GANPAT UNIVERSITY

U.V. PATEL COLLEGE OF ENGINEERING

Practical File

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Practical 1

Aim:- To Study about Unified Modeling Language (UML) with Tools.

Answer the following questions.

1.explain the objectives of Object Oriented Analysis & Design.

- Develop design class diagrams
- Develop interaction diagrams based on the principles of object responsibility and use case controllers
- Object-Oriented Analysis and Design and the Unified Process
- Develop detailed sequence diagrams as the core process in systems design
- Develop communication diagrams as part of systems design
- Document the architecture design using package diagrams
- Object-Oriented Analysis and Design and the Unified Process

2. Discuss the role of Model in Object Oriented Analysis & Design.

Object Modelling

Object modelling develops the static structure of the software system in terms of objects. It identifies the objects, the classes into which the objects can be grouped into and the relationships between the objects. It also identifies the main attributes and operations that characterize each class.

The process of object modelling can be visualized in the following steps −

- Identify objects and group into classes
- Identify the relationships among classes
- Create user object model diagram
- Define user object attributes
- Define the operations that should be performed on the classes
- Review glossary

Dynamic Modelling

After the static behavior of the system is analyzed, its behavior with respect to time and external changes needs to be examined. This is the purpose of dynamic modelling.

Dynamic Modelling can be defined as "a way of describing how an individual object responds to events, either internal events triggered by other objects, or external events triggered by the outside world".

The process of dynamic modelling can be visualized in the following steps −

- Identify states of each object
- Identify events and analyze the applicability of actions
- Construct dynamic model diagram, comprising of state transition diagrams
- Express each state in terms of object attributes
- Validate the state–transition diagrams drawn

Functional Modelling

Functional Modelling is the final component of object-oriented analysis. The functional model shows the processes that are performed within an object and how the data changes as it moves between methods. It specifies the meaning of the operations of object modelling and the actions of dynamic modelling. The functional model corresponds to the data flow diagram of traditional structured analysis.

The process of functional modelling can be visualized in the following steps −

- Identify all the inputs and outputs
- Construct data flow diagrams showing functional dependencies
- State the purpose of each function
- Identify constraints
- Specify optimization criteria

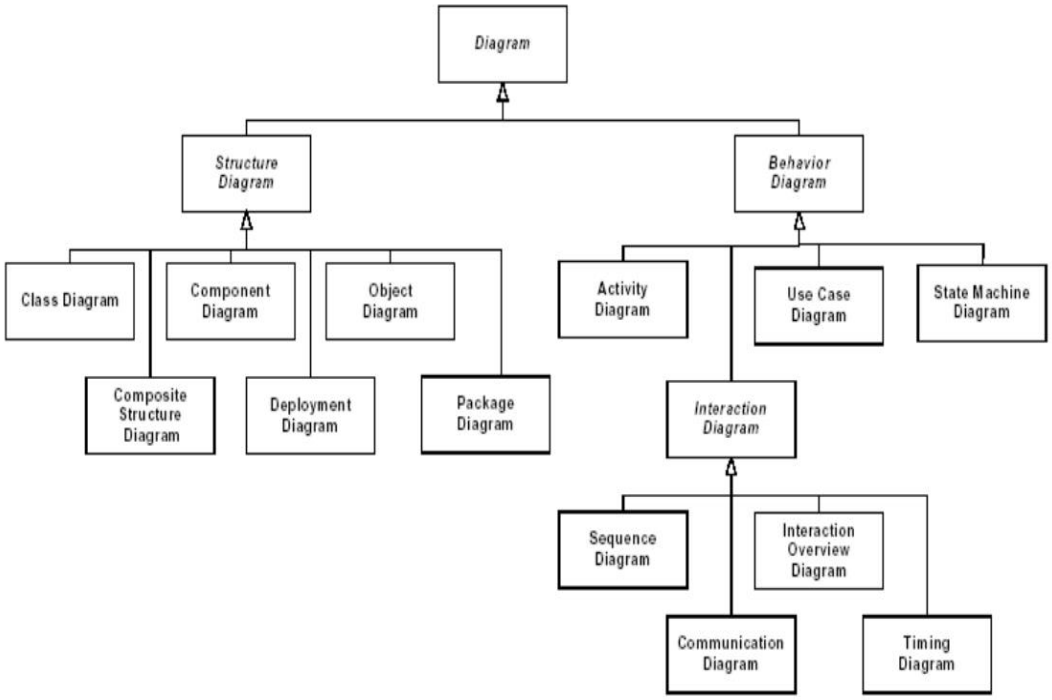
3. Why UML is required in Object Oriented Analysis & Design?

UML is a modeling language used to model software and non-software systems. Although UML is used for non-software systems, the emphasis is on modeling OO software applications. Most of the UML diagrams discussed so far are used to model different aspects such as static, dynamic, etc. Now whatever be the aspect, the artifacts are nothing but objects.

If we look into class diagram, object diagram, collaboration diagram, interaction diagrams all would basically be designed based on the objects.

Hence, the relation between OO design and UML is very important to understand. The OO design is transformed into UML diagrams according to the requirement. Before understanding the UML in detail, the OO concept should be learned properly. Once the OO analysis and design is done, the next step is very easy. The input from OO analysis and design is the input to UML diagrams.

4. Draw the hierarchy of UML diagrams.



5. Describe Star UML briefly.

StarUML is an open source software modeling tool that supports UML (Unified Modeling Language).

StarUML™ is a software modeling platform that supports UML (Unified Modeling Language). It is based on UML version 1.4 and provides eleven different types of diagram, and it accepts UML 2.0 notation. It actively supports the MDA (Model Driven Architecture) approach by supporting the UML profile concept. StarUML™ excels in customizability to the user's environment and has a high extensibility in its functionality. Using StarUML™, one of the top leading software modeling tools, will guarantee to maximize the productivity and quality of your software projects.