

```
1 package Tests;
2
3 import java.util.*;
4
5 public class Lab9 {
6     public static void main(String[] args) {
7         q1();
8         System.out.println("
9 -----");
10        q2();
11    }
12
13    public static void q1()
14    {
15        int numberOfTimes = 15;
16        int i = 0;
17        for (i = 0; i < numberOfTimes; i++)
18        {
19            System.out.print(RandomCharacter.
20            getRandomLowerCaseLetter() + " ");
21        }
22        System.out.println();
23        for (i = 0; i < numberOfTimes; i++)
24        {
25            System.out.print(RandomCharacter.
26            getRandomUpperCaseLetter() + " ");
27        }
28        System.out.println();
29        for (i = 0; i < numberOfTimes; i++)
30        {
31            System.out.print(RandomCharacter.
32            getRandomDigit() + " ");
33        }
34        System.out.println();
35        for (i = 0; i < numberOfTimes; i++)
36        {
37            System.out.print(RandomCharacter.
38            getRandomCharacter() + " ");
39        }
40        System.out.println();
41    }
42}
```

```

36
    -----
    _");
37     }
38     public static void q2()
39     {
40         int numberOfTimes = 15;
41         int i =0;
42         for (i = 0; i<numberOfTimes; i++)
43         {
44             System.out.print(RandomCharacter.
getRandomPrime()+ " ");
45         }
46         System.out.println();
47         System.out.println("
-----");
48     }
49 }
50
51 class RandomCharacter
52 {
53     public static char getRandomLowerCaseLetter()
54     {
55         Random randy = new Random();
56         int number = randy.nextInt(26);
57         char letter = (char)(number + 'a');
58         return letter;
59     }
60     public static char getRandomUpperCaseLetter()
61     {
62         Random randy = new Random();
63         int number = randy.nextInt(26);
64         char letter = (char)(number + 'A');
65         return letter;
66     }
67
68     public static char getRandomDigit()
69     {
70         Random randy = new Random();
71         int number = randy.nextInt(10);
72         return (char)(number+'0');

```

```
73     }
74     public static char getRandomCharacter()
75     {
76         Random randy = new Random();
77         int number = randy.nextInt(3);
78         if (number==1)
79         {
80             return getRandomLowerCaseLetter();
81         }
82         else if(number ==2)
83         {
84             return getRandomUpperCaseLetter();
85         }
86         else
87         {
88             return getRandomDigit();
89         }
90     }
91     public static int getRandomPrime()
92     {
93         boolean isValid = false;
94         int number = 0;
95         Random randy = new Random();
96         while (!isValid)
97         {
98             number = Math.abs(randy.nextInt());
99             isValid = isPrime(number);
100        }
101        return number;
102    }
103    public static boolean isPrime(int num)
104    {
105        if (num == 2)
106        {
107            return true;
108        }
109        if (num%2==0)
110        {
111            return false;
112        }
113        int factor = (int)Math.sqrt(num) +1;
```

```
114         for (int i = 3; i<factor;i+=2)
115         {
116             if (num % i==0)
117             {
118                 return false;
119             }
120         }
121         return true;
122     }
123 }
```

```
1 package Tests;
2
3 import org.junit.Assert;
4 import org.junit.jupiter.api.Test;
5 class RandomCharacterTest {
6
7     @Test
8     void getRandomLowerCaseLetter() {
9         for (int i = 0; i < 1000; i++)
10         {
11             char c = RandomCharacter.
getRandomLowerCaseLetter();
12             Assert.assertTrue((c>='a'&& c<='z'));
13         }
14         System.out.println("Passed RandomLowerCase()
test...");
15     }
16
17     @Test
18     void getRandomUpperCaseLetter() {
19         for (int i = 0; i < 1000; i++)
20         {
21             char c = RandomCharacter.
getRandomUpperCaseLetter();
22             Assert.assertTrue((c>='A'&& c<='Z'));
23         }
24         System.out.println("Passed RandomUpperCase()
test...");
25     }
26
27     @Test
28     void getRandomDigit() {
29         for (int i = 0; i < 1000; i++)
30         {
31             char c = RandomCharacter.getRandomDigit
32             ();
33             Assert.assertTrue((c>='0'&& c<='9'));
34         }
35         System.out.println("Passed RandomDigit() test
...");
36     }
37 }
```

```
36
37     @Test
38     void getRandomCharacter() {
39         for (int i = 0; i < 1000; i++)
40             {
41                 char c = RandomCharacter.
getRandomCharacter();
42                 Assert.assertTrue((c>='a'&& c<='z') || (c
>='A'&& c<='Z') || (c>='0'&& c<='9') );
43             }
44             System.out.println("Passed RandomCharacter()
test...");
45     }
46
47     @Test
48     void getRandomPrime() {
49         for (int i = 0; i < 1000; i++)
50             {
51                 int prime = RandomCharacter.
getRandomPrime();
52                 Assert.assertTrue(RandomCharacter.isPrime
(prime));
53             }
54             System.out.println("Passed RandomPrime() test
...");
55     }
56 }
```

```

1 E:\Java\bin\java.exe "-javaagent:E:\Java\IntelliJ
  IDEA Community Edition 2022.3.1\lib\idea_rt.jar=62452
  :E:\Java\IntelliJ IDEA Community Edition 2022.3.1\bin
  " -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -
  Dsun.stderr.encoding=UTF-8 -classpath E:\Java\coding\
  IntelliJ\CSC110900PProject\CSC1109Lab9untitled\out\
  test\CSC1109Lab9;C:\Users\Desktop\.m2\repository\org\
  junit\jupiter\junit-jupiter\5.8.1\junit-jupiter-5.8.1
  .jar;C:\Users\Desktop\.m2\repository\org\junit\
  jupiter\junit-jupiter-api\5.8.1\junit-jupiter-api-5.8
  .1.jar;C:\Users\Desktop\.m2\repository\org\opentest4j
  \opentest4j\1.2.0\opentest4j-1.2.0.jar;C:\Users\
  Desktop\.m2\repository\org\junit\platform\junit-
  platform-commons\1.8.1\junit-platform-commons-1.8.1.
  jar;C:\Users\Desktop\.m2\repository\org\apiguardian\
  apiguardian-api\1.1.2\apiguardian-api-1.1.2.jar;C:\
  Users\Desktop\.m2\repository\org\junit\jupiter\junit-
  jupiter-params\5.8.1\junit-jupiter-params-5.8.1.jar;C
  : \Users\Desktop\.m2\repository\org\junit\jupiter\
  junit-jupiter-engine\5.8.1\junit-jupiter-engine-5.8.1
  .jar;C:\Users\Desktop\.m2\repository\org\junit\
  platform\junit-platform-engine\1.8.1\junit-platform-
  engine-1.8.1.jar;E:\Java\coding\IntelliJ\junit-4.13.2
  .jar Tests.Lab9
2 z z o q n i d k k w d h w a x
3 E R H O P P M P F S A Z A C Z
4 0 1 0 9 5 2 0 3 0 8 5 4 7 3 0
5 9 F g m 6 Z 6 e 6 N 6 l P f m
6 -----
  -
7 Testing portion of the question
8 -----
9 3941633 1057429343 1576186369 1737261847 1065759577
  838506491 182685829 2084113783 837848647 332741573
  431941303 1873092373 256605121 1250447927 551461609
10 Testing portion of the question
11 -----
12 -----
13
14 Process finished with exit code 0
15

```

RandomCharacterTest: 5 total, 5 passed

87 ms

[Collapse](#) | [Expand](#)

```
"C:\Program Files\Java\jdk-19.0.2\bin\java.exe" -ea "-
javaagent:C:\Users\LENOVO~1\AppData\Local\Temp\testAgent470jars\intellij-coverage-agent-
1.0.682.jar=C:\Users\LENOVO~1\AppData\Local\Temp\coverage3126args" -
Didea.new.sampling.coverage=true -Dcoverage.ignore.private.constructor.util.class=true -
Didea.test.cyclic.buffer.size=1048576 "-javaagent:C:\Users\LENOVO\Desktop\CSC1109
OOP\IntelliJ IDEA Community Edition 2022.3.1\lib\idea_rt.jar=49970:C:\Users\LENOVO
\Desktop\CSC1109 OOP\IntelliJ IDEA Community Edition 2022.3.1\bin" -Dfile.encoding=UTF-8 -
Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath "C:\Users\LENOVO
O\m2\repository\org\junit\platform\junit-platform-launcher\1.8.1\junit-platform-launcher-
1.8.1.jar;C:\Users\LENOVO\O\m2\repository\org\junit\vintage\junit-vintage-engine\5.8.1\junit-vintage-
engine-5.8.1.jar;C:\Users\LENOVO\Desktop\CSC1109 OOP\IntelliJ IDEA Community Edition
2022.3.1\lib\idea_rt.jar;C:\Users\LENOVO\Desktop\CSC1109 OOP\IntelliJ IDEA Community Edition
2022.3.1\plugins\junit\lib\junit5-rt.jar;C:\Users\LENOVO\Desktop\CSC1109 OOP\IntelliJ IDEA
Community Edition 2022.3.1\plugins\junit\lib\junit-rt.jar;C:\Users\LENOVO\Desktop\CSC1109
OOP\coding\Lab9\out\test\Lab9;C:\Users\LENOVO\Desktop\CSC1109
OOP\coding\Lab9\out\production\Lab9;C:\Users\LENOVO\O\m2\repository\junit\junit\4.13.1\junit-
4.13.1.jar;C:\Users\LENOVO\O\m2\repository\org\hamcrest\hamcrest-core\1.3\hamcrest-core-
1.3.jar;C:\Users\LENOVO\O\m2\repository\org\junit\jupiter\junit-jupiter\5.8.1\junit-jupiter-
5.8.1.jar;C:\Users\LENOVO\O\m2\repository\org\junit\jupiter\junit-jupiter-api\5.8.1\junit-jupiter-api-
5.8.1.jar;C:\Users\LENOVO\O\m2\repository\org\opentest4j\opentest4j\1.2.0\opentest4j-
1.2.0.jar;C:\Users\LENOVO\O\m2\repository\org\junit\platform\junit-platform-commons\1.8.1\junit-
platform-commons-1.8.1.jar;C:\Users\LENOVO\O\m2\repository\org\apiguardian\apiguardian-
api\1.1.2\apiguardian-api-1.1.2.jar;C:\Users\LENOVO\O\m2\repository\org\junit\jupiter\junit-jupiter-
params\5.8.1\junit-jupiter-params-5.8.1.jar;C:\Users\LENOVO\O\m2\repository\org\junit\jupiter\junit-
jupiter-engine\5.8.1\junit-jupiter-engine-5.8.1.jar;C:\Users\LENOVO
O\m2\repository\org\junit\platform\junit-platform-engine\1.8.1\junit-platform-engine-1.8.1.jar"
com.intellij.rt.junit.JUnitStarter -ideVersion5 -junit5 Tests.RandomCharacterTest ---- IntelliJ IDEA
coverage runner ---- sampling ... include patterns: Tests\.* exclude patterns: exclude annotations
patterns: .*Generated.* Class transformation time: 0.0120132s for 874 classes or
1.374508009153318E-5s per class Process finished with exit code 0
```

| | | |
|--|--------|-------|
| getRandomLowerCaseLetter() | passed | 24 ms |
| getRandomDigit() | passed | 1 ms |
| getRandomPrime() | passed | 60 ms |
| getRandomUpperCaseLetter() | passed | 1 ms |
| getRandomCharacter() | passed | 1 ms |

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