CHANDIGARH UNIVERSITY

Discover. Learn. Empower.

UNIVERSITY INSTITUTE OF ENGINEERING

Subject Name –Project Based Learning In Java

Subject Code: 23CSH-304

Submitted To:

Faculty Name: - Deep Prakash Gupta

Submitted By:

Name: Harjit Singh

UID: 23BCS10849

Project Report: Development of a Student Information System in Java

Aim: Design a student information system using Java with features demonstrating abstraction and polymorphism through abstract classes and derived classes.

Hard Level

Objective: Demonstrate abstraction and polymorphism using abstract classes and derived classes.

Procedure

Step1: Define an abstract class Person with attributes name and age, and an abstract method displayDetails().
Step2: Create a Student class extending Person, with an additional attribute rollNumber, and implement displayDetails().
Step3: Create a Teacher class extending Person, with an additional attribute subject, and implement displayDetails().
Step4: In the main method, create objects of Student and Teacher, and invoke displayDetails() on each.

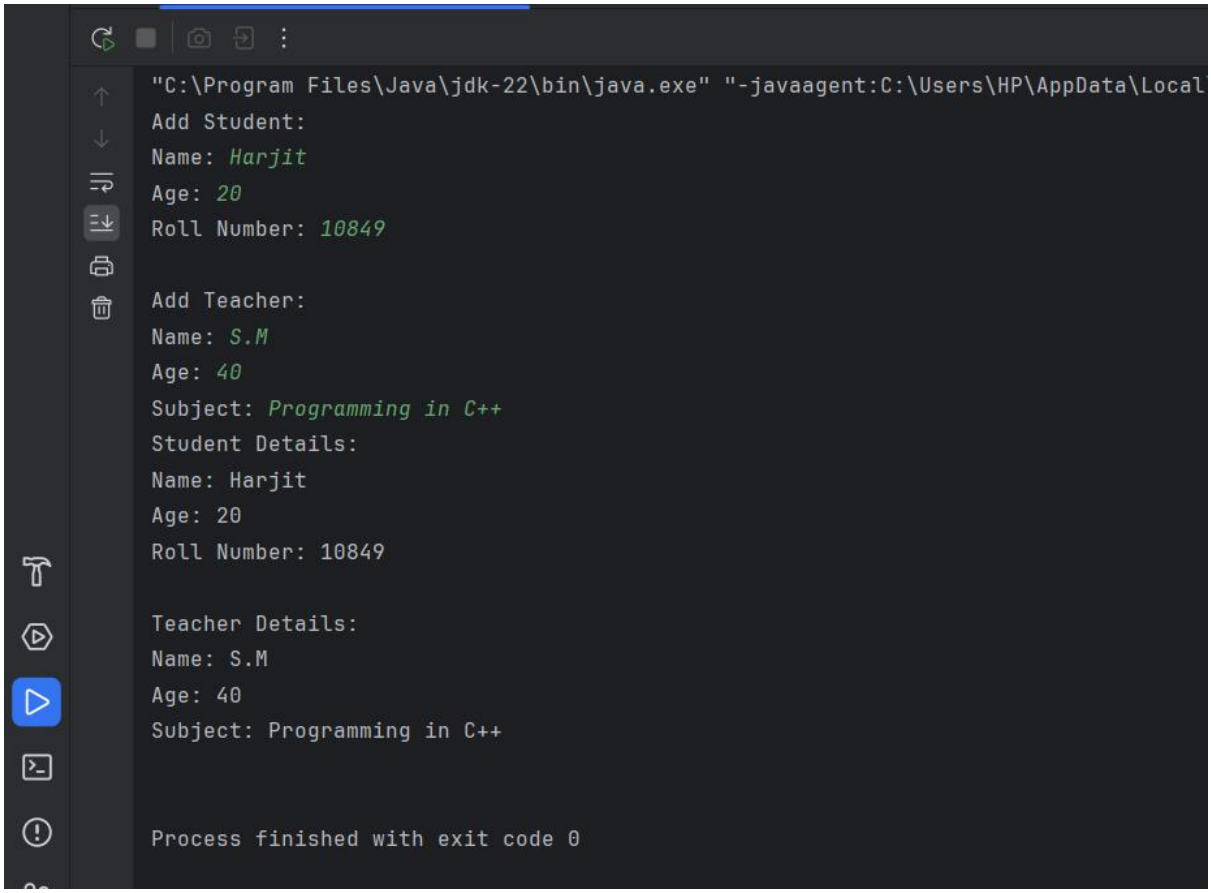
CODE

```
import java.util.Scanner;

abstract class Person {
    protected String name;
    protected int age;
    public Person(String name, int age) {
        this.name = name;
        this.age = age;
    }
    public abstract void displayDetails();
}

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);
        System.out.println("Age: " + age);
        System.out.println("Roll Number: " + rollNumber);
        System.out.println();
    }
}
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);
        System.out.println("Age: " + age);
        System.out.println("Subject: " + subject);
        System.out.println();
    }
}

public class StudentInformationSystem {
    public static void main(String[] args) {
```

```
        Scanner sc = new Scanner(System.in);
        // Add Student
        System.out.println("Add Student:");
        System.out.print("Name: ");
        String studentName = sc.nextLine();
        System.out.print("Age: ");
        int studentAge = sc.nextInt();
        System.out.print("Roll Number: ");
        int rollNumber = sc.nextInt();
        sc.nextLine(); // Consume newline

        // Add Teacher
        System.out.println("\nAdd Teacher:");
        System.out.print("Name: ");
        String teacherName = sc.nextLine();
        System.out.print("Age: ");
        int teacherAge = sc.nextInt();
        sc.nextLine(); // Consume newline
        System.out.print("Subject: ");
        String subject = sc.nextLine();

        // Create objects
        Student student = new Student(studentName, studentAge, rollNumber);
        Teacher teacher = new Teacher(teacherName, teacherAge, subject);
        // Display details
        student.displayDetails();
        teacher.displayDetails();
    }
}
```

OUTPUT:


"C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent:C:\Users\HP\AppData\Local
Add Student:
Name: Harjit
Age: 20
Roll Number: 10849
Add Teacher:
Name: S.M
Age: 40
Subject: Programming in C++
Student Details:
Name: Harjit
Age: 20
Roll Number: 10849
Teacher Details:
Name: S.M
Age: 40
Subject: Programming in C++
Process finished with exit code 0