

CS457: Software Architecture and Design

Final Year Project, 2020



Instructions

1. Number of students per project is 1 up to 5.
2. Please submit only work that you did yourself. If you copy work from your friend, a book or the internet, you will risk passing the course.
3. You are expected to **submit one document (.doc)** file for answering project 1 or project 2
4. Please choose **one project only**.

Project 1: Online Trip Assistant

When planning to go to a trip users have to do some reservations from source to destination, hotel reservations at destination place and other travel reservations from destination to other places, this involves lot of manual work. To make it easier to users all these type of reservations can be done using the Online Trip assistant application. This application allows users to reserve flight, hotels, site seeing visits, and any events listed in the application. Online Trip assistant gives all the required facilities to their users when they are ready to plan for a tour. The application also recommends activities to the users based on their profile and previous selections. Three main activities are supported by the application

- User activities
- Distance Calculator
- Currency Converter

1 . User activities :

Users can browse existing travel packages, create customized travel packages. A travel package includes flights to and from the destination, hotel reservations, and events and activities users wish to participate in.

If a user wants to use the facilities which are provided by the web assistant he/she must be registered by using username and password. Once they login they can use all the web application facilities.

2. Distance calculator :

Distance calculator gives the distance between source and destination locations which gives the idea to the users that which facility they will use on the basis of distance because for short distance customer can use car booking facility of the Online Trip Assistant (run by a third-party site). For long distances they can use train, cruise or flight booking as per their budget and based on the availability of these services in the destination city. The users are directed to the appropriate third-party (if it is available). site to do the reservation

3. Currency converter:

The Online Trip Assistant also provides a currency converter facility that queries a third-party currency converter API to give users an overview of the value of their currency in the country they are heading to.

Your task is to design the Online Trip Assistant

- 1) Assume that the flight/hotel (or any other third party) contractors are willing to provide any kind of interface you request.
- 2) The travel agency is willing to buy you necessary hardware and software resources, as long as it is reasonable.
- 3) Finally, The waterfall software development model is followed in this project. This means, the design has to be as complete as possible before you pass it to the development team.

Project 2: A Web-based Corona Virus Reporting System

Currently the Ministry of Health and Population in Egypt has setup a phone based hotline for Corona virus reporting. However, a Web-based Reporting System will help the ministry not lose any potential patient. This system is aims at improving the Corona Virus Reporting for individuals. In addition, such a system allows the ministry to 1) plan for making tests for patients reporting form within the same area , 2) it will provide the ministry with some reports on: the number of users using the system and their locations; the number of users that are suspected to be positive (and therefore need testing), and their locations; The area's which seem to have the highest reporting.

Because not every user is a potential corona virus patient, the system asks a number of questions about symptoms and makes recommendations including on social distancing, self-quarantine, monitoring symptoms and then displays to the user whether he should be tested for COVID-19 or not. If the user is to be tested, then the system asks the user to fill a form specifying his personal details (ID, current address, number of family members, phone number, mobile number, and password). An account is created for the user with the ID as the

username and the password he entered, this account is used for further contact with the user. An appointment for making the test is then sent to the user as a message to his account and also a SMS to his mobile phone.

On the other hand, the ministry personals use the application to view various generated reports as mentioned above. Ministry personals schedule appointments with users who reported to the application and track the status of the users, whether positive, negative , taken to hospital, or home quarantined. If the user is taken to hospital the hospital name and code is specified and the check-in date.

Your task is to design this system.

1. Assume any missing information but make your assumptions clear
2. The waterfall software development model is followed in this project. This means, the design has to be as complete as possible before you pass it to the development team.

Deliverables

The output of your project is a design document, which documents your design.

Your design document should contain:

- 1) a clear specification of the application's architecture, including all its interfaces, components, connectors, and constraints;
- 2) Use at least two architecture views to represent and document your design
- 3) a description of your design process and a thoughtful reflection on your design, including the rationale behind it (telling a story about your design);
- 4) Provide a detailed design for the system you specified in 1,2
- 5) An evaluation of your systems architecture using the ATAM method, or any other architecture evaluation method however give reference to the method you use
- 6) Explicitly mention any assumptions you have made.