



COMSATS UNIVERSITY ISLAMABAD (CUI)

DEPARTMENT OF COMPUTER SCIENCE
MIDTERM EXAMINATION SPRING - 2024
BS (CS/AI/DS/SE/)- VI SEMESTER

Course: CSC291-Software Engineering Concept

Dated: 19, 04, 2024

Instructor: Dr. Uzair Iqbal Janjua and Mr. Atique Ahmad Zafar

Maximum Marks: 25

Time Allowed: 80 Minutes

Note:

- All questions are self-explanatory and require no further explanations during exam time.
- Make sure that you have signed the attendance sheet before leaving the examination room.
- Return the question paper along with the answer sheet.

CLO-1: Explain the concept of software engineering along with its processes and deliverables.

Q.1 Provide short answers for the following questions

Marks (2+2)

- a. What are the attributes of good software?

The software should deliver the required functionality and performance to the user and should have **Maintainability, Dependability, Efficiency, Acceptability**

- b. What are the key challenges facing software engineering?

Heterogeneity, Delivery, Trust, Legacy systems

Q.2 Plan-driven and Agile are two different methodologies that organizations follow to develop a software project. Both methods have their characteristics. You have been given different feature sets. You are required to select the best option and fill the table accordingly. (a) **Low criticality, High criticality** (b) **Junior developers, Senior developers** (c) **Requirements do not change often, Requirements change often** (d) **Small number of developers, Large number of developers.**

Marks (2)

Agile methods	Plan-driven methods
Low criticality	High criticality
Senior developers	Junior developers
Requirements change often	Requirements do not change often
Small number of developers	Large number of developers

Q.3 Match each description below to the SINGLE MOST APPROPRIATE TERM among the following. (Note: terms may apply to none, one, or more than one description.) **Marks (2)**

A. Boehm's spiral development	D. V-Model
B. Prototype Model	E. Extreme programming
C. incremental development	H. Waterfall model

- All developers are expected to refactor the code continuously.
- Staff is unavailable for complete implementation and deadline is tight
- Explicitly incorporates risk assessment and resolution throughout the process.

- Advantages in projects where there is a strong emphasis on testing and quality assurance.
- **Answer:** E, C, A, D

CLO – 2: Identify functional and non-functional requirements for a medium sized software system.

Q. No. 4: (2+5 Marks)

- a. Derive functional requirements from the following use case parts.

Note: You are only required to write functional requirement **Title** and **Description**

Preconditions

PRE-1. Patient is logged into Appointment Management System (AMS).

PRE-2. New Patient is registered for make an appointment by AMS.

Solution:

Possible Functional Requirements are

Appointment.Make:

The system shall let a patient who is logged in to the AMS, make an appointment for medical check-up.

Appointment.Make.Register:

The system shall confirm that the new patient is registered into AMS for making an appointment.

Appointment.Make.Register.No:

If the new patient is not registered into AMS for making an appointment, the system shall give the Patient options to register now and continue making an appointment for medical check-up or to exit from the AMS.

- b. 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 requirement document	Requirements 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%.	Reliability
2	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.	Usability
3	The “Super-lab” subsystem that deals with billing patients for their tests may be eventually used as a subsystem developed in the “Physiotherapy	Reusability

	Center” software package.	
4	The “Super-lab” software package developed for the Linux operating system should be compatible for applications in a Windows NT environment.	Portability
5	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.	Integrity

CLO – 3: Construct appropriate design models for the structure and behavior of a medium sized software system.

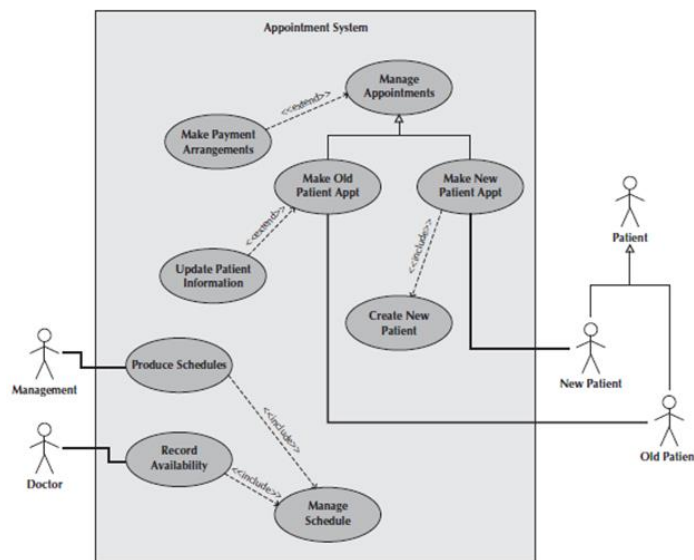
Q. No. 5:

(5+5 Marks)

5:

(5+5 Marks)

- a. Differentiate include, extend and generalization relationships used in use case diagram with example.



- b. Based on your experience with a bank ATM, draw an activity diagram that models the data processing involved when a customer Withdraws Cash from the machine.

*******BEST OF LUCK*******