5. Problem Statement

Task 1

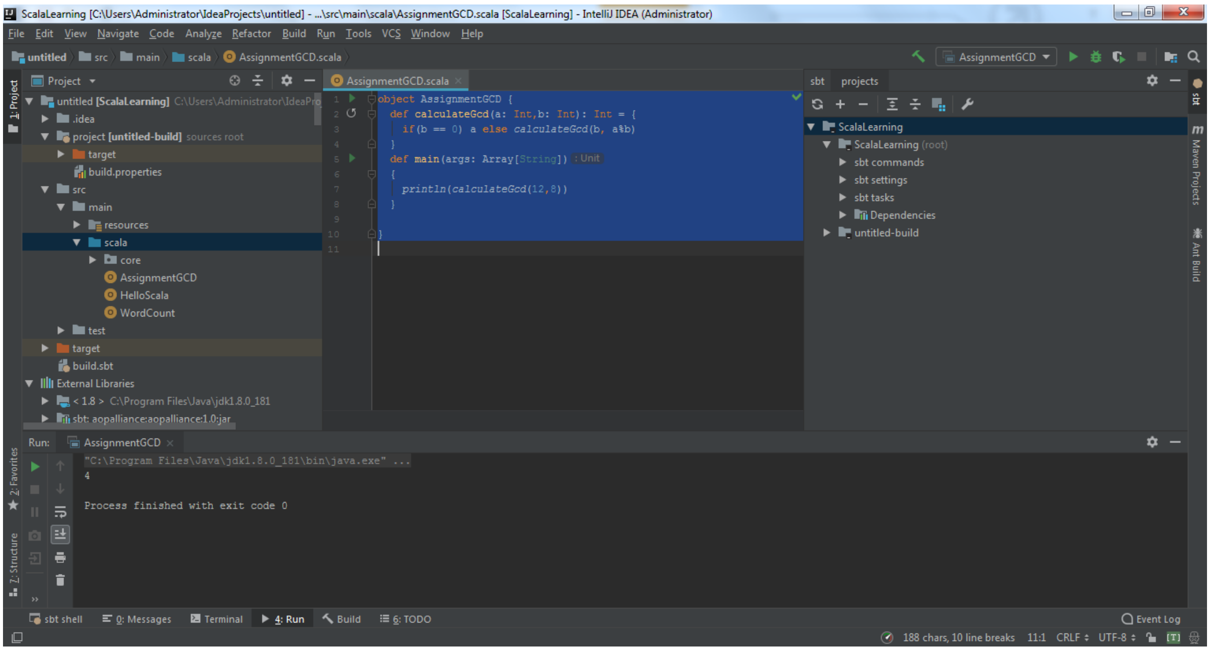
Create a Scala application to find the GCD of two numbers

Scala Code from Intellij

```scala
object AssignmentGCD {
  def calculateGcd(a: Int,b: Int): Int = {
    if(b == 0) a else calculateGcd(b, a%b)
  }
  def main(args: Array[String])
  {
    println(calculateGcd(12,8))
  }

}
```

Output-:

Here we are finding output of two number 12 and 8, this should be 4


ScalaLearning [C:\Users\Administrator\IdeaProjects\untitled] - ...\src\main\scala\AssignmentGCD.scala [ScalaLearning] - IntelliJ IDEA (Administrator)
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
untitled src main scala AssignmentGCD.scala
AssignmentGCD
1: Project
Project
untitled [ScalaLearning] C:\Users\Administrator\IdeaPro
.idea
project [untitled-build] sources root
target
build.properties
src
main
resources
scala
core
AssignmentGCD
HelloScala
WordCount
test
target
build.sbt
External Libraries
< 1.8 > C:\Program Files\Java\jdk1.8.0_181
sbt: aopalliance:aopalliance:1.0:jar
AssignmentGCD.scala
sbt
projects
ScalaLearning
ScalaLearning (root)
sbt commands
sbt settings
sbt tasks
Dependencies
untitled-build
Maven Projects
Ant Build
2: Favorites
7: Structure
Run:
AssignmentGCD
sbt shell
0: Messages
Terminal
4: Run
Build
6: TODO
Event Log
188 chars, 10 line breaks
11:1
CRLF
UTF-8

```scala
object AssignmentGCD {
  def calculateGcd(a: Int,b: Int): Int = {
    if(b == 0) a else calculateGcd(b, a%b)
  }
  def main(args: Array[String]) : Unit
  {
    println(calculateGcd(12,8))
  }

}
```

```
"C:\Program Files\Java\jdk1.8.0_181\bin\java.exe" ...
4

Process finished with exit code 0
```

Task 2

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.

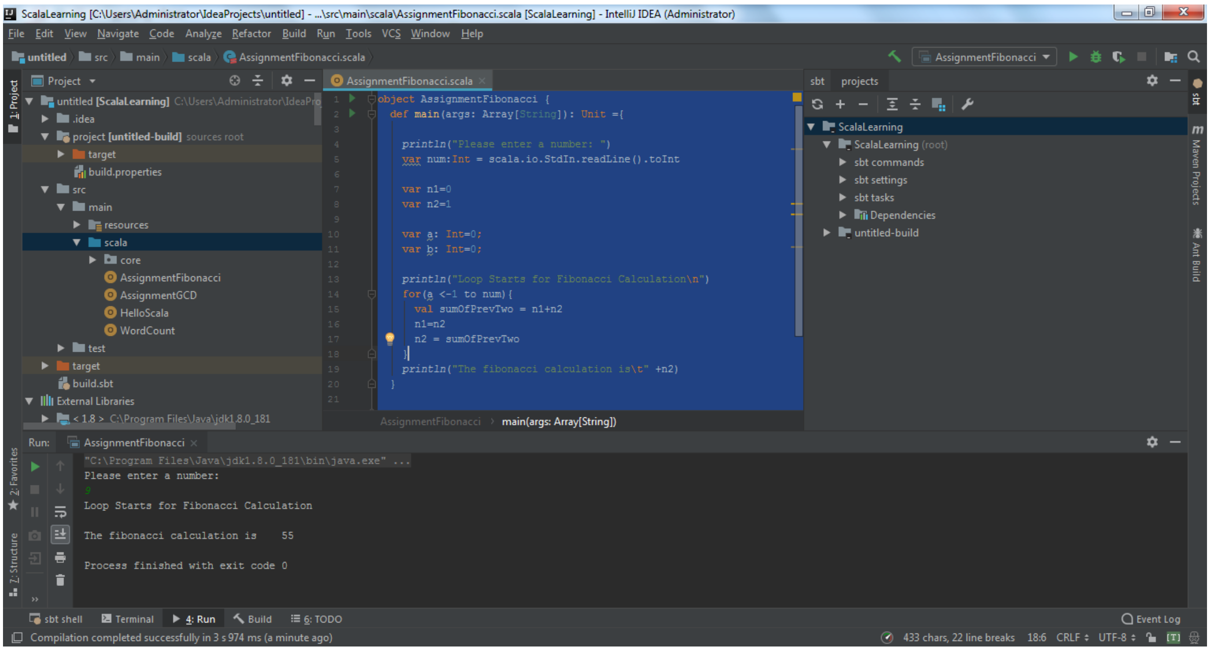
➢ Write the function using standard for loop

➢ Write the function using recursion

Scala Code using Intellij

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

    println("Please 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("Loop Starts for Fibonacci Calculation\n")
    for(a <-1 to num){
      val sumOfPrevTwo = n1+n2
      n1=n2
      n2 = sumOfPrevTwo
    }
    println("The fibonacci calculation is\t" +n2)
  }

}
```

Output-: I have taken number as 9



ScalaLearning [C:\Users\Administrator\IdeaProjects\untitled] - ...\src\main\scala\AssignmentFibonacci.scala [ScalaLearning] - IntelliJ IDEA (Administrator)

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

    println("Please 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("Loop Starts for Fibonacci Calculation\n")
    for(a <-1 to num){
      val sumOfPrevTwo = n1+n2
      n1=n2
      n2 = sumOfPrevTwo
    }
    println("The fibonacci calculation is\t" +n2)
  }
```

```
"C:\Program Files\Java\jdk1.8.0_181\bin\java.exe" ...
Please enter a number:
9
Loop Starts for Fibonacci Calculation

The fibonacci calculation is	55

Process finished with exit code 0
```

Compilation completed successfully in 3 s 974 ms (a minute ago)

Task 3

Find square root of number using Babylonian method.

1. Start with an arbitrary positive start value x (the closer to the root, the better).

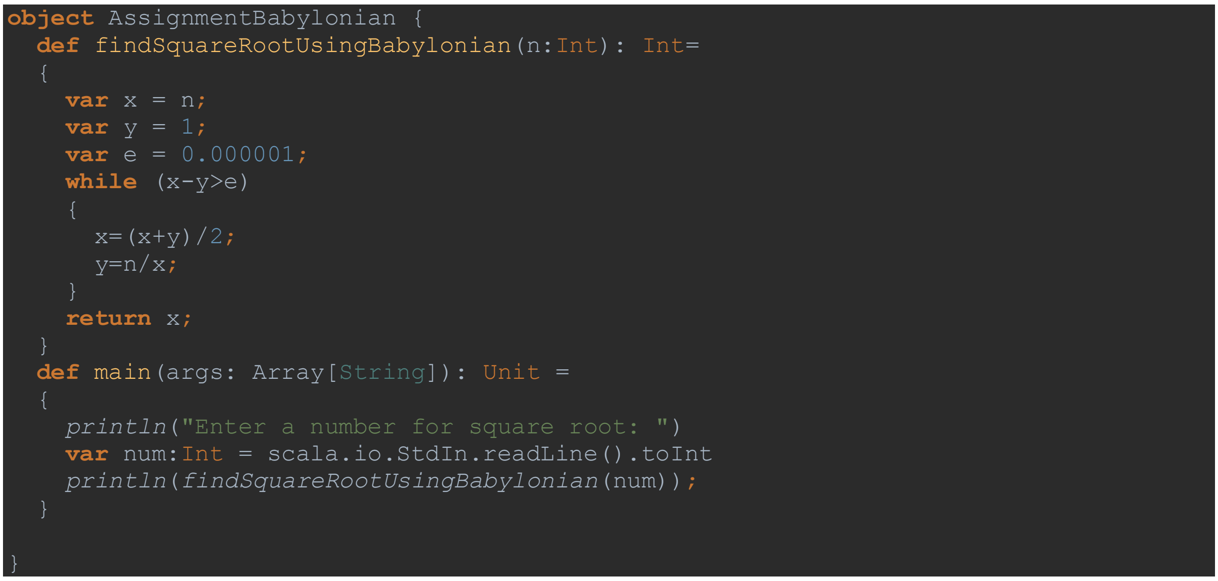
2.Initialize y = 1.

3. Do following until desired approximation is achieved.

a) Get the next approximation for root using average of x and y

b) Set y = n/x

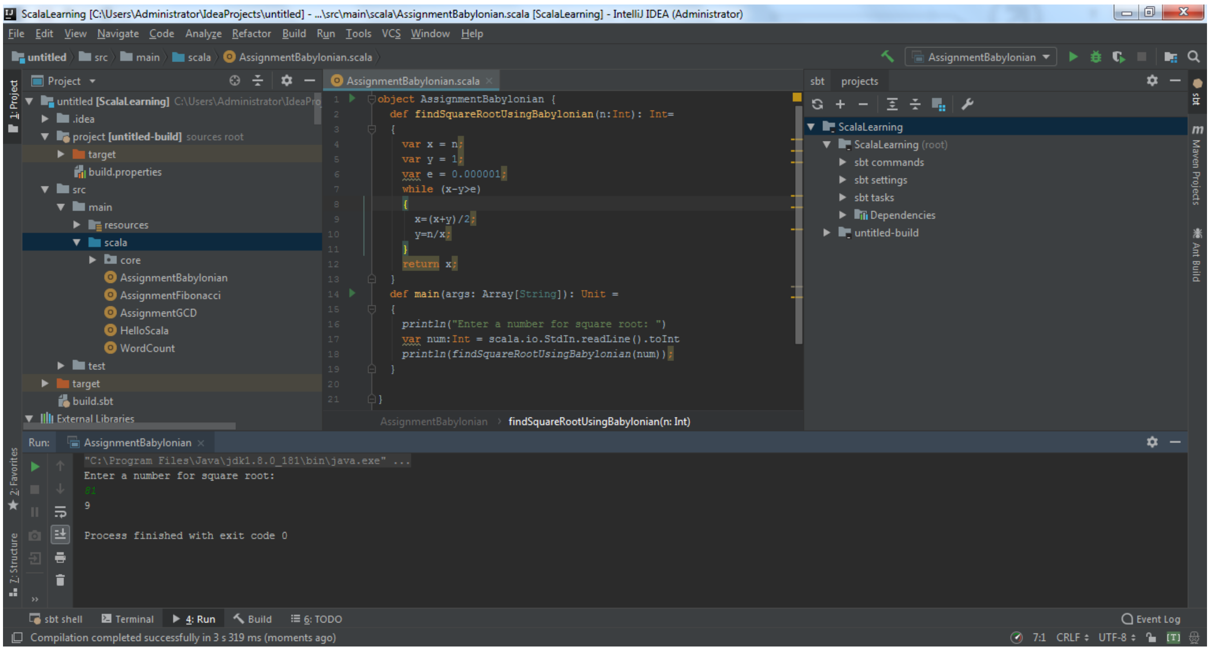
Scala Code in Intellij



```
object AssignmentBabylonian {
  def findSquareRootUsingBabylonian(n:Int): Int=
  {
    var x = n;
    var y = 1;
    var e = 0.000001;
    while (x-y>e)
    {
      x=(x+y)/2;
      y=n/x;
    }
    return x;
  }
  def main(args: Array[String]): Unit =
  {
    println("Enter a number for square root: ")
    var num:Int = scala.io.StdIn.readLine().toInt
    println(findSquareRootUsingBabylonian(num));
  }

}
```

Output-:

I have given input number as 81 and the output should come as 9



ScalaLearning [C:\Users\Administrator\IdeaProjects\untitled] - ...\src\main\scala\AssignmentBabylonian.scala [ScalaLearning] - IntelliJ IDEA (Administrator)

```
object AssignmentBabylonian {
  def findSquareRootUsingBabylonian(n:Int): Int=
  {
    var x = n;
    var y = 1;
    var e = 0.000001;
    while (x-y>e)
    {
      x=(x+y)/2;
      y=n/x;
    }
    return x;
  }
  def main(args: Array[String]): Unit =
  {
    println("Enter a number for square root: ")
    var num:Int = scala.io.StdIn.readLine().toInt
    println(findSquareRootUsingBabylonian(num));
  }

}
```

```
"C:\Program Files\Java\jdk1.8.0_181\bin\java.exe" ...
Enter a number for square root:
81
9

Process finished with exit code 0
```

Compilation completed successfully in 3 s 319 ms (moments ago)