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Purpose: To create a program that simulates the craps game and to use it to analyze the chances of winning per round.

Sample outputs:

```
Number of rounds: 5.0
Total money: 10
Average Money loss: 2.0
```

```
Number of rounds: 100.0
Total money: 160
Average Money loss: 1.6
```

```
Number of rounds: 1000.0
Total money: 60
Average Money loss: 0.06
```

```
Number of rounds: 10000.0
Total money: -3060
Average Money loss: -0.306
```

```
Number of rounds: 100000.0
Total money: -11640
Average Money loss: -0.1164
```

```
Number of rounds: 1000000.0
 Total money: -134320
 Average Money loss: -0.13432
```

```
Number of rounds: 1.0E8
Total money: -13913100
Average Money loss: -0.139131
```

```
Number of rounds: 1.0E9
 Total money: -142628640
 Average Money loss: -0.14262864
```

{CODE IN THE BACK}

Analysis:

Base from the code, if a player plays craps for a while the player will eventually start to lose money per round according the law of large numbers. From the sample trials output, it can be clearly seen that the more times a player plays the more the player will lose money per round. Rolling a 2, 3, or 12 has a probability of (1/36 + 2/36+1/36) 4/36, while rolling a 7 or 11 is (6/36+2/36) 8/36, and rolling a 4, 5,6,8,9 or 10 is (3/36+4/36+5/36+5/36+4/36+3/36) 24/36. There is about an 11% chance the player will win, a about 22% change lose, and about 66% the player may win depending if the player rolls their specific point before rolling a 7 that has a probability of 6/36. However, based on the law of large number the player will lose money.

This code took me about an hour to do. Had to do some research to properly use a Boolean.

```
package project;
public class craps {
	public static void main(String[] args) {
		MultiDie dice1= new MultiDie(6);
		MultiDie dice2= new MultiDie(6);

		final float trials=100000;
		int bet=10;

		int Total_Money=0;
		boolean a= false;
		int point;
		for (int i=1; i<=trials; i++)
		{
			dice1.roll();
			dice2.roll();
			int x = dice1.getFaceValue() + dice2.getFaceValue();
			switch(x){
			case 2: case 3: case 12:
				Total_Money=Total_Money-bet;
				break;
			case 7: case 11:
				Total_Money+=bet;
				break;
			case 4: case 5: case 6: case 8: case 9: case 10:
				a=true; // if true you will go through loop
				point=x;
				while (a)
				{
					dice1.roll();
					dice2.roll();
					x = dice1.getFaceValue() + dice2.getFaceValue();
					if( x==7 )
					{
						Total_Money=Total_Money-bet;
						a=false;
					}
					else if(x==point)
					{
						Total_Money+=bet;
						a=false;
					}
				}
				break;
			  default :
			System.out.println("Invalid number");
			  }

		}
		double average= (double)Total_Money/(double)trials;
		System.out.println(" Number of rounds: " + trials);
		System.out.println(" Total money: " + Total_Money);
		System.out.println(" Average Money loss: " + average);
	}

}
```