SCALA PROGRAMMING

20/9/2023

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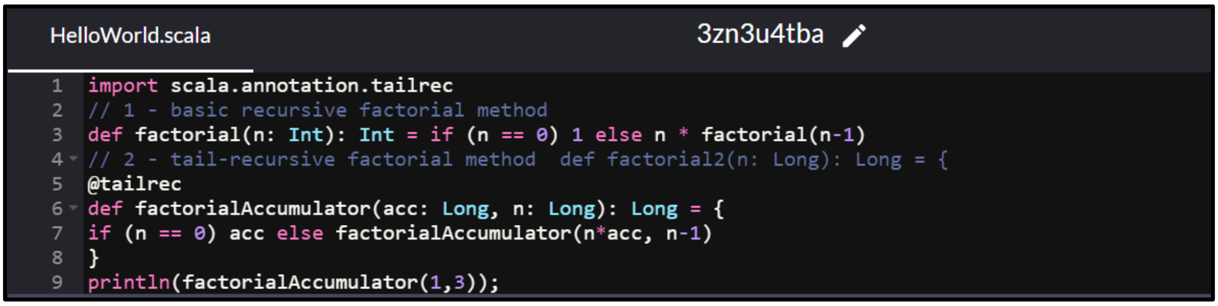
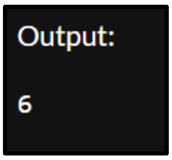
Tail Recursion

Code



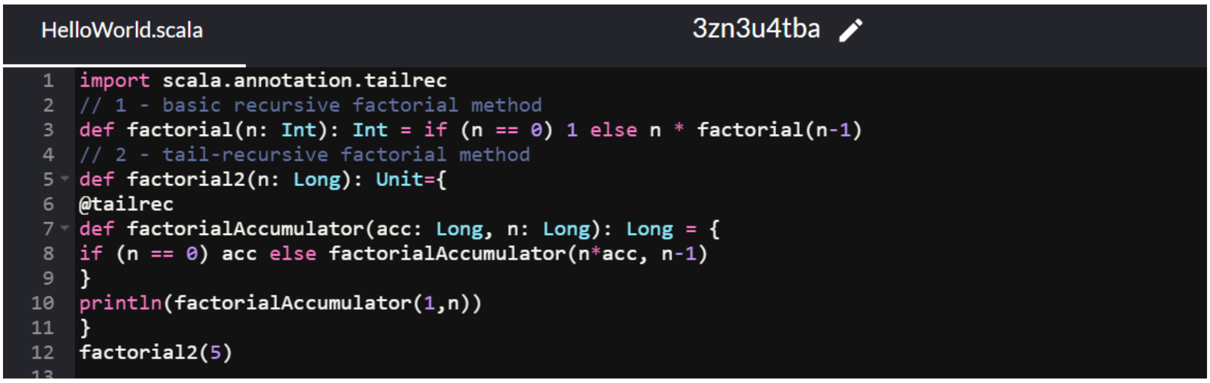
```scala
import scala.annotation.tailrec
// 1 - basic recursive factorial method
def factorial(n: Int): Int = if (n == 0) 1 else n * factorial(n-1)
// 2 - tail-recursive factorial method  def factorial2(n: Long): Long = {
@tailrec
def factorialAccumulator(acc: Long, n: Long): Long = {
if (n == 0) acc else factorialAccumulator(n*acc, n-1)
}
println(factorialAccumulator(1,3));
```

Output



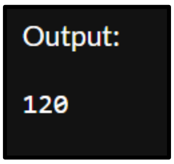
```
Output:

6
```

Code



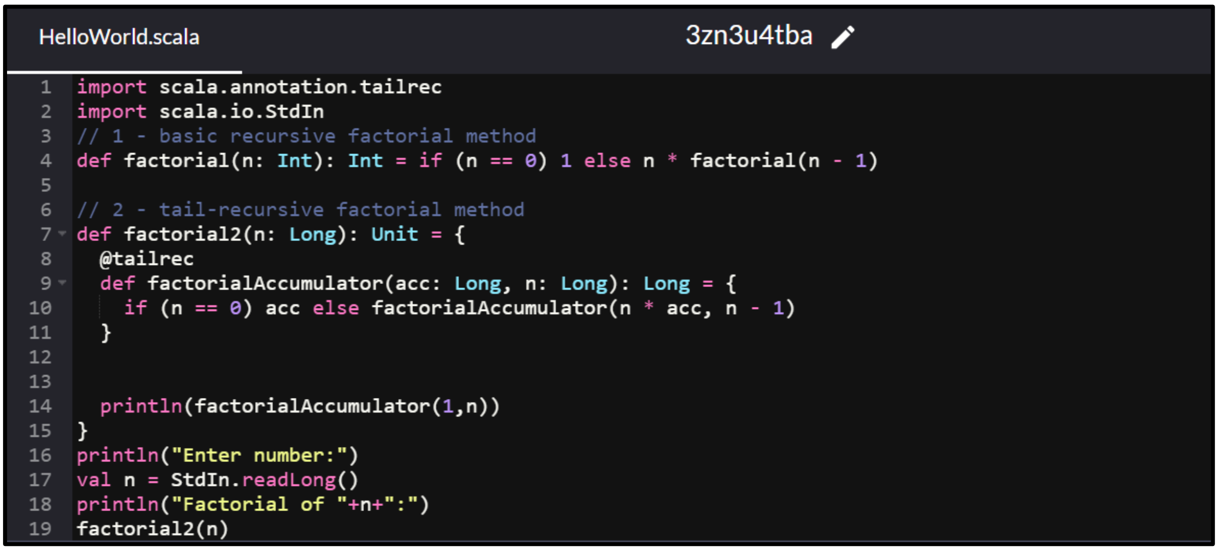
```scala
import scala.annotation.tailrec
// 1 - basic recursive factorial method
def factorial(n: Int): Int = if (n == 0) 1 else n * factorial(n-1)
// 2 - tail-recursive factorial method
def factorial2(n: Long): Unit={
@tailrec
def factorialAccumulator(acc: Long, n: Long): Long = {
if (n == 0) acc else factorialAccumulator(n*acc, n-1)
}
println(factorialAccumulator(1,n))
}
factorial2(5)
```

Output



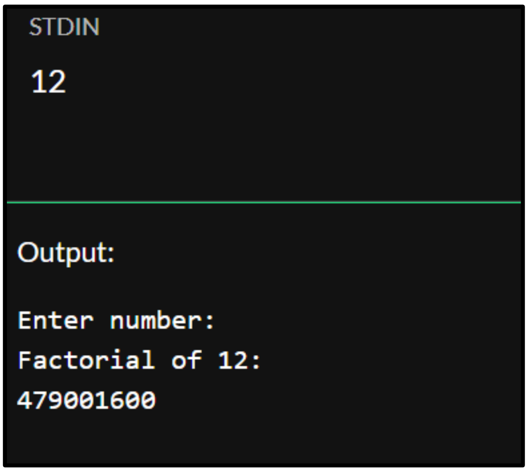
```
Output:

120
```

Code



```scala
import scala.annotation.tailrec
import scala.io.StdIn
// 1 - basic recursive factorial method
def factorial(n: Int): Int = if (n == 0) 1 else n * factorial(n - 1)

// 2 - tail-recursive factorial method
def factorial2(n: Long): Unit = {
  @tailrec
  def factorialAccumulator(acc: Long, n: Long): Long = {
    if (n == 0) acc else factorialAccumulator(n * acc, n - 1)
  }


  println(factorialAccumulator(1,n))
}
println("Enter number:")
val n = StdIn.readLong()
println("Factorial of "+n+":")
factorial2(n)
```

Output



```
12
```

```
Enter number:
Factorial of 12:
479001600
```