

1. Problem Statement- Write a Scala application to find the Nth digit in the sequence using standard for loop.

Solution- Below is the code used for generating or extracting the nth digit of the Fibonacci sequence-

In below code we are defining a function named as fib_iter which will take a input of integer type. Then if the value of n is less than 2 it will return the same value else it willl iterate through for loop till n-1 summing the subsequent values.

For example we are taking 10 as n here. So it will sum below numbrs-

1,1,2,3,5,8,13,21,34 to give finally 55 as 10th number of this sequence-

```
package main.scala

object Fibonac{

    def fib_iter(n: Int) = {
        if (n < 2) n
        else {
            var ans = 0
            var n1 = 0
            var n2 = 1

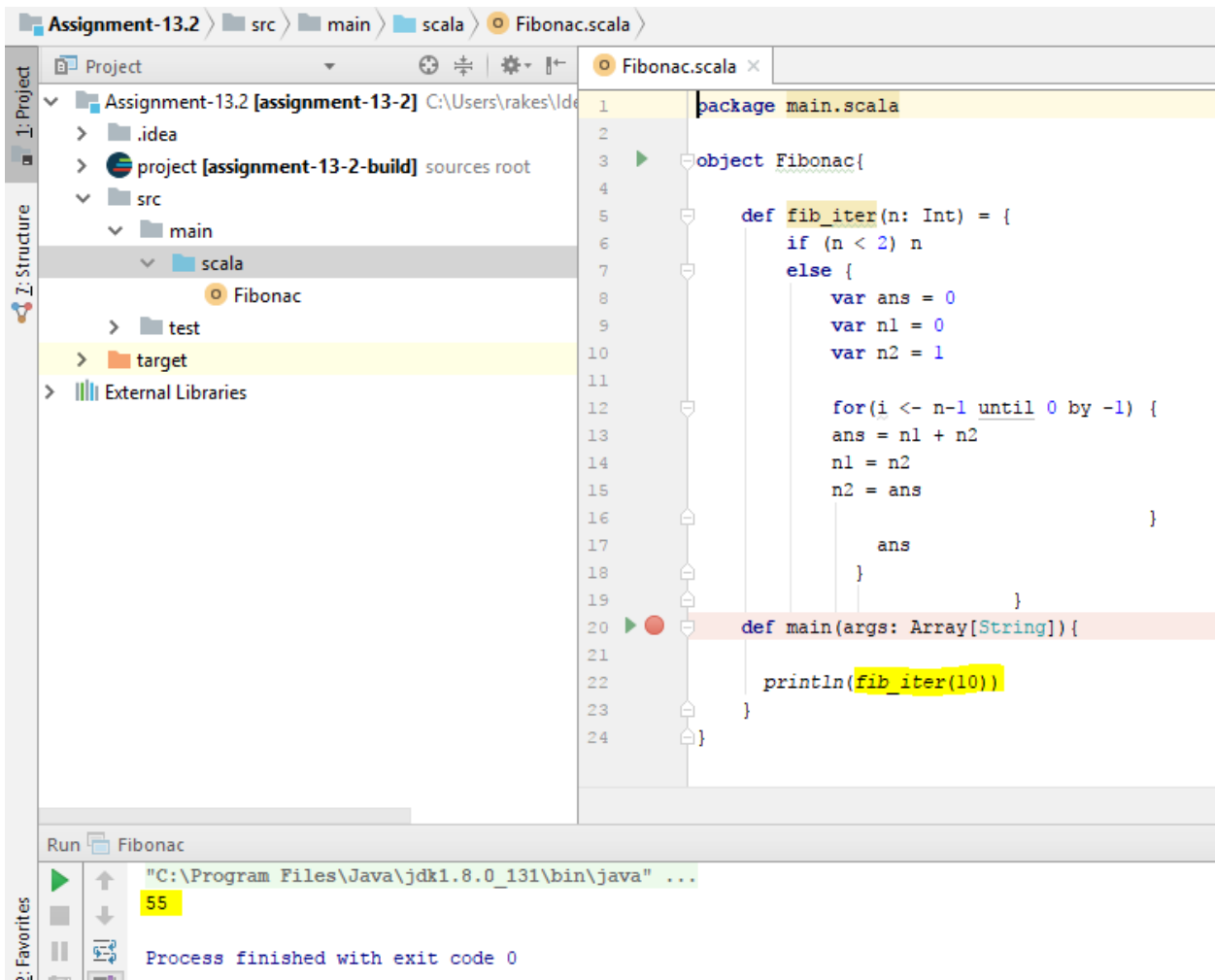
            for(i <- n-1 until 0 by -1) {
                ans = n1 + n2
                n1 = n2
                n2 = ans
            }

            ans
        }
    }

    def main(args: Array[String]){

        println(fib_iter(10))
    }
}
```

Below is the screenshot for the same with output-



2. Problem Statement- Write a Scala application to find the Nth digit in the sequence using recursion.

Solution- Below is the code used for generating or extracting the nth digit of the Fibonacci sequence using recursion-

In below code we are defining a function named as **fib** which will take a input of Long type. Then if the value of n is 0 or 1 then it will return 0 and 2 consecutively but if it is other than that then it will again call itself by passing values less than 1 and less than 2 than itself and summing them. For example we are taking 8 as n here. So it will sum below numbrs-

1,1,2,3,5,8,13,21 to give finally 21 as 8th number of this sequence-

```
package main.scala

object FiboncRecur {

  def fib(n:Long):Long = n match {
    case 0 => 0
    case 1 => 1
    case _ => fib(n - 1) + fib(n - 2)
  }

  def main(args: Array[String]): Unit = {
    println(fib(8))
  }
}
```

Below screenshot shows the same with output-

