Credit Name: CSE 2110 Procedural Programming 1
Assignment Name: Chapter 6 Mastery MetricConversions

How has your program changed from planning to coding to now? Please explain?

I began by creating 8 different methods that calculated the conversion between the user's given length, and a different measurement type.
All 8 methods return a double value of the calculated length, and use a parameter given by the user called "length" to calculate said value.

```
//**For reference**
//i = inches, c = centimeters, f = feet, y = yards, me = meters, mi = miles, k = kilometers

//The following 8 methods calculates the conversion between 2 measurement types with one given length...

public static double iTOc(double length) { //@param length: length in i - @return (double): length in c
    return(length*2.54);
}

public static double fTOc(double length) { //@param length: length in f - @return (double): length in c
    return(length*30);
}

public static double yTOme(double length) { //@param length: length in y - @return (double): length in me
    return(length*0.91);
}

public static double miTOk(double length) { //@param length: length in mi - @return (double): length in k
    return(length*1.6);
}

public static double cTOi(double length) { //@param length: length in c - @return (double): length in i
    return(length/2.54);
}

public static double cTOf(double length) { //@param length: length in c - @return (double): length in f
    return(length/30.0);
}

public static double meTOy(double length) { //@param length: length in me - @return (double): length in y
    return(length/0.91);
}

public static double kTOmi(double length) { //@param length: length in k - @return (double): length in mi
    return(length/1.6);
}
```

In the main area, I began by initalizing variables.

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

    //Initialize variables
    int choice;
    double num;
```

Imported scanner to prepare for user input, and created decimal formating to shorten longer decimals to 2 decimal places

```
//Preparing for user input + format decimal variables
Scanner input = new Scanner(System.in);
DecimalFormat shorten = new DecimalFormat("#00.00");
```

Prompted user for a number (used for length), and recorded user input in variable num.

```java
//Prompt user for number and record user input
System.out.print("Please enter a number: ");
num = input.nextDouble();
```

Displayed the 8 different conversion choices to the user to pick from.

```java
//Display conversion choices to user
System.out.println("Convert:");
System.out.println("1. Inches to Centimeters    5. Centimeters to Inches ");
System.out.println("2. Feet to Centimeters      6. Centimeters to Feet");
System.out.println("3. Yards to Meters          7. Meters to Yards");
System.out.println("4. Miles to Kilometers      8. Kilometers to Miles");
```

Prompted user for their choice, and recorded user input in variable choice.

```java
//Prompt user for choice and record user input
System.out.print("Please enter your choice: ");
choice = input.nextInt();
```

Using a switch-case statement, I used choice as the expression, and determined which corresponding method to use based on the choice given.
Using correspondent method with (num) param, I calculated the length, shortened it with decimal formatting, and displayed it to the user.

```java
//Determine which conversion (method) to use, then use corresponding method with num variable as parameter.
//Shorten decimals + Display conversion result to user
switch(choice) {

case 1: System.out.println(num+ " inches equals " + shorten.format(iTOc(num)) + " centimeters."); break;
case 2: System.out.println(num+ " feet equals " + shorten.format(fTOc(num)) + " centimeters."); break;
case 3: System.out.println(num+ " yards equals " + shorten.format(yTOme(num)) + " meters."); break;
case 4: System.out.println(num+ " miles equals " + shorten.format(miTOk(num)) + " kilometers."); break;
case 5: System.out.println(num+ " centimeters equals " + shorten.format(cTOi(num)) + " inches."); break;
case 6: System.out.println(num+ " centimeters equals " + shorten.format(cTOf(num)) + " feet."); break;
case 7: System.out.println(num+ " meters equals " + shorten.format(meTOy(num)) + " yards."); break;
case 8: System.out.println(num+ " kilometers equals " + shorten.format(kTOmi(num)) + " miles."); break;
```