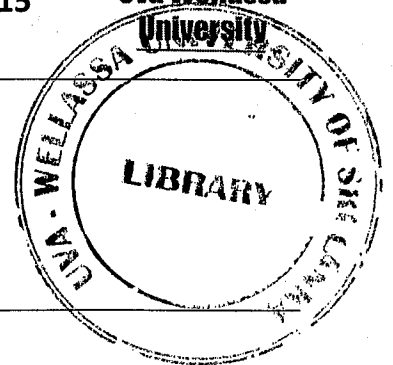


Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
100 level 2nd Semester Examination – Sept./Oct. 2015
CST 122-2 Object Oriented Analysis and Design



**Uva Wellassa
University**



Instructions to candidates

Duration: Two (02) hours

Number of questions: Four (04)

Answer all questions

Mark allocation: 100

01.

- a. What are the main stages that a designer must follow during the software designing?
(05 mark)
- b. Briefly describe the four (04) major elements of an object model.
(04 mark)
- c. Explain information and behavior of an object using an example.
(06 mark)
- d. Write short notes for each of the following
 - i. Aggregation
 - ii. Composition
(06 mark)
- e. Read the following scenario and list the use cases.
A teacher can record grades. Whenever grades are recorded, they are also saved to disk. A teacher can update grades. Whenever grades are updated, the existing grade is loaded. Then the updated grade is saved to disk. A teacher, a registrar and/or a student can view grades. Whenever any of these people view grades, they must always log on to the system. If their log on fails, they must re-authenticate their user name and password. A registrar can generate report cards. A teacher can distribute report cards.
(04 mark)

02.

- a. Suppose we wish to model an application for issuing business registration licenses. Identify:
 - i. Three (03) classes for the model
 - ii. At least three (03) attributes for each class
(10 mark)
- b. How would you measure the quality of a software system design?
(05 mark)
- c. Briefly explain an important design principle that helps the developers to increase the quality of a software system.
(10 mark)

03.

- a. What do class cohesion and coupling mean?
(05 mark)
- b. Explain the level of cohesion and coupling (High/Low) for a quality design?
(05 mark)
- c. Explain the following cohesion levels giving examples.
 - i. Logical cohesion
 - ii. Procedural cohesion(05 mark)
- d. Which of the following statements are true? For those that are false, explain why.
 - i. "Trainee" is an example of a class
 - ii. "Grady Booch" is an example of a class
 - iii. "createJob" is an example of an object
 - iv. "deleteFile" is an example of an operation
 - v. "name" is an attribute(10 mark)

04. Consider the following scenario of an ATM of a bank.

A customer wants to withdraw money from his bank account. He inserts his card in to an ATM. The ATM prompts "Enter the PIN". The customer enters his PIN. The ATM internally retrieves the account number from the card, encrypts it and the PIN together and sends it over to the bank. The bank verifies the account and PIN. If PIN is correct, the ATM displays "Enter amount". When the customer gives the correct amount, ATM draws money from the bank account and pays out the amount.

- a. Draw a Collaboration diagram for the above system.
(15 mark)
- b. Suppose that the PIN and the account are verified by the bank. Now, when the customer gives the amount to withdraw, the ATM checks the account for sufficient funds and pays out the amount. Illustrate this portion of the scenario using a Sequence diagram.
(10 mark)