



THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF COMPUTER SCIENCE
B.Sc. DEGREE PROGRAMME 2019/2020
FINAL EXAMINATION
CSU4302/CPU2140: SYSTEM ANALYSIS AND SOFTWARE ENGINEERING
DURATION: TWO HOURS ONLY (2 HOURS)

Date: 04th January, 2020 Time: 9.30 a.m. to 11.30 a.m.

Question Q1 is compulsory. Answer any THREE questions out of the remaining.

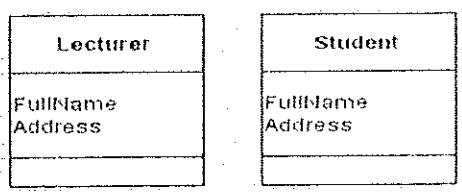
Q1).

- I. Briefly describe the purpose of each of the following types of UML diagrams for system analysis and design:
 - a. Activity Diagram
 - b. Sequence Diagram
 - c. State Diagram

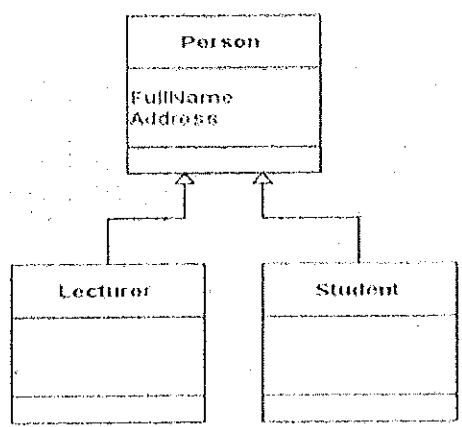
- II. Draw a Use Case diagram for the description given below.
Assume that the open university needs a system to automate the process of registration of students for the temporary residence facility (TRF). Over the study period, university students can reserve rooms in the TRF by login into the system. They must specify their name, student number, course, year, and identify a room of the TRF as their preferences. The system reserves the requested rooms to the particular students depending on their availability. Then the system sends notifications to students confirming the booking and sends the same notification to the administrator for approval.

III.

- 1.
 - a. Explain the following model:



- b. Explain the following model:



- c. Discuss which one of the above two models is better.

2. Identify the classes, attributes, relationships, and multiplicities and draw the **class diagrams** for the cases given below.
 - a. Every student is enrolled in a degree programme. Each student may be enrolled in a set of courses. Some courses are core courses for one or more degree programmes and some courses are elective courses for one or more degree programmes.
 - b. A book consists of a front cover, multiple chapters, and a back cover. Front cover consists of a title page and a preface; back cover consists of multiple appendixes and an index.

Q2).

- I. When do you argue against the use of the waterfall model to develop a software system? Explain at least two main situations.
- II. Explain why incremental development is the most effective approach to develop software systems used in the businesses than real-time systems?
- III. Discuss the situation where you can apply the RAD model for software development.

Q3).

- I. Discuss the usage of use case diagrams for the requirement engineering process.
- II. As a student of the Software Engineering course, do you propose to address user requirements and system requirements explicitly in the requirements engineering process? If "Yes" explain "why"?
- III. Why reliability metrics are used to develop critical system specifications?

Q4).

- I. Briefly describe what reference architecture is?
- II. Identify the stage/s in which the regression testing and stress testing are performed during the software testing process and discuss their importance for obtaining a quality software?
- III. The first step in the new software system implementation process is to prepare the organization for the implementation. Suggest a way you can implement this step.

Q5).

- I. Briefly describe four types of software maintenance. Use appropriate examples for the explanations.
- II. What are the advantages of using function point and object point to measure the productivity of software development over the line of code?
- III. Do you agree the behavior of a programmer, who produces software with a low number of defects, but he/she consistently ignores organizational quality standards? Give reasons for your view.

Q6).

- I. Explain the distinguishes in software project management than the other engineering project management.
- II. As a student of the Software Engineering course .explain why you should not use only the title of a document to identify the document in a configuration management system. Briefly describe a standard for a document identification scheme that may be used for all projects in an organization.
- III. Discuss the use of CASE tools to system building.

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