INF2011S- Theory Workshop 1

Due Date: 12 August 2021, 23:55PM

Objective: Revision on Theory Lesson 1-3 (System Design, System Architecture & Class Design)

Use the revision notes from Theory Lessons on Vula to prepare for this tutorial. This will be a team exercise so you only need to submit one solution. You are welcome to work synchronously (via WhatsApp/MS Teams) or asynchronously via email. Please do not copy or share your answer with other teams. Zero will be awarded if work is deemed as plagiarised. You are welcome to use any modelling tool of your choice. For online tool, we recommend Lucidchart (https://www.lucidchart.com/pages/). If you wish to install software on your own or Lab PC, check what is available on the ICTS website.

For this exercise, you may even draw the diagram on a sheet of paper and take a picture of it with your mobile device. Save your solution file as "Workshop_1_GroupNo.pdf". Submit your workshop solution via Vula assignments as a pdf document under the Theory Workshop 1 by 12 August at 23H55PM. Please complete the following mark rubric at the top of your document:

INF2011S Theory Workshop 1 Due Date: 12 August 2021, 23:55PM	
Group Number	
Student 1 (Name, Student Number)	
Student 2 (Name, Student Number)	
Student 3 (Name, Student Number)	
Student 4 (Name, Student Number)	
Tutor	
Mark	**/40**

Question 1 – Systems Design

For the *Phumla Kamnandi Hotels* software application, your design should allow very large volumes of reservations to be processed during peak periods.

In Lectures 1 and 2, we mentioned that there are many qualities of good design (e.g. flexibility, security, performance etc.) and these relate to non-functional requirements.

Given the context in which the *Phumla Kamnandi Hotels* software application will be used during peak hours, what qualities should you, as the systems designer, enforce while designing the solution? Most importantly, what is the justification for your stated design quality? Discuss four qualities (The full answer should be ~300 words).

10 marks

Question 2 – Systems Architecture

As the new Systems Architect for Phumla Kamnandi Hotels, you have been tasked with developing the best client-server computing architecture for an online reservation system. Write a memo (business memorandum) that describes to the project manager your reasons for selecting an n-tiered (multi-tier) architecture over a two-tiered architecture. In this memo to the project manager, provide details about the different components of the architecture you would include. (The memo should be ~300 words).

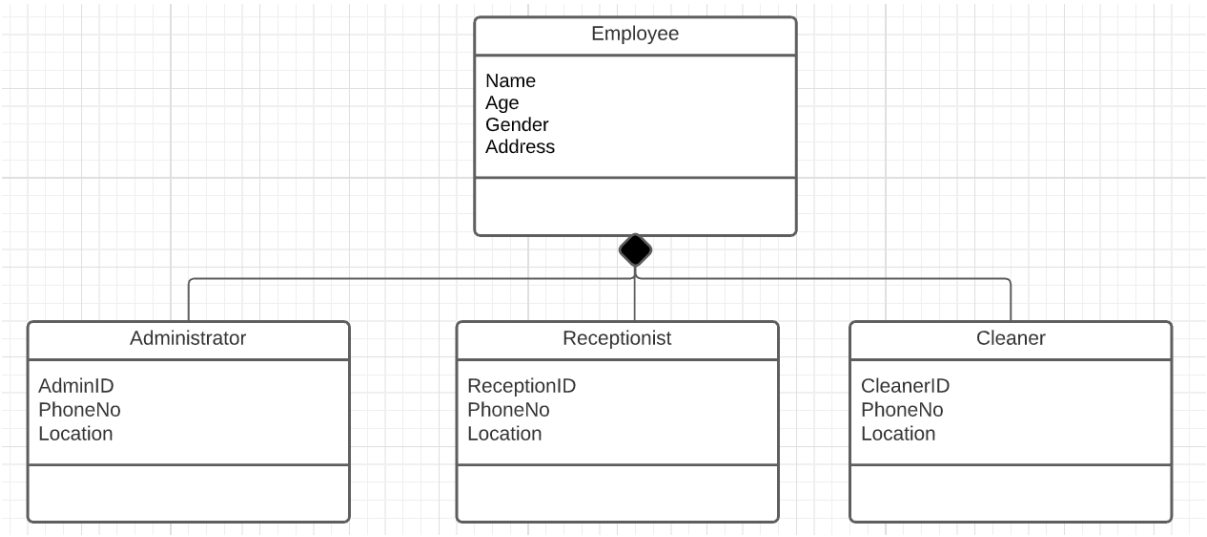
Tips: https://edu.gcfglobal.org/en/business-communication/how-to-write-a-clear-business-memo/1/

10 marks

Question 3 – Introduction to Class Diagrams

You are an intern system analyst at Phumla Kamnandi Hotels. The IT Manager requests you to develop a basic program that keeps track of employees in a typical hotel. Only three types of employees are managed by the hotel: administrators, receptionists and cleaners. The manager needs to have access to information about each employee, specifically information relating to their name, age, gender, address etc; as well as their working hours and salary levels and other relevant details (use your imagination).

You can start with the following Domain class diagram which is merely provided as an example. Add the correct attributes /methods as indicated in the case study:



Describe in your own words (do not copy and paste from external sources), with the scenario above in mind, answer the questions below:

1. Explain what you understand by the term encapsulation? (1)

2. Explain what you understand by the term specialisation? (1)
3. Explain what you understand by the term generalisation? (1)
4. Explain what you understand by the term inheritance? (1)
5. Is this class model an example of specialization or generalization? Motivate. (2)
6. Add the appropriate visibility markers to the attributes and any additional attribute that you may deem to be essential. (4)
7. Add the appropriate data types to the attributes. (4)
8. Add the appropriate methods together with their associated parameters and visibility markers to each class. (6)

20 marks

Marking Guide

0 – No solution

25% – Poorly structured answer with little relevance to the question and the case provided

50% – Demonstrated some understanding of the concept. Relevant design consideration mentioned, but not that well justified

75% – Good understanding of concept with good justification

100% – Very good answer