File - C:\Users\fongk\Desktop\SIT\oop\lab9\Q1\src\Q1\RandomCharacter.java

```java
package Q1;

import java.util.Random;

public class RandomCharacter {
    private char lowercase;
    private char uppercase;
    private int prime_number;
    private int temp;
    private Random random = new Random();

    public char getRandomLowerCaseLetter(){

        int lowerAscii = this.random.nextInt(97, 122);
        this.lowercase = (char) lowerAscii;
        return this.lowercase;

    }
    public char getRandomUpperCaseLetter(){

        int upperAscii = this.random.nextInt(65, 91);
        this.uppercase = (char) upperAscii;
        return this.uppercase;

    }
    public int getRandomDigitCharacter(){
        return this.random.nextInt(0,10);
    }
    public char getRandomCharacter(){

        int choice = this.random.nextInt(0, 3);

        if (choice==0){
            return this.getRandomLowerCaseLetter();
        }
        if (choice==1){
            return this.getRandomUpperCaseLetter();
        }
        if (choice==2){
            return Character.forDigit(this.getRandomDigitCharacter(), 10);
        }
        else{
            return '\u0000';
        }

    }
    public int getPrime(){
        temp = random.nextInt(0,1000);
        while(isPrime(temp)==false){
            temp = random.nextInt(0,1000);
        }
        this.prime_number=temp;
        return this.prime_number;
    }
    public boolean isPrime(int input){
        for (int i = 2; i < input/2; i++) {
            if (input%i==0){
                return false;
            }
```

```java
        }
        return true;
    }


}

class Main{
    public static void main(String[] args) {
        RandomCharacter randomCharacter = new RandomCharacter();
        // print 15 characters for each method
        for (int i = 0; i < 4; i++) {
            System.out.println(" ");
            for (int j = 0; j < 15; j++) {
                switch (i){
                    case 0:
                        if (j==0){
                            System.out.println("Printing random lower case: "
);
                        }
                        System.out.print(randomCharacter.
getRandomLowerCaseLetter()+" ");
                        break;
                    case 1:
                        if (j==0){
                            System.out.println("Printing random upper case: "
);
                        }
                        System.out.print(randomCharacter.
getRandomUpperCaseLetter()+" ");
                        break;
                    case 2:
                        if (j==0){
                            System.out.println("Printing digit character: ");
                        }
                        System.out.print(randomCharacter.
getRandomDigitCharacter()+" ");
                        break;
                    case 3:
                        if (j==0){
                            System.out.println("Printing random character: ");
                        }
                        System.out.print(randomCharacter.getRandomCharacter()+
" ");
                        break;
                }

            }
        }

        //print random prime number
        System.out.println("\nGenerating random prime number: "+
randomCharacter.getPrime());
    }
}
```

```
 1 "C:\Users\fongk\AppData\Local\Programs\Eclipse Adoptium\jdk-17.0.5.8-hotspot\
   bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community
   Edition 2022.3.1\lib\idea_rt.jar=62472:C:\Program Files\JetBrains\IntelliJ IDEA
    Community Edition 2022.3.1\bin" -Dfile.encoding=UTF-8 -classpath C:\Users\
   fongk\Desktop\SIT\oop\lab9\out\production\lab9;C:\Users\fongk\.m2\repository\
   org\junit\jupiter\junit-jupiter\5.8.1\junit-jupiter-5.8.1.jar;C:\Users\fongk\.
   m2\repository\org\junit\jupiter\junit-jupiter-api\5.8.1\junit-jupiter-api-5.8.1
   .jar;C:\Users\fongk\.m2\repository\org\opentest4j\opentest4j\1.2.0\opentest4j-1
   .2.0.jar;C:\Users\fongk\.m2\repository\org\junit\platform\junit-platform-
   commons\1.8.1\junit-platform-commons-1.8.1.jar;C:\Users\fongk\.m2\repository\
   org\apiguardian\apiguardian-api\1.1.2\apiguardian-api-1.1.2.jar;C:\Users\fongk
   \.m2\repository\org\junit\jupiter\junit-jupiter-params\5.8.1\junit-jupiter-
   params-5.8.1.jar;C:\Users\fongk\.m2\repository\org\junit\jupiter\junit-jupiter-
   engine\5.8.1\junit-jupiter-engine-5.8.1.jar;C:\Users\fongk\.m2\repository\org\
   junit\platform\junit-platform-engine\1.8.1\junit-platform-engine-1.8.1.jar Q1.
   Main
 2
 3 Printing random lower case:
 4 u j m x n a p n y a t u i j d
 5 Printing random upper case:
 6 Y M A R C W C V G G G V I F O
 7 Printing digit character:
 8 4 9 0 1 8 6 8 3 6 2 3 9 7 5 5
 9 Printing random character:
10 p 6 3 i 0 L R n 1 e S R T Y a
11 Generating random prime number: 127
12
13 Process finished with exit code 0
14
```

File - C:\Users\fongk\Desktop\SIT\oop\lab9\Q1\src\Q1\RandomCharacterTest.java

```java
package Q1;

import org.junit.jupiter.api.Test;

import static org.junit.jupiter.api.Assertions.*;

class RandomCharacterTest {

    private char c;
    private int j;
    RandomCharacter randomCharacter = new RandomCharacter();
    @Test
    public void getRandomLowerCaseLetter() {
        c = randomCharacter.getRandomLowerCaseLetter();
        for (int i = 0; i < 100; i++) {
            assertTrue('a'<=c && c<='z', "Character is not lower case");
            System.out.println("Test passed!");
        }
    }

    @Test
    void getRandomUpperCaseLetter() {
        c = randomCharacter.getRandomUpperCaseLetter();
        for (int i = 0; i < 100; i++) {
            assertTrue('A'<=c && c<='Z', "Character is not upper case");
            System.out.println("Test passed!");
        }
    }

    @Test
    void getRandomDigitCharacter() {
        j = randomCharacter.getRandomDigitCharacter();
        for (int i = 0; i < 100; i++) {
            assertTrue(0<=j && j<=9, "Digit not valid or out of range");
            System.out.println("Test passed!");
        }
    }

    @Test
    void getRandomCharacter() {
        c = randomCharacter.getRandomCharacter();
        for (int i = 0; i < 100; i++) {
            assertTrue(('A' <= c && c <= 'Z') || ('a' <= c && c <= 'z') || (0
    <= j && j <= 9), "Character is not a valid letter or number");
            System.out.println("Test passed!");
        }
    }

    @Test
    void getPrime() {
        j = randomCharacter.getPrime();
        for (int i = 0; i < 100; i++) {
            assertTrue(randomCharacter.isPrime(j),"Digit is not prime");
            System.out.println("Test passed!");
        }
    }
}
```

RandomCharacterTest: 5 total, 5 passed

33 ms

Collapse | Expand

"C:\Users\fongk\AppData\Local\Programs\Eclipse Adoptium\jdk-17.0.5.8-hotspot\bin\java.exe" -ea -Didea.test.cyclic.buffer.size=1048576 "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3.1\lib\idea_rt.jar=62513:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3.1\bin" -Dfile.encoding=UTF-8 -classpath "C:\Users\fongk\.m2\repository\org\junit\platform\junit-platform-launcher\1.8.1\junit-platform-launcher-1.8.1.jar;C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3.1\lib\idea_rt.jar;C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3.1\plugins\junit\lib\junit5-rt.jar;C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3.1\plugins\junit\lib\junit-rt.jar;C:\Users\fongk\Desktop\SIT\oop\lab9\out\production\lab9;C:\Users\fongk\.m2\repository\org\junit\jupiter\junit-jupiter\5.8.1\junit-jupiter-5.8.1.jar;C:\Users\fongk\.m2\repository\org\junit\jupiter\junit-jupiter-api\5.8.1\junit-jupiter-api-5.8.1.jar;C:\Users\fongk\.m2\repository\org\opentest4j\opentest4j\1.2.0\opentest4j-1.2.0.jar;C:\Users\fongk\.m2\repository\org\junit\platform\junit-platform-commons\1.8.1\junit-platform-commons-1.8.1.jar;C:\Users\fongk\.m2\repository\org\apiguardian\apiguardian-api\1.1.2\apiguardian-api-1.1.2.jar;C:\Users\fongk\.m2\repository\org\junit\jupiter\junit-jupiter-params\5.8.1\junit-jupiter-params-5.8.1.jar;C:\Users\fongk\.m2\repository\org\junit\jupiter\junit-jupiter-engine\5.8.1\junit-jupiter-engine-5.8.1.jar;C:\Users\fongk\.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 Q1.RandomCharacterTest Process finished with exit code 0

getRandomLowerCaseLetter()	passed	25 ms
getRandomUpperCaseLetter()	passed	2 ms
getRandomDigitCharacter()	passed	2 ms
getRandomCharacter()	passed	2 ms
getPrime()	passed	2 ms