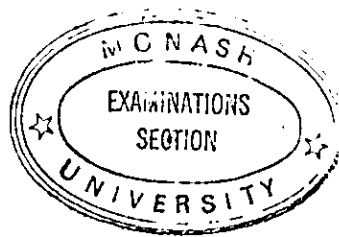




Exam November 2008, questions

Systems Development (Monash University)



Monash University
Semester Two Examination
2008

Faculty of Information Technology

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EXAM CODES: FIT2001 / IMS9001
TITLE OF PAPER: Systems Analysis and Design
EXAM DURATION: 3 hours writing time
READING TIME: 10 minutes

THIS PAPER IS FOR STUDENTS STUDYING AT: (tick where applicable)

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| <input type="checkbox"/> Berwick | <input type="checkbox"/> Clayton | <input type="checkbox"/> Malaysia | <input type="checkbox"/> Off Campus Learning | <input type="checkbox"/> Open Learning |
| <input checked="" type="checkbox"/> Caulfield | <input type="checkbox"/> Gippsland | <input type="checkbox"/> Peninsula | <input type="checkbox"/> Enhancement Studies | <input type="checkbox"/> Sth Africa |
| <input type="checkbox"/> Pharmacy | <input type="checkbox"/> Other (specify) | | | |

Candidates must complete this section

STUDENT ID _____ DESK NUMBER _____

During an exam, you must not have in your possession, a book, notes, paper, calculator, pencil case, mobile phone or other material/item which has not been authorized for the exam or specifically permitted as noted below. Any material or item on your desk, chair or person will be deemed to be in your possession. You are reminded that possession of unauthorized materials in an exam is a discipline offence under Monash Statute 4.1.

AUTHORISED MATERIALS:

Calculator NO
Open Book NO
Specifically Permitted Items NO

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	M a r k s	
Part 1		40
Part 2		30
Q 3.1		10
Q 3.2		8
Q 3.3		6
Q 3.4		6
TOTAL		100

INSTRUCTIONS TO CANDIDATES:

1. Print your name and ID number in the section above.
2. Answer all questions in the space provided in this examination paper. Answers given anywhere else will not be marked.
3. You must use a pen (other than red) to write your answers.
4. This paper consists of 3 Parts. Individual marks for each question are indicated.
5. Total marks for this examination are 100.

PART 1. MULTIPLE CHOICE QUESTIONS

(20 * 2 marks) = 40 marks

Marking Scheme for Multiple Choice Questions:

2 marks for a correct answer

0 marks for a wrong or more than one answer

0 marks for no answer

Answer every question by circling the letter corresponding to the ONE best answer. Example:

QUESTION XX:

I learned in FIT2001 that:

- ☒ A. The assignment can be done one day before the submission date
- B. If the day is too cold, I can excuse myself from going to lectures
- C. FIT2001 is a common core unit at the Faculty of Education at Monash
- D. FIT2001 is a common core unit at the Faculty of IT at Monash
- E. None of the above

If you change your mind about an answer, place a line through the circle you have drawn around the incorrect answer and circle the correct answer. Example:

QUESTION XX:

I learned in FIT2001 that:

- ☒ A. The assignment can be done one day before the submission date
- B. If the day is too cold, I can excuse myself from going to lectures
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- ☐ D. FIT2001 is a common core unit at the Faculty of IT at Monash
- E. None of the above

QUESTION 1.1:

A determination of economic feasibility of the project always requires a thorough ____.

- A. proof of concept prototype
- B. system scope document
- C. cost/benefit analysis
- D. work breakdown structure (WBS)

QUESTION 1.2:

A concept that allows subclasses to share the characteristics of their superclasses is called _____.

- A. encapsulation
- B. aggregation
- C. multiplicity
- D. inheritance

QUESTION 1.3:

An external agent or actor that receives data from the system is called a _____.

- A. activity
- B. destination
- C. source
- D. trigger

QUESTION 1.4:

A _____ is a data flow diagram that summarises all processing activity within the system in a single process symbol.

- A. level of abstraction
- B. context diagram
- C. data flow
- D. data store

QUESTION 1.5:

During the planning phase of the system development life cycle (SDLC), the _____ helps to define the scope of the problem.

- A. proof of concept prototype
- B. project evaluation and review technique (PERT) chart
- C. critical path method (CPM) chart
- D. context diagram

QUESTION 1.6:

A metaphor of human-computer interaction (HCI) in which the user interacts directly with objects on the display screen, is referred to as _____.

- A. document metaphor
- B. direct manipulation metaphor
- C. desktop system units
- D. dialog metaphor

QUESTION 1.7:

Questionnaires can be useful in information gathering when users ____.

- A. do not have time for interviews
- B. need prompting to respond to questions
- C. are not well-informed
- D. are widely distributed geographically

QUESTION 1.8:

High coupling ____ in a system.

- A. is easier to maintain
- B. adds complexity
- C. decreases visibility between classes
- D. reduces ripple effects in a system when changes occur

QUESTION 1.9:

The objective of a structured walkthrough is to ____.

- A. fix problems in the system
- B. find errors and problems
- C. walkthrough a piece of work
- D. inform the project leader of progress

QUESTION 1.10:

User interface objects in a sequence diagram often are labeled with the stereotype ____.

- A. control
- B. entity
- C. view or boundary
- D. persistent

QUESTION 1.11:

A class that represents a many-to-many association between two other classes is called an ____ class.

- A. association
- B. associative entity
- C. encapsulated
- D. inherited

QUESTION 1.12:

____ refers to the degree to which all of the code within a module contributes to implementing one well-defined task.

- A. Cohesion
- B. Coupling
- C. Pseudocode
- D. Transform analysis

QUESTION 1.13:

An event that occurs as a result of reaching a point in time is called a ____ event.

- A. state
- B. temporal
- C. logical
- D. external

QUESTION 1.14:

High-level design that defines the overall structure of a system is called ____ design.

- A. system
- B. functional
- C. nodal
- D. architectural

QUESTION 1.15:

The traditional approach to information systems development describes activities as ____.

- A. objects that interact with people and each other
- B. objects that send and respond to messages
- C. processes carried out by people or computers
- D. a collection of interacting objects

QUESTION 1.16:

Which of the following is that part of the three-layer architecture that contains the programs that implement the business rules of the application?

- A. user layer
- B. data layer
- C. domain or business logic layer
- D. view layer

QUESTION 1.17:

The “includes” relationship represents the idea of ____.

- A. one use case being used by another
- B. classes included within use cases
- C. embedding classes within other classes
- D. embedding states within other states

QUESTION 1.18:

Which of the following types of contracts will most likely put most of the risk on the vendor?

- A. Cost-plus-incentive
- B. Cost-plus-percentage
- C. Cost-plus
- D. Fixed-dollar

QUESTION 1.19:

Use cases can be organized by ____.

- A. subsystem
- B. the needs of the project team
- C. grouping all cases that involve a specific actor
- D. all of the above

QUESTION 1.20:

A good ____ includes a detailed explanation of the information needs of an organization and the processing requirements that must be fulfilled.

- A. packaged software
- B. prototype
- C. turnkey system
- D. request for proposal (RFP)

END OF PART 1

$(4 + 3 + 3 + 4 + 3 + 3 + 4 + 3 + 3) = 30$ marks

(4 marks)

[illegible]

(3 marks)

Question 2.3 Structured analysis

(3 marks)

Why might an analyst describe a process with a decision tree or table instead of structured English?

Question 2.4 Structured design

(4 marks)

Briefly explain the data gathering technique *joint application development (JAD) session*.

Question 2.5 Object oriented analysis

(3 marks)

What are the two basic parts of a use case model? What is its purpose or objective?

Question 2.6 Object oriented design

(3 marks)

What is three-layer design? What are the most common layers found in three-layer design?

Question 2.7 Interface design

(4 marks)

In human-computer interface design, what is meant by the terms visibility and affordance?

Question 2.8 System interfaces

(3 marks)

List three types of input controls used to reduce input errors. Briefly describe how each works.

Question 2.9 Implementation alternatives

(3 marks)

What are the advantages of purchasing a packaged solution to support a particular application (rather than a custom-built system)? What are the disadvantages or dangers?

END OF PART 2

**PART 3. SYSTEMS ANALYSIS AND DESIGN
QUESTIONS**

(10 + 8 + 5 + 7) = 30 marks

Question 3.1 Class diagram

(10 marks)

Develop a domain class model for the Downtown video case study based on the following description.

DownTown Videos is a chain of 11 video stores scattered throughout Melbourne. The chain started with a single store several years ago and has grown to its present size. Paul Lowes, the owner of the chain, knows that to compete with the larger chains will require a state-of-the-art movie rental system. You have been asked to develop the system requirements for the new system.

Each store has a stock of movies and video games for rent. It is important to keep track of each movie title to know and to identify its category (classical, drama, comedy, and so on), its rental type (new release, standard), movie rating, and other general information such as movie producer, release date, cost, and so forth. In addition to tracking each title, the business must track each individual copy to note its purchase date, its condition, and its rental status. User functions must be provided to maintain this inventory information.

Customers, the lifeblood of the business, are also tracked. DownTown considers each family to be a customer so special mailings and promotions are offered to each household. For any given customer, several people may be authorized to rent videos and games. The primary contact for each customer can also establish rental parameters for other members of the household. For example, if a parent wants to limit a child's rental authorization to only PG movies, the system will track that.

Each time a movie is rented, the system must keep track of which copies of which movies and games are rented; the rental date and time and the return date and time; and the household and person renting the movie. Each rental is considered to be open until all of the movies and games have been returned. Customers pay for rentals when checking out videos at the store.

Continue your answer to question 3.1 here.

Question 3.2 Use case modeling

(5 marks)

Use the description of the Downtown video system given in 3.1 to draw a preliminary use case diagram for the library system. Please make sure your diagram includes a use case named “return movies”.

Question 3.3 Use case narrative

(5 marks)

Develop a detailed use case narrative for the use case “return movies” for the Downtown video system.

Question 3.4 Sequence diagrams

(10 marks)

Draw a first-cut sequence diagram (not a system sequence diagram) for the use case “return movies” for the downtown video system.

END OF PART 3

THE NEXT THREE PAGES ARE SPARE SPACES

**CLEARLY NUMBER YOUR ANSWERS AND
INDICATE IN THE RESPECTIVE QUESTIONS
ON THE PREVIOUS PAGES
IF THERE ARE ADDITIONAL ANSWERS ON THESE PAGES**

SPARE SPACES FOR ANSWERS

SPARE SPACES FOR ANSWERS

SPARE SPACES FOR ANSWERS

END OF FINAL EXAM PAPER