Tallying Coin Toss Exercise

This program is going to ask the user for the number of times to toss a coin and then based on that number it will tally how many heads versus tails are flipped.

1. Open NetBeans and begin a new project called **HeadsTails**.

2. Let's start by adding our comments to the top of the program.

3. We will need to add our Scanner import so that we can take in data via command line.

   import java.util.Scanner;

4. In order to use the Scanner class to take in data via command line, you will need to create a Scanner object. Let's name this object **input**.

   Scanner input=new Scanner(System.in);

5. Next, let's ask the user how many coin tosses they would like. We will save this data into a variable named **times**. This will help use to determine how many times we need to repeat our code in our loop.

   System.out.println("How many times would you like to flip the coin?");
   int times=input.nextInt();

6. Then, we need to create tally variables that will be used to figure out how many times the coin landed on heads and how many times it landed on tails. We will need to separate variables to do this.

   int headCounter=0;
   int tailCounter=0;

7. Next, we will need a for loop that will execute as many times as the user typed in for the number of coin tosses. This information will be in the **times** variable.

```
for (int i = 0; i < times; i++) {

}
```

8. Inside the loop, we need to generate a random number. We don't need to modify the random number that is generated since we want it to stay a 16 digit decimal number. We will use this decimal to determine whether the coin is heads or tails. Let's store our random number in a variable named **r**.

   double r = Math.random();

9. Now let's use that number to determine whether the coin flip is heads or tails. If the number is greater than 0.5, then we will make it heads….otherwise it will be tails.

```
for (int i = 0; i < times; i++) {
    double r = Math.random(); // generate a random number
    if (r >= .5) {    //fair chance of heads and tails
        System.out.println("Heads");
    } else {
        System.out.println("Tails");
    }
}
```

10. Test your program and see if you generate print out statements with your coin flips of heads/tails the correct number of times. Try running it again. Did you get different results?

11. Let's add our counter variables to keep track of how many heads were flipped and how many tails were flipped.

```
for (int i = 0; i < times; i++) {
    double r = Math.random(); // generate a random number
    if (r >= .5) {    //fair chance of heads and tails
        headCounter++;
        System.out.println("Heads");
    } else {
        tailCounter++;
        System.out.println("Tails");
    }
}
```

12. Next, we need to add our print out that will display how many total head flips we got versus how many total tail flips we got.

System.out.println("Number of heads: " + headCounter +
"\nNumber of tails: " + tailCounter);

13. The full program should look as follows.

```
/* Coin toss
 * Name & Date
 * JDK Version */
import java.util.Scanner;
public class HeadsTails {
    public static void main(String args[]) {
        Scanner input=new Scanner(System.in);
        System.out.println("How many times would you like to flip the coin?");
        int times=input.nextInt();
        int headCounter=0;
        int tailCounter=0;
        for (int i = 0; i < times; i++) {
            double r = Math.random(); // generate a random number
            if (r >= .5) {   //fair chance of heads and tails
                headCounter++;
                System.out.println("Heads");
            } else {
                tailCounter++;
                System.out.println("Tails");
            }
        }
        System.out.println("Number of heads: " + headCounter +
                "\nNumber of tails: " + tailCounter);
    }
}
```

14. If you want, you can remove the print outs for inside the loop that print “Heads” and “Tails” because that could be annoying if the user choosing to flip the coin 50 times and they have to look at 50 print outs of heads and tails.

15. Test your program by running it several times and seeing if you get different numbers for heads/tails.