United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Mid Term Exam   Trimester: Fall 2023   Marks: 30   Time: 1 Hr 45 mins
Code: CSE 3411   Course Title: System Analysis & Design

"Any examinee found adopting unfair means will be expelled from the trimester / program as per UIU disciplinary rules."

Answer the following questions:

1. Consider the following scenario and answers of the questions mentioned as follows:

The recent surge in interest in **rooftop gardening** is a response to urban growth and the lack of availability of fertile land. As the city expands, green enthusiasts are turning to rooftop gardening as a popular solution. An app named **"Smart Garden"** has emerged as a valuable resource for individuals who are eager to start their gardening journey. This app leverages various APIs, sensors, and advanced technology to effectively monitor rooftop gardens.

Users, predominantly homeowners, can access real-time information about the status of their gardens. This data includes vital details such as soil moisture levels, temperature, and lighting conditions. Furthermore, the app empowers homeowners to take control of their garden's irrigation system by allowing them to adjust the watering schedule based on the real-time data.

In addition to these features, the Smart Garden app interfaces with a Weather API to provide users with up-to-date weather information, aiding in informed decision-making for their gardening activities. A special tool known as the "garden planner" is integrated into the system. This tool assists users in designing and planning the layout of their rooftop garden, providing guidance on plant placement and spacing to maximize their gardening success.

The app also includes a recommendation portal where users receive personalized suggestions for suitable plants. These suggestions take into account the garden's location, current weather conditions, and the preferences of the garden owner. Moreover, the system offers valuable guidance and troubleshooting tips to users encountering issues in their gardens, such as pest infestations or diseases.

To foster a sense of community and knowledge-sharing, the app hosts a forum where users can share their experiences, discuss challenges they've encountered, and offer support to fellow rooftop garden enthusiasts. **[CO3]**

   a) Draw the Use case diagram for the above scenario (show at least **one extend/include** relationship in the diagram).   3
   b) Write down the descriptive form of **one major use case** shown in the use case diagram for the above scenario.   3

c) Draw the Swimlane diagram for the whole scenario. 3

d) Draw the Data Flow Diagram for the scenario. 3

2. a) Depict and shortly brief on the working methodology of "Prototyping SDLC". 2

b) Mention some major activities of the following SDLC steps: Analysis, Deployment. 2

c) Mention some key features for the following types of software system (any **two**): ERP, DSS, ES. 2

[CO1]

3. Considering the above-described scenario, answer the followings questions:

a) Mention the major sources of information you should explore/study for gathering proper information about the above-mentioned system. Mention the expected targets from the different sources of information. 2+2

b) Shortly brief on the following required steps with respect to above scenario: Features analysis and information gathering, Gap analysis/ value adding concept.

[CO2] 2+2

4. Shortly brief on the Feasibility Analysis concept with respect to above scenario. Mention the purposes of: economic feasibility and behavior feasibility. **[CO4]** 2+2