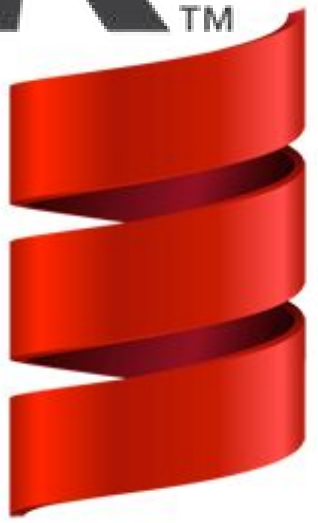
Spark Installation & Practicals



Scala

Agenda

Visit Apache Spark website
Download Spark tar.gz file
Extract Spark tar.gz file
Open Spark Shell
Basic operation in Scala
constants & variables in Scala
If-Else in Scala
Use of braces in Scala
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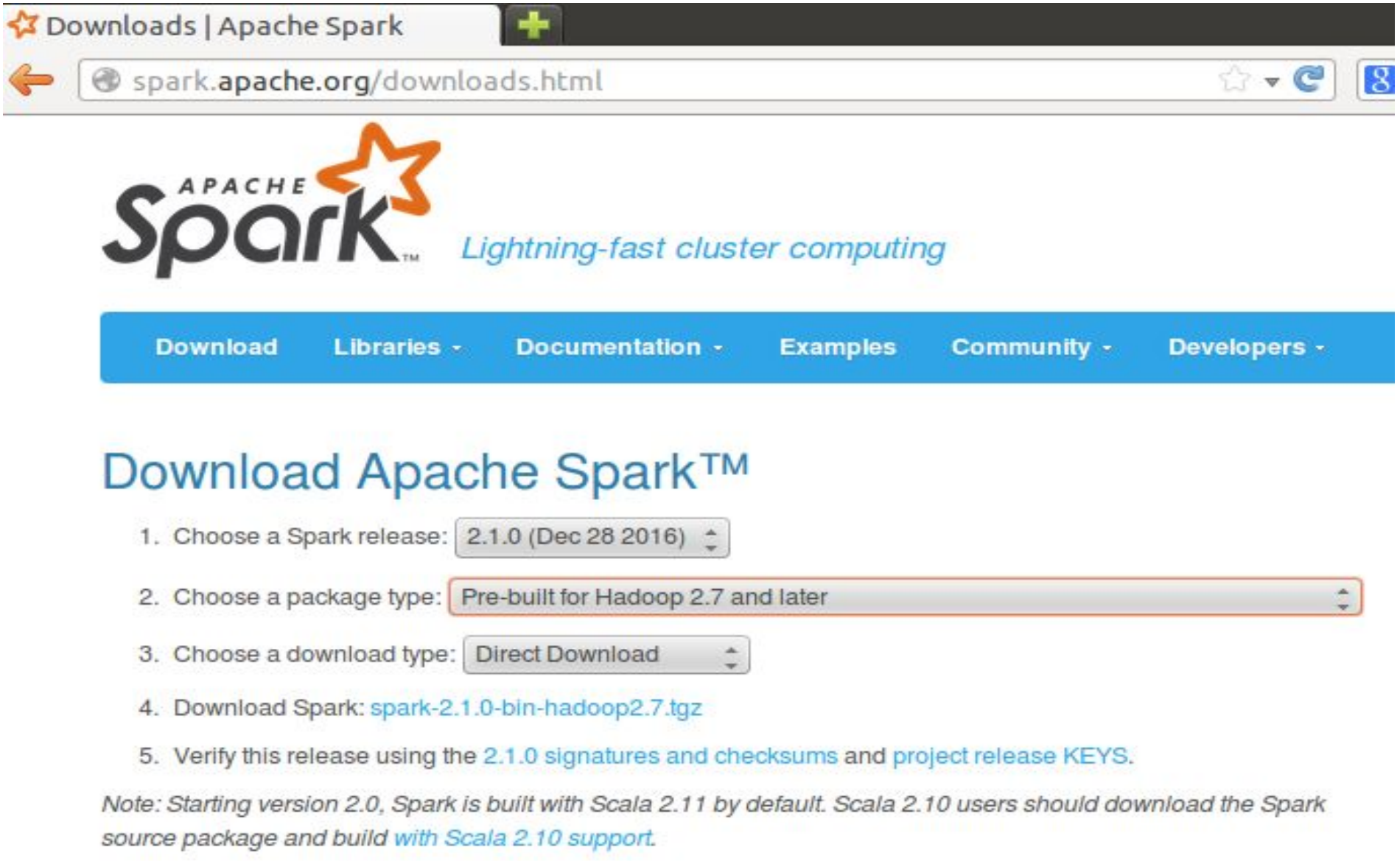
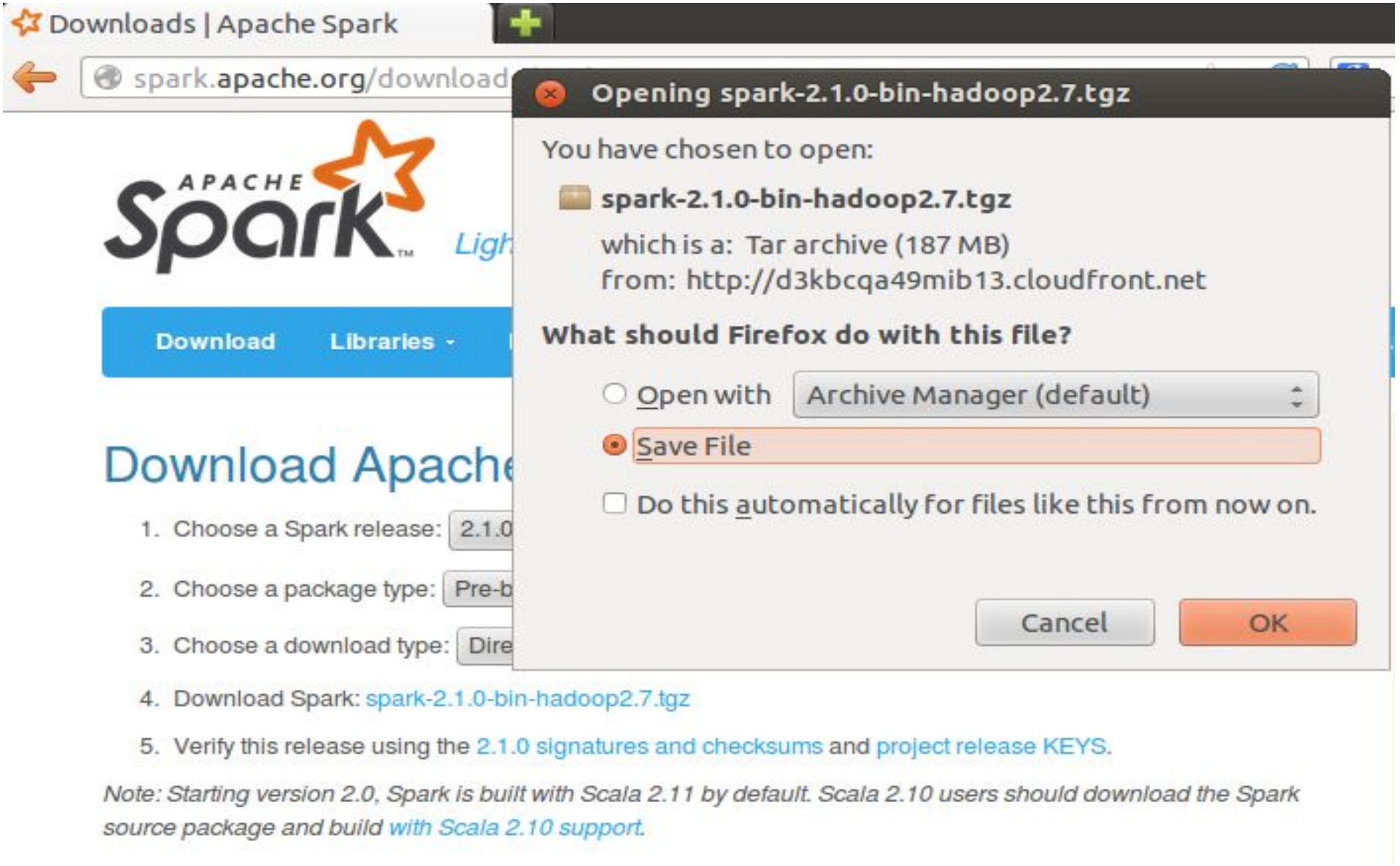
While loop in Scala
For loop in Scala
Function in Scala
Array in Scala
ArrayBuffer in Scala
Map in Scala
Word Count in Scala

Visit Apache Spark website

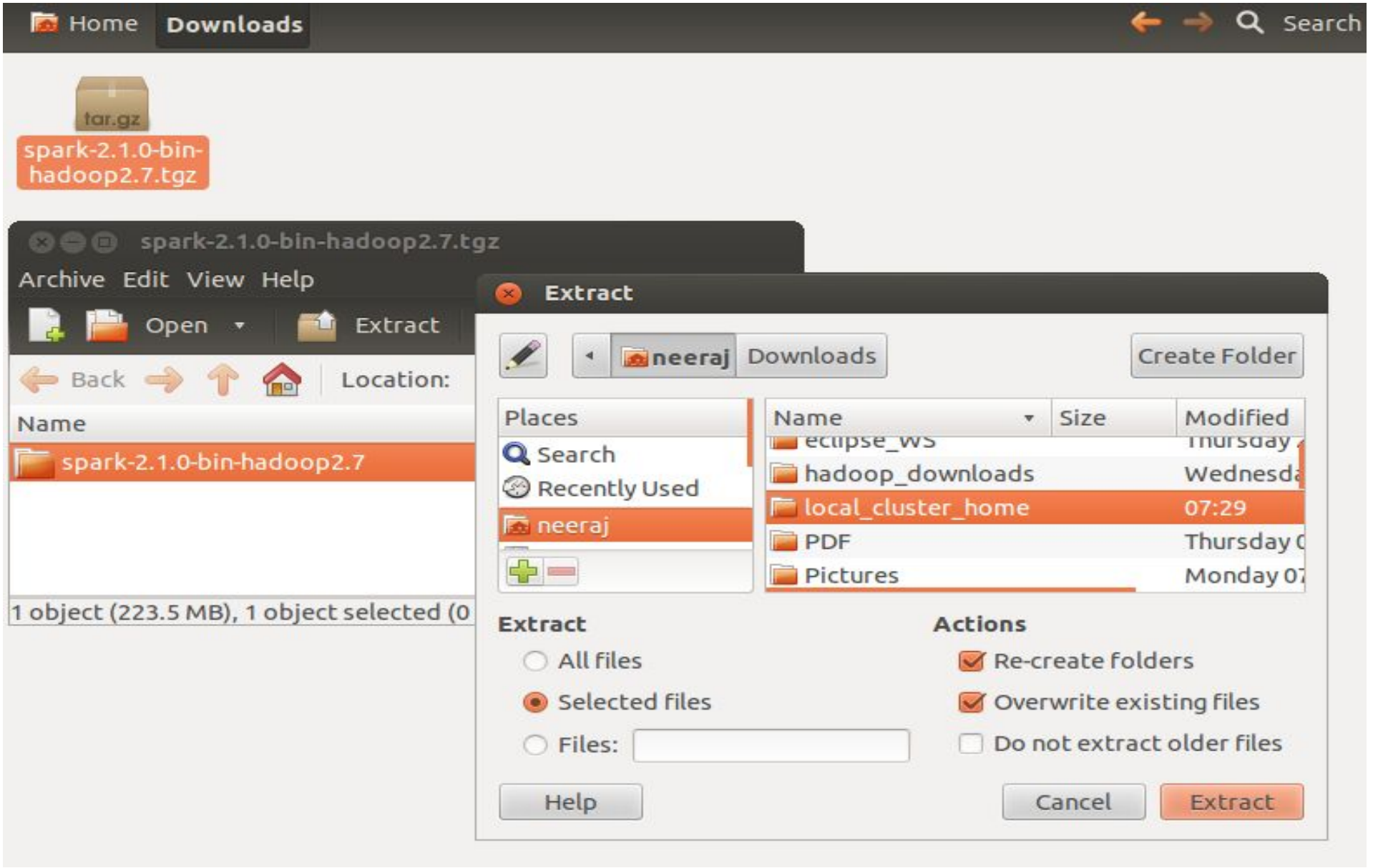
http://spark.apache.org/downloads.html



Download Spark tar.gz file



Extract Spark tar.gz file



Open Spark Shell

```
neeraj@myubuntu:~/local_cluster_home/spark-2.1.0-bin-hadoop2.7/bin$ pwd
/home/neeraj/local_cluster_home/spark-2.1.0-bin-hadoop2.7/bin
neeraj@myubuntu:~/local_cluster_home/spark-2.1.0-bin-hadoop2.7/bin$ ./spark-shell
Using Spark's default log4j profile: org/apache/spark/log4j-defaults.properties
Setting default log level to "WARN".
To adjust logging level use sc.setLogLevel(newLevel). For SparkR, use setLogLevel(newLevel).
17/01/17 22:24:37 WARN SparkContext: Support for Java 7 is deprecated as of Spark 2.0.0
17/01/17 22:24:38 WARN NativeCodeLoader: Unable to load native-hadoop library for your platf
uiltin-java classes where applicable
17/01/17 22:24:38 WARN Utils: Your hostname, myubuntu resolves to a loopback address: 127.0.
0.2.15 instead (on interface eth5)
17/01/17 22:24:38 WARN Utils: Set SPARK_LOCAL_IP if you need to bind to another address
17/01/17 22:25:03 WARN ObjectStore: Failed to get database global_temp, returning NoSuchObje
Spark context Web UI available at http://10.0.2.15:4040
Spark context available as 'sc' (master = local[*], app id = local-1484672079424).
Spark session available as 'spark'.
Welcome to
      ____              __
     / __/__  ___ _____/ /__
    _\ \/ _ \/ _ `/ __/  '_/
   /___/ .__/\_,_/_/ /_/\_\   version 2.1.0
      /_/

Using Scala version 2.11.8 (Java HotSpot(TM) Client VM, Java 1.7.0_80)
Type in expressions to have them evaluated.
Type :help for more information.

scala>
```

Basic operation in Scala

```
scala> 4 * 5 + 3
res0: Int = 23

scala> val result = 4 * 5 + 3
result: Int = 23
```

Constants & variables in Scala

```
scala> val answer = 5
answer: Int = 5

scala> answer = 8
<console>:25: error: reassignment to val
       answer = 8
              ^

scala> var answer = 5
answer: Int = 5

scala> answer = 8
answer: Int = 8
```

If-Else in Scala

```
scala> var a = 5
a: Int = 5

scala> var b = 0
b: Int = 0

scala> if (a > 0) b = 1 else b = -1

scala> b
res4: Int = 1

scala>
```

Use of braces in Scala

```
scala> var a = 2
a: Int = 2

scala> var b = 3
b: Int = 3

scala> if (a > 0) {
     | b = b * 2
     | b = b + 1
     | }
```

Paste mode in Scala

```
scala> :paste
// Entering paste mode (ctrl-D to finish)

var a = 2
var b = 3
if (a > 0 )
b = b * 2
b = b + 1
b

// Exiting paste mode, now interpreting.

a: Int = 2
b: Int = 7
b: Int = 7
res11: Int = 7
```

While loop in Scala

```
scala> var counter = 1
counter: Int = 1

scala> while(counter <= 5) {
     | println("Hello !!!")
     | counter = counter + 1
     | }
Hello !!!
Hello !!!
Hello !!!
Hello !!!
Hello !!!

scala>
```

For loop in Scala

```
scala> for(i <- 1 to 5) {
     | println("Hello" + i)
     | }
Hello1
Hello2
Hello3
Hello4
Hello5

scala>
```

For loop in Scala

```
scala> for(i <- 1 until 5) {
     | println("Hello" + i)
     | }
Hello1
Hello2
Hello3
Hello4

scala>
```

Function in Scala

```
scala> def myFxn(n : Int) = {
     |
     | var r = 1
     |
     | for (i <- 1 to n) r = r * i
     |
     | r
     |
     | }
myFxn: (n: Int)Int

scala> myFxn(5)
res18: Int = 120
```

Function in Scala

```
scala> def displayName(name: String,
     | left: String = "[ ",
     |  right: String = " ]") =
     | left + name + right
displayName: (name: String, left: String, right: String)

scala> displayName("SPARK")
res36: String = [ SPARK ]
```

Array in Scala

```
scala> val nums = new Array[Int](5)
nums: Array[Int] = Array(0, 0, 0, 0, 0)

scala> nums(0)=5

scala> nums(1)=7

scala> nums
res24: Array[Int] = Array(5, 7, 0, 0, 0)

scala> val words = Array("Hello", "World")
words: Array[String] = Array(Hello, World)

scala> words
res25: Array[String] = Array(Hello, World)

scala> words(0)="Hello!!!"

scala> words
res27: Array[String] = Array(Hello!!!, World)
```

Array in Scala

```
scala> var nums = Array(1,2,3,4,5)
nums: Array[Int] = Array(1, 2, 3, 4, 5)

scala> for (elem <- nums) yield 2 * elem
res28: Array[Int] = Array(2, 4, 6, 8, 10)

scala> var newNums = for (elem <- nums) yield 2 * elem
newNums: Array[Int] = Array(2, 4, 6, 8, 10)

scala> newNums
res29: Array[Int] = Array(2, 4, 6, 8, 10)
```

ArrayBuffer in Scala

```
scala> import scala.collection.mutable.ArrayBuffer
import scala.collection.mutable.ArrayBuffer

scala> val nums = ArrayBuffer(1, 7, 2, 9)
nums: scala.collection.mutable.ArrayBuffer[Int] = ArrayBuffer(1, 7, 2, 9)

scala> val sortedNums = nums.sorted
sortedNums: scala.collection.mutable.ArrayBuffer[Int] = ArrayBuffer(1, 2, 7, 9)

scala> val sortedNums = nums.sortWith(_ > _)
sortedNums: scala.collection.mutable.ArrayBuffer[Int] = ArrayBuffer(9, 7, 2, 1)
```

Map in Scala

```
scala> var map1 = Map("A" -> 1, "B" -> 2, "C" -> 3)
map1: scala.collection.immutable.Map[String,Int] = Map(A -> 1, B -> 2, C -> 3)

scala> map1("A")=0
<console>:27: error: value update is not a member of scala.collection.immutable.Map[String,Int]
       map1("A")=0
       ^

scala> var map2 = scala.collection.mutable.Map("A" -> 1, "B" -> 2, "C" -> 3)
map2: scala.collection.mutable.Map[String,Int] = Map(A -> 1, C -> 3, B -> 2)

scala> map2
res31: scala.collection.mutable.Map[String,Int] = Map(A -> 1, C -> 3, B -> 2)

scala> map2("A")=0

scala> map2
res33: scala.collection.mutable.Map[String,Int] = Map(A -> 0, C -> 3, B -> 2)
```

Word Count in Scala

```
scala> val inputPath = "/home/neeraj/sample_hadoop.txt"
inputPath: String = /home/neeraj/sample_hadoop.txt

scala> val outputPath = "/home/neeraj/Desktop/spark_word_count_op"
outputPath: String = /home/neeraj/Desktop/spark_word_count_op

scala> val input = sc.textFile(inputPath)
input: org.apache.spark.rdd.RDD[String] = /home/neeraj/sample_hadoop.txt MapPartitionsRDD[12] at textFile
at <console>:27

scala> val words = input.flatMap(line => line.split(" "))
words: org.apache.spark.rdd.RDD[String] = MapPartitionsRDD[13] at flatMap at <console>:29

scala> val count = words.map(word => (word, 1)).reduceByKey { case (x,y) => x + y}
count: org.apache.spark.rdd.RDD[(String, Int)] = ShuffledRDD[15] at reduceByKey at <console>:33

scala> val output = count.map{case ((key, id)) => (key + " " + id)}
output: org.apache.spark.rdd.RDD[String] = MapPartitionsRDD[16] at map at <console>:35

scala> output.coalesce(1, true).saveAsTextFile(outputPath)
```

…Thanks…