Fifth Semester B. E. (Computer Science and Engineering) Examination

DESIGN PATTERNS

Time : 3 Hours]   [Max. Marks : 60

Instructions to Candidates :—
   (1)   Assume suitable data wherever necessary and clearly state the assumption made.
   (2)   Question **Three** and Question **Five** has internal choice as indicated.

1.   (a)   Discuss in detail the two criteria used to classify design patterns.

                                                                    4(CO 1)

     (b)   What are different ways to reuse code ? How delegation is related to code reuse ?   6(CO 1)

2.   (a)   Describe three thread – safe solutions for implementing Singleton pattern.

                                                                    6(CO 2)

     (b)   Explain one advantages and one disadvantage of Abstract Factory Pattern in detail.   4(CO 2)

3.   (a)   The client has access to various shapes like Rectangle, Circle etc via an interface Shape which supports draw ( ) method. The Drawing Pattern may differ as Hollow, Filled or Dotted Lined. By default the Shapes are drawn with Solid Lines.
            Design a program to create shapes dynamically and change the drawing pattern of the shape at runtime in Java. Also produce the class diagram for the application.
            [Hint : Use Bridge Pattern]
            [Expected Output : If the user selects Circle and Filled, the draw method should output "You have created a Filled Circle" on the console]

                                                                    10(CO 2)

OR

(b) Explain working of Bridge pattern in detail with an example. How is Bridge different from Strategy ? 10(CO 2)

4. (a) Demonstrate Chain of Responsibility principle with an example. 5(CO 3)

(b) Describe the following about Interpreter patterns :—

    (i) Intent

    (ii) Structure

    (iii) Participants

    (iv) Collaboration.. 5(CO 3)

5. (a) Match the following aspects that design patterns let you vary with the design patterns.

ASPECT	PATTERN
i. Grammar and interpretation of language ii. An algorithm iii. States of object iv. How and which objects interact with each other	a) Strategy b) State c) Mediator d) Interpreter e) Observer

4(CO 3)

(b) Illustrate the motivation, structure, participants and their collaboration in Mediator pattern with appropriate example. 6(CO 3)

OR

(c) How does Iterator pattern encapsulate the way components of an aggregate object are accessed and traversed ? Explain with the help of an example. 6(CO 3)

6. (a) Identify any six problems encountered in designing a document editor and discuss in brief. 6(CO 4)

(b) How multiple look and feel can be supported in an application ? 4(CO 4)