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# FACULTY OF ENGINEERING & TECHNOLOGY

## BCS-503: Object Oriented Techniques

## Lecturer-13

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# OBJECTIVES

**In this PPT, you will learn to:**

- ❖Object Oriented Analysis
- ❖Object Modelling
- ❖Dynamic Modelling
- ❖Functional Modelling
- ❖Structured Analysis vs. Object Oriented Analysis

# OBJECT ORIENTED ANALYSIS

- object-oriented analysis phase of software development
- The system requirements are determined
- The classes are identified
- The relationships among classes are identified

**The three analysis techniques that are used in conjunction with each other for object-oriented analysis are:**

1) object modelling
2) dynamic modelling
3) functional modelling.

# 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

# 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

# STRUCTURED ANALYSIS VS. OBJECT ORIENTED ANALYSIS

**The Structured Analysis/Structured Design (SASD) approach is the traditional approach of software development based upon the waterfall model. The phases of development of a system using SASD are −**

- Feasibility Study
- Requirement Analysis and Specification
- System Design
- Implementation
- Post-implementation Review

# REFERENCES


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7. https://www.javatpoint.com/java-tutorial

8. https://www.tutorialspoint.com/java/index.htm

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# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q1. The method of design encompassing the process of object oriented decomposition and a notation for depicting both logical and physical and as well as static and dynamic models of the system under design is known as:**

a) Object- Oriented Programming

b) Object- Oriented Design

c) Object- Oriented Analysis

d) None of the mentioned

## Multiple Choice Question:

**Q2. What is the programming style of the object oriented conceptual model?**

a) Invariant relationships

b) Algorithms

c) Classes and objects

d) Goals, often expressed in a predicate calculus.

## Multiple Choice Question:

**Q3. The essential characteristics of an object that distinguish it from all other kinds of objects and thus provide crisply defined conceptual boundaries, relative to the perspective of the viewer is called:**

a) Encapsulation

b) Modularity

c) Hierarchy

d) Abstraction

## Multiple Choice Question:

**Q4. Abstraction is classified into _____ types**

a) 4

b) 3

c) 2

d) 1

## Multiple Choice Question:

**Q5. What is that concept in type theory in which a single name may denote objects of many different classes that are related by some common super class referred to _____**

a) Monomorphism

b) Type Checking

c) Polymorphism

d) Generalization

# Summary

## In this PPT, you learned that:

- System analysis or object-oriented analysis phase of software development.
- Object-oriented analysis are object modelling, dynamic modelling, and functional modelling.