Reg No: 23MCA1030
Name: Vinayak Kumar Singh
Subject: Java Programming Lab

1. Declare a static integer variable to store numerical values. Perform addition, multiplication, and subtraction operations on two numbers using this variable, and then display the respective results.
   input:

```
num1 = 8
num2 = 3
```

   Output:

```
Addition Result: 11
Multiplication Result: 24
Subtraction Result: 5
```

Code:

```
public class Main {
    public static void main(String[] args) {
        // Declaring static integer variable
        int num1 = 8;
        int num2 = 3;
        int Addition = num1 + num2;
        int Multiplication = num1 * num2;
        int Subtraction = num1 - num2;

        // Displaying the results
        System.out.println("23MCA1030");
        System.out.println("Addition Result: " + Addition);
        System.out.println("Multiplication Result: " + Multiplication);
        System.out.println("Subtraction Result: " + Subtraction);
    }
}
```

Output:

Main.java

```java
public class Main {
    public static void main(String[] args) {
        // Declaring static integer variable
        int num1 = 8;
        int num2 = 3;
        int Addition = num1 + num2;
        int Multiplication = num1 * num2;
        int Subtraction = num1 - num2;

        // Displaying the results
        System.out.println("23MCA1030");
        System.out.println("Addition Result: " + Addition);
        System.out.println("Multiplication Result: " + Multiplication);
        System.out.println("Subtraction Result: " + Subtraction);
    }
}
```

input

```
23MCA1030
Addition Result: 11
Multiplication Result: 24
Subtraction Result: 5


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

2. Develop a class with two static variables representing the ages of two individuals. Write a static method to calculate the age difference and display the result.

input:

```
agePerson1 = 25
agePerson2 = 30
```

Output:

```
Age Difference: 5 years
```

Code:

```
public class Main {

    // Defining the static variables for ages
    static int agePerson1 = 25;
    static int agePerson2 = 30;

    // Static method for calculating & displaying age difference
    public static void calcAgeDiffer() {
        int ageDifference = Math.abs(agePerson1 - agePerson2);
        System.out.println("Age Difference: " + ageDifference + " years");
    }

    public static void main(String[] args) {
        System.out.println("23MCA1030");
        // Calling the method to display age difference
        calcAgeDiffer();
    }
}
```

Output:

Main.java

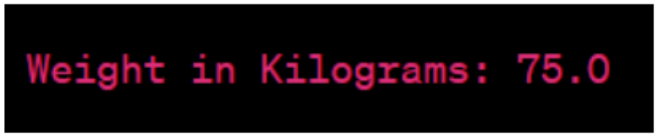
```java
public class Main {

    // Defining the static variables for ages
    static int agePerson1 = 25;
    static int agePerson2 = 30;

    // Static method for calculating & displaying age difference
    public static void calcAgeDiffer() {
        int ageDifference = Math.abs(agePerson1 - agePerson2);
        System.out.println("Age Difference: " + ageDifference + " years");
    }

    public static void main(String[] args) {
        System.out.println("23MCA1030");
        // Calling the method to display age difference
        calcAgeDiffer();
    }
}
```

input

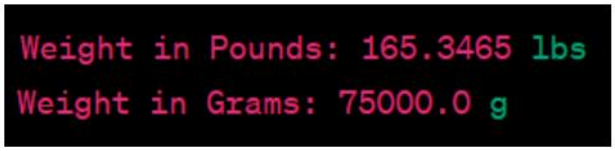
```
23MCA1030
Age Difference: 5 years


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

3. Create a class with a static variable for storing a weight in kilograms. Write static methods to convert this weight to pounds and grams. Display the converted values.

   Input:



   Output:



Code:

```
public class Main {
    // static variable for weight in kilograms
    static double weightKg = 75.0;
    // Static method to convert to pounds
    static double convertToPounds() {
        return weightKg * 2.20462;
    }
    // Static method to convert to grams
    static double convertToGrams() {
        return weightKg * 1000;
    }
    // display conversions
    static void displayConversions() {
        double weightLbs = convertToPounds();
        double weightGrams = convertToGrams();
        System.out.println("23MCA1030");
        System.out.println("Weight in Pounds: " + weightLbs + " lbs");
        System.out.println("Weight in Grams: " + weightGrams + " g");
    }

    public static void main(String[] args) {
        displayConversions();
    }
}
```

Output:

Main.java

```java
public class Main {
    // static variable for weight in kilograms
    static double weightKg = 75.0;
    // Static method to convert to pounds
    static double convertToPounds() {
        return weightKg * 2.20462;
    }
    // Static method to convert to grams
    static double convertToGrams() {
        return weightKg * 1000;
    }
    // display conversions
    static void displayConversions() {
        double weightLbs = convertToPounds();
        double weightGrams = convertToGrams();
        System.out.println("23MCA1030");
        System.out.println("Weight in Pounds: " + weightLbs + " lbs");
        System.out.println("Weight in Grams: " + weightGrams + " g");
    }

    public static void main(String[] args) {
        displayConversions();
    }
}
```

input

```
23MCA1030
Weight in Pounds: 165.3465 lbs
Weight in Grams: 75000.0 g


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

4. Implement a class with a static variable representing a distance in meters. Write static methods to calculate the distance in kilometers and centimeters. Display the calculated values.

   input

   ```
   Distance in Meters: 1500.0
   ```

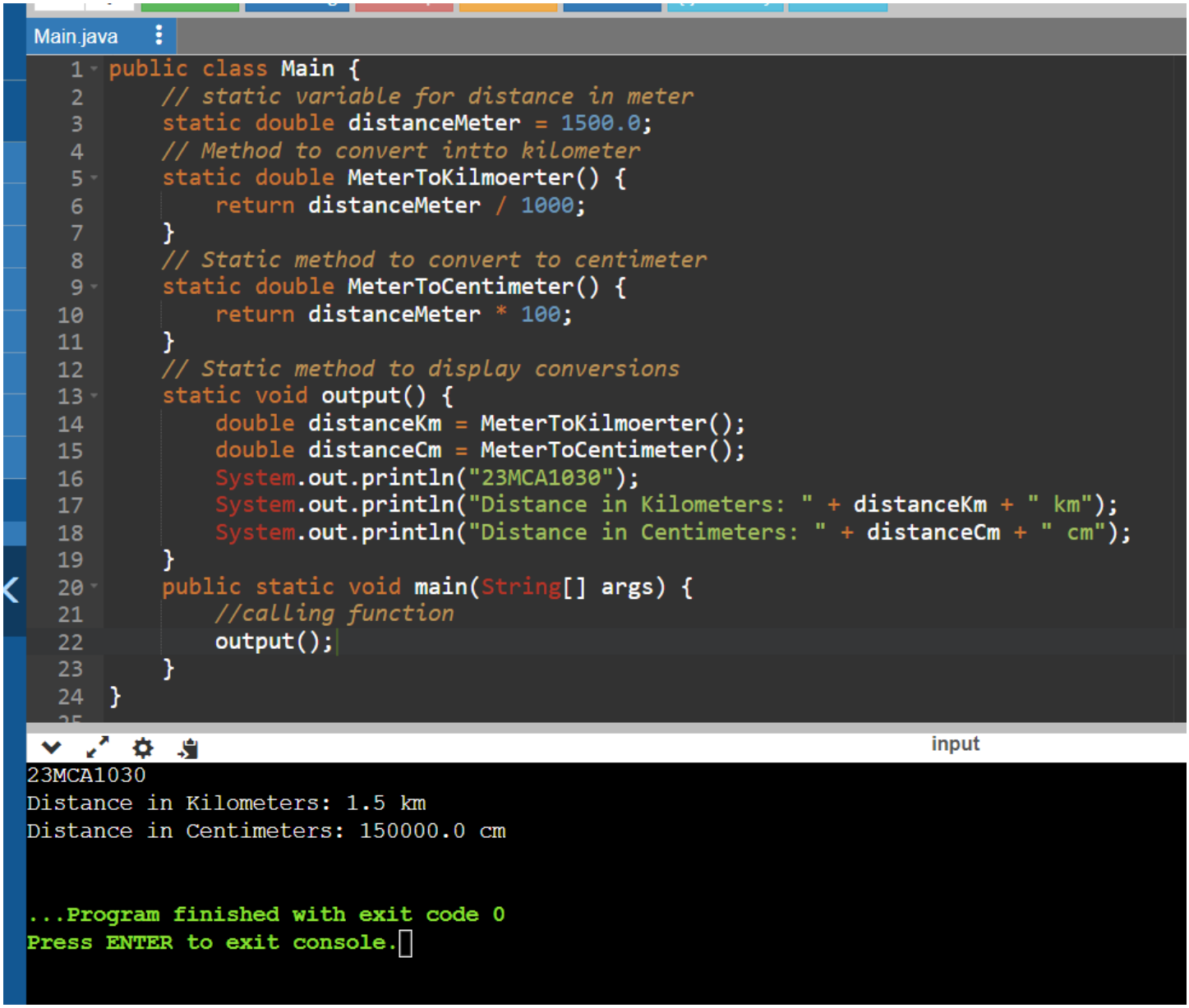
   Output:

   ```
   Distance in Kilometers: 1.5 km
   Distance in Centimeters: 150000.0 cm
   ```

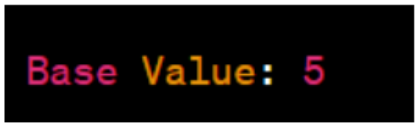
Code:

```
public class Main {
    // static variable for distance in meter
    static double distanceMeter = 1500.0;
    // Method to convert intto kilometer
    static double MeterToKilmoerter() {
        return distanceMeter / 1000;
    }
    // Static method to convert to centimeter
    static double MeterToCentimeter() {
        return distanceMeter * 100;
    }
    // Static method to display conversions
    static void output() {
        double distanceKm = MeterToKilmoerter();
        double distanceCm = MeterToCentimeter();
        System.out.println("23MCA1030");
        System.out.println("Distance in Kilometers: " + distanceKm + " km");
        System.out.println("Distance in Centimeters: " + distanceCm + " cm");
    }
    public static void main(String[] args) {
        //calling function
        output();
    }
}
```

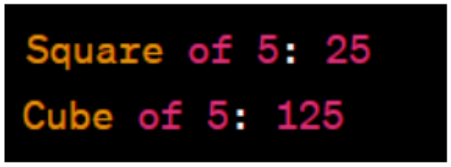
Output:


Main.java
public class Main {
// static variable for distance in meter
static double distanceMeter = 1500.0;
// Method to convert intto kilometer
static double MeterToKilmoerter() {
return distanceMeter / 1000;
}
// Static method to convert to centimeter
static double MeterToCentimeter() {
return distanceMeter * 100;
}
// Static method to display conversions
static void output() {
double distanceKm = MeterToKilmoerter();
double distanceCm = MeterToCentimeter();
System.out.println("23MCA1030");
System.out.println("Distance in Kilometers: " + distanceKm + " km");
System.out.println("Distance in Centimeters: " + distanceCm + " cm");
}
public static void main(String[] args) {
//calling function
output();
}
}
input
23MCA1030
Distance in Kilometers: 1.5 km
Distance in Centimeters: 150000.0 cm
...Program finished with exit code 0
Press ENTER to exit console.

5. Declare a static integer variable to represent a base value. Implement static methods to calculate the square and cube of this base value. Display the results.
input



Output:



Code:

```
public class Main {
    // Static variable for the base value
    static int BaseValue = 5;
    // Static method to calculate the square of base value
    static int calculateSquare() {
        return BaseValue * BaseValue;
    }
    // Static method to calculate the cube  of base value
    static int calculateCube() {
        return BaseValue * BaseValue * BaseValue;
    }
    // Display the results
    static void output() {
        System.out.println("23MCA1030");
        System.out.println("Square of " + BaseValue + ": " +
calculateSquare());
        System.out.println("Cube of " + BaseValue + ": " +
calculateCube());
    }
    public static void main(String[] args) {
        output();
    }
}
```

Output:

Main.java

```java
public class Main {
    // Static variable for the base value
    static int BaseValue = 5;
    // Static method to calculate the square of base value
    static int calculateSquare() {
        return BaseValue * BaseValue;
    }
    // Static method to calculate the cube  of base value
    static int calculateCube() {
        return BaseValue * BaseValue * BaseValue;
    }
    // Display the results
    static void output() {
        System.out.println("23MCA1030");
        System.out.println("Square of " + BaseValue + ": " + calculateSquare());
        System.out.println("Cube of " + BaseValue + ": " + calculateCube());
    }
    public static void main(String[] args) {
        output();
    }
}
```

input

```
23MCA1030
Square of 5: 25
Cube of 5: 125


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