 5 Years).

Users (parents or guardians) register their babies in the application with babies' details. (Name, birth date, Gender, current weight, current height). Registered users should enter the already received vaccination process of their babies. With time, users enter their babies' vaccinations, weight and height details.

The system should be fed with a standard vaccine schedule (government and private). System includes standard weight and height ranges according to age. When users enter the details, the application compares those information with these standard information. Based on that comparison, users will get notifications such as when the next vaccination date is nearby, when weight or height are not within the standard rate.

Project Idea 04: Bluetooth-based Chatting System

The aim is to build a mobile application to carry out two-way chat over Bluetooth.

This application helps users to chat via bluetooth. Other than normal two-way chat scenarios, users create unique groups (channels) and administrators can send invitations to join or if the users know group details, they can send requests to get joined.

When administrators scan users in the range for a particular group, the application should list all the users who are in the range and the users who are not in the range.