EXAM 9 June 2017, questions

Systems Development (Monash University)

Office Use Only

MONASH University

Faculty of Information Technology

EXAM CODES: **FIT2001 SAMPLE EXAM**

TITLE OF PAPER: **Systems Development**

EXAM DURATION: 2 hours writing time

READING TIME: 10 minutes

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

☐ Berwick	☑ Clayton	☐ Malaysia	☐ Off Campus Learning	☐ Open Learning
☐ Caulfield	☐ Gippsland	☐ Peninsula	☐ Enhancement Studies	☐ Sth Africa
☐ Parkville	☐ Other (specify)			

AUTHORISED MATERIALS

OPEN BOOK	☐ **YES**	☒ **NO**
CALCULATORS	☐ **YES**	☒ **NO**
SPECIFICALLY PERMITTED ITEMS **if yes, items permitted are:**	☐ **YES**	☒ **NO**

INSTRUCTIONS

1. The exam paper is divided into **THREE Sections**.
   - Section A: MCQ (20 marks)
   - Section B: Short Questions (50 marks)
   - Section C: Case Study (30 marks)
2. Attempt **ALL** questions in this examination.
3. For Section A, using the Multiple-Choice Form, mark your answers for Section A by shading the letter with a pencil corresponding to the ONE **best** answer
   - 1 mark for a correct answer
   - 0 marks for a wrong, no answer or more than one answer
4. For Sections B and C, write your answers in the spaces provided in this examination paper.

SECTION A: MCQ (1 x 20 = 20 marks)

1) Which one of the following statements does not represent an area in which a systems analyst needs to possess skills?

A. Business strategy

B. Problem solving

C. Inter-personal skills

D. Programming

3) Which one of the following statements is true about agile development philosophy?

A. Responding to change over following a plan.

B. Individuals and interactions over processes and tools.

C. Working software over comprehensive documentation.

D. Customer collaboration over contract negotiation.

E. All of the above.

4) Which one of the following statements best represents an example of giving a poor impression about analysts to stakeholders?

A. Analysts understanding users' expectations

B. Analysts talking in a business language that users appreciate

C. Analysts look well dressed

D. Analysts talking in technical jargons

5) A major benefit of object-oriented design and programming techniques over other programming paradigm is ____.

A. data encapsulation

B. succinctness of programs

C. availability of third-party libraries

D. mature and active research

6) A metaphor of human-computer interaction (HCI) in which the interactions between the user and the computer can be seen as conversations, is referred to as ____.

A. document metaphor

B. direct manipulation metaphor

C. desktop system units

D. dialog metaphor

7) Researching vendor solutions can be useful in information gathering when ____.

A. users do not have time for interviews

B. similar problems have been solved by other companies

C. all stakeholders have been identified and available

D. users are widely distributed geographically

8) Which one of the following statements best represents a benefit of phased deployment strategy?

A. increases complexity

B. clarifies management complexity

C. reduces management complexity

D. invite more activities, milestones and management complexity

9) Which one of the following statements does not represent an essential element of storyboard prototype?

A. who the users are

B. where the users are

C. what happens to the behavior of users

D. how the interactions happen

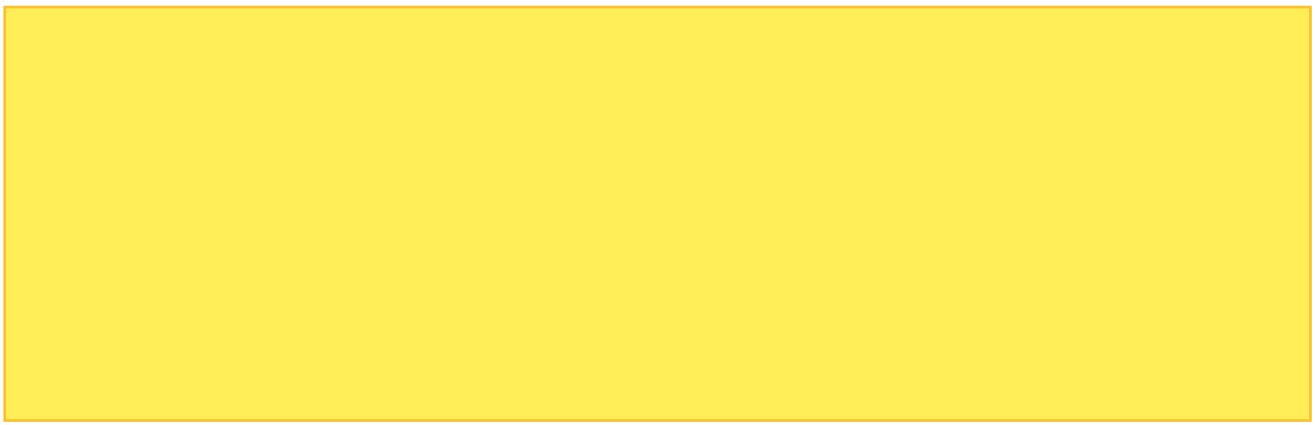
10) In a design class diagram, controller classes mediate between:

A. boundary class and data access class

B. boundary class and entity class

C. boundary class and controller class

D. controller class and data access class



12) A _____ provides guidelines to follow for completing every activity in systems development, including specific models, tools, and techniques.

A. systems development life cycle

B. business process analysis

C. system development methodology

D. generalization hierarchy

13) Which of the following statements best represents a valid characteristic of a use case?

A. a use case must have an initiator

B. a use case represents an activity

C. a use case needs to be described

D. all of the above

14) Which of the following is **not** one of the principles of user-centered design?

A. Usability over functionality.

B. Evaluate design to ensure usability.

C. Use iterative development.

D. Focus early on the users and their work.

15) High cohesion of classes____.

A. increases system complexity

B. makes such classes difficult to maintain

C. helps to group functionality logically

D. makes testing harder

16) Which of the following statements does not represent a valid type of software maintenance?

A. Corrective

B. Executive

C. Perfective

D. Adaptive

17) The <<includes>> relationship represents the situation of one use case being used by another one. It is similar to the ____relationship.

A. <<extends>>

B. <<invokes>>

C. <<aggregates>>

D. None of the above.

18) What is an important activity in the **support** phase of a SDLC?

A. System maintenance.

B. User acceptance testing.

C. System installation.

D. Documentation of functionality.

19) A good requirements specification report typically includes information on ____.

A. scope of system analysis

B. all functional and non-functional requirements

C. high-level system architecture

D. a test plan

20) Which one of the following statements best represents a key activity of software systems post-implementation review?

A. Identify what went wrong

B. How well original requirements were met

C. Comparing expected and actual benefits

D. All of the above

SECTION B: SHORT QUESTIONS (50 marks)

Question 1 (5 marks)

Barbara Singleton, manager of western regional sales at the WAMAP Company, requested that the IT department develop a sales force management and tracking system that would enable her to better monitor the performance of her sales staff. Unfortunately due to the massive backlog of work facing the IT department, her request was given *a low priority*. Alter six months of inaction by the IT department, Barbara decided to take matters into her own hands. Based on the advice of friends, Barbara purchased a PC and a simple database software and constructed a sales force management and tracking system on her own.

Although Barbara's system has been "completed" for about six weeks it still has many features that do not work correctly, and some functions are full of errors. Barbara's assistant is so *mistrustful* of the system that she has secretly gone back to using her old paper-based system, since it is much more reliable. Over dinner one evening, Barbara complained to a systems analyst friend "*I don't know what went wrong with this project. It seemed pretty simple to me. Those IT guys wanted me to follow this elaborate set of steps and tasks using a rigorous systems development methodology, but I didn't think all that really applied to a PC-based IT system. I just thought I could build this system and tweak it around until I got what I wanted without all the fuss and bother of the methodology the IT guys were pushing. I mean, doesn't that just apply to their big expensive systems?*"

Discussion Question

Assuming you are Barbara's systems analyst friend, how would you think of the ways through which a systems development approach would offer benefits?

Question 2 (5 marks)

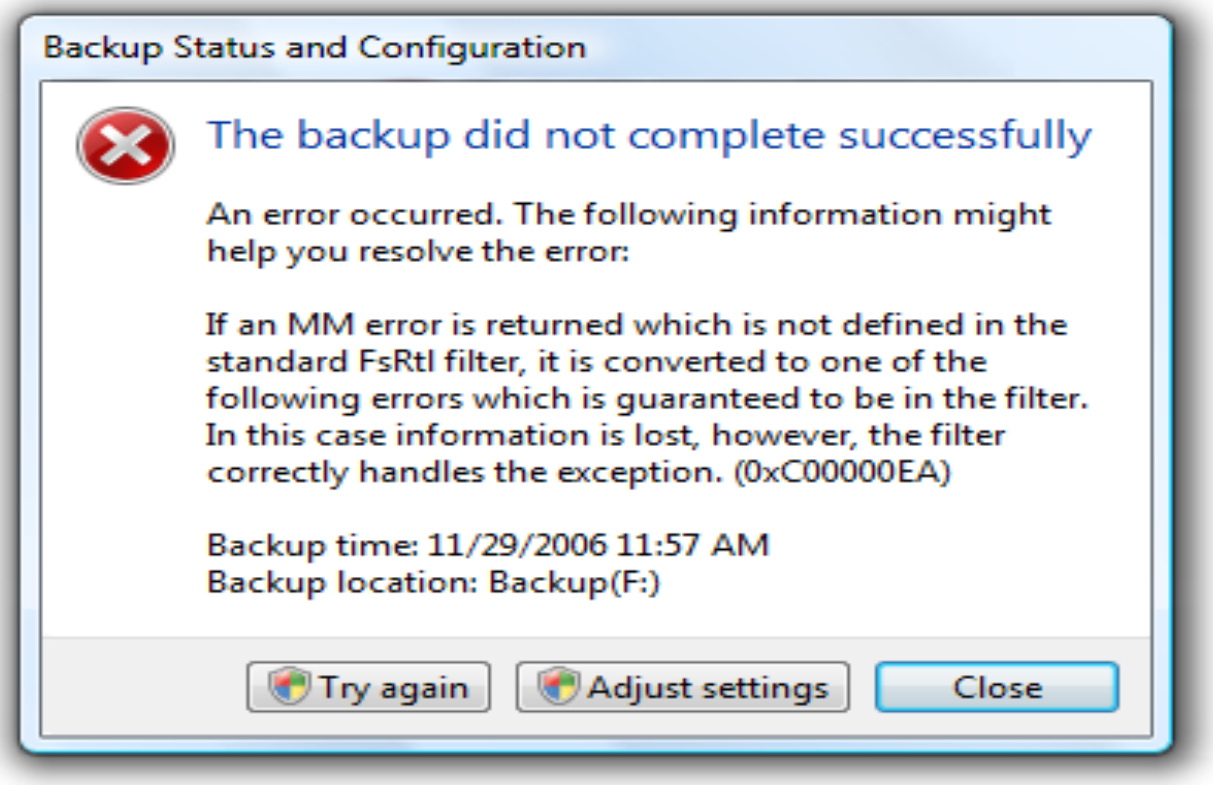
How does prototyping relate to Scrum approach? Discuss.

Question 3 (5 marks)

Use case realization is a process used to create a sequence diagram that represents a use case. A common design technique used when performing use case realization is to add a use case control class to a sequence diagram. What is the purpose of a use case controller class?

Question 4 (5 marks)

Carefully look at the following error message and indicate what is wrong with this message. Present your opinions in terms of three components which are associated with a typical error message.



Question 5 (5 marks)

Develop an activity diagram based on the following narrative. Note any ambiguities or questions that you have as you develop the model. If you need to make assumptions, also note them.

Case Report

The purchasing department handles purchase requests from other departments in the company. People in the company who initiate the original purchase request are the "customers" of the purchasing department. A case worker within the purchasing department receives the request and monitors it until it is ordered and received. Case workers process requests for the purchase of products under $1,500, write a purchase order, and then send it to the approved vendor. Purchase requests over $1,500 must first be sent out for bid from the vendor that supplies the product. When the bids return, the case worker selects one bid and then writes a purchase order and sends it to the vendor.

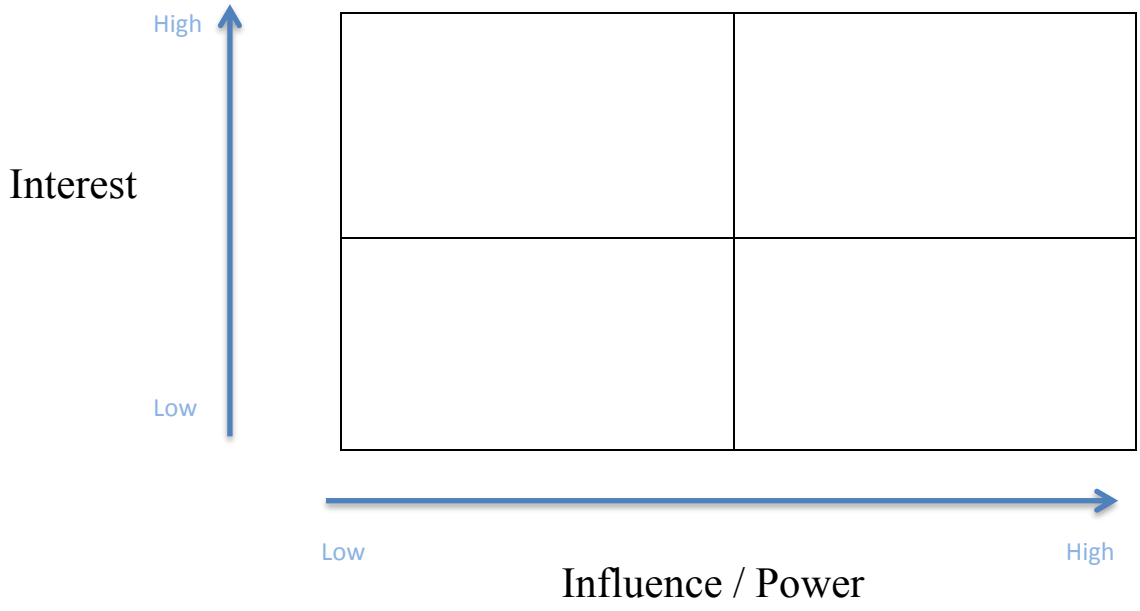
Question 6 (5 marks)

A reputed IT company was recently contracted to build a web-based procurement system for the Australian Defence Force (ADF). The project involves undertaking a rigorous systems analysis investigation of the procurement process followed by the ADF. The goal is to design a web-based system that will be used by both civilian staff involved in ADF procurement process as well as the many army officers who place orders for procurement. The development of the system is sponsored by the army general, who heads the logistics division of the ADF. He will need to read many of the high level reports generated by the system. The system will also require inputs from many lower ranking non-officer army personnel.

The IT company also wants to consider the group of mid-level managers (Captains and Majors) who they believe will be more actively involved in daily operations once the new IT system is deployed. These managers, although involved in managing the procurement process, do not know the exact details of how the process works at the lowest levels.

Based on the description above:

Identify the key stakeholders and place them on the quadrants in the matrix below, by considering their influence/power and interest in the development of the electronic purchasing system.



Question 7 (5 marks)

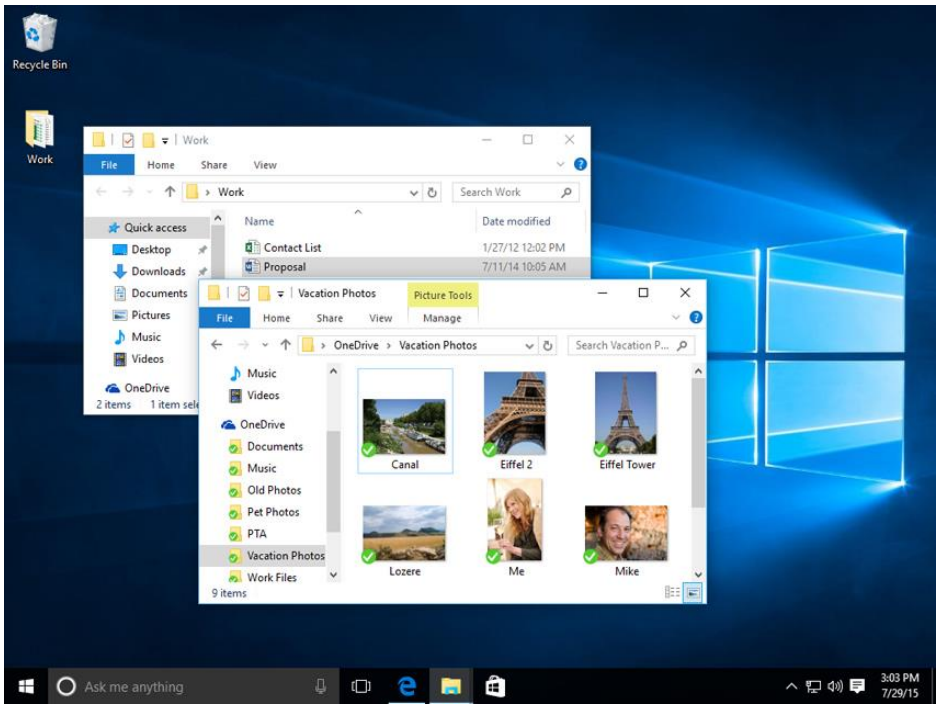
Discuss three differences between corrective and perfective maintenance of a software system.

Question 8 (5 marks)

Requirements gathering are critical in learning users and stakeholder's requirements of their future system. Discuss three fact-finding techniques.

Question 9 (5 marks)

Carefully examine the interface shown in figure below and describe three metaphors of Human-Computer Interaction that can be seen in this interface.



Question 10. (5 marks)

Draw and describe the three-layer architecture when designing an external environment for deployment.

SECTION C: CASE STUDY (30 marks)

Read the following case study that describes the Real Estate Multiple Listing Service System (MLSS). Questions C1, C2, C3 and C4 are based on this case study.

The Real Estate Multiple Listing Service system supplies information that local real estate agents use to help them sell houses to their customers. During the month, agents list houses for sale (listings) by contracting with homeowners. The agent works for a real estate office and sends information to add a listing to the Multiple Listing Service Systems (MLSS) clerk. The clerk upon receiving the request verifies the existence of the agent, and when the agent is found valid, would then add the listing to the Listing database maintained via the MLSS system. Therefore, any agent in the community can get information on the listing.

Information on a listing includes the address, year built, square feet, number of bedrooms, number of bathrooms, owner name, owner phone number, asking price and status code. At any time during the month, an agent might directly request information on listings that match customer requirements, so the agent contacts the MLSS clerk with the request. Information is provided on the house, on the agent who listed the house, and on the real estate office for which the agent works. For example, an agent might want to call the MLSS clerk to ask additional questions or call the homeowner directly to make an appointment to show the house.

Twice each month (on the 15th and 30th), the MLSS produces a listing book that contains information on all listings. These books are sent to all of the real estate agents. Many real estate agents however prefer a printed version of the books (which are easier to flip through). Hence, MLSS clerk sends those printed books to the real estate offices even though the information contained in those printed books may sometimes be out of date. Sometimes agents and owners decide to change information about a listing, such as reducing the price, correcting previous information on the house, or indicating that the house is sold. The agents (on behalf of the real estate office) send in these change requests to the MLSS clerk.

NOTE: Please list any assumptions that you make.

Question 1 (10 marks)

Develop a domain model class diagram for the Real Estate Multiple Listing Service System case study. The model should include all relevant domain classes, and show their attributes, relationships and relationship multiplicities.

Question 2 (5 marks)

Draw a use case diagram for the Real Estate Multiple Listing Service System study. Make sure you include a use case called "Add a listing".

Question 3 (5 marks)

Develop a detailed use case narrative for the use case "Add a listing" for the Real Estate Multiple Listing Service System case study.

Question 4 (10 marks)

Draw a first-cut sequence diagram (not a system sequence diagram) for the use case "Add a listing" for the Real Estate Multiple Listing Service System case study.

(The End)