

Mansoura University
Software Engineering (1)
Date: 4/1/2016
Final Exam.

Faculty of Computer and Information Sciences
Third year Computer Science Department
Time allowed: Three hours
60 points

Answer the following questions:

Question # 1 (15 points)

a. (10 points) State whether the following sentences are TRUE or FALSE, and correct the false sentences:

- 1. Performance testing is a part of the acceptance testing.**
- 2. Probably, developing a prototype may not meet the normal organizational quality standards.**
- 3. Web-based systems should be developed and delivered incrementally.**
- 4. Use cases may be used to add details to the sequence diagrams.**
- 5. In developing an application system using COTS, the design process becomes concerned with how to use its configuration features.**
- 6. Probability of data corruption on failure is one way to measure the system robustness.**
- 7. Program testing can reveal the absence of errors not their presence.**
- 8. Data-driven models are used to define the dynamic behavior of a system as it is executing.**
- 9. In architectural design, a physical view shows how at run-time, the system is composed of interacting processes.**
- 10. An interaction model demonstrates the other systems in the environment of the system being developed.**

b. (5 points) Depending on your background about the student registration system at your university, define one of its functional requirements and choose one way to specify this requirement in details.

Question # 2 (15 points)

a. (4 points) Discuss in details the implementation issues rather than that been have covered in the programming process.

b. (6 points) You are a developer at a software company. You have assigned a task to develop a "patient information system for a health care" using MDA. Describe in details the steps for developing this system.

c. (5 points) Suggest and draw the appropriate software architecture for the following systems (give reasons for your answer):

(I) A security system that inspects the customers entering a building.

(II) A hospital management information system.

Question # 3 (15 points)

a. (4 points) Why savings in cost from reusing existing software is not simply proportional to the size of the components that are reused? Explain in details.

b. (5 points) Draw the state diagram for the following:

- An online shopping system.

- A digital clock which sets, and displays the time in hours:minutes:seconds.

c. (6 points) Identify testing portions for a function defined as follows: it enters N five-digits integers and sorts them in an ascending order if N is odd and in an descending order if N is even. Derive set of tests for this function.

Question # 4 (15 points)

a. (3 points) Draw a chart showing the process of prototype development, what are the benefits of prototyping?

b. (6 points) Suppose you have a tourism company system, discuss in details the steps for developing this system. Justify your answer by some UML charts.

c. (6 points) For the system developed in (4.b), define some real tests to test your system using:

- Requirements based testing.

- Features tested by scenario.

Good Luck

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