

THE OPEN UNIVERSITY OF SRI LANKA  
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE  
B.Sc. DEGREE PROGRAMME – 2012/2013  
**CPU2140: SYSTEM ANALYSIS AND SOFTWARE ENGINEERING**  
**NO BOOK TEST - 2**



DURATION: ONE AND A HALF HOURS ONLY (1.5HRS)

Date : 24<sup>th</sup> September 2013

Time: 4.00pm – 5.30pm

Answer ALL Questions.

Q1).

I.

- a. What is the use of “include” and “extend” relationships in a use case diagram?
- b. Draw the use case diagram for the following Hotel Management System case study.

There are two types of customers: Tour-group customers and Individual customers. Both can book, cancel, check-in and check-out of a room by Phone or via the Internet. There is a booking process clerk and the reception staff who manage it. A customer can pay his bill by credit card.

II. Identify the most suitable relationship type among generalization, aggregation, composition and association and draw the class diagram (sketch) for each relationship description given below.

- a. A file is an ordinary file or a directory file.
- b. Files contain records.
- c. Teacher teaches subjects.
- d. A drawing object is a text, a geometrical object, or a group.
- e. Modems and keyboards are input / output devices.
- f. Classes may have several attributes.
- g. A route connects two cities.
- h. A country has a capital city.
- i. A chef uses a fork.
- j. Employee works for employer.

III. A customer decides to purchase a DVD player for her. She begins by calling the sales department of the PC vendor and sales department asks her to tell her to call to the customer support. She then calls the customer support and they put her on hold while talking to the engineering department. Finally, customer support tells the customer about

several supported DVD options. The customer chooses a DVD and it is shipped by the mail department. The customer receives the DVD, installs it satisfactorily and then mails her payment to accounting department of the vender.

- a. Identify the *objects*, its *attributes*, *operations* and *relationships* and construct the *class diagram* for the case study given above.
- b. Construct the *activity diagram* for the case study given above.

Q2).

- I. Why architectural design is so important in system design?
- II. *Repository Model* and *Client Server Model* are system organizational styles that are widely used. Discuss two (02) advantages and two (02) disadvantages of each of them.
- III. Components in Component Base Software Engineering are usually developed using an object oriented approach, but they differ from objects in a number of important ways. List three (03) of them?
- IV.
  - a. Why rapid software development is important for today?
  - b. Briefly describe how Agile Method helps for rapid software development.

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