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The Open University of Sri Lanka
B.Sc. Degree Program – Level 05
Final Examination 2008/2009
CSU3277: Software Engineering: Paper II
Duration: 2½ Hours

Date: 30th December 2008 Time: 1.00pm – 3.30pm

Answer **FOUR** questions **ONLY.**

1.

i. Describe the purposes of the analysis phase of a systems study.
ii. Give an example of a transaction processing system.
iii. What is the major difference between the waterfall and spiral models?
iv. What is the difference between MIS and DSS?
v. The qualifications and experience of three candidates for the post of a systems analyst are given below. Who would you choose as the most promising candidate? Justify your answer.

Name	*Age*	*Education*	*Experience*
Mr. A. Pradeep	30	B.Sc Diploma in Computer Applications	Operator 3 yrs. Programmer 4 yrs. Senior programmer 4 yrs
Mr. K.Vasantha	32	B.Sc Diploma in Management	Office Manager 6 yrs.
Mr. P.Kumara	25	Master of Computer Applications, Diploma in Management.	Management Trainee 1 year.

2.

i. Under what circumstances and for what types of application should organizations consider using the prototype development method?
ii. Can prototyping be used with any other development methodologies? Explain the reasons for your answer.
iii. Define the acronym CASE. What are some of the facilities typically included in a CASE product?
iv. How do CASE tools help in the process of software development?

3.

i. What kind of Coupling and Cohesion is desirable in Software design?

ii. A software module performs error processing for an engineering analysis package. The module is called when computed data exceeds specified bounds. It performs the following tasks:

- Computes supplementary data, based on computed data
- Produces an error report to the user terminal.
- Performs follow-up calculations requested by the user
- Updates a database
- Enables Menu selection for subsequent processes

Although the above processing parts (procedures) are loosely related, each of them is an independent functional entity that might best perform as a separate module.

What level of Cohesion that the above module would belong to? Justify your answer.

iii. Draw ER-diagrams showing the connectivity for the following:

- An invoice is sent to one customer and there can be many invoices sent to the same customer.
- A part is used in many projects and many projects use the part.
- Students take subjects. Each subject can be taken by many students and each student can take many subjects.
- Persons apply for loans. Each loan must be made to one person but each person can make many applications.
- An operator can work on many machines and each machine belongs to one department but a department can have many machines.

4.

i. What is the advantage of showing a data flow graphically, rather than using a narrative description to study or explain a system?

ii. Is data flow allowed between an external entity and a data store? Answer "Yes" or "No" then justify your answer.

iii. Obtain a DFD for a simple payroll system described below.

A list of employees with their basic pay is sent to a clerk. The clerk calculates the gross pay using standard allowances which are known for each pay slab. Deduction statements such as loan repayment, subscription to associations, etc, are also calculated by another clerk who matches these slips of gross pay and calculates net pay. This slip is used by a third clerk to write out pay cheques for each employee and send to respective employees. The total pay bills paid are also computed.

5.

Develop a decision tree and a decision table for the following:

The gatekeeper of an amusement park is given the following instructions for admitting persons to the park:

- If the person is under three years of age, there is no admission fee.
- If a person is under 16, half the admission is charged and this admission is reduced to a quarter, if the person accompanied by an adult (the reduction applies only if the person is under 12).
- Half the admission fee is charged if the person is between 16 and 18 years and is a student; otherwise the full admission is charged.
- Full admission fee is charged for those who are above 18.
- A discount of 10 percent is given for a person over 16 if they are in a group of 10 or more.
- There is no student concession during weekends. Under 12-s get one free ride on weekdays.

6.

Outline the steps involved in the Michael Jackson Program Design method.

A serial file consists of batches of records. Records in the same batch have the same key value. There are no batch header or trailer records. A listing of the file, with each batch starting at the top of a new page is required. Derive a program structure using JSD to perform this task.