

Person Class Hierarchy with Student and Teacher Subclasses

Class Structure Overview

```
// Base Person class
class Person {
  constructor(name, age) {
    this.name = name;
    this.age = age;
  }
  displayInfo() {
    return `Name: ${this.name}, Age: ${this.age}`;
  }
}

// Student class extending Person
class Student extends Person {
  constructor(name, age, grade, course) {
    super(name, age);
    this.grade = grade;
    this.course = course;
  }
  displayInfo() {
    return `${super.displayInfo()}, Grade: ${this.grade}, Course: ${this.course}`;
  }
}

// Teacher class extending Person
class Teacher extends Person {
  constructor(name, age, subject, department) {
    super(name, age);
    this.subject = subject;
    this.department = department;
  }
  displayInfo() {
    return `${super.displayInfo()}, Subject: ${this.subject}, Department: ${this.department}`;
  }
}
```

Live Demo

Run Demo

Clear Output

```
=== Person Class Hierarchy Demo ===
```

```
Person instance:
Name: John Doe, Age: 30
Hello, I'm John Doe
```

```
=== Person Class Hierarchy Demo ===
```

```
Person instance:
```

```
Name: John Doe, Age: 30
```

```
Hello, I'm John Doe
```

```
Student instances:
```

```
Student 1: Name: Alice Johnson, Age: 16, Grade: A, Course: Computer Science
```

```
Student 1 greeting: Hi! I'm Alice Johnson, a student in grade A
```

```
Student 1 studying: Alice Johnson is studying Computer Science
```

```
Student 2: Name: Bob Smith, Age: 17, Grade: B+, Course: Mathematics
```

```
Student 2 greeting: Hi! I'm Bob Smith, a student in grade B+
```

```
Student 2 studying: Bob Smith is studying Mathematics
```

```
Teacher instances:
```

```
Teacher 1: Name: Dr. Sarah Wilson, Age: 45, Subject: Computer Science, Department: Engineering
```

```
Teacher 1 greeting: Hello, I'm Dr. Sarah Wilson, a Computer Science teacher
```

```
Teacher 1 teaching: Dr. Sarah Wilson teaches Computer Science in the Engineering department
```

```
Teacher 2: Name: Prof. Michael Brown, Age: 52, Subject: Mathematics, Department: Science
```

```
Teacher 2 greeting: Hello, I'm Prof. Michael Brown, a Mathematics teacher
```

```
Teacher 2 teaching: Prof. Michael Brown teaches Mathematics in the Science department
```

```
=== Polymorphism Demo ===
```

```
Person 1 info: Name: John Doe, Age: 30
```

```
Person 1 greeting: Hello, I'm John Doe
```

```
Person 2 info: Name: Alice Johnson, Age: 16, Grade: A, Course: Computer Science
```

```
Person 2 greeting: Hi! I'm Alice Johnson, a student in grade A
```

```
Person 3 info: Name: Bob Smith, Age: 17, Grade: B+, Course: Mathematics
```

```
Person 3 greeting: Hi! I'm Bob Smith, a student in grade B+
```

```
Person 4 info: Name: Dr. Sarah Wilson, Age: 45, Subject: Computer Science, Department: Engineering
```

```
Person 4 greeting: Hello, I'm Dr. Sarah Wilson, a Computer Science teacher
```

```
Person 5 info: Name: Prof. Michael Brown, Age: 52, Subject: Mathematics, Department: Science
```

```
Person 5 greeting: Hello, I'm Prof. Michael Brown, a Mathematics teacher
```

Person 5 greeting: Hello, I'm Prof. Michael Brown, a Mathematics teacher

Interactive Examples

Person Instance

Info: Name: John Doe, Age: 30

Greeting: Hello, I'm John Doe

Student Instance

Info: Name: Alice Johnson, Age: 16, Grade: A, Course: Computer Science

Greeting: Hi! I'm Alice Johnson, a student in grade A

Study: Alice Johnson is studying Computer Science

Teacher Instance

Info: Name: Dr. Sarah Wilson, Age: 45, Subject: Computer Science, Department: Engineering

Greeting: Hello, I'm Dr. Sarah Wilson, a Computer Science teacher

Teaching: Dr. Sarah Wilson teaches Computer Science in the Engineering department

Student Instance

Info: Name: Alice Johnson, Age: 16, Grade: A, Course: Computer Science

Greeting: Hi! I'm Alice Johnson, a student in grade A

Study: Alice Johnson is studying Computer Science

Teacher Instance

Info: Name: Dr. Sarah Wilson, Age: 45, Subject: Computer Science, Department: Engineering

Greeting: Hello, I'm Dr. Sarah Wilson, a Computer Science teacher

Teaching: Dr. Sarah Wilson teaches Computer Science in the Engineering department

Key Concepts Demonstrated

- **Inheritance:** Student and Teacher classes extend the Person base class
- **Method Overriding:** Subclasses override the displayInfo() method to show additional information
- **Super Keyword:** Used to call parent class methods and constructor
- **Polymorphism:** Different objects can be treated uniformly through their common interface
- **Encapsulation:** Properties and methods are encapsulated within their respective classes