Betsy De La Cruz

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**Purpose:** To create a program that outputs the length of a run time of T or H . This is to show if the Gambler's Fallacy holds true.

**Sample Outputs:**

```
N=10
1222121121
run is 3
```

---

```
N=10
2112111211
run is 3
```

---

```
N=10
2122212211
run is 3
```

---

```
N=1000
run is 11
```

```
N=100
211112212112221212122121212111111122111
121221122222222212221222112112122221211
1221112221112111212122
run is 9
```

---

```
N=100
112211211112112121211211212112222121212
112212121122112212221111222111111121221
221221112222221211211 1
run is 7
```

**Reflection:**

This code took me about 5 hours to complete. I kept over thinking how to set up the run code. However, I knew I had to use an array so I can compare the output by its array element. After reviewing a few of my C++ code I was able to understand what I had to do.

The Gambler's Fallacy the belief that if something appears more frequently, then it will happen less or if it appears less frequently then it will appear more in the future. This belief is falls because it is generated random. In this case, although tails or head will have a long run, both will always have a 50/50 chance of appearing each time around. The larger the Nth number is the clearer the proof is that no matter how long the run is, both head and tail still have an equally likely outcome.

```
package toss;

public class mainflip {

	public static void main(String[] args)
	{
		final int N = 10 ; // constant
		System.out.println("N="+ N);
		// N in an array
		int[] flips = new int[N];

		//Constructor to have 1 and 2
		MultiDie coin= new MultiDie(2);

		//tossing the coin
		for( int i=1; i<= N; i++)
		{
			coin.roll();
			int x = coin.getFaceValue();
			flips[i-1] = x; // puts the values in the array
			//displaying the outcome of each toss
			System.out.print(x);
		}
		// setting up the run
		int run=1;
		int count = 0;
		for (int j = 0; j < N; ++j)
		{
			if (j == 0)
			{
				count = 1;
			}
			else if (flips[j] == flips[j-1])  // 0 == n^th array element
			{
				count++;
			}
			else
			{
				if (count > run)
				{
					run = count;
				}
				count = 1;
			}

		}
		System.out.println();
		System.out.println("run is " + run);
	}

}
```