SCALA - SESSION II

Assignment

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Course: Big Data Hadoop & Spark Training

Assignment 2– Write a Scala application to find the Nth digit in the sequence in the Fibonacci series.

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Introduction

In this assignment we are going to write a Scala application to find the **nth** digit in the sequence.

Problem Statement

A Fibonacci series (starting from 1) written in order without any spaces in between, thus producing a sequence of digits.

Write a Scala application to find the nth digit in the sequence.

- Write the function using standard for loop
- Write the function using recursion

Before going in to the tasks, we will just see an over view that what is he Fibonacci number,

The Fibonacci sequence is the series of numbers,
0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...

The next number is found by adding up the two numbers before it.

The 2 is found by adding the two numbers before it (1+1)

The 3 is found by adding the two numbers before it (1+2),

And the 5 is (2+3),

And so on!

Example: the next number in the sequence above is 21+34 = 55

n =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
xn =	0	1	2	3	5	8	13	21	34	55	89	144	233	377	610	987

Formula,

xn = xn-1 + xn-2

Example,

The 8th term is the 7th term plus the 6th term: X8 = X7+X6

From the above table,

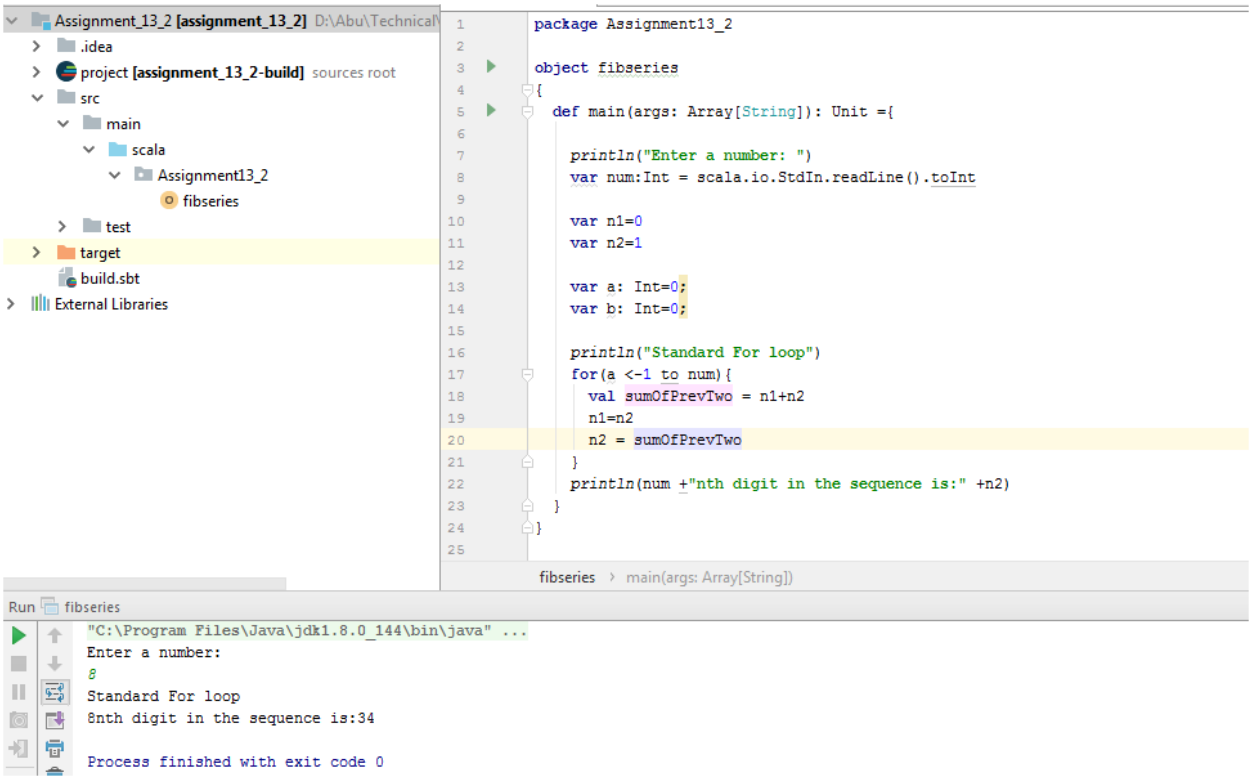
The 8^{th} term is 21, hence the 7^{th} term 21+the 6^{th} term 13 = 34.

Task 1: write function using standard for loop

Scala code

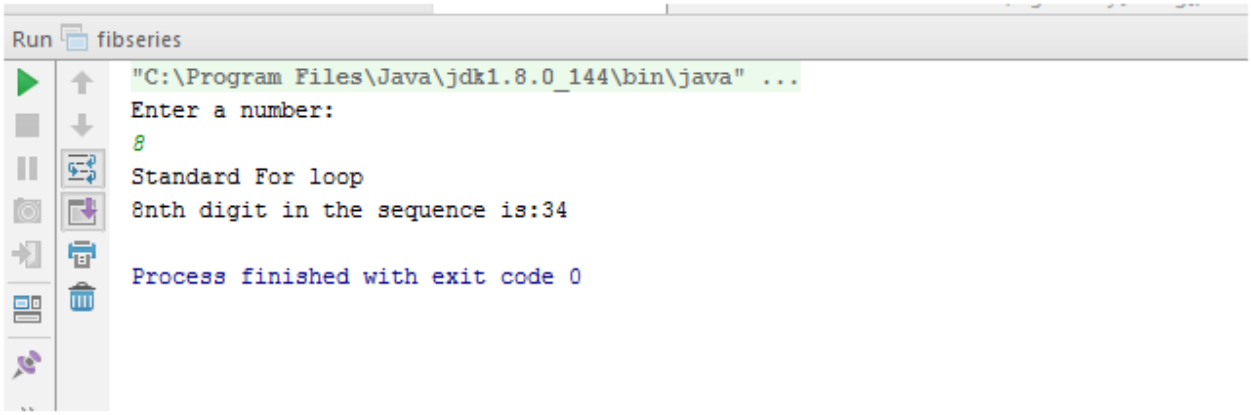
```
package Assignment13_2

object fibseries
{
  def main(args: Array[String]): Unit ={

    println("Enter a number: ")
    var num:Int = scala.io.StdIn.readLine().toInt

    var n1=0
    var n2=1

    var a: Int=0;
    var b: Int=0;

    println("Standard For loop")
    for(a <-1 to num){
      val sumOfPrevTwo = n1+n2
      n1=n2
      n2 = sumOfPrevTwo
    }
    println(num +"nth digit in the sequence is:" +n2)
  }
}
```

Screen Shot:

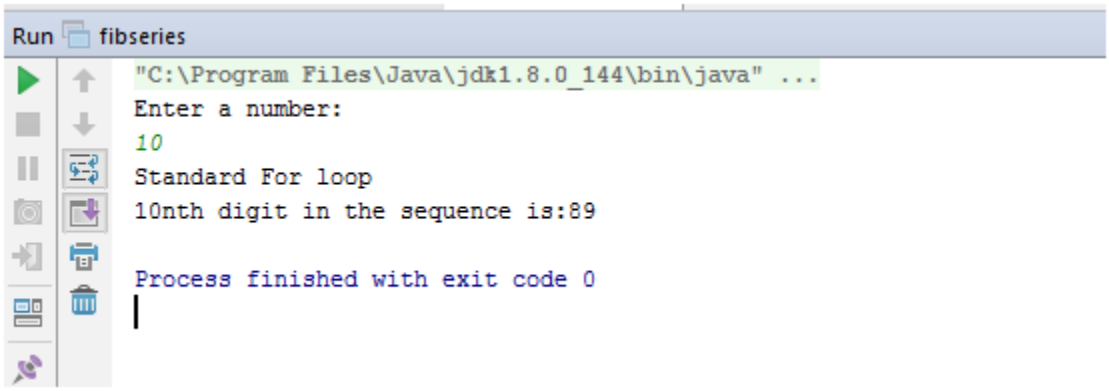


Output

When we provide number 8 as input, the 8th digit in the Fibonacci sequence is 34.



If we give the input as 10, the 10th digit of Fibonacci sequence is 89

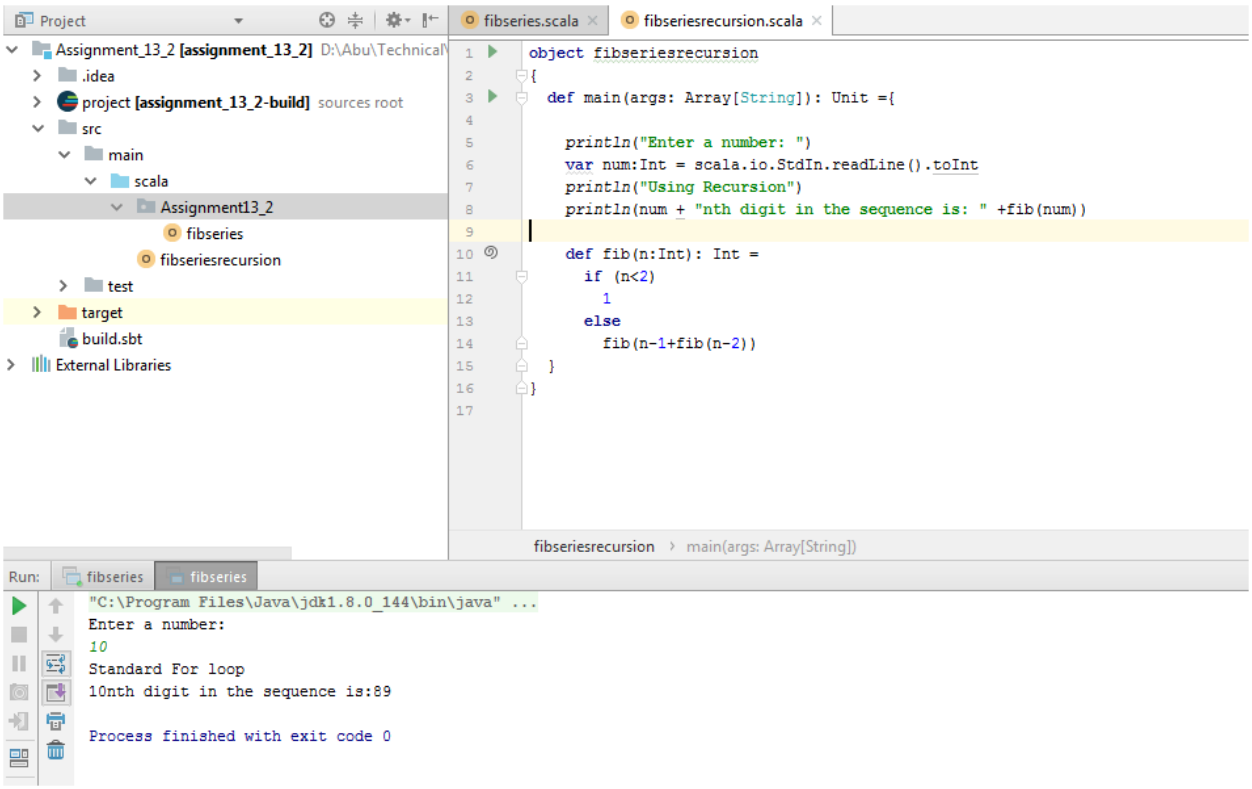


Task2 - Write the function using recursion

Scala code

```
object fibseriesrecursion
{
  def main(args: Array[String]): Unit ={

    println("Enter a number: ")
    var num:Int = scala.io.StdIn.readLine().toInt
    println("Using Recursion")
    println(num + "nth digit in the sequence is: " +fib(num))

  def fib(n:Int): Int =
    if (n<2)
      1
    else
      fib(n-1+fib(n-2))
  }
}
```

Screen shot:



Output