

ASSIGNMENT 11

Submitted By

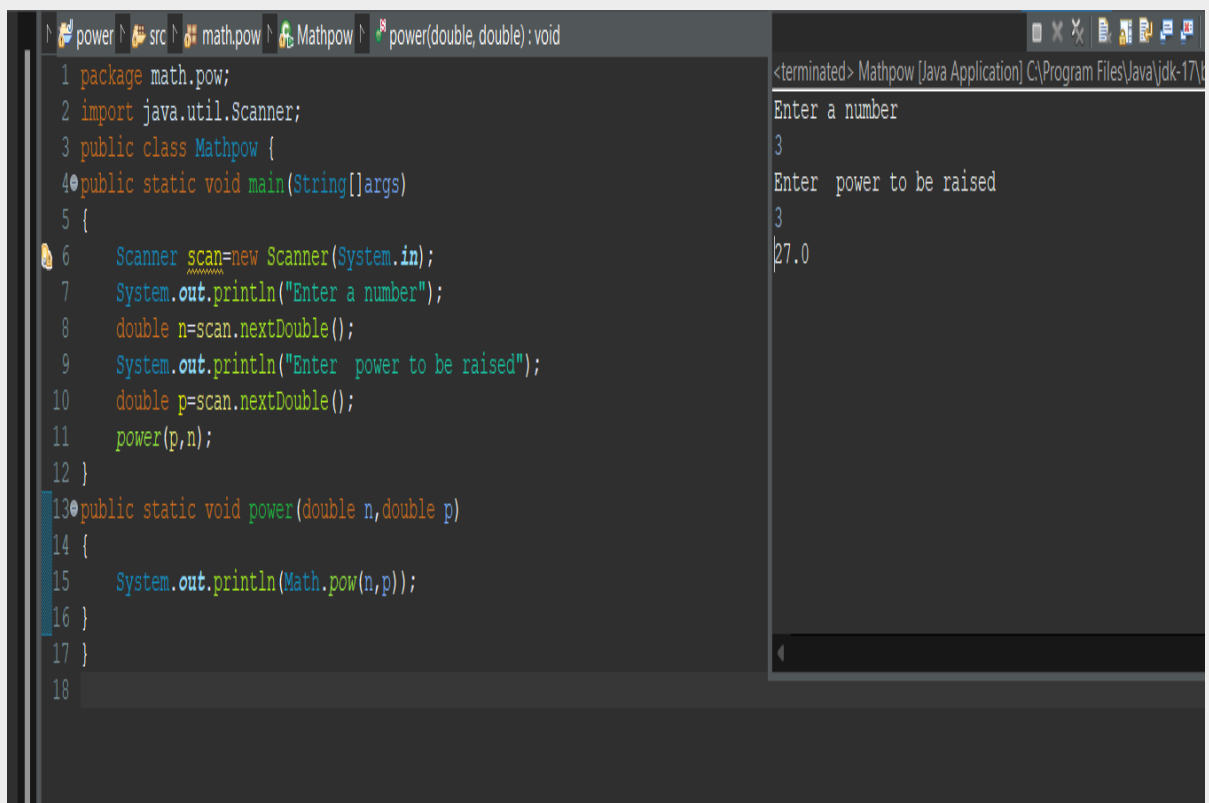
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Math pow() method in java

The `java.lang.Math.pow()` is used to calculate a number raised to the power of some other number. This function accepts two parameters and returns the value of first parameter raised to the second parameter. There are some special cases as listed below:

- If the second parameter is positive or negative zero then the result will be 1.0.
- If the second parameter is 1.0 then the result will be same as that of the first parameter.
- If the second parameter is NaN then the result will also be NaN.
- The function `java.lang.Math.pow()` always returns a double datatype.



The screenshot displays a Java IDE with a code editor on the left and a console window on the right. The code editor shows the following code:

```
1 package math.pow;
2 import java.util.Scanner;
3 public class Mathpow {
4     public static void main(String[] args)
5     {
6         Scanner scan=new Scanner(System.in);
7         System.out.println("Enter a number");
8         double n=scan.nextDouble();
9         System.out.println("Enter power to be raised");
10        double p=scan.nextDouble();
11        power(p,n);
12    }
13    public static void power(double n,double p)
14    {
15        System.out.println(Math.pow(n,p));
16    }
17 }
18
```

The console window on the right shows the execution of the program:

```
<terminated> Mathpow [Java Application] C:\Program Files\Java\jdk-17\
Enter a number
3
Enter power to be raised
3
27.0
```

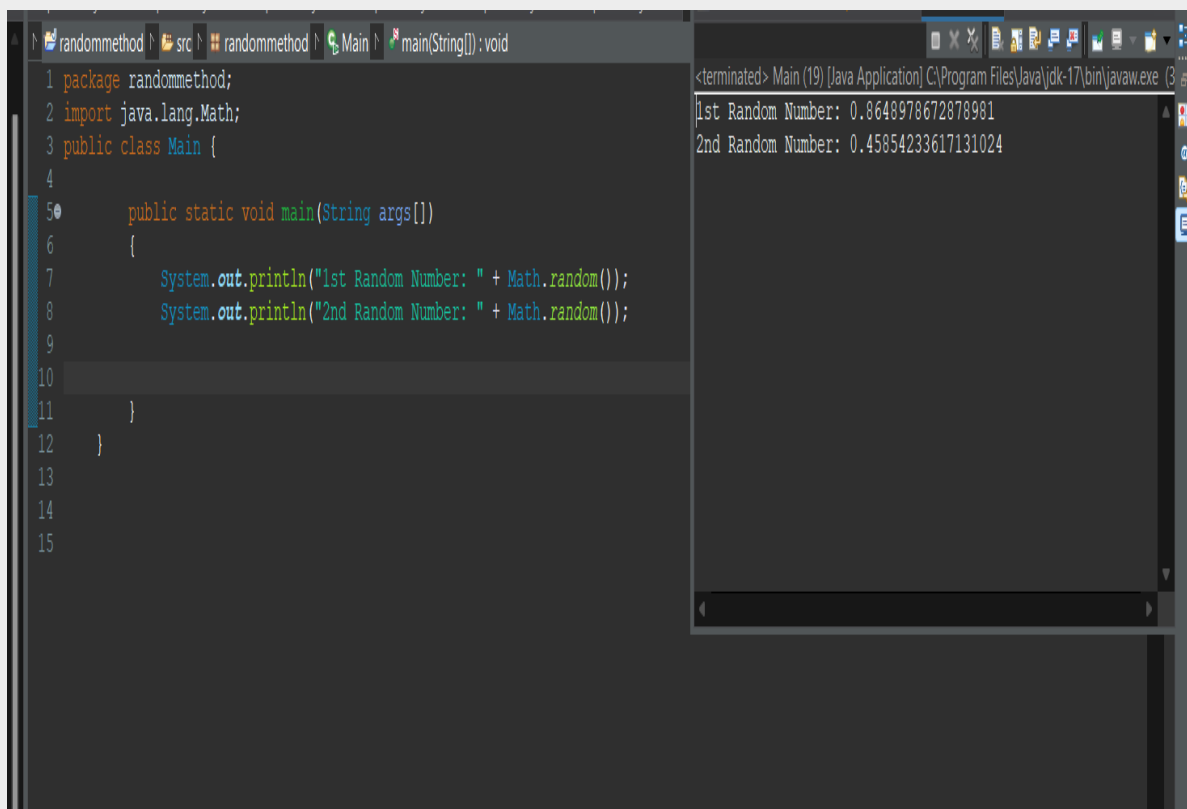
Math.random Method()

The Java Math class has many methods for different mathematical operations. One of them is the random() method. It is a static method of the Math class. We can invoke it directly. It generates only double type random number greater than or equal to 0.0 and less than 1.0. Before using the random() method, we must import the java.lang.Math class.

Syntax:

```
public static double random()
```

It does not accept any parameter. It returns a pseudorandom double that is greater than or equal to 0.0 and less than 1.0.



The screenshot shows a Java IDE with a code editor on the left and a console window on the right. The code editor contains the following code:

```
1 package randommethod;
2 import java.lang.Math;
3 public class Main {
4
5     public static void main(String args[])
6     {
7         System.out.println("1st Random Number: " + Math.random());
8         System.out.println("2nd Random Number: " + Math.random());
9
10
11     }
12 }
13
14
15
```

The console window on the right shows the output of the program:

```
<terminated> Main (19) [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (3
1st Random Number: 0.8648978672878981
2nd Random Number: 0.45854233617131024
```

Every time we get a different output when we execute the program. Your output may differ from the output shown above.

We can also use the following formula if we want to generate a random number between a specified range.

$\text{Math.random()} * (\text{max} - \text{min} + 1) + \text{min}$

In the above formula, the min value is inclusive while the max value is exclusive.

Random Class

Another way to generate a random number is to use the Java Random class of the java.util package. It generates a stream of pseudorandom numbers. We can generate a random number of any data type, such as integer, float, double, Boolean, long. If you are going to use this class to generate random numbers, follow the steps given below:

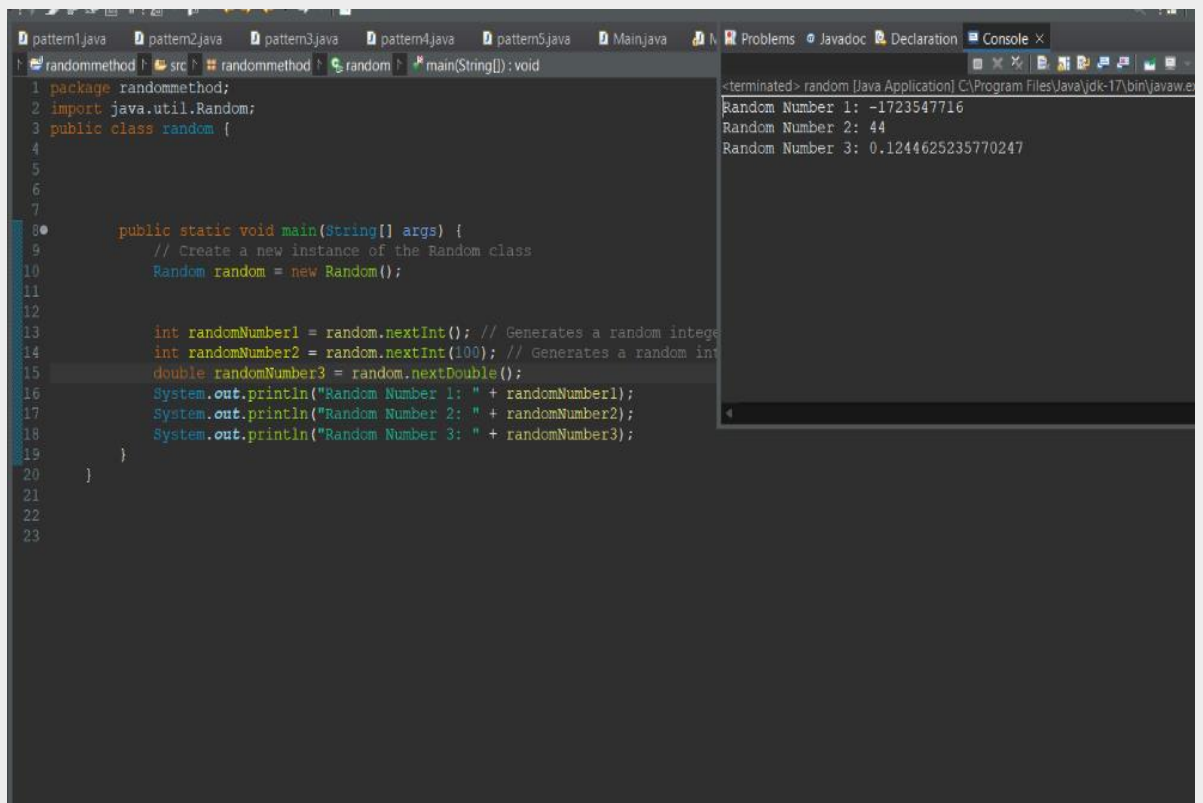
First, import the class java.lang.Random.

Create an object of the Random class.

Invoke any of the following methods:

- nextInt(int bound)
- nextInt()
- nextFloat()
- nextDouble()
- nextLong()
- nextBoolean()

All the above methods return the next pseudorandom, homogeneously distributed value (corresponding method) from this random number generator's sequence. The nextDouble() and nextFloat() method generates random value between 0.0 and 1.0.



The image shows a screenshot of an IDE with a Java project. The left pane displays the source code for a class named `random` in the package `randommethod`. The code uses `java.util.Random` to generate three random numbers: an integer, an integer between 0 and 100, and a double. The right pane shows the console output of the program.

```
1 package randommethod;
2 import java.util.Random;
3 public class random {
4
5
6
7
8 •   public static void main(String[] args) {
9       // Create a new instance of the Random class
10      Random random = new Random();
11
12
13      int randomNumber1 = random.nextInt(); // Generates a random integer
14      int randomNumber2 = random.nextInt(100); // Generates a random integer between 0 and 100
15      double randomNumber3 = random.nextDouble();
16      System.out.println("Random Number 1: " + randomNumber1);
17      System.out.println("Random Number 2: " + randomNumber2);
18      System.out.println("Random Number 3: " + randomNumber3);
19  }
20 }
21
22
23
```

Console Output:

```
<terminated> random [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe
Random Number 1: -1723547716
Random Number 2: 44
Random Number 3: 0.1244625235770247
```