Object Oriented Modeling

Home Assignment-1

Q1.(a) How scenario and use cases are related? How usecases can be used to identify the boundary of the system.

(b) How a useful usecases are determined in modeling of the solution of a problem. What are the ways in which it helps in the solution of large problems.

(c) Is there any difference between conceptual and description classes. Why use Description classes.

Q2.(a) Illustrate through an example code how polymorphism helps to substitute the use of "switch" and "case" statements. List the advantages of the above.

(b) Differentiate between Statically and Dynamically Typed Languages.

(c) Can a link and association be used interchangeably? Justify your answer.

(d) Show through example codes high level and low level code reuse.

(e) Why concept of "this pointer" or "self reference" has been introduced into OOPLs. What are the various uses of this pointer?

(f) What is the basic principle of object orientation for role modeling and how is it achieved?

(g) How to provide differential (preferential) services to different customers through basic Principles of Object Orientation?

Q3.(a) Differentiate the inheritance and polymorphism in terms of code reuse.

(b) Differentiate between abstraction and encapsulation with an example.

(c) Provide UML Notations (Diagram) for a class, an instance of a class, inheritance relationship, an aggregation relationship, composition, association relationship.

(d) Describe the need for the "Models for Comprehension".

(e) Are private members of super class are available in subclasses, if yes, why they are there if these being private cannot be accessed in subclasses.

(f) Explain the benefits of using single interface through multiple implementations and multiple interfaces through single implementation.

Q4. (A) Describe two kinds of reuse in object oriented modeling, which supports higher reuse and why?

(B) Why java supports both abstract classes as well as interfaces. Can we do away with one, justify your answer.

Q5.(a) Can a link and association be used interchangeably? Justify your answer.

(b) How to resolve many to many associations of classes?

(**c)** Compare and contrast between aggregation and composition.

(d) Why is a responsibility not the same thing as a method?

Q6. Design a class diagram hierarchy to develop an application, which can exhibit polymorphic behavior further differentiate between multilevel and multiple inheritance.

Q 7. **a)** What is an association? Why association classes are needed. Explain with an example of multiplicity in association.

b) Differentiate between statically and dynamically typed languages by taking at least two example language of each type.

Q 8. Classify each of the following relationship as a class, an instance of a class, inheritance relationship, aggregation relationship, composition, association relationship with diagram and justification.

(i) Furniture — Table

(ii) Computer - Keyboard

(iii) Chess board- Squares of Chess Board

(iv) Doctor-Pediatrics

(v) Bank-Customer

Q 9. **a)** Can object oriented software development be called engineering? Discuss.

b) Describe various types of data members and method members of a class along with the accessibility of one member from the other.

Q 10 **a)** Define and describe the uses of ADT, Virtual Data Type and Hardware Data Type in context of OOM. Define ADT for Binary Tree along with the illustration of traces of three functions.

b) Define events and describe its categories and kinds along with the modeling constructs for the same.