UNIVERSITI SAINS MALAYSIA

First Semester Examination
Academic Session 1997/98

September 1997

CSI503 - Information System Analysis and Design

Duration : [3 hours]

INSTRUCTION TO CANDIDATE:

- Please ensure that this examination paper contains **FOUR** questions in **FOUR** printed pages before you start the examination.

- Answer **ALL** questions. You can choose to answer either in Bahasa Malaysia or English.

ENGLISH VERSION OF THE QUESTION PAPER

1. (a) Describe systems analysis and the major activities that occur during this phase of the systems development life cycle.

(20 marks)

(b) Describe four traditional techniques for collecting information during analysis. When might one be better than another?

(20 marks)

(c) The systems analysis consulting firm of Flow Associates is working on a systems design project for Wind and Waves Waterbeds, Inc.

Description	Task	Must Follow	Expected Time (Days)
Draw data flow	P	None	9
Draw decision tree	Q	P	12
Revise tree	R	Q	3
Write up project	S	R, Z	7
Organise data dictionary	T	P	11
Do output prototype	X	None	8
Revise output design	Y	X	14
Design database	Z	T, Y	5

Using the data from above, draw a Gantt chart to help Flow Associates organise their design project.

(20 marks)

(d) Starting with a context diagram, draw as many nested DFDs as you consider necessary to represent all the details of the employee hiring system described in the following narrative. You must draw at least a context and a level-0 diagram. In drawing these diagrams, if you discover that the narrative is incomplete, make up reasonable explanations to complete the story. Supply these extra explanations along with the diagrams. Here is the narrative.

Projects Inc. is an engineering firm with approximately 500 engineers of different types. The company keeps records on all employees, their skills, projects assigned, and departments worked in. New employees are hired by the personnel manager based on data in an application form and evaluations collected from other managers who interview the job candidates. Prospective employees may apply at any time. Engineering managers notify the personnel manager when a job opens and list the characteristics necessary to be eligible for the job. The personnel manager compares the qualifications of the available pool of applicants with the characteristics of an open job, then schedules interviews between the manager in charge of the open position and the three best candidates from the pool. After receiving evaluations on each interview from the manager, the personnel manager makes the hiring decision based upon the evaluations and applications of the candidates and the characteristics of the job, and then notifies the interviewees and the manager about the decision. Applications of rejected applicants are retained for one year, after which time the application is purged. When hired, a new engineer completes a non-disclosure agreement, which is filed with other information about the employee.

(40 marks)

2. (a) What is the purpose of logic modeling? What techniques are used to model decision logic?

(10 marks)

(b) A computer supplies firm called True Disk has set up accounts for countless businesses in Dosville. True Disk sends out invoices monthly and will give discounts if payments are made within ten days. The discounting policy is as follows: If the amount of the order for computer supplies is greater than RM1,000, subtract 4 percent for the order; if the amount is between RM500 and RM1,000, subtract a 2 percent discount; if the amount is less than RM500, do not apply any discount. Any special order (computer furniture, for example) is exempt from all discounting.

Develop a decision table for True Disk discounting decisions, when the condition alternatives are limited to Y and N.

(25 marks)

(c) The following is an example of a grade report for one student at the Universiti Sains Malaysia:

Grade Report
2nd Semester 1997

Name: Ali	Major: CS
Student: CS8888	Status: Final

Course Number	Course Title	Instructor	Instructor's Department	Grade
CS201	Systems Analysis	Ngo, D.	P.P. Sains Komputer	B
CS202	Conceptual Foundations	Byrne, J.	P.P. Sains Komputer	A

Convert the user view to a 3 NF relation. Show each step along the way.

(40 marks)

(d) An airline reservation is an association between a passenger, a flight, and a seat. Select a few pertinent attributes for each of these entity types and represent a reservation in an E-R diagram.

(25 marks)

3. (a) List two ways screens can be kept consistent. Give three ways to facilitate movement between screens.

(20 marks)

(b) List the five most legible foreground and background colour combinations for screen use.

(20 marks)

(c) Design one sample data entry screen for a hotel registration system using the data entry guidelines. Support your design with arguments for each of the design choices you made.

(30 marks)

(d) Describe some typical dialogue scenarios between users and a hotel registration system. Represent the dialogues through the use of dialogue diagrams.

(30 marks)

4. (a) Using transform analysis, convert the following level-0 data flow diagram for a payroll system to a refined structure chart.
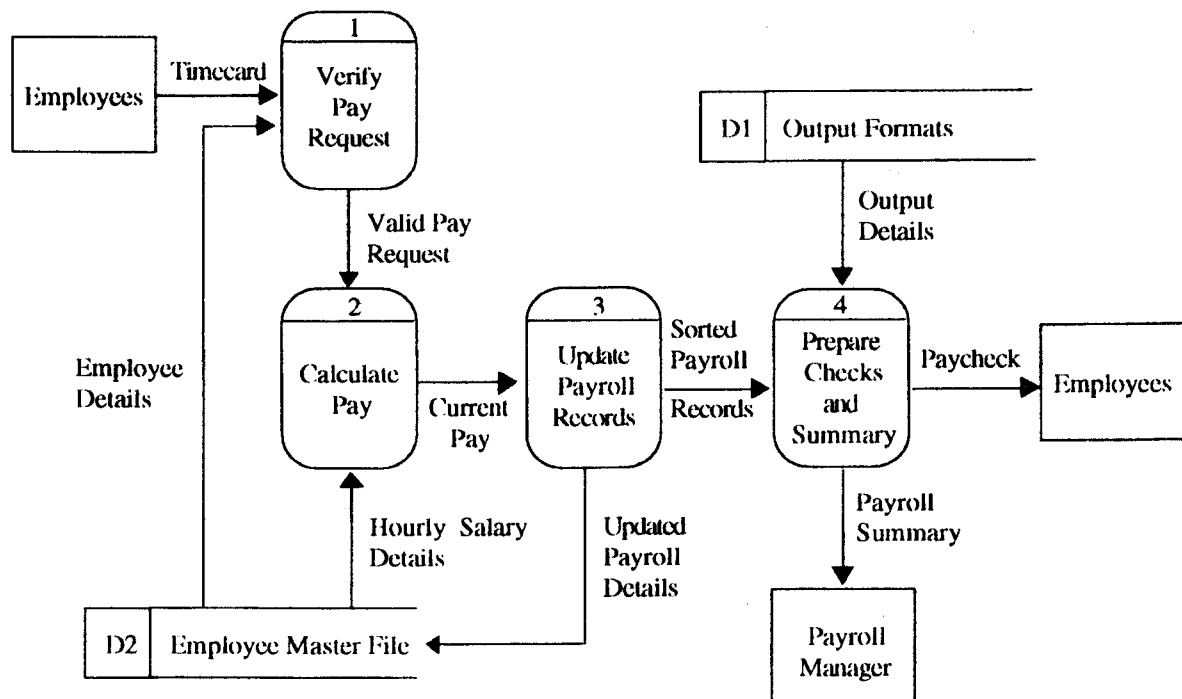

Figure 1 : The data flow diagram for a payroll system

(40 marks)

(b) Draw a Nassi-Shneiderman (N-S) chart to update your checkbook. Start with the balance the last time you balanced it. Subtract checks, electronic withdrawals, and any service charges. Add deposits and interest.

(20 marks)

(c) Describe the four approaches to implementation.

(20 marks)

(d) Describe the factors that influence the cost of maintenance. Are any factors more important? Why?

(20 marks)

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