

تم الرفع بواسطة:

هدى شريف

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## Faculty of Engineering & Technology

### Department of Computer Science

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Course: Software Engineering (COMP 433)

#### Sections:

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2: Dr. Samer Zain (SM)

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#### Midterm Exam

Student Name: سارة عبد Student ID: ...1191974.

Enter your student name and number in the spaces provided above. Do this now.

CLOSED BOOK EXAM: BOOKS, NOTES OR OTHER MATERIAL MAY NOT BE BROUGHT INTO THE EXAMINATION ROOM.

TIME ALLOWED: 90 minutes

ANSWER ALL QUESTIONS.

**Question One [40 Marks]**

- a) In your opinion as a software engineer, what would be the best overall (or main) software process model you would apply for the following scenarios. [20 Marks]

State your answer in the provided space.

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- i. To develop a secure ATM sub-system to integrate with an existing banking system. The developed ATM sub-system will be deployed across a 376 ATM machines. It shall include an industry validated 99.9% accuracy money notes counting dispenser, and three-level security that uses a card reader, a pin code and a biometric reader.

=> Waterfall

- ii. To develop a human resources management system to be installed in three public hospitals. The system will provide complete employee management system in terms of recruitment, employment, training, and so forth. Estimated number of employees in terms of doctors, nurses, management, and services is about 1500 personnel.

=> Waterfall

- iii. To develop an engaging mobile game for children aged 2-9 years old. The game should provide multi-level challenge puzzles and learning functions to teaching mathematical skills. The game should work on two mobile operating systems: Apple iOS and Android. It should also work on different screen sizes phone and iPad devices.

=> Incremental Development, Waterfall, and prototyping.

- iv. To develop a medical device to measure vital signs, of blood pressure, temperature, and oxygen saturation level. The device will be used in hospitals for real-time medical use and therefore shall provide less than 0.01% error in its accuracy and produce results in less than 5 seconds.

=> Waterfall

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- b) Choose the most correct answer for the following questions. [20 Marks]

[20 Marks]

20

Draw a clear circle on your chosen answer. Questions that have more one circle drawn will be given a ZERO mark.

- i. \_\_\_\_\_ is a software attribute that is concerned with building a trustworthy software that has the ability to evolve to meet the changing needs of customers.
- Dependability.
  - Maintainability.
  - Robustness.
  - Efficiency.

ii. Which of the following software development process models is based on explicit risk management activities to manage and reduce risks?

- a. Boehm spiral model.
- b. Waterfall.
- c. Reuse-oriented.
- d. Agile.

iii. A \_\_\_\_\_ is a requirement elicitation technique system analysts observe users in their real working environment.

- a. Closed interviews.
- b. Focus groups.
- c. Scenarios.
- ~~d. Ethnography.~~

iv. A \_\_\_\_\_ is an estimate made of whether the software product to be developed can be done within the time, budget, and current team experience.

- a. Software vision.
- b. Feasibility study.**
- c. Development and testing plan.
- d. None of above.

v. Which of the following features is considered to be absent when working in Waterfall model?

- a. Detailed work plan. ✓
- b. Continuous customer involvement.**
- c. Integration testing.
- d. Development team members can work on other projects at different phases.

**Question Two [36 Marks]****a) Answer the following questions:**[16 Marks] 12

- i. List two advantages of the prototyping method. Write your answer in the space provided below.
- => ~~it can help the Developer to know if the customer is understand well about the system feature also help the customer to explain more details to developer,~~
- => ~~the Developer can be more sure about the features (to confirm if he can make with these plate form).~~
- ii. From a management perspective, list two problems of the incremental (or evolutionary) model that would face a software project manager. Write your answer in the space provided below.
- => ~~the software project manager can't have enough time to work on the system~~
- => ~~② the software project manager can't have enough time to work on the system  
also no can't know the team velocity~~
- => ~~③ software project manager can't determine specific appointment about when we finished the system because it not plan advance~~

**b) Consider the following set of software requirements:**[20 Marks] 16

R1.0: The system shall enable the inventory manager to search inventory items based on item number, item name, part of the item description, or category name.

R2.0: The search results of inventory items shall be displayed to the system user in no longer than 5 seconds.

R3.0: The system shall be easy to be operated by average users and shall not take a long time to train new users to use it

R4.0: The system should enable the inventory manager to generate and view inventory and financial reports.

**Choose the most correct answer from the following.**

Draw a clear circle on your chosen answer. Questions that have more one circle drawn will be given a ZERO mark.

1) The above requirements describe a set of:

- A. User requirements
- B. System requirements. X
- C. Both A and B
- D. None of above.

4 out of [5]

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2) The functional requirements are:

- A. R1.0, R2.0
- B. R1.0, R2.0, R4.0
- C. R1.0, R4.0
- D. None of above

3) The non-functional requirements are

- A. R1.0, R2.0
- B. R2.0, R3.0
- C. R1.0, R2.0, R4.0
- D. None of above

4) The non-verifiable non-functional requirements are:

- A. R3.0
- B. R2.0
- C. R3.0
- D. R4.0

5) The mandatory (must have) requirements are

- A. All of them.
- B. R1.0, R2.0
- C. R1.0, R2.0, R3.0
- D. None of above.

### Question Three [24 Marks]

a) Describe two different techniques that are used to validate software requirements

[12 Marks]

- => 1) Question the customer about the requirement
- => 2) make an interview with the customer and meeting (close interview also)

(2)

make a scenarios with the customer.

b) Name four output artefacts that are the result of the design phase?

[12 Marks]

- => the system show the shape of system (Graphical user interface)
- => Subsystem / module
- => complete and balance full to the requirement
- => we know who the system should do it
- => general view about the interface to the system

(3)

End of Questions

5 out of [5]

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