Reflection Log

```
7  package Mastery;
8
9  import java.util.Scanner;
10
11 public class MetricConversion {
12
13     public static void main(String[] args) {
14         Scanner scanner = new Scanner(System.in); // Create a Scanner object for user input
15         int choice; // Variable to store user's menu choice
```

Here I imported the Scanner for the Program.

```
// Display the menu and prompt the user to choose a conversion option
do {
    System.out.println("Metric Conversion Menu:");
    System.out.println("1. Inches to Centimeters");
    System.out.println("2. Centimeters to Inches");
    System.out.println("3. Feet to Centimeters");
    System.out.println("4. Centimeters to Feet");
    System.out.println("5. Yards to Meters");
    System.out.println("6. Meters to Yards");
    System.out.println("7. Miles to Kilometers");
    System.out.println("8. Kilometers to Miles");
    System.out.println("9. Exit");
    System.out.print("Choose an option (1-9): ");
    choice = scanner.nextInt(); // Read the user's choice
```

Here the program prompts the user which conversion method they want to use for the program.

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```
// Switch statement to handle each conversion option
switch (choice) {
    case 1:
        // Inches to Centimeters conversion
        System.out.print("Enter inches: ");
        double inches = scanner.nextDouble();
        System.out.println(inches + " inches = " + inchesToCentimeters(inches) + " centimeters");
        break;
    case 2:
        // Centimeters to Inches conversion
        System.out.print("Enter centimeters: ");
        double cmToInches = scanner.nextDouble();
        System.out.println(cmToInches + " centimeters = " + centimetersToInches(cmToInches) + " inches");
        break;
    case 3:
        // Feet to Centimeters conversion
        System.out.print("Enter feet: ");
        double feet = scanner.nextDouble();
        System.out.println(feet + " feet = " + feetToCentimeters(feet) + " centimeters");
        break;
    case 4:
        // Centimeters to Feet conversion
        System.out.print("Enter centimeters: ");
        double cmToFeet = scanner.nextDouble();
        System.out.println(cmToFeet + " centimeters = " + centimetersToFeet(cmToFeet) + " feet");
        break;
    case 5:
        // Yards to Meters conversion
        System.out.print("Enter yards: ");
        double yards = scanner.nextDouble();
        System.out.println(yards + " yards = " + yardsToMeters(yards) + " meters");
        break;
    case 6:
        // Meters to Yards conversion
        System.out.print("Enter meters: ");
        double metersToYards = scanner.nextDouble();
        System.out.println(metersToYards + " meters = " + metersToYards(metersToYards) + " yards");
        break;
    case 7:
        // Miles to Kilometers conversion
        System.out.print("Enter miles: ");
        double miles = scanner.nextDouble();
        System.out.println(miles + " miles = " + milesToKilometers(miles) + " kilometers");
        break;
    case 8:
        // Kilometers to Miles conversion
        System.out.print("Enter kilometers: ");
        double kilometers = scanner.nextDouble();
        System.out.println(kilometers + " kilometers = " + kilometersToMiles(kilometers) + " miles");
        break;
    case 9:
        // Exit the program
        System.out.println("Exiting the program.");
        break;
    default:
        // Handle invalid menu choices
        System.out.println("Invalid choice. Please choose again.");
}
```

These are the cases for the method the user just choose, the options are as follow, 1) Inches to Centimeters 2) Centimeters to Inches 3) Feet to Centimeters 4) Centimeters to Feet 5) Yards to Meters 6) Meters to Yards 7) Miles to Kilometers 8) Kilometers to Miles 9) Exit the program.

```
            System.out.println(); // Print a blank line for readability

        } while (choice != 9); // Continue until the user chooses to exit

        scanner.close(); // Close the scanner to prevent resource leaks
    }
```

Program closes the scanner.

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```java
// Conversion methods

// Converts inches to centimeters
public static double inchesToCentimeters(double inches) {
    return inches * 2.54;
}

// Converts centimeters to inches
public static double centimetersToInches(double centimeters) {
    return centimeters / 2.54;
}

// Converts feet to centimeters
public static double feetToCentimeters(double feet) {
    return feet * 30.48;
}

// Converts centimeters to feet
public static double centimetersToFeet(double centimeters) {
    return centimeters / 30.48;
}

// Converts yards to meters
public static double yardsToMeters(double yards) {
    return yards * 0.9144;
}

// Converts meters to yards
public static double metersToYards(double meters) {
    return meters / 0.9144;
}

// Converts miles to kilometers
public static double milesToKilometers(double miles) {
    return miles * 1.60934;
}

// Converts kilometers to miles
public static double kilometersToMiles(double kilometers) {
    return kilometers / 1.60934;
}
```

This is the conversion method, its how the program converts all the methods.