Experiment 11: Inheritance in Java

10(a). Single Level Inheritance

Aim

To write a Java program to demonstrate Single Inheritance

Theory:

Single level inheritance involves one parent class and one child class. The child class inherits the properties and methods of the parent class.

Algorithm

1. Create a parent class
2. Create a child class that extends the parent class
3. Access parent class methods using child object

Program Code:

```
class FoodStall {

    void stallType() {
        System.out.println("This is a Street Food Stall");
    }
}

class DosaStall extends FoodStall {

    void specialItem() {
        System.out.println("Special Item: Masala Dosa");
    }
}

class SingleInheritanceDemo {
    public static void main(String[] args) {
        DosaStall stall = new DosaStall();
        stall.stallType();
        stall.specialItem();
    }
}
```

Result

The program demonstrates single level inheritance where the child class inherits properties of the base class.

11(b). Multiple Inheritance

Aim

To write a Java program to demonstrate Multiple Inheritance using interfaces.

Theory:

Java does not support multiple inheritance using classes. However, it can be achieved using interfaces, where a class can implement more than one interface.

Algorithm

1. Create two interfaces
2. Declare methods in both interfaces
3. Implement both interfaces in one class
4. Call the methods

Program Code:

```
interface OnlineTeaching {
   void startOnlineClass();
}

interface OfflineTeaching {
   void startOfflineClass();
}

class SmartClassroom implements OnlineTeaching, OfflineTeaching {
   public void startOnlineClass() {
      System.out.println("Online class started using projector");
   }

   public void startOfflineClass() {
      System.out.println("Offline class started in classroom");
   }
}

class MultipleInheritanceDemo {
   public static void main(String[] args) {
      SmartClassroom sc = new SmartClassroom();
      sc.startOnlineClass();
      sc.startOfflineClass();
   }
}
```

Result

The program demonstrates multiple inheritance using interfaces.

10(a). Multi-Level Inheritance

Aim

To write a Java program to demonstrate Multi-level Inheritance.

Theory:

Multi-level inheritance involves more than one level of inheritance, where a class is derived from another derived class.

Algorithm

1. Create a base class
2. Create an intermediate class that extends base class
3. Create a child class that extends intermediate class
4. Access methods from all levels

Program Code:

```
class BankAccount {
    void openAccount() {
        System.out.println("Bank account opened");
    }
}

class SavingsAccount extends BankAccount {
    void depositMoney() {
        System.out.println("Money deposited in savings account");
    }
}

class SalaryAccount extends SavingsAccount {
    void salaryCredit() {
        System.out.println("Monthly salary credited");
    }
}

class MultiLevelInheritanceDemo {
    public static void main(String[] args) {
        SalaryAccount acc = new SalaryAccount();
        acc.openAccount();
        acc.depositMoney();
        acc.salaryCredit();
    }
}
```

Result

The program successfully demonstrates multi-level inheritance in Java.