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University Examinations 2012/2013

FOURTH YEAR, FIRST SEMESTER, EXAMINATION FOR THE DEGREE OF BACHELOR OF BUSINESS INFORMATION TECHNOLOGY

ICS 2302: SOFTWARE ENGINEERING

DATE: DECEMBER 2012 **TIME: 2 HOURS**

INSTRUCTIONS: *Answer question **one** and any other **two** questions*

QUESTION ONE – 30 MARKS

a. Explain software engineering paradigm. (2 Marks)
b. Describe the software process. (3 Marks)
c. Identify three activities undertaken in an object oriented software design approach. (3 Marks)
d. Identify three important parts of an SRS document. (3 Marks)
e. Identify three features of an object oriented design approach. (3 Marks)
f. Explain three reasons for the failure of water fall model. (3 Marks)
g. Explain three drawbacks of RAD model. (3 Marks)
h. Explain the use of process technology tools (4 Marks)
i. Briefly explain the principles of software project scheduling. (3 Marks)
j. Explain the objectives of requirements analysis. (3 Marks)

QUESTION TWO – 20 MARKS

a. Identify stages through which a software product undergoes during its lifetime. (6 Marks)
b. Explain the problems that might be faced by an organization if it does not follow any software life cycle model. (6 Marks)
c. Identify two activities carried out during each phase of a spiral model. (8 Marks)

QUESTION THREE – 20 MARKS

a. Using withdraw cash from ATM example, describe documenting functional requirements. (6 Marks)
b. Consider the following fire-alarm systematic scenario:

The owner of a large multi-stored building wants to have a computerized fire alarm system for his building. Smoke detectors and fire alarms would be placed in each room of the building. The fire alarm system would monitor the status of these smoke detectors. Whenever a fire condition is reported by any of the smoke detectors, the fire alarm system should determine the location at which the fire condition is reported by any of the smoke detectors, the fire alarm system should determine the location at which the fire condition has occurred and then sound the alarms only in the neighbouring locations. The fire alarm system should also flash an alarm message on the computer consol. Firefighting personnel man the console round the clock. After a fire condition has been successfully handled, the fire alarm system should support resetting the alarms by the firefighting personnel.

i. Analyse the above fire-alarm system scenario and describe three differences between function oriented and object oriented design approach. (6 Marks)

c. Explain the following:
   i. Reverse engineering (4 Marks)
   ii. Re-engineering (4 Marks)

QUESTION FOUR – 20 MARKS

a. Consider the following Trading House Automation System (TAS) scenario:
The trading house wants us to develop a computerized system that would automate various book keeping activities associated with its business. The following are the salient features of the system to be developed:
   - The trading house has a set of regular customers. The customers place orders with it for various kinds commodities. The trading house maintains the names and address of various kinds of commodities. The trading house maintains the names and addresses of its regular customers. Each of these regular customers should be assigned a unique customer identification number (CIN) by the computer. The customers quote their CIN on every order they place.
   - Once order is placed, as per current practice, the accounts department of the trading house first checks the credit worthiness of the customer. The credit worthiness of the customer is determined by analyzing the history of his payments to different bills sent to him in the past. After automation, this task has to be done by the computer.
   - If the customer is not credit-worthy, his orders are not processed any further and an appropriate order rejection message is generated for the customer.
   - If a customer is credit worthy, the items that have been ordered are checked against a list of items that the trading house deals with. The items in the order which the trading house does not deal with are processed any further and an appropriate apology message for the customer's for these items is generated.
   - The items in the customer's order that the trading house deals with are checked for availability in the inventory. If the items are available in the inventory in the desired quantity, then:
     - A bill with the forwarding address of the customer is printed
     - A material issue slip is printed. The customer can produce this material issue slip at the store house and take delivery of the items.
     - Inventory data is adjusted to reflect the sale to the customer.

- If any of the ordered items are not available in the inventory in sufficient quantity to satisfy the order, then these out-of-stock items along with the quantity ordered by the customer and the CIN are stored in a "pending order" file for the further processing to be carried out when the purchase department issues the "generate indent" command.
- The purchase department should be allowed to periodically issue commands to generate indents. When a command to generate indents is issued, the system should examine the "pending order" file to determine the orders that are pending and determine the total quantity required for each of the items. If should find out the addresses of the vendors who supply these items by examining a file containing vendor details and then should print out indents to these vendors.
- The system should also answer managerial queries regarding the statistics of different items sold over any given period of time and the corresponding quantity sold and the price realized:
    - Analyse and draw the context diagram for the trading house automation problem. (5 Marks)
    - Draw the level one DFD for trading house automation system. (5 Marks)
    - Construct the data dictionary for the DFD model of trading house automation system. (5 Marks)

b. Explain intermediary pattern and circumstances when it can be used. (5 Marks)

QUESTION FIVE – 20 MARKS

a. Explain the taxonomy of software testing. (6 Marks)
b. Describe CASE tool taxonomy as used in software development. (5 Marks)
c. Discuss five software design concepts as used in software engineering. (5 Marks)
d. Explain software design documentation in detail. (4 Marks)