Universiti Malaysia PAHANG

Engineering · Technology · Creativity

UNIVERSITI MALAYSIA PAHANG

FACULTY OF COMPUTER SYSTEM & SOFTWARE ENGINEERING

MID-TERM EXAMINATION

COURSE	:	SOFTWARE QUALITY ASSURANCE
COURSE CODE	:	BCS 3263
DATE	:	1th APRIL 2014
TIME	:	2 HOURS
LECTURER	:	AZLINA BINTI ZAINUDDIN
SEMESTER	:	SEMESTER II SESSION 2013/2014
PROGRAM CODE	:	BCS

INSTRUCTIONS TO CANDIDATES

1. Answer **ALL** questions.
2. All answers to a new question should start on new page.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

This examination paper consists of **FIVE (5)** printed pages including front page.

SECTION 1
Answer all questions. Total mark: 20 Marks

1. Define software error, software fault and software failure. Explain the differences between these undesirable software statuses.

[6 Marks]

2. Suggest a situation where a new type of software failure ("bug") appears in a software package that has been serving 300 clients for the first time five years since the software package was first sold to the public.

[4 Marks]

3. List **THREE (3)** and briefly describe the various causes of software errors.

[6 Marks]

4. Classify **NINE (9)** causes of error according to the group responsible for the error (put in a table format): the client's staff, the systems analysts, the programmers, the testing staff. Map the group based on the sharing responsibility from the causes of errors.

[4 Marks]

SECTION 2
Answer all questions. Total mark: 30 Marks

Question 1

According to McCall's factor models:

a) What are the three factor categories?

[3 Marks]

b) What factors are included in each of the categories?

[9 Marks]

c) The software requirement document for the tender for development of "Super-lab," a software system for managing a hospital laboratory, consists of chapters according to the required quality factors as follows: correctness, reliability, efficiency, integrity, usability, maintainability, flexibility, testability, portability, reusability and interoperability.
In the following table you will find sections taken from the mentioned requirements document. For each section, fill in the name of the factor that best fits the requirement (chose only one factor per requirements section).

No	Section taken from the software requirements document	Requirement factor
1	The probability that the "Super-lab" software system will be found in a state of failure during peak hours (9 am to 4 pm) is required to be below 0.5%.	
2	The "Super-lab" software system will enable direct transfer of laboratory results to those files of hospitalized patients managed by the "MD-File" software package.	
3	The "Super-lab" software system will include a module that prepares a detailed report of the patient's laboratory test results during his or her current hospitalization. (This report will serve as an appendix to the family physician's file.) . The time required to obtain this printed report will be less than 60 seconds: the level of accuracy and completeness will be at least 99%.	

4	The "Super-lab" software to be developed for hospital laboratory use may be adapted later for private laboratory use.	
5	The training of a laboratory technician, requiring no more than 3 days, will enable the technician to reach level C of "Super-lab" software usage. This means that he or she will be able to manage reception of 20 patients per hour.	
6	The "Super-lab" software system will record a detailed users' log. In addition, the system will report attempts by unauthorized persons to obtain medical information from the laboratory test results database. The report will include the following information: network identification of the applying terminal, system code of the employee who requested that information, day and time of attempt, and type of attempt.	
7	The "Super-lab" subsystem that deals with billing patients for their tests may eventually be used as a subsystem the "Physiotherapy Center" software package.	
8	The "Super-lab" software system will process all the monthly reports for the hospital departments' management, the hospital management and the hospital controller according to Appendix D of the development contract.	
9	The software system should be able to serve 12 workstations and 8 automatic testing machines with a single model AS20 server 25 communication lines. This hardware system should conform to all availability requirements as listed in Appendix C.	
10	The "Super-lab" software package developed for the Linux operating system should be compatible for application in a Windows NT environment.	

[10 Marks]

Question 2

Pressman's definition of quality requires the client to specify the software requirements because only documented requirements are binding for the developer. Any omissions or errors made by the client are considered as his/her fault, and not listed among the developer's errors.

a) How can a client be sure that his or her organization has the professional capabilities   **[4 Marks]**

b) In what ways can the developer support the client in this matter?   **[4 Marks]**

END QUESTION PAPER

Question 2

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a) How can a client be sure that his or her organization has the professional capabilities   [4 Marks]

b) In what ways can the developer support the client in this matter?   [4 Marks]

END QUESTION PAPER