Scala Assignment 13.1

For this assignment, I've used Intellij Idea.

Create a Scala application to find the GCD of two numbers.

In mathematics, the greatest common divisor (gcd) of two or more integers, which are not all zero, is the largest positive integer that divides each of the integers. For example, the gcd of 8 and 12 is 4

Steps and the way of finding GCD by Successive Division Method is as :-

1) Divide the larger number 24 by the smaller number 18. And this division will give remainder 6.
2) Now, divide 18 (divisor of step 1) with 6 (remainder of step 1)
3) Step 3 = Division in Step 2 give us remainder 0 (Zero). And The Last Divisor is the GCD of 24 & 18.
4) Hence, GCD = 6

```
  18 | 24 | 1
       18
     ------

       6 | 18 | 3
           18
         ------

           0
```

Steps followed:

1) Created a method , which takes 2 int values as input as returns an int value as output.

```
def gcd(a: Int,b: Int): Int = {
}
```

2) Checked if b is 0, then returned a,

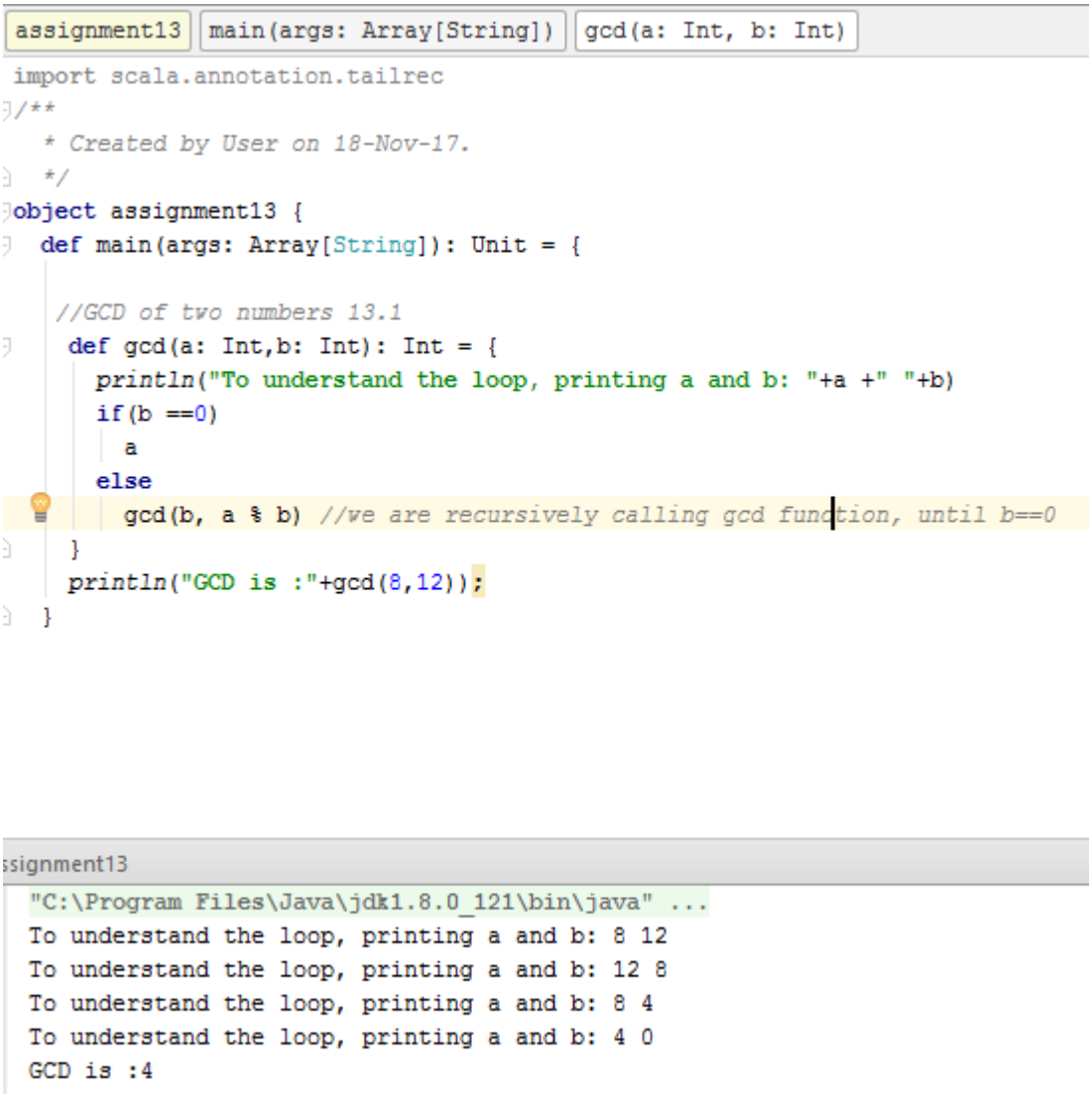
```
if(b ==0)
   a
```

3) Else finding a%b, and initializing b value with a%b and passing b as a and recursively calling the gcd funtion.

```
gcd(b, a%b)  //we are recursively, and calling gcd function, until b==0
```

4) After few recursions, at some point of time b will reach 0, then value of a at that time is the GCD of a &b

Screenshot of IntelliJ and output:



```
assignment13 | main(args: Array[String]) | gcd(a: Int, b: Int)
import scala.annotation.tailrec
/**
  * Created by User on 18-Nov-17.
  */
object assignment13 {
  def main(args: Array[String]): Unit = {

    //GCD of two numbers 13.1
    def gcd(a: Int,b: Int): Int = {
      println("To understand the loop, printing a and b: "+a +" "+b)
      if(b ==0)
        a
      else
        gcd(b, a % b) //we are recursively calling gcd function, until b==0
    }
    println("GCD is :"+gcd(8,12));
  }
```

```
ssignment13
  "C:\Program Files\Java\jdk1.8.0_121\bin\java" ...
  To understand the loop, printing a and b: 8 12
  To understand the loop, printing a and b: 12 8
  To understand the loop, printing a and b: 8 4
  To understand the loop, printing a and b: 4 0
  GCD is :4
```

Source code:

```
//GCD of two numbers 13.1
def gcd(a: Int,b: Int): Int = {
  println("To understand the loop, printing a and b: "+a +" "+b)
  if(b ==0)
    a
  else
    gcd(b, a%b)  //we are recursively, calling gcd function, until b==0
}
```