
UNIVERSITI SAINS MALAYSIA

First Semester Examination
Academic Session 2002/2003

September 2002

CIT504 – Analysis, Design and Management of Information Systems

Duration : 3 hours

INSTRUCTION TO CANDIDATE:

- Please ensure that this examination paper contains **FOUR** questions in **FIVE** printed pages before you start the examination.
 - Answer **ALL** questions.
 - You can choose to answer either in Bahasa Malaysia or English.
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ENGLISH VERSION OF THE QUESTION PAPER

1. (a) Describe the key 'best practices' and concepts in the Unified Process (UP). (20/100)

- (b) The most important idea in the Unified Process (UP) is 'iterative development'. But many professional software developers do not practice 'iterative development' in their day-to-day 'extreme programming' (XP) work. Explain in detail your arguments. (20/100)

- (c) Based on the two sequence diagrams below, explain how one could minimize the complexity of object design in the creation of a cash payment instance.

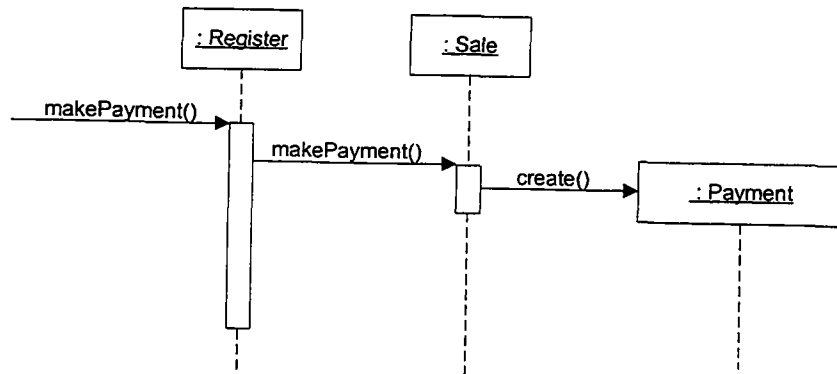


Figure 1: An object design showing Sale creates Payment

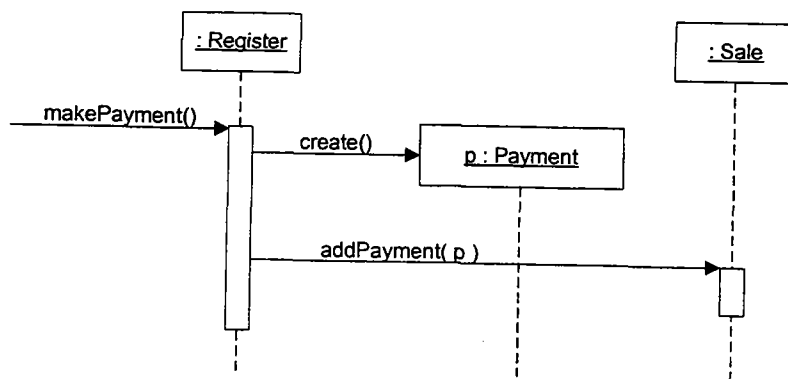


Figure 2: An object design showing Register creates Payment

- (d) Discuss **two (2)** cases whereby accepting low cohesion is justifiable. (30/100)

- (30/100)

2. (a) In object-oriented analysis and design, the same UML diagrams are used in both phases, but more details are added in the design phase and in subsequent iterations. Explain how this situation helps to ensure that the requirements defined during the analysis phase are not overlooked during the design phase, as compared to the transition from structured analysis to structured design.

(20/100)

- (b) Based on the OO technology and other more recent technologies oriented to patterns, components and agents, discuss how the reusability of software units could be enhanced. Your discussion should also take note of XML Web services and other related internet protocols. You need to explain why OO technology itself is not sufficient to support software reusability, replaceability and interchangeability.

(40/100)

- (c) In your group project, you have drawn a set of UML diagrams to specify and document one of the following pre-assigned components:

- Inventory Control and Management
- Orders Processing, Negotiations and Invoicing
- Accounts Receivable
- Accounts Payable
- General Ledger
- Payroll
- Personnel

Suppose you have completed another iteration, draw a set of UML diagrams to show your *new* analysis and design ideas/results which would add value to the component you have explored and tested in your project. You are required to draw the following UML diagrams:

- One use case diagram.
- One system sequence diagram for the whole component.
- One activity diagram for the whole component.
- One sequence and/or collaboration diagram.
- One statechart diagram for an important object.
- One class diagram for the important classes.
- One multi-tier architecture.

(40/100)

3. (a) (i) Define E-Commerce in term of its process.
- (ii) List and describe briefly the major types of infrastructure that serves as a framework for the Electronic Commerce applications. (30/100)
- (b) You are the CIO for a large university hospital. The medical staff of the oncology ward would like to build an expert system for diagnosis. Your preliminary review shows that the financial investment would be great. You have the options to use either System Development Life Cycle (SDLC) or end-user system development or prototyping approach to build this system.
- State the choice of your approach and cite the reasons behind your choice. (20/100)
- (c) (i) What are the limitations of financial models for establishing the value of information systems? State the limitations.
- (ii) Why is it more difficult to measure productivity in information-intensive industries? Explain briefly. (20/100)
- (d) (i) List the major types of information systems that are used to support knowledge management in an organization.
- (ii) Describe the functions of each major types of information systems that you have identified above. (30/100)
4. (a) Assume that you are the president of a new mortgage loan firm. You have found that you can beat competitors by using a DSS that was built using data on the characteristics of people who default on their loan payments. The DSS your firm built is the best in the industry for discerning who is a **bad risk** (bad risk is the term bank use for parties who are likely to default). This advantage allows you to offer loans at lower interest rates because you can employ fewer loan officers, who base their credit decision on the output of the system, without wasting time using their own judgement. Civil right advocates have sent you letters of complaint regarding the process of decision making in your firm which solely based on the output of DSS and not supplemented it with human judgement.

Write your responses to defend the use of DSS in your firm.

(30/100)

- (b) Identify and describe briefly the special measures required to ensure the reliability, availability, and security of information systems that are linked to the Internet.
(20/100)
- (c) Analyze the relationship among ethical, social and political issues raised by information systems. Write your analysis.
(30/100)
- (d) State the **five (5)** major dimensions to consider when building an international information systems.
(20/100)

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