



THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
B.Sc. DEGREE PROGRAMME – 2010/2011
CPU2140: FUNDAMENTALS OF SYSTEM ANALYSIS AND SOFTWARE ENGINEERING
CLOSED BOOK TEST - 2

DURATION : ONE AND HALF HOURS ONLY (1.5HRS)

Date : 19th April 2011

Time: 4.00pm – 5.30pm

Answer ALL Questions.

Q1).

- I. Briefly describe the importance of the architectural design of software.
- II. What are the two main strategies used to decompose a sub-system into modules. Briefly describe one of them by considering the advantages and disadvantages of it.

Q2).

- I. Draw the *use case diagram* and write a use case narrative/description for a selected use case for the problem definition given below.

“Disaster Management System (DMS) is a distributed information system for accident management. It includes many users, such as FieldOfficers, who represent the police and fire officers who are responding to an accident, and Dispatchers - the police officers responsible for answering 911 calls and dispatching resources to an incident. DMS supports both users by keeping track of incidents, resources and task plans. It also has access to multiple databases such as hazardous materials database and emergency operations procedures. The FieldOfficer and the Dispatcher interact with the system through different interfaces. FieldOfficers access DMS through a mobile personal assistant, Dispatchers access DMS through a workstation. FieldOfficers activate the “Report Emergency” function of DMS from his laptop, if an accident is noticed. Emergency level of the accident, type, location and brief description of the situation are required and notifies the Dispatcher by a pop-up dialog. Dispatcher reviews the information and creates an incident. All the information sent by the FieldOfficer is automatically included in this incident. The acknowledgment is generated and sent to the FieldOfficer once the resources are allocated successfully by the Dispatcher.”

- II. Assume you have been hired as a software engineer at a newly started software development company. They have got a requirement to develop a security system for ABC (PVT) LTD main gate. You are given the event flow of the use case description of the system as follows. Identify the objects, its attributes and functions and draw the *class diagram* for it.

<i>Flow of Event</i>	<ol style="list-style-type: none">1. The company vehicle horns to be let out.2. The horn recognizer "hears" a horn.3. If it's the company vehicle horning, the horn recognizer sends a request to the gate to open.4. The gate opens.5. The company vehicle goes outside.6. The gate shuts automatically.7. After a while company vehicle horns to be let back inside to the company premises8. The horn recognizer "hears" a horn (again)9. If it's the company vehicle horning, the horn recognizer sends a request to the gate to open10. The gate opens again11. The company vehicle goes back inside.12. The door shuts automatically.
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Q3).

- I. *"It is not good to use the conventional software development life cycles (ex: waterfall model) if requirements of the system change rapidly"*
 - a. Comment on this statement.
 - b. Briefly describe a software development method that you can use when the system requirements change rapidly.
- II. Briefly describe the problems associated with the *Component Based Software Engineering*, though it is becoming the main development approach for the businesses and commercial systems.

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