



United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Final Exam Trimester: Summer 2022 Marks: 40 Time: 2 Hours

Code: CSE 3411/CSI 311 Course Title: System Analysis & Design

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

Answer **ALL** of the following questions:

QUESTION 1

[CO3]

14

Consider the following scenario for an Online Bus Reservation System application:

Consider an online reservation system for a bus company, The bus company includes several buses and realizes trips to different cities. Such bus is identified by its plate color and a separately assigned bus number. The trips are based on a predefined schedule and stop at predefined bus stations. Each bus can have only one trip per day, each bus includes a driver and one hostess. For long trips, the bus will have a break at, service and rest areas, there are two types of trips: normal trips and express trips. Express trips do not stop at intermediate stations and get faster at the destination, Seats can be reserved by customer~ on the web site of the bus company The customer has the option to directly pay for the seat through the website. In that case, the seat cannot be cancelled (neither by the customer nor by the company). If the customer has not paid for the seat, the bus company can cancel the seat if the customer does not show up one hour before the trip. When the reservation is cancelled, the seat will become free and can be sold to another customer. Both the customer and the company staff must authenticate themselves for performing operations with the system

- a) Draw the USE CASE Diagram (having at least one “include” and “extend” connection).
Mention the purposes of include or extend symbol. [5]
- b) Write down the USE CASE Descriptive Form for one of a major Use Case. [4]
- c) Draw Sequence Diagram for the above scenario. [5]

QUESTION 2**[CO3]****12**

Consider the following scenario:

The "Sweet Treat" company is 'a small, independent business that sells sweets and cakes to the public. The proprietor is very keen on baking and specializes in making homemade sweets and cakes for sale in the shop. Besides, making a lot of the confectionary sold in the shop, the proprietor also buys sweets and some cakes from suppliers to increase the range of products for sale. The proprietor keeps records of the quantities of stock he has on hand. The stock includes raw ingredients for his baking, and the sweets and cakes he buys from suppliers. Once a week proprietor checks the stock to dispose of anything that is past its 'sell by 'date. He also checks to see if any raw ingredients or any pre-made sweets and cakes need to be ordered from the suppliers. At the end of each day, the proprietor checks how many of each homemade item have been sold. He keeps a record of these sales and uses this to decide how many of each cake or sweet to make for the following day.

- a) Draw the **Class Diagram** and **CRC card** for the above scenario. Mention the justification of considering the classes. [5+3]
- b) Draw the State Diagram for the above scenario. [4]

QUESTION 3**[CO3]****14**

- a) One SRS document can support the different stakeholders in different perspective in a software development process – illustrate it. 4
- b) Write functional and non-functional features/requirements for the scenario mention in questions 2. 5
- c) Show the proposed UI Sketch for the home page design for the scenario described in question 2 and mention the rule/s you have followed in proposed drawing. 5