

05.01 Virtual Lecture Notes (Part 2): The `random()` Method

Java's `Math` class contains the `random()` method, which is very useful for generating random numbers.

<code>static double</code>	<code>random()</code> Returns a double value with a positive sign, greater than or equal to 0.0 and less than 1.0.
----------------------------	---

Answer the following questions based on the Summary Table for the `random()` method.

1. Does the `random()` method take any parameters?
2. What type of value does the `random()` method return?
3. What is the smallest and largest number returned by the `random()` method?

Type in the following simple program and observe the output. Turn on the BlueJ Debugger first!

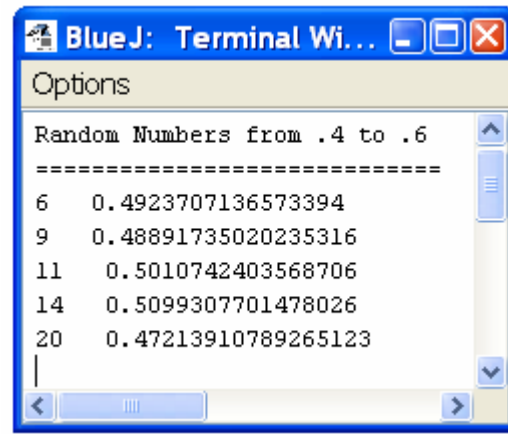
```
public class RandomMethodDemo
{
    public static void main(String [] args)
    {
        double randomNumber;
        int counter = 0;

        while(counter <= 99)
        {
            randomNumber = Math.random();
            System.out.println(randomNumber);
            counter ++;
        }
    }
}
```

After running the demo program, answer the following questions.

1. How many decimal places are included in the random numbers generated?
2. What would you change to generate 1,000, 10,000, 100,000, etc., random numbers?
3. How could you make the demo program interactive and let users choose how many random numbers will be generated? Try it.

4. Which three statements would you change to make the program count backwards (i.e., descending)?
5. Is there any noticeable difference in the performance or output of the program counting in ascending or descending order?
6. How could you generate negative numbers?
7. Instead of the print statement in this program that displays every random number picked, what kind of condition statement could you write to only display specific sets of random numbers? For example, assume that a program chooses 20 random numbers, but only prints values that fall between .4 and .6 as shown in the following screen capture. (Numbers to the left indicate the sixth, ninth, etc. values fell within the range.)



How could you modify the demo program shown above to produce similar results? What modification would be necessary to print the following sets of random numbers?

- Random numbers less than .35.
- Random numbers greater than 88.
- Random numbers less than .29 and greater than .48.

Before resuming the lessons, play with the **random()** method until you feel comfortable with generating different sets of random numbers.