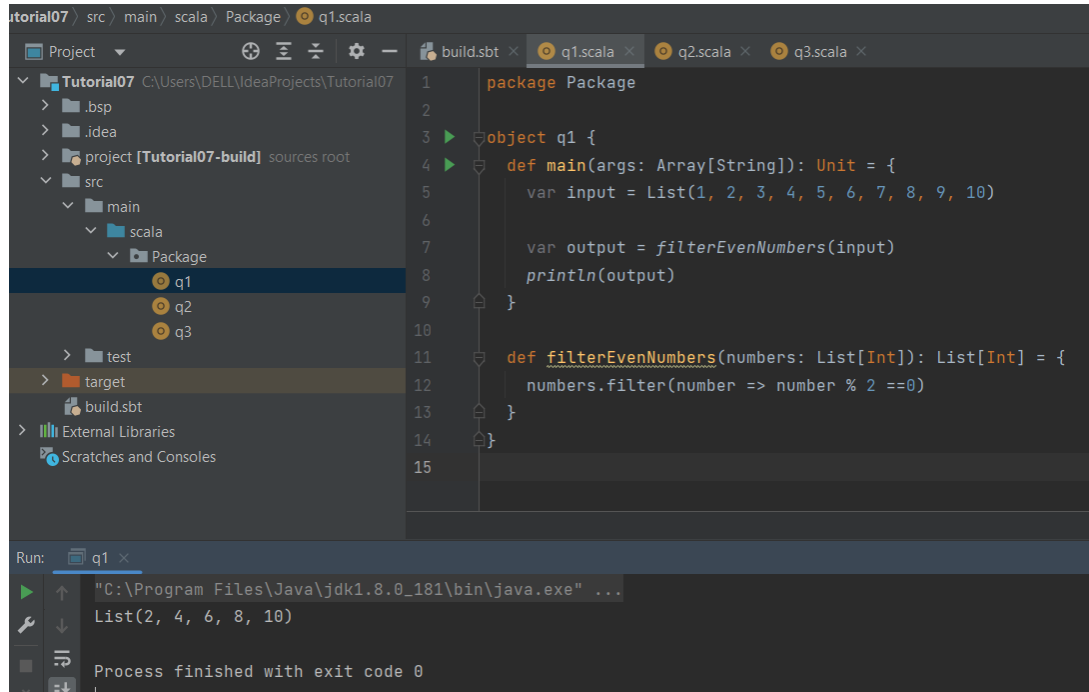


SCS 2204 - Functional Programming

Scala Tutorial – 7

Question 01



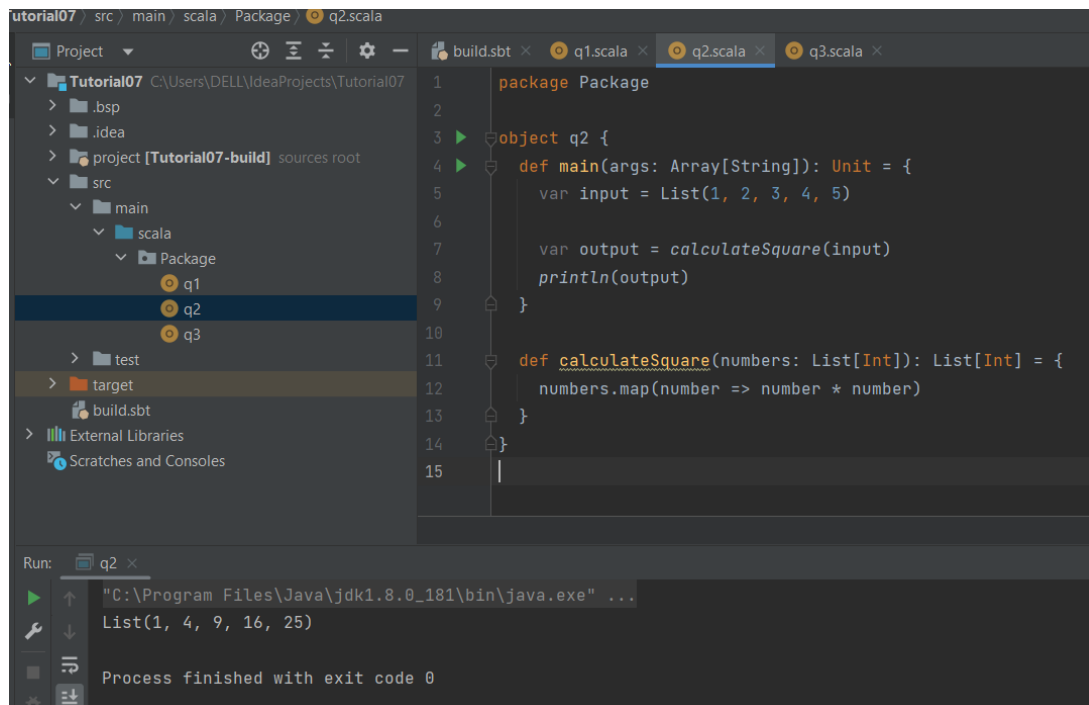
The screenshot shows the IntelliJ IDEA IDE with a project named 'Tutorial07'. The file explorer on the left shows the project structure: 'src/main/scala/Package' containing 'q1', 'q2', and 'q3'. The 'Run' tab at the bottom shows the execution of 'q1'.

```
1 package Package
2
3 object q1 {
4   def main(args: Array[String]): Unit = {
5     var input = List(1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
6
7     var output = filterEvenNumbers(input)
8     println(output)
9   }
10
11   def filterEvenNumbers(numbers: List[Int]): List[Int] = {
12     numbers.filter(number => number % 2 == 0)
13   }
14 }
15
```

Run: q1

"C:\Program Files\Java\jdk1.8.0_181\bin\java.exe" ...
List(2, 4, 6, 8, 10)
Process finished with exit code 0

Question 02



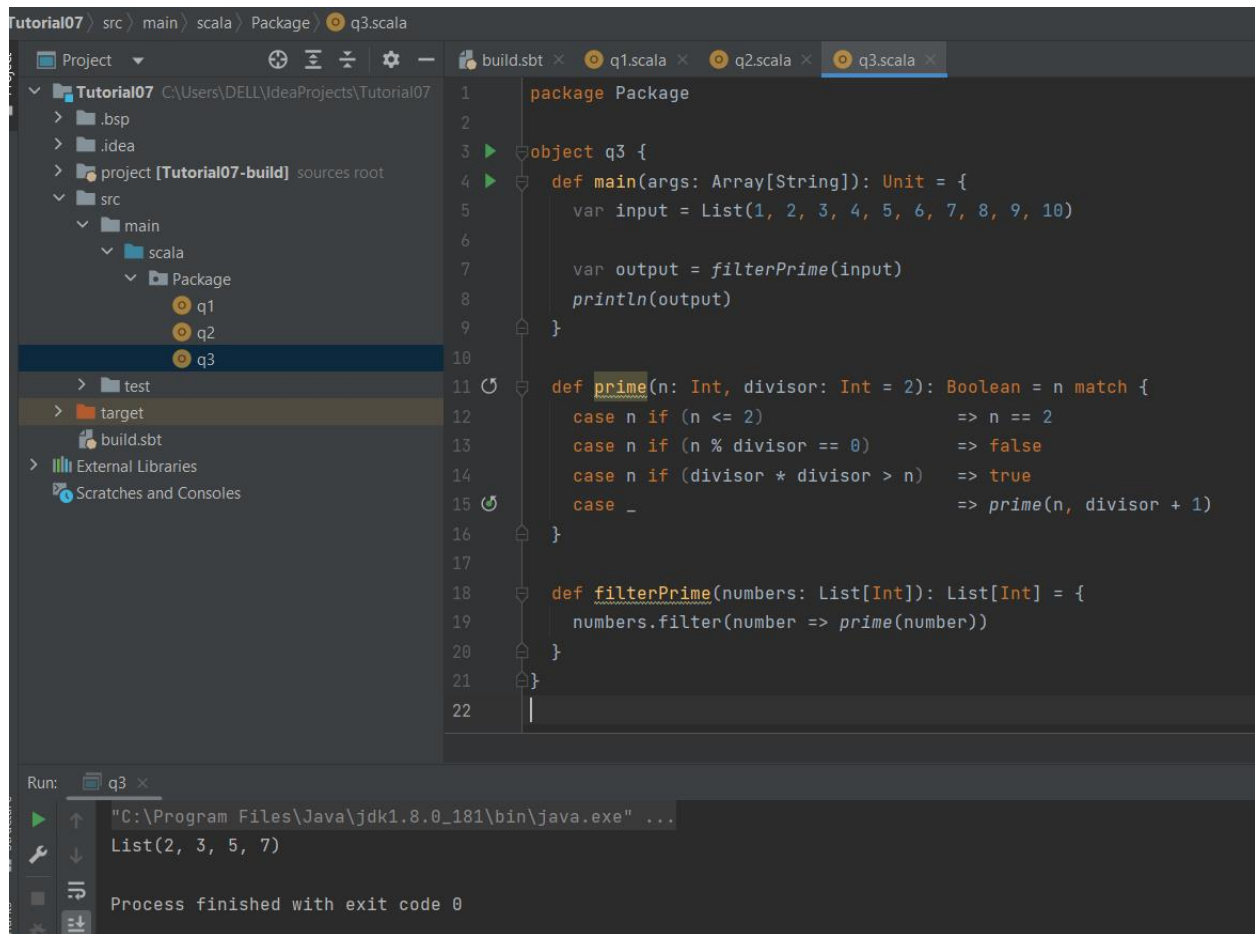
The screenshot shows the IntelliJ IDEA IDE with the same project 'Tutorial07'. The file explorer shows the project structure. The 'Run' tab at the bottom shows the execution of 'q2'.

```
1 package Package
2
3 object q2 {
4   def main(args: Array[String]): Unit = {
5     var input = List(1, 2, 3, 4, 5)
6
7     var output = calculateSquare(input)
8     println(output)
9   }
10
11   def calculateSquare(numbers: List[Int]): List[Int] = {
12     numbers.map(number => number * number)
13   }
14 }
15
```

Run: q2

"C:\Program Files\Java\jdk1.8.0_181\bin\java.exe" ...
List(1, 4, 9, 16, 25)
Process finished with exit code 0

Question 03



The screenshot shows an IDE with a project named 'Tutorial07'. The file explorer on the left shows the project structure: 'src' > 'main' > 'scala' > 'Package' > 'q3.scala'. The main editor displays the following Scala code:

```
1 package Package
2
3 object q3 {
4   def main(args: Array[String]): Unit = {
5     var input = List(1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
6
7     var output = filterPrime(input)
8     println(output)
9   }
10
11   def prime(n: Int, divisor: Int = 2): Boolean = n match {
12     case n if (n <= 2) => n == 2
13     case n if (n % divisor == 0) => false
14     case n if (divisor * divisor > n) => true
15     case _ => prime(n, divisor + 1)
16   }
17
18   def filterPrime(numbers: List[Int]): List[Int] = {
19     numbers.filter(number => prime(number))
20   }
21 }
22
```

The bottom panel shows the 'Run' output for 'q3':

```
Run: q3
"C:\Program Files\Java\jdk1.8.0_181\bin\java.exe" ...
List(2, 3, 5, 7)
Process finished with exit code 0
```