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.

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

b) Set y = n/x

Solution:

Finding square root of number using Babylonian method:

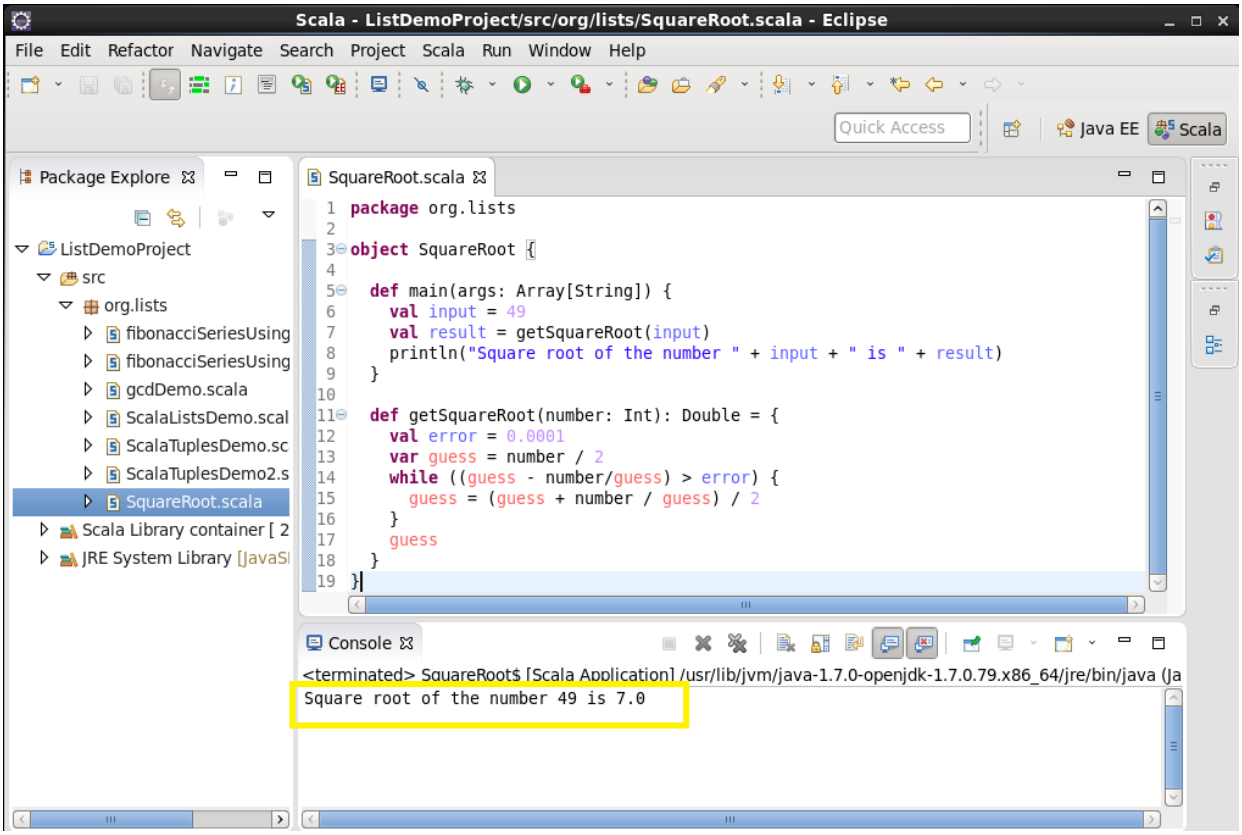
Babylonian method consists of dividing and averaging the numbers with guessed numbers to arrive at the closest value to the square root of given number.

Here is the code snippet I have written in Scala to get this done:

```
object SquareRoot
{
   def main(args: Array[String]) {
       val input = 49
       val result = getSquareRoot(input)                                    // method invocation
       println("Square root of the number " + input + " is " + result)      // print result
   }
   def getSquareRoot(number: Int): Double = {
       val error = 0.0001                                  // set an initial value for error
       var guess = number / 2                              // initialize the guess value with number
       while((guess - number/guess) > error) // repeat if difference between guesses is more than error
             guess = (guess + number / guess) / 2          // compute average of guess and the number
    guess                                                  // return the guessed number as result
    }
}
```

Output:

Square root of given number 49 is 7.0



Steps involved in Babylonian method of finding square root of a number:

Step 1: Make a guess

Step 2: Divide the input number with the guessed number

Step 3: Compute average of these two numbers

Step 4: Use this average as the next guess

Step 5: Repeat the process until the guess gets less than or equal to the value of error.