# National University of Computer and Emerging Sciences, Lahore Campus

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| | **Course:** | **Introduction to Software Engineering** | **Course Code:** | **SE1001** |
| | **Program:** | **BS (SE)** | **Semester:** | **Spring 2023** |
| | **Duration:** | **60 Minutes (1 Hour)** | **Total Marks:** | **40** |
| | **Paper Date:** | **February 28, 2023** | **Weight** | **15%** |
| | **Section:** | **All** | **Page(s):** | **4** |
| | **Exam:** | **Midterm I** | | |

**Instruction/Notes:** 1. Attempt all questions on the question paper. Do not submit any extra sheet
2. You are allowed to use a single-sided, hand-written, A-4 size cheat sheet

Name: _____ Roll Number: _____ Section _____

## Question 1 (Max. Marks = 5) (CLO-1)

**In each of the following MCQs, circle the most appropriate single option.**

**1)** Hardware is different from Software because unlike software, hardware
   a. is easy to change
   b. wears-out
   c. is malleable
   d. updated

**2)** In software engineering process, the framework activity named "Modeling" mainly consists
   a. Analysis of requirements and design
   b. Comprehension and expression
   c. Code generation and testing
   d. Modeling and deployment

**3)** keypad control for a microwave oven is an example of
   a. Scientific/engineering software
   b. Artificial based software
   c. Application software
   d. Embedded software

**4)** Pick the odd one out:
   a. Software quality assurance
   b. Communication
   c. Modeling
   d. Deployment

**5)** Which of the following is not the cost in software engineering?
   a. Development cost
   b. Operational cost
   c. Overcome a defect
   d. None of these

## Question 2 (Max. Marks = 5) (CLO -4)

**Label the following requirements as Functional (F) or Non-Functional (NF).**

| S.R | Requirements | F/NF |
|---|---|---|
| 1 | The banking system shall be able to process 1000 hits/second. | |
| 2 | The calculator application shall be able to compute currency conversions ( i.e. PKR to dollar). | |
| 3 | The camera app shall provide user options to set shutter timer as 5,10 or 15 seconds. | |
| 4 | Google photos shall secure the uploaded content using google security APIs | |
| 5 | The share button on google docs screen shall be placed on top right corner of the screen | |

## Question 3 (Max. Marks 2 x 5 = 10) (CLO-1)

**For each of the following software systems, determine its application domain and three most representative qualities (i.e. the qualities this system must have). Also, provide the justification for specifying the representative qualities**

a. Khareedo.pk is an online platform that allows its users to browse and buy products online from multiple sellers. Customers create profiles on khareedo.pk website using their personal information i.e., credit card info, name, and house address. Keeping this information secure is one big challenge for the website. Slow response time of this web application can cause it to lose its customers. The website is currently working to add a new payment option by interfacing with RAAST. **Note:** No credit for writing Correctness and Robustness

   Application domain: _____

   Representative qualities: _____, _____, _____

   Justifications:

b. A mobile game that will interface with smart TV via smart view to broadcast the game on a bigger screen. The Game, smartphone & Smart TV all run on Android OS. The game is expected to be streamed without any lag on the television. The controls of the game should be arranged neatly on the UI for a better and easy user experience. The game is expected to allow the user to move the character with the tilt of the phone. The score calculation module of the game should use Google ladder board API.

   Application domain: _____

   Representative qualities: _____, _____, _____

   Justifications:

## Question 4 (Max. Marks = 10) (CLO-1)

**Given the Software Engineering Practices below:**

Proper modularization,
Unit Testing,
Exception handling,
Smoke Testing,
Specification of open interfaces,
Standardized interfaces of software components,
Economic utilization of computer resources,
Static analysis for checking conformance to requirements,
Improving code readability,
Software Reusable Libraries,
Creating WBS,
Analyzing the complexity of algorithms,
Standardization of human interfaces

**Write matching software engineering practice in front of Software quality**

**Note:** You may repeat one practice for more than one software quality.
Do not write more than one practice in one cell.

| **Sr**. | **Software Quality** | **Software Engineering Practices** |
|---|---|---|
| 1 | Robustness | |
| 2 | Efficiency | |
| 3 | Reliability | |
| 4 | Correctness | |
| 5 | Repairability | |
| 6 | Usability | |
| 7 | Reusability | |
| 8 | Understandability | |
| 9 | Interoperability | |
| 10 | Performance | |

## Question 5 (Max. Marks = 10) (CLO-5)

**Create Work Breakdown Structure BS for the given scenario.**

A newly opened university would like to develop a student registration system (SRS) that can be deployed on any operating system. In the first phase, information about the needs and expectations of the participants will be gathered, this step involves interviews, surveys, focus groups, and other techniques to gather information from stakeholders. Then in the next step, information will be analyzed to identify the high-level goals and objectives of the software system. Identification of functional and non-functional requirements and identification of any constraints or limitations that may affect the development of the software system will be performed. After that a document will be generated that will consist of requirements identified in the analysis step in a clear, consistent, and unambiguous manner. Then requirements will be validated. This step involves checking that the requirements are complete, consistent, and accurate. Then the next step will be the management of the requirements throughout the software development life cycle, including tracking and controlling changes, and ensuring that the requirements are still valid and relevant.

In the second phase, High-Level Design (HLD) and low-level design will be created. In HLD, a Brief description and name of each module, an outline about the functionality of every module, Database tables identified along with their key elements, complete architecture diagrams will be designed.

In Low-Level Design(LLD), Functional logic of the modules, Database tables, Complete detail of the interface, Listing of error messages, Complete input and outputs for every module will be designed.
Page
In the next phase, developers start to build the entire system by writing code using the chosen programming language. Tasks will be divided into units or modules and assigned to the various developers for coding and unit testing.