Assignment 13.3

Problem Statement :-

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.

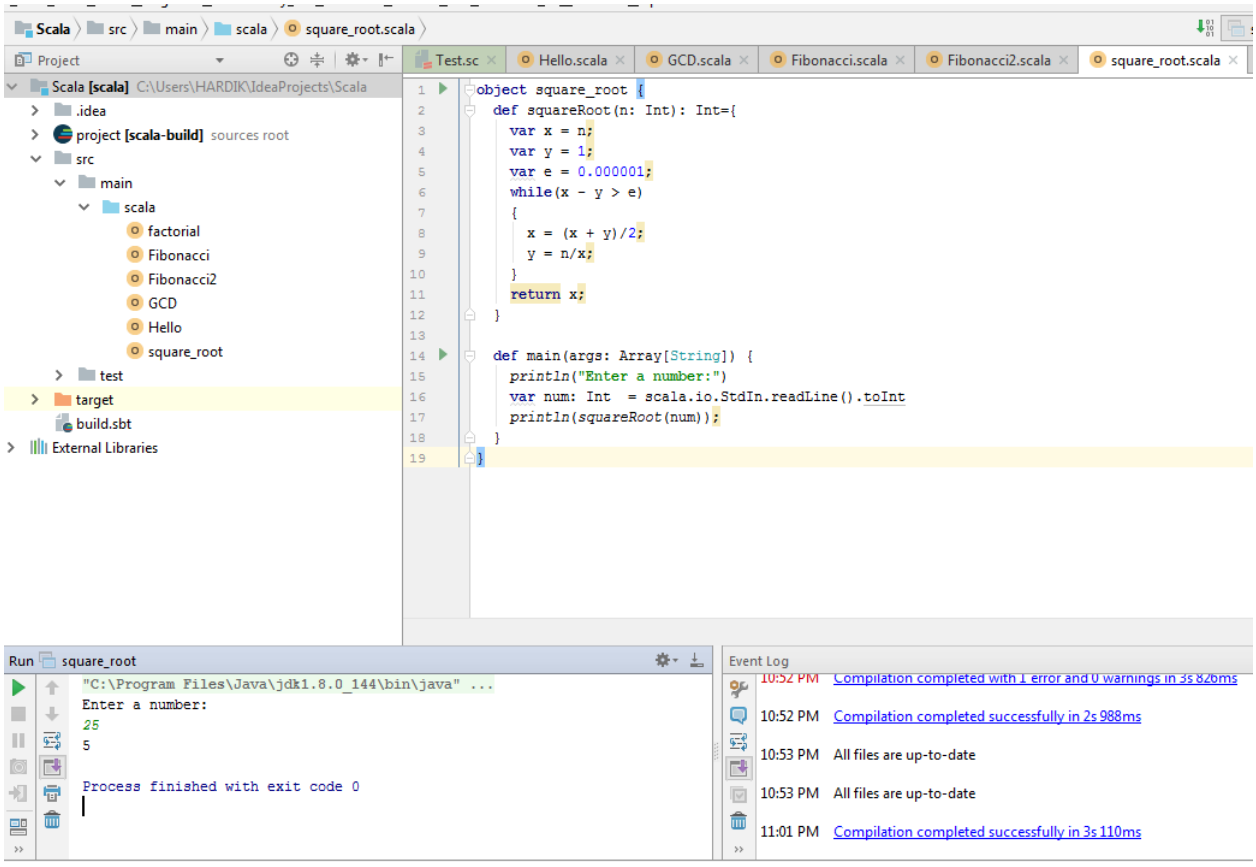
- Get the next approximation for root using average of x and y
- Set y = n/x

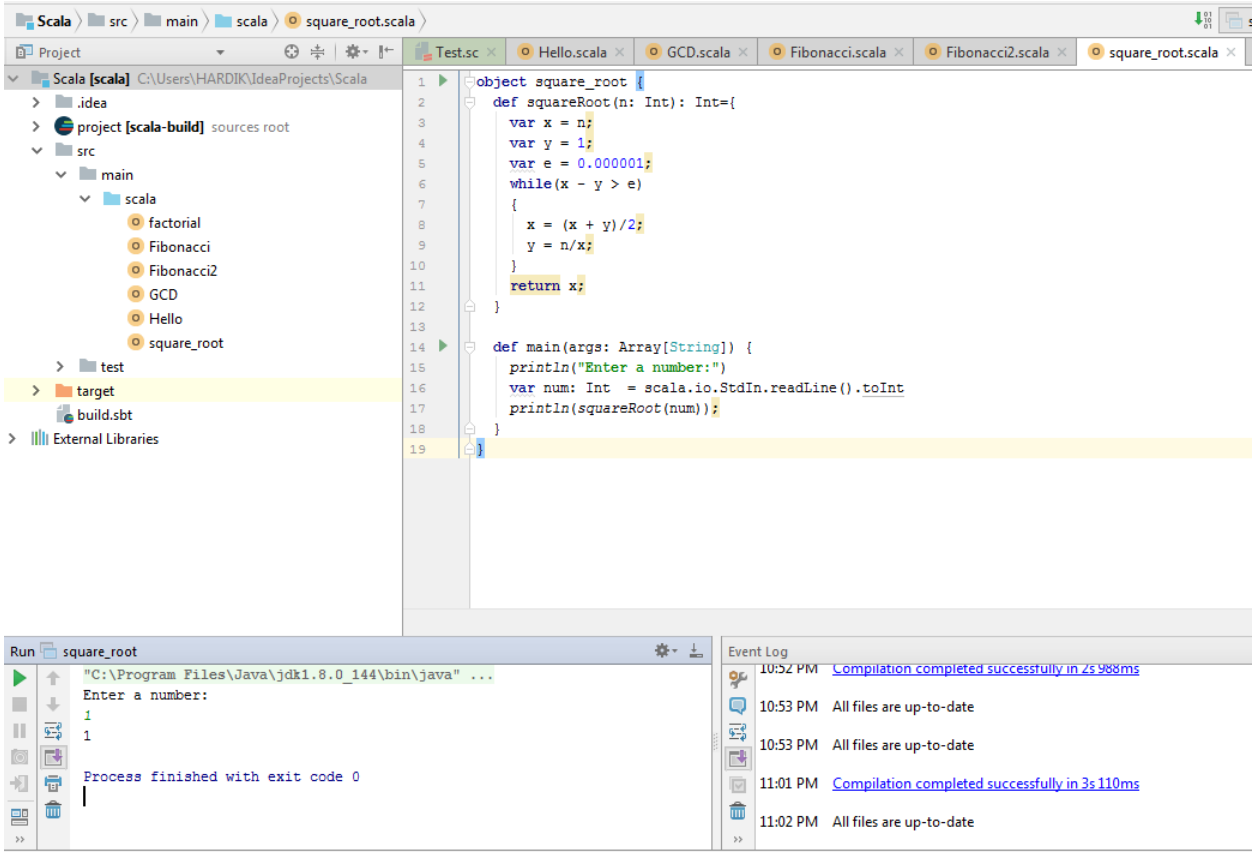
Solution:-

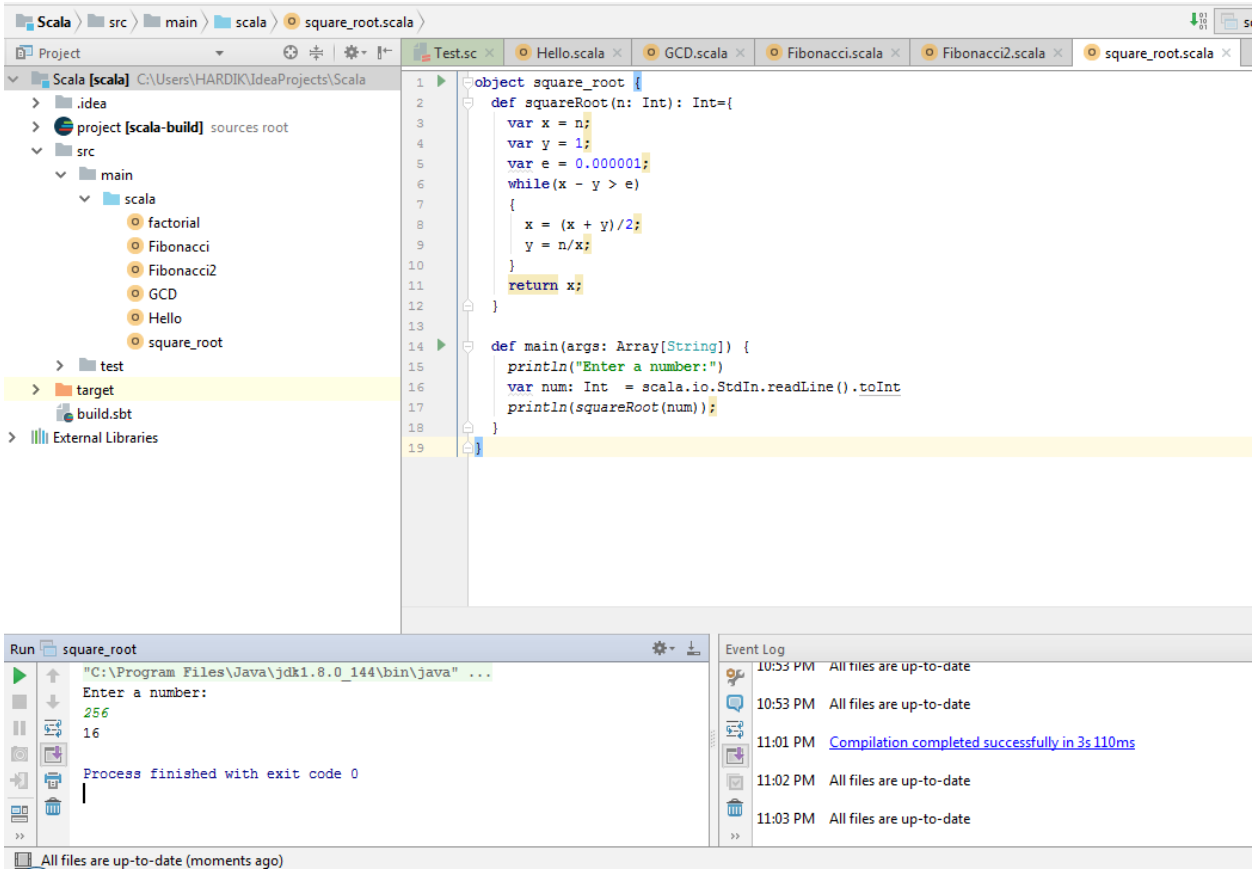
Scala Application for finding square root of number using Babylonian Method is as follows:-

```
object square_root {

  def squareRoot(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]) {
    println("Enter a number:")
    var num: Int  = scala.io.StdIn.readLine().toInt
    println(squareRoot(num));
  }
}
```




Scala src main scala square_root.scala
Project
Scala [scala] C:\Users\HARDIK\IdeaProjects\Scala
.idea
project [scala-build] sources root
src
main
scala
factorial
Fibonacci
Fibonacci2
GCD
Hello
square_root
test
target
build.sbt
External Libraries
Test.sc
Hello.scala
GCD.scala
Fibonacci.scala
Fibonacci2.scala
square_root.scala
object square_root {
def squareRoot(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]) {
println("Enter a number:")
var num: Int = scala.io.StdIn.readLine().toInt
println(squareRoot(num));
}
}
Run square_root
"C:\Program Files\Java\jdk1.8.0_144\bin\java" ...
Enter a number:
1
1
Process finished with exit code 0
Event Log
Compilation completed successfully in 2s 988ms
10:53 PM All files are up-to-date
10:53 PM All files are up-to-date
11:01 PM Compilation completed successfully in 3s 110ms
11:02 PM All files are up-to-date


Scala src main scala square_root.scala
Project
Test.sc
Hello.scala
GCD.scala
Fibonacci.scala
Fibonacci2.scala
square_root.scala
Scala [scala] C:\Users\HARDIK\IdeaProjects\Scala
.idea
project [scala-build] sources root
src
main
scala
factorial
Fibonacci
Fibonacci2
GCD
Hello
square_root
test
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External Libraries
object square_root {
def squareRoot(n: Int): Int={
var x = n;
var y = 1;
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while(x - y > e)
{
x = (x + y)/2;
y = n/x;
}
return x;
}
def main(args: Array[String]) {
println("Enter a number:")
var num: Int = scala.io.StdIn.readLine().toInt
println(squareRoot(num));
}
}
Run square_root
"C:\Program Files\Java\jdk1.8.0_144\bin\java" ...
Enter a number:
256
16
Process finished with exit code 0
Event Log
10:53 PM All files are up-to-date
10:53 PM All files are up-to-date
11:01 PM Compilation completed successfully in 3s 110ms
11:02 PM All files are up-to-date
11:03 PM All files are up-to-date
All files are up-to-date (moments ago)