United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Mid Term Exam Trimester: Spring 2025 Marks: 30 Time: 1 hr 30 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 write down the answers to the questions mentioned as follows:

SmartMed is an online platform developed by a network of private clinics in Bangladesh to help patients book doctor appointments, receive prescriptions, and get medicines delivered to their homes.

A **patient** visits the SmartMed website or app. First, they **register** and **log in** to their account. After logging in, the patient can browse available **doctors** by specialization (e.g., medicine, dermatology, pediatrics) and book an **appointment**. Once booked, the system updates the **Appointments table**. On the day of the appointment, the **doctor** logs in to SmartMed. During the consultation, the doctor fills out a digital prescription form. After submission, the prescription is saved in the **Prescriptions table**, which stores the prescription ID, doctor ID, patient ID, date, and medicine list. The patient receives a notification and can choose to either download the prescription or order the medicines online. If the patient chooses to order, SmartMed sends the prescription to a nearby **pharmacy**, chosen from the **Pharmacies table**. The pharmacy checks availability and responds with prices and delivery options. Once the patient confirms, the order is saved in the **Orders table**, and medicine quantity is updated in the **Medicines table** (which stores info like medicine name, stock, and expiry). The patient pays online using a third-party payment system. After successful payment, the pharmacy prepares the order. A **delivery person**, chosen from the **DeliveryStaff table**, picks up the package and delivers it to the patient's address.

An **admin** user can manage doctor schedules, monitor unusual prescriptions, and access system statistics. **[CO3]**

a. Draw the DFD for the above scenario. **[4]**
b. Draw the Use Case diagram for the above scenario (show at least one extend and one include relationship in the diagram). **[4]**
c. Write down the descriptive form of one **major** use case shown in the use case diagram for the above scenario. **[4]**

2. Consider that you have to collect the requirements before the development of the above project. Briefly explain any **one tool** for gathering the information that might be most effective for this type of project. Mention the **sources of information**, the merits and demerits of the **tool you choose**, and the expected outcome of the information gathering process. **[CO2]** **[1+2+2 = 5]**

3. Answer the following questions:

   [CO1]

   a. Mention the key features of Customer Relationship Management (CRM) and Expert System (ES) software. **[2]**
   b. Briefly outline the steps of the Prototyping SDLC model using a diagram. **[2]**

4. Define feasibility analysis concept. Suppose you are considering an investment opportunity for a new mobile app startup. It requires an initial investment of **$10,000**, followed by additional investments of **$4000** and **$6000** after **1** and **3** years, respectively. In return, you expect to earn **$2000**, **$3500**, **$4500**, and **$9000** after **2**, **3**, **4**, and **5** years, respectively. The annual interest rate for this venture is set at **9%**.

   Find out Profit/Loss through Cash Flow Method. **[1+3 = 4]** **[CO4]**

5. Develop and present in the class room on a **partial** SRS document (software requirement specification) as a group wise project assigned in the classroom. The SRS document should cover the following areas regarding your respective project: Introduction, Rationale/purposes of the project, Detail system study (tentatively you should cover benchmark products, research papers, onsite visit, survey, online sources etc.), feasibility analysis (SWOT analysis, cash flow analysis etc.), system design (Use case diagram, use case descriptive form, Data Flow Diagram, activity diagram, swimlane diagram etc.)
   (do not answer this question in the examination) **[CO3]** **[5]**