



## HYDERABAD INSTITUTE OF ARTS, SCIENCE, AND TECHNOLOGY

Object Oriented Programming lab-10

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### Title:

Constructors and Methods in Classes

### Objectives

- To understand the concept of constructors in classes.
- To differentiate between default and parameterized constructors.
- To learn how to define and call methods inside a class.
- To implement practical examples using constructors and methods.

### Definition

#### Constructor

A constructor is a special method in a class that is automatically called when an object is created. Its main purpose is to initialize the object's attributes. In Java, the constructor has the same name as the class and no return type.

Types of Constructors:

1. Default Constructor – No parameters, initializes values with defaults.
2. Parameterized Constructor – Takes arguments to set values at object creation.

#### Methods in Classes

Methods define behaviors/actions of an object. They are normal functions written inside the class and called using objects.

Syntax:

```
returnType methodName(parameters) {  
    // method body  
}
```

## Example Code (Java)

Example: Book Class with Constructor

```
class Book {  
  
    String title;  
  
    String author;  
  
    int year;  
  
    // Constructor  
  
    Book(String t, String a, int y) {  
  
        title = t;  
  
        author = a;  
  
        year = y;  
  
    }  
  
    void displayInfo() {  
  
        System.out.println("Book: " + title + " | Author: " + author + " | Year: " + year);  
  
    }  
  
  
  
  
  
  
  
  
  
    public static void main(String[] args) {  
  
        // Creating multiple objects using the constructor  
  
        Book b1 = new Book("The Alchemist", "Paulo Coelho", 1988);  
  
        Book b2 = new Book("Clean Code", "Robert C. Martin", 2008);  
  
        b1.displayInfo();  
  
        b2.displayInfo();  
  
    }  
}
```

### Output:

Title: Unknown, Author: Unknown

Title: 1984, Author: Orwell

## Lab Tasks

1. Task 1: Create a Student class with a default constructor that sets name = "Not Assigned" and rollNo = 0. Add a method display() to print details.
2. Task 2: Add a parameterized constructor to the Student class to set name and rollNo at object creation.
3. Task 3: Write a class Employee with attributes id, salary. Use a parameterized constructor and a method calculateAnnualSalary() that returns yearly salary.
4. Task 4 (Discussion): Modify the Book class so it has a method isAuthor(String name) that checks if the book was written by the given author.

## Discussion Questions

1. What is the difference between a constructor and a method?
2. Can we overload constructors? How?
3. What happens if we don't define any constructor in a class?
4. Why do we use parameterized constructors instead of setters?