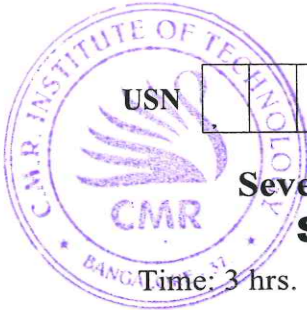


CBCS SCHEME



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15IS72

Seventh Semester B.E. Degree Examination, July/August 2022 Software Architecture and Design Patterns

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is and is not a design pattern? (06 Marks)
b. How design patterns solve design patterns? (10 Marks)

OR

- 2 a. Describe step-by-step approach of applying a design pattern effectively. (04 Marks)
b. Briefly explain the key concepts of object-oriented design approach. (08 Marks)
c. Comprehend the benefits of object oriented paradigm. (04 Marks)

Module-2

- 3 a. Explain the overview of the analysis phase of object oriented development. (04 Marks)
b. Illustrate the business process of the library system and draw the use-case table for "Book Check out". (08 Marks)
c. Give the guidelines to be followed while writing use-cases. (04 Marks)

OR

- 4 a. Enlist the steps involved in design process of object oriented systems. (04 Marks)
b. Explain and draw the relationships between the software classes of library system. (04 Marks)
c. Write a sequence diagram and Java code for "issuingbooks" from library system. (08 Marks)

Module-3

- 5 a. How do you define an adapter pattern? Illustrate the motivation, structure and implementation steps of an Adapter pattern. (08 Marks)
b. "Decouple an abstraction from its implementation so that the two can vary independently", detail your understanding of the given problem context with relevant example and its structure. (08 Marks)

OR

- 6 a. Design a simple video game using Fly weight design pattern where players will be moving around the map and shoot each other, that implements a realistic particle system and make it a distinctive feature of the game. Bullets, missiles and shrapnel from explosions should fly over in vast quantities and deliver a thrilling experience to the players. (06 Marks)
b. What is decorator pattern? Explain its structure, participants and consequences with example. (10 Marks)

Module-4

- 7 a. What do you mean by interactive systems? Explain MVC architecture in detail with examples. (05 Marks)
b. Apply MVC architectural pattern to design a simple program that allows us to create and label figures. Also write a use-case table for "Adding a Label". (05 Marks)
c. Draw the sequence diagram for the following for a simple drawing program,
(i) Sequence of operations for drawing a line.
(ii) Sequence of operations for adding a label. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Describe the process of designing the subsystems of simple drawing program with relevant diagrams. (08 Marks)
- b. Discuss the issues and schemes of implementing the Undo operation on drawing system. (04 Marks)
- c. Show how to add a new feature to the interactive system using composite pattern. (04 Marks)

Module-5

- 9 a. Explain Java Remote method invocation. Also elaborate the steps for setting up a remote object system. (10 Marks)
- b. Detail the advantages and disadvantages of building distributed systems. (03 Marks)
- c. Give the classification of distributed systems and explain client/server system architecture. (03 Marks)

OR

- 10 a. Illustrate the hosting of a distributed application taking library system as an example. (10 Marks)
- b. Draw a state transition diagram for "renewing books". (06 Marks)
