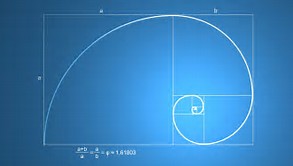
Session 13

Assignment 2

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| **Prepared For:** | AcadGild |
|  |  |
| **Document Approval:** | **AcadGild** |
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|  |  |
| **Project Title:** | Session 13 – Assignment 2 |
|  |  |
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| **Document Reference:** | **Session 12 – Assignment 2** |
|  |  |
| **Start Date:** | 10/10/2017 |
|  |  |
|  |  |



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# Change History

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| --- | --- | --- | --- | --- | --- |
| **Document Revision** | **Date** | **Authored By** | **Authorised By** | **Sections Affected** | **Reason for Change** |
| Rev 01 | 12/10/2017 | Duncan Burgess |  | All | Initial release. |
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# 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

# Solutions

## Solution 1

**Code created**

***import*** *scala.annotation.tailrec*

***import*** *scala.math*

***object*** *fibo1 {*

*println("Welcome to the Scala worksheet") //> Welcome to the Scala worksheet*

***def*** *fiba(x:Int,y:Int): Int = {*

***var*** *conres ="1"*

***def*** *fib\_tail (x:Int, p: Int = 0, n: Int =1): Int = x* ***match****{*

***case*** *0 => n*

***case*** *1 => p*

***case*** *\_=> conres = conres + (n + p)*

*fib\_tail(x-1,n,p+n)*

*}*

*fib\_tail(x)*

***var*** *conres2=conres.toString*

***var*** *c = conres2.charAt(y-1)*

*println ("number in sequence " + (x) + " Sequence is " + conres2)*

*println ("The character at position " + (y) + " is " + c)*

***return*** *fib\_tail(x,0,1)*

*} //> fiba: (x: Int, y: Int)Int*

*fiba(20,8) //> number in sequence 20 Sequence is*

*}*

**Various results**

*//> number in sequence 20 Sequence is 112358132134558914423337761098715972584418*

*//| 16765*

*//| The character at position 8 is 3*

*//> number in sequence 14 Sequence is 1123581321345589144233377*

*//| The character at position 6 is 8*

## Solution 2 with loop

Code Created

***object*** *fibo2 {*

*println("Welcome to the Scala worksheet") //> Welcome to the Scala worksheet*

***def*** *fibloop (x: Int, y: Int) {*

***var*** *conres = "1"*

***if*** *(x<2){*

*println(x)*

*}*

***else*** *{*

***var*** *result: Int=0*

***var*** *a: Int=0*

***var*** *b: Int=1*

***for*** *(l <- 1 until x){*

*result = a + b*

*a = b*

*b = result*

*conres = conres + result*

*}*

***var*** *conres2=conres.toString*

***var*** *c = conres2.charAt(y-1)*

*println ("number in sequence " + (x) + " Sequence is " + conres2)*

*println ("The character at position " + (y) + " is " + c)*

*}*

*} //> fibloop: (x: Int, y: Int)Unit*

*fibloop (8,6) //> number in sequence 8 Sequence is 1123581321*

*//| The character at position 6 is 8*

*fibloop (12,9)* //> number in sequence 12 Sequence is 1123581321345589144

//| The character at position 9 is 2

**Various Results**

**8 and 6** *//> number in sequence 8 Sequence is 1123581321*

*//| The character at position 6 is 8*

**12 and 9** *//> number in sequence 12 Sequence is 1123581321345589144*

*//| The character at position 9 is 2*