

Assignment 13.2

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

Solution:-

The Scala Application for the above Problem Statement is as follows:-

```
object Fibonacci2 {  
  def main(args: Array[String]): Unit = {  
    println("Enter a number:")  
    var num: Int = scala.io.StdIn.readLine().toInt  
    var num1 = 0  
    var num2 = 1  
    var a: Int = 0;  
    var b: Int = 0;  
    println("Using Standard for loop")  
    for(a <- 1 to num){  
      val sumOfPrevTwo = num1 + num2  
      num1 = num2  
      num2 = sumOfPrevTwo
```

```
}  
  
println(num + "digit in the sequence is:"+num2)  
  
println("Using Recursion")  
  
println(num + "digit in the sequence is:"+fib1(num))  
  
}  
  
def fib1(n: Int): Int =  
  if (n < 2)  
    1  
  else  
    fib1(n-1) + fib1(n-2)  
  
}
```

The screenshot displays an IDE interface with a Scala project. The left sidebar shows the project structure: `Scala [scala]` at `C:\Users\HARDIK\IdeaProjects\Scala`, containing `.idea`, `project [scala-build]` (sources root), `src` (with `main` and `test` subdirectories), `target`, `build.sbt`, and `External Libraries`. The `main` directory contains Scala files: `factorial`, `Fibonacci`, `Fibonacci2`, `GCD`, and `Hello`. The `Fibonacci2.scala` file is open in the editor, showing the following code:

```
1 object Fibonacci2 {  
2   def main(args: Array[String]): Unit = {  
3     println("Enter a number:")  
4     var num: Int = scala.io.StdIn.readLine().toInt  
5     var num1 = 0  
6     var num2 = 1  
7     var a: Int = 0;  
8     var b: Int = 0;  
9     println("Using Standard for loop")  
10    for(a <- 1 to num){  
11      val sumOfPrevTwo = num1 + num2  
12      num1 = num2  
13      num2 = sumOfPrevTwo  
14    }  
15    println(num + "digit in the sequence is:" + num2)  
16    println("Using Recursion")  
17    println(num + "digit in the sequence is:" + fib1(num))  
18  }  
19  
20  def fib1(n: Int): Int =  
21    if (n < 2)  
22      1  
23    else  
24      fib1(n-1) + fib1(n-2)  
25  }  
26}
```

The bottom panel shows the `Run` tab for `Fibonacci2`. The console output is as follows:

```
"C:\Program Files\Java\jdk1.8.0_144\bin\java" ...  
Enter a number:  
10  
Using Standard for loop  
10digit in the sequence is:89  
Using Recursion  
10digit in the sequence is:89  
Process finished with exit code 0
```

The `Event Log` on the right shows four successful compilation events:

- 9:10 PM [Compilation completed successfully in 3s 806ms](#)
- 9:27 PM [Compilation completed successfully in 3s 750ms](#)
- 9:28 PM [Compilation completed successfully in 3s 344ms](#)
- 9:31 PM [Compilation completed successfully in 3s 411ms](#)

The status bar at the bottom indicates: `Compilation completed successfully in 4s 112ms (2 minutes ago)`, `26:1`, `CRLF`, and `UTF-8`.

Submitted By:-

Hardik Kaushik