



Faculty of Engineering & Technology

Department of Computer Science

Course: Software Engineering (COMP 433)

Second Semester

Sections:  1 Dr. Adel Taweel

2 Dr. Samer Zain

Midterm Exam

Tuesday, 18 April 2017, 14:00-15:30

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Maher Saleem Khdeir

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: **75 minutes**

ANSWER **ALL QUESTIONS.**

مراجعة  
Q2.b.i

+4

92

## Question One [34 Marks]

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reus

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.

State your answer in the provided space.

[14 Marks]

- 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.

=> ~~reuse oriented waterfall~~ since its critical system  
~~reuse since~~ reuse oriented since we use components already exists

- ii. To develop university student self registration system that can support 23500 students, and up-to 7800 concurrent students' access, would not need more than 55 minutes (user) training and need to be delivered in 4 years for inc operational use.

=> incremental since the delivery time is large, and we can show the user and get feedback every 1 month for example.

b) Choose the most correct answer for the following questions.

[20 Marks]

Draw a clear circle around your chosen answer. Questions that have more one circle drawn will receive 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.

a. Dependability.

b. Maintainability.

c. Robustness.

d. 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 where stakeholders answer a predefined set of questions.

a. Closed interviews.

b. Focus groups.

c. Scenarios.

d. Observations.

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.

(b)

v. The \_\_\_\_\_ is the final testing stage in which the system is tested by the customer with real data at real environment conditions.

a. Acceptance testing.

b. System testing.

c. Integration testing.

d. Unit testing.

### Question Two [34 Marks]

a) Regarding software process models:

[14 Marks]

i. List two characteristics of the agile software development model. Write your answer in the space provided below.

=> flexible, cope with changes

=> incremental planning ~~and~~ periodic feedback from customer

ii. From a management perspective, list two problems of the incremental model that would face a software project manager. Write your answer in the space provided below.

=> process progress is not clear <sup>(visible)</sup> since there is no advance plan

=> every time new requirement is requested => the ~~structure~~ <sup>Architecture</sup> of the software will be ~~deprecate~~ <sup>(بطلان)</sup> since we add new requirement that affects other

b) Consider the following set of software requirements:

[20 Marks]

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. functional

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

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. non-fun

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

Choose the most correct answer from the following. Draw a clear circle around your chosen answer. Questions that have more one circle drawn will receive a ZERO mark.

- i. The above requirements describe a set of:
- a. User requirements
  - b. System requirements.
  - c. Both A and B
  - d. None of above.
- ii. 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
- iii. 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
- iv. The non-verifiable non- functional requirements are:
- a. R1.0
  - b. R2.0
  - c. R3.0
  - d. R4.0
- v. 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.

L (4)

- 21

R3.0

### Question Three [32 Marks]

Consider the following description or scenario:

Rami downloaded a new mobile app, named myHealth, which asks him to register by entering his personal information and email, and a username and a password. After, Rami enters his medical information (current diseases, current medications). myHealth provides two services: doctor appointments reminder and diagnosis advice. For reminders, Rami shall enter details of his upcoming doctor appointments so that 30 minutes before the time is due, the software produces a notification on the mobile's screen and simultaneously send an email to Rami. For a diagnosis advice, the system asks Rami first to enter his symptoms. Based on the entered symptoms and Rami's medical information, myHealth displays a list of possible diagnoses, if any is found.

Write your answers in the provided space.

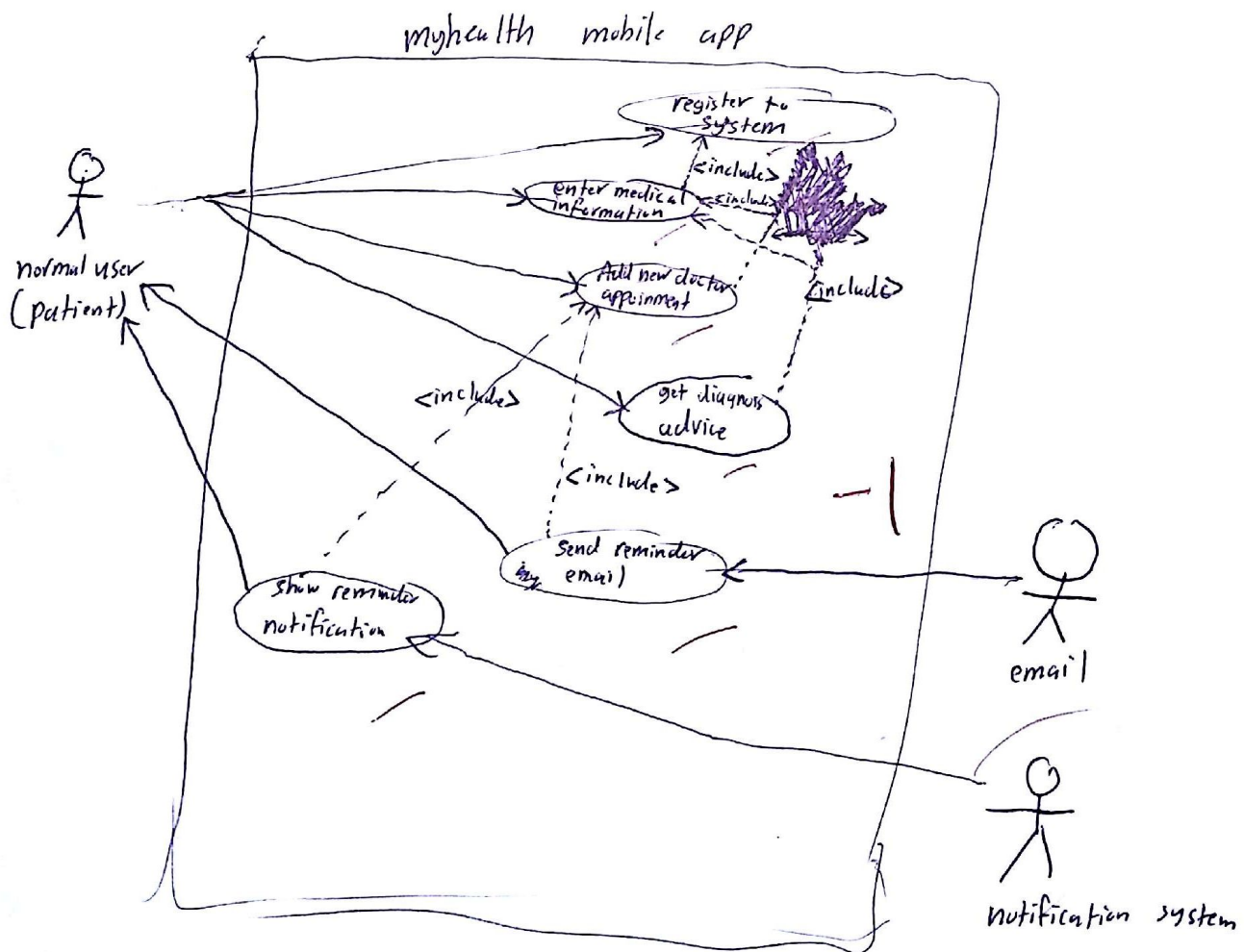
a) List the Actors, and describe what each represent, from the above scenario. [12 Marks]

① Normal user (patient) : the user that registered for the system, and the can get appointment notifications (by email and phone) and can get diagnosis advice.

② email : the non-human actor he will send email to the "normal user" 30 mins before appointment

③ notification system : non-human actor he will make notification to user 30 min before appointment.

b) Draw a use case diagram based on the above scenario, showing the identified Actors and their respective use cases, using correct UML 2.0 notations. [20 Marks]



END OF QUESTIONS

"Good luck comes to those with ambition and work hard for it"