

Overview

Object-oriented software engineering process is similar to that found in the rapid prototyping or spiral paradigms. Even though, object-oriented software engineering follows the same steps as the conventional approach (analysis, design, implementation, and testing) it is harder to separate them into discrete activities.

Evolutionary Object-Oriented Process Model

- Customer communication
- Planning
- Risk analysis
- Engineering construction and analysis

- Identify candidate classes
- Look-up classes in library
- Extract classes if available
- Engineer classes if not available
 - o Object-oriented analysis (OOA)
 - o Object-oriented design (OOD)
 - o Object-oriented programming (OOP)
 - o Object-oriented testing (OOT)

- Put new classes in library
- Construct Nth iteration of the system

- Customer evaluation

Object-Oriented Concepts

- Objects - encapsulates both data (attributes) and data manipulation functions (called methods, operations, and services)
- Class - generalized description (template or pattern) that describes a collection of similar objects
- Superclass - a collection of objects
- Subclass - an instance of a class
- Class hierarchy - attributes and methods of a superclass are inherited by its subclasses
- Messages - the means by which objects exchange information with one another
- Inheritance - provides a means for allowing subclasses to reuse existing superclass data and procedures; also provides mechanism for propagating changes
- Polymorphism - a mechanism that allows several objects in a class hierarchy to have different methods with the same name (instances of each subclass will be free to respond to messages by calling their own version of the method)

Advantages of Object-Oriented Architectures

- Implementation details of data and procedures are hidden from the outside world (reduces the propagation of side effects when changes are made).
- Data structures and operators are merged in single entity or class (this facilitates reuse)
- Interfaces among encapsulated objects are simplified (system coupling is reduced since object needs not be concerned about the details of internal data structures)

Class Construction Options

- Build new class from scratch without using inheritance
- Use inheritance to create new class from existing class contains most of the desired attributes and operations
- Restructure the class hierarchy so that the required attributes and operations can be inherited by the newly created class
- Override some attributes or operations in an existing class and use inheritance to create a new class with (specialized) private versions of these attributes and operations.

Identifying the elements of an object model: (Refer section 20.3)

Management of Object Oriented Software Projects: (Refer section 20.4)

REFER TO CHAPTER 20 "*Pressman. R. S., Software Engineering a practitioners Approach. 5th Edition*" ACCORDINGLY.