WEEK 8

Question 1: Create a class FRUIT which has data members colour, taste and price. Also create a method display() which will print values of FRUIT object. Create three objects of FRUIT class and call their display() methods.

Solution:

Fruit.java

```java
package com.fruit;
public class Fruit {
    private String color;
    private String taste;
    private double price;

    public String getColor() { return color; }
    public void setColor(String color) { this.color = color; }
    public String getTaste() { return taste; }
    public void setTaste(String taste) { this.taste = taste; }
    public double getPrice() { return price; }
    public void setPrice(double price) { this.price = price; }

    public void display(){
        System.out.println("Color: " + color);
        System.out.println("Taste: " + taste);
        System.out.println("Price: " + price + "\n");
    }
}
```

Main.java

```java
package com.fruit;
public class Main {
    Run main | Debug main | Run | Debug
    public static void main(String[] args) {
        Fruit mango = new Fruit();
        mango.setColor(color:"Yellow");
        mango.setTaste(taste:"Sweet");
        mango.setPrice(price:50.0);
        Fruit apple = new Fruit();
        apple.setColor(color:"Red");
        apple.setTaste(taste:"Sweet");
        apple.setPrice(price:100.0);
        Fruit grapes = new Fruit();
        grapes.setColor(color:"Green");
        grapes.setTaste(taste:"Sour");
        grapes.setPrice(price:60.0);
        System.out.println(x:"Mango Details:");
        mango.display();
        System.out.println(x:"Apple Details:");
        apple.display();
        System.out.println(x:"Grapes Details:");
        grapes.display();
    }
}
```

Output:

```
PS D:\Uni Material\LAB\sem 3\Week 8\Que1\src\main\java\com\fruit> javac Main.java Fruit.java
PS D:\Uni Material\LAB\sem 3\Week 8\Que1\src\main\java\com\fruit> java Main.java
Mango Details:
Color: Yellow
Taste: Sweet
Price: 50.0

Apple Details:
Color: Red
Taste: Sweet
Price: 100.0

Grapes Details:
Color: Green
Taste: Sour
Price: 60.0
```

Question 2: Create a class FRUIT which has data members color, taste and price. It has a method setDetails() which will set the values of color, taste and price. Also create a method display() which will print values of FRUIT object.

Solution:

Fruit.java

```java
package com.fruitseller;
public class Fruit {
    private String color;
    private String taste;
    private double price;

    public void setDetails(String color, String taste, double price) {
        this.color = color;
        this.taste = taste;
        this.price = price;
    }
    public void display(){
        System.out.println("Color: " + color);
        System.out.println("Taste: " + taste);
        System.out.println("Price: " + price + "\n");
    }
}
```

Main.java

```java
package com.fruitseller;
public class Main {
    public static void main(String[] args) {
        Fruit mango = new Fruit();
        mango.setDetails(color:"Yellow", taste:"Sweet", price:50.0);
        Fruit apple = new Fruit();
        apple.setDetails(color:"Red", taste:"Sweet", price:100.0);
        Fruit grapes = new Fruit();
        grapes.setDetails(color:"Green", taste:"Sour", price:60.0);
        System.out.println(x:"Mango Details:");
        mango.display();
        System.out.println(x:"Apple Details:");
        apple.display();
        System.out.println(x:"Grapes Details:");
        grapes.display();
    }
}
```

Output:

```
PS D:\Uni Material\LAB\sem 3\Week 8\Que2\src\main\java\com\fruitseller> javac Fruit.java Main.java
PS D:\Uni Material\LAB\sem 3\Week 8\Que2\src\main\java\com\fruitseller> java Main.java
Mango Details:
Color: Yellow
Taste: Sweet
Price: 50.0

Apple Details:
Color: Red
Taste: Sweet
Price: 100.0

Grapes Details:
Color: Green
Taste: Sour
Price: 60.0
```

Question 3: In previous question, set the values of using color, taste and price using Constructor.

Solution:

Fruit.java

```java
package com.fruit;
public class Fruit {
    private String color;
    private String taste;
    private double price;
    Fruit (String color, String taste, double price) {
        this.color = color;
        this.taste = taste;
        this.price = price;
    }
    public void display(){
        System.out.println("Color: " + color);
        System.out.println("Taste: " + taste);
        System.out.println("Price: " + price + "\n");
    }
}
```

Main.java

```java
package com.fruit;
public class Main {
    Run main | Debug main | Run | Debug
    public static void main(String[] args) {
        Fruit mango = new Fruit(color:"Yellow", taste:"Sweet", price:50.0);
        Fruit apple = new Fruit(color:"Red", taste:"Sweet", price:100.0);
        Fruit grapes = new Fruit(color:"Green", taste:"Sour", price:60.0);
        System.out.println(x:"Mango Details:");
        mango.display();
        System.out.println(x:"Apple Details:");
        apple.display();
        System.out.println(x:"Grapes Details:");
        grapes.display();
    }
}
```

Output:

```
PS D:\Uni Material\LAB\sem 3\Week 8\Que3\src\main\java\com\fruit> javac Main.java Fruit.java
PS D:\Uni Material\LAB\sem 3\Week 8\Que3\src\main\java\com\fruit> java Main.java
Mango Details:
Color: Yellow
Taste: Sweet
Price: 50.0

Apple Details:
Color: Red
Taste: Sweet
Price: 100.0

Grapes Details:
Color: Green
Taste: Sour
Price: 60.0
```

Question 4: Add one-argument constructor and two-argument constructor in addition to default constructor in FRUIT class.

Solution:

Fruit.java

```java
package com.fruit;
public class Fruit {
    private String color;
    private String taste;
    private double price;
    Fruit (String color) { this.color = color; }
    Fruit (String color, String taste) {
        this.color = color;
        this.taste = taste;
    }
    Fruit (String color, String taste, double price) {
        this.color = color;
        this.taste = taste;
        this.price = price;
    }
    public String getColor() { return color; }
    public void setColor(String color) { this.color = color; }
    public String getTaste() { return taste; }
    public void setTaste(String taste) { this.taste = taste; }
    public double getPrice() { return price; }
    public void setPrice(double price) { this.price = price; }
    public void display(){
        System.out.println("Color: " + color);
        System.out.println("Taste: " + taste);
        System.out.println("Price: " + price + "\n");
    }
}
```

Main.java

```java
package com.fruit;
public class Main {
    public static void main(String[] args) {
        Fruit mango = new Fruit(color:"Yellow", taste:"Sweet", price:50.0);
        Fruit apple = new Fruit(color:"Red", taste:"Sweet");
        apple.setPrice(price:102);
        Fruit grapes = new Fruit(color:"Green");
        grapes.setTaste(taste:"Sour");
        grapes.setPrice(price:65);
        System.out.println(x:"Mango Details:");
        mango.display();
        System.out.println(x:"Apple Details:");
        apple.display();
        System.out.println(x:"Grapes Details:");
        grapes.display();
    }
}
```

Output:

```
PS D:\Uni Material\LAB\sem 3\Week 8\Que4\src\main\java\com\fruit> javac Fruit.java Main.java
PS D:\Uni Material\LAB\sem 3\Week 8\Que4\src\main\java\com\fruit> java Main.java
Mango Details:
Color: Yellow
Taste: Sweet
Price: 50.0

Apple Details:
Color: Red
Taste: Sweet
Price: 102.0

Grapes Details:
Color: Green
Taste: Sour
Price: 65.0
```

Question 5: Use the concept of constructor-chaining in the previous question using this().

Solution:

Fruit.java

```java
package com.fruit;
public class Fruit {

    private String color;
    private String taste;
    private double price;

    Fruit (String color) { this.color = color; }
    Fruit (String color, String taste) {
        this(color);
        this.taste = taste;
    }
    Fruit (String color, String taste, double price) {
        this(color, taste);
        this.price = price;
    }
    public String getColor() { return color; }
    public void setColor(String color) { this.color = color; }

    public String getTaste() { return taste; }
    public void setTaste(String taste) { this.taste = taste; }

    public double getPrice() { return price; }
    public void setPrice(double price) { this.price = price; }

    public void display(){
        System.out.println("Color: " + color);
        System.out.println("Taste: " + taste);
        System.out.println("Price: " + price + "\n");
    }
}
```

```java
package com.fruit;

public class Main {
    Run main | Debug main | Run | Debug
    public static void main(String[] args) {

        Fruit mango = new Fruit(color:"Yellow", taste:"Sweet", price:50.0);
        Fruit apple = new Fruit(color:"Red", taste:"Sweet");
        apple.setPrice(price:102);
        Fruit grapes = new Fruit(color:"Green");
        grapes.setTaste(taste:"Sour");
        grapes.setPrice(price:65);

        System.out.println(x:"Mango Details:");
        mango.display();

        System.out.println(x:"Apple Details:");
        apple.display();

        System.out.println(x:"Grapes Details:");
        grapes.display();
    }
}
```

Output:

```
PS D:\Uni Material\LAB\sem 3\Week 8\Que5\src\main\java\com\fruit> javac Main.java Fruit.java
PS D:\Uni Material\LAB\sem 3\Week 8\Que5\src\main\java\com\fruit> java Main.java
Mango Details:
Color: Yellow
Taste: Sweet
Price: 50.0

Apple Details:
Color: Red
Taste: Sweet
Price: 102.0

Grapes Details:
Color: Green
Taste: Sour
Price: 65.0
```

Optional

Question 6: Create a class CAR with the following details:

Data members: model, color, price.

Member methods:

- setDetails() – to set values of all data members using setters.
- getDetails() – to get values of all data members using getters.
- display() – to print all details of the car.

Requirements:

- Implement default constructor to initialize default values.
- Implement a parameterized constructor (with one argument) to
- set only model.
- Implement another parameterized constructor (with two
- arguments) to set model and color.
- Use constructor chaining to reduce code redundancy.
- Create three objects of CAR class using:
- ● Default constructor
- ● One-argument constructor
- ● Two-argument constructor
- Set price for each object using the setDetails() method.
- Call the display() method for each object.

Solution:

Main.java

```java
package com.car;

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

        CAR car1 = new CAR();
        car1.setPrice(500000);
        car1.display();

        CAR car2 = new CAR("Tesla Model 3");
        car2.setPrice(15000000);
        car2.display();

        CAR car3 = new CAR("BMW X5", "Black");
        car3.setPrice(10000000);
        car3.display();
    }
}
```

```java
package com.car;
public class CAR {
    private String model;
    private String color;
    private double price;
    public CAR() {
        this(model:"Unknown", color:"White", price:0.0);
    }
    public CAR(String model) {
        this(model, color:"White", price:0.0);
    }
    public CAR(String model, String color) {
        this(model, color, price:0.0);
    }
    public CAR(String model, String color, double price) {
        this.model = model;
        this.color = color;
        this.price = price;
    }
    public void setModel(String model) { this.model = model; }
    public void setColor(String color) { this.color = color; }
    public void setPrice(double price) { this.price = price; }
    public String getModel() { return model; }
    public String getColor() { return color; }
    public double getPrice() { return price; }
    public void setDetails(String model, String color, double price) {
        this.model = model;
        this.color = color;
        this.price = price;
    }
    public String getDetails() {
        return "Model: " + model + ", Color: " + color + ", Price: " + price;
    }
    public void display() {
        System.out.println("Model: " + model);
        System.out.println("Color: " + color);
        System.out.println("Price: " + price);
        System.out.println();
    }
}
```

Output:

```
PS D:\Uni Material\LAB\sem 3\Week 8\Ques6\src\main\java\com\car> javac CAR.java Main.java
PS D:\Uni Material\LAB\sem 3\Week 8\Ques6\src\main\java\com\car> java Main.java
Model: Unknown
Color: White
Price: 500000.0

Model: Tesla Model 3
Color: White
Price: 1.5E7

Model: BMW X5
Color: Black
Price: 1.0E7
```