



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment - 2

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Semester: 5th

Subject Name: PBLJ

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Section/Group: KRG-2-B

Date of Performance: 23/7/25

Subject Code: 23CSH-304

Aim: : To develop Java programs to manage product details, library systems, and student information using classes, inheritance, and abstraction.

Easy-level Problem

Aim: To write a Java program to create a Product class with attributes id, name and price. The program should demonstrate the use of constructors and methods to display product details.

Code -

```
package exp2;
class Product {
    int id;
    String name;
    double price;
    // Parameterized constructor
    Product(int id, String name, double price) {
        this.id = id;
        this.name = name;
        this.price = price;
    }
    // Method to display details
    void displayDetails() {
        System.out.println("Product Details:");
        System.out.println("ID: " + id);
        System.out.println("Name: " + name);
        System.out.println("Price: " + price);
    }
}
public class easy {
    public static void main(String[] args) {
        // Creating product object
        Product p1 = new Product(101, "Laptop", 75000);
        p1.displayDetails();
    }
}
```



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Output -

```
Product Details:
```

```
ID: 101
```

```
Name: Laptop
```

```
Price: 75000.0
```

Medium- Level Problem

Aim : To write a Java program to implement a library management system. The program should Use a base class Book and derived classes Fiction and Non Fiction.

Code :

```
package exp2;
class Book {
    String title, author;
    double price;
    Book(String title, String author, double price) {
        this.title = title;
        this.author = author;
        this.price = price;
    }
    void displayDetails() {
        System.out.println("Book Details:");
        System.out.println("Title: " + title);
        System.out.println("Author: " + author);
        System.out.println("Price: " + price);
    }
}
// Derived class Fiction
class Fiction extends Book {
    Fiction(String title, String author, double price) {
        super(title, author, price);
    }
    @Override
    void displayDetails() {
        System.out.println("Fiction Book Details:");
        System.out.println("Title: " + title);
        System.out.println("Author: " + author);
        System.out.println("Price: " + price);
    }
}

class NonFiction extends Book {
    NonFiction(String title, String author, double price) {
        super(title, author, price);
    }
    @Override
    void displayDetails() {
        System.out.println("Non-Fiction Book Details:");
        System.out.println("Title: " + title);
        System.out.println("Author: " + author);
        System.out.println("Price: " + price);
    }
}

public class medium {
    public static void main(String[] args) {
        Fiction f1 = new Fiction("Harry Potter", "J.K. Rowling", 500);
        NonFiction nf1 = new NonFiction("Sapiens", "Yuval Noah Harari", 700);
    }
}
```



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```
f1.displayDetails();  
System.out.println();  
nf1.displayDetails();  
}  
}
```

Fiction Book Details:

Title: Harry Potter

Author: J.K. Rowling

Price: 500.0

Non-Fiction Book Details:

Title: Sapiens

Author: Yuval Noah Harari

Price: 700.0

Hard -level Problem

Aim : To design a student information system using Java with following features: - Use an abstract class Person with attributes name, age and methods like displayDetails(). - Create derived classes Student and Teacher to override displayDetails() and add unique attributes like rollNumber for students and subject for teachers.

Code :

```
package exp2;
abstract class Person {
    String name;
    int age;
    Person(String name, int age) {
        this.name = name;
        this.age = age;
    }
    // Abstract method
    abstract void displayDetails();
}
// Student class
class Student extends Person {
    int rollNumber;
    Student(String name, int age, int rollNumber) {
        super(name, age);
        this.rollNumber = rollNumber;
    }
    @Override
    void displayDetails() {
        System.out.println("Student Details:");
        System.out.println("Name: " + name);
        System.out.println("Age: " + age);
        System.out.println("Roll Number: " + rollNumber);
    }
}
// Teacher class
class Teacher extends Person {
    String subject;
    Teacher(String name, int age, String subject) {
        super(name, age);
        this.subject = subject;
    }
}
```



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```
@Override
void displayDetails() {
    System.out.println("Teacher Details:");
    System.out.println("Name: " + name);
    System.out.println("Age: " + age);
    System.out.println("Subject: " + subject);
}
}

public class hard {
    public static void main(String[] args) {
        Student s1 = new Student("Alice", 20, 101);
        Teacher t1 = new Teacher("Mr. Smith", 40, "Mathematics");
        s1.displayDetails();
        System.out.println();
        t1.displayDetails();
    }
}
```

Output:

```
> terminated? hard (1) Java Applica
Student Details:
Name: Alice
Age: 20
Roll Number: 101

Teacher Details:
Name: Mr. Smith
Age: 40
Subject: Mathematics
```