



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment - 2

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Branch: BE-CSE

Section/Group: 626-B

Semester: 6th

Date of Performance: 14/02/25

Subject Name: Java

Subject Code: 22CSH-352

1. Aim: Develop a program for

- a) Easy Level: Product Class
- b) Medium Level: Library Management System
- c) Hard Level: Student Information System

2. Implementation/Code:

a) class Product {

 // Attributes

 private int id;

 private String name;

 private double price;

 // Constructor

 public Product(int id, String name,
double price) {

 this.id = id;

 this.name = name;



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```
        this.price = price;
    }

    // Method to display product
    details

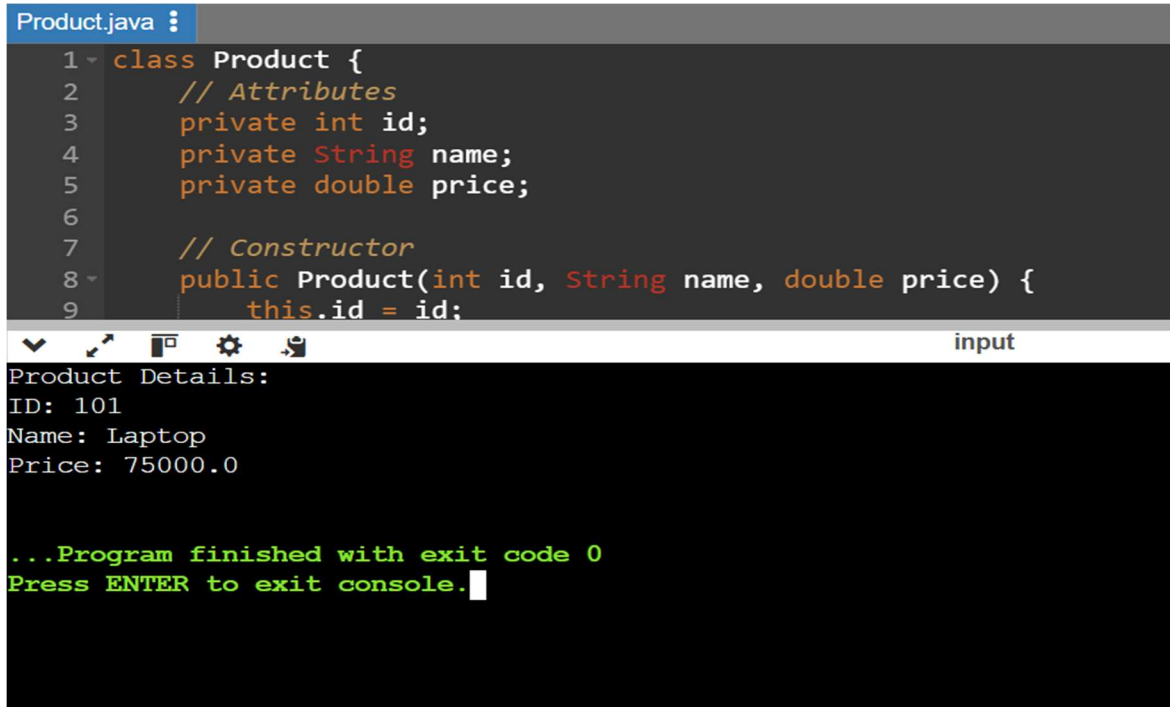
    public void displayDetails() {
        System.out.println("Product
    Details:");
        System.out.println("ID: " + id);
        System.out.println("Name: " +
    name);
        System.out.println("Price: " +
    price);
    }

    // Main method to test the class
    public static void main(String[]
    args) {
        // Creating a Product object
        Product product = new
    Product(101, "Laptop", 75000);

        // Displaying product details
```

```
        product.displayDetails();  
    }  
}
```

Output:



```
Product.java :  
1 class Product {  
2     // Attributes  
3     private int id;  
4     private String name;  
5     private double price;  
6  
7     // Constructor  
8     public Product(int id, String name, double price) {  
9         this.id = id;  
10    }  
11 }  
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```



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

```
this.author = author;

this.price = price;

}

// Method to display book details

public void displayDetails() {

    System.out.println("Title: " +
title);

    System.out.println("Author: " +
author);

    System.out.println("Price: " +
price);

}

}

// Derived class for Fiction books

class Fiction extends Book {

    public Fiction(String title, String
author, double price) {

        super(title, author, price);

    }

    @Override
```



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

```
        public void displayDetails() {  
            System.out.println("Fiction  
Book Details:");  
            super.displayDetails();  
        }  
    }  
}
```

```
// Derived class for Non-Fiction  
books  
  
class NonFiction extends Book {  
    public NonFiction(String title,  
String author, double price) {  
        super(title, author, price);  
    }  
}
```

```
@Override  
public void displayDetails() {  
    System.out.println("Non-  
Fiction Book Details:");  
    super.displayDetails();  
}  
}
```



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```
// Main class to test the  
implementation  
  
public class  
LibraryManagementSystem {  
  
    public static void main(String[]  
args) {  
  
        // Creating Fiction book  
  
        Fiction fictionBook = new  
Fiction("Harry Potter", "J.K. Rowling",  
500);  
  
  
        // Creating Non-Fiction book  
  
        NonFiction nonFictionBook =  
new NonFiction("Sapiens", "Yuval  
Noah Harari", 700);  
  
  
        // Displaying book details  
  
        fictionBook.displayDetails();  
  
        System.out.println();  
  
        nonFictionBook.displayDetails();  
  
    }  
}
```



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

OUTPUT:

```
LibraryManageme...  
47 // Main class to test the implementation  
48 public class LibraryManagementSystem {  
49     public static void main(String[] args) {  
50         // Creating Fiction book  
51         Fiction fictionBook = new Fiction("Harry Potter", "J.K. Rowling", 500);  
52  
53         // Creating Non-Fiction book  
54         NonFiction nonFictionBook = new NonFiction("Sapiens", "Yuval Noah Harari", 700);  
55  
56         // Displaying book details  
57         fictionBook.displayDetails();  
58         System.out.println();  
59         nonFictionBook.displayDetails();  
60     }  
61 }  
62
```

input

```
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  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

C) abstract class Person {

protected String name;

protected int age;

// Constructor

public Person(String name, int

age) {

this.name = name;

this.age = age;

}



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

```
// Abstract method to display
details

public abstract void
displayDetails();
}

// Derived class for Student

class Student extends Person {

    private int rollNumber;

    public Student(String name, int
age, int rollNumber) {

        super(name, age);

        this.rollNumber = rollNumber;

    }

    @Override

    public void displayDetails() {

        System.out.println("Student
Details:");

        System.out.println("Name: " +
name);
```




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```
        System.out.println("Age: " +  
age);  
  
        System.out.println("Roll  
Number: " + rollNumber);  
  
    }  
}  
  
// Derived class for Teacher  
class Teacher extends Person {  
    private String subject;  
  
    public Teacher(String name, int  
age, String subject) {  
        super(name, age);  
        this.subject = subject;  
    }  
  
    @Override  
    public void displayDetails() {  
        System.out.println("Teacher  
Details:");  
  
        System.out.println("Name: " +  
name);
```



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

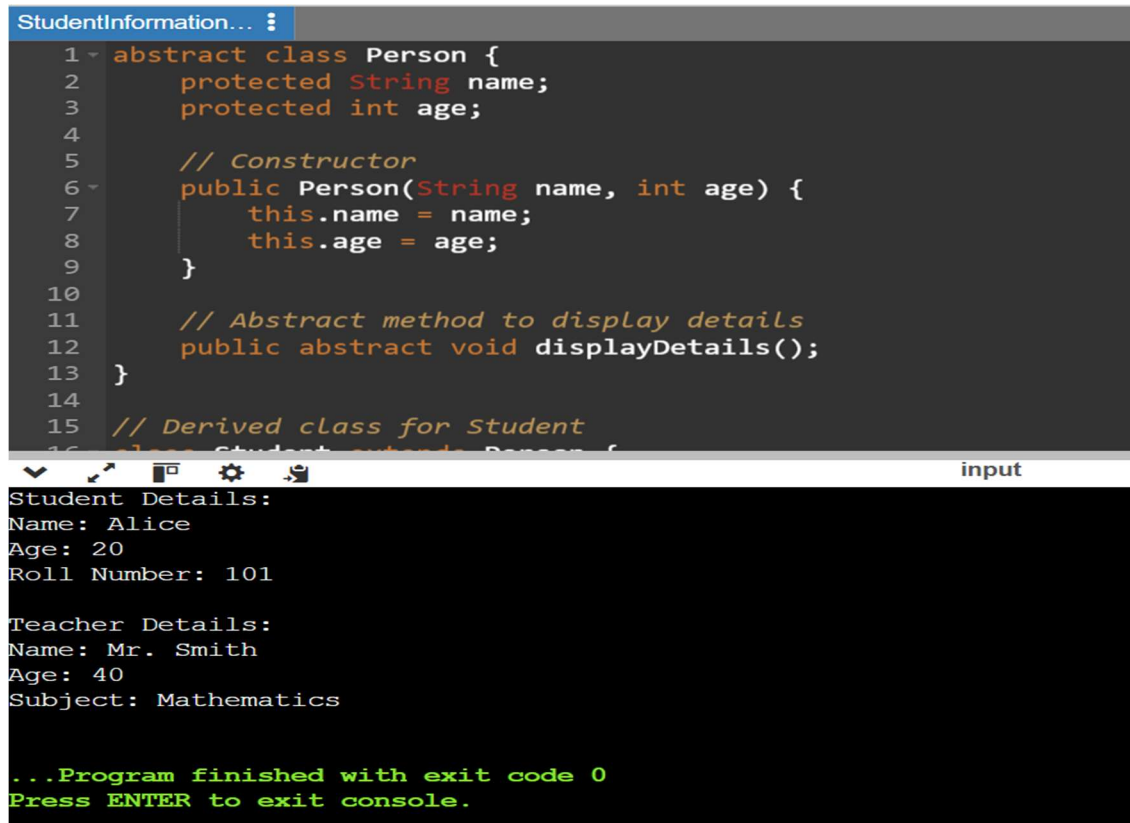
```
        System.out.println("Age: " +  
age);  
  
        System.out.println("Subject: " +  
subject);  
    }  
}
```

```
// Main class to test the system  
  
public class  
StudentInformationSystem {  
    public static void main(String[]  
args) {  
        // Creating Student object  
        Student student = new  
Student("Alice", 20, 101);  
  
        // Creating Teacher object  
        Teacher teacher = new  
Teacher("Mr. Smith", 40,  
"Mathematics");
```

```
// Displaying details  
student.displayDetails();
```

```
        System.out.println();  
  
        teacher.displayDetails();  
  
    }  
  
}
```

OUTPUT:



The screenshot shows an IDE window titled 'StudentInformation...' with a dark theme. The code editor displays the following Java code:

```
1 abstract class Person {  
2     protected String name;  
3     protected int age;  
4  
5     // Constructor  
6     public Person(String name, int age) {  
7         this.name = name;  
8         this.age = age;  
9     }  
10  
11     // Abstract method to display details  
12     public abstract void displayDetails();  
13 }  
14  
15 // Derived class for Student  
16 class Student extends Person {
```

Below the code editor, the console output is visible:

```
Student Details:  
Name: Alice  
Age: 20  
Roll Number: 101  
  
Teacher Details:  
Name: Mr. Smith  
Age: 40  
Subject: Mathematics  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```