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Assignment No. : 13 (B4)
Subject : DSBDA Lab

1. Variable Declaration in Scala:

```
var Var1: String = "Ankit"
val Var2: String = "Ankit"

var Var4 = 2
var Var5 = 3
Var4 + Var5 // Output: 5

Var4 == Var5 // Output: false
```

Output:

```
Var4: Int = 2
Var5: Int = 3
res1: Int = 5
res2: Boolean = false
```

2. Using If-Else Expression in Scala:

```
var Var3 = 1
if (Var3 == 1) {
  println("True")
} else {
  println("False")
}
```

Output:

```
True
```

3. Iteration in Scala using For Loop:

```
for (a <- 1 to 10) {
  println("Value of a: " + a)
}
```

Output:

```
Value of a: 1
Value of a: 2
Value of a: 3
```

```
Value of a: 4
Value of a: 5
Value of a: 6
Value of a: 7
Value of a: 8
Value of a: 9
Value of a: 10
```

4. Declaring a Simple Function in Scala:

```
def mul2(m: Int): Int = m * 10

mul2(2)  // Output: 20
```

Output:

```
res9: Int = 20
```

5. Working with Arrays in Scala:

```
var name = Array("Faizan", "Swati", "Kavya", "Deepak", "Deepak")
name(0) = "jal"
name(1) = "Faizy"
name(2) = "Expert in deep learning"
println(name.mkString(", "))
```

Output:

```
jal, Faizy, Expert in deep learning, Deepak, Deepak
```

6. Simple "Hello World" Program in Scala:

```
object HelloWorld {
  def main(args: Array[String]): Unit = {
    println("Hello, world!")
  }
}
```

Output:

```
Hello, world!
```

7. Scala Program using Apache Spark:

```
// Importing Spark libraries
import org.apache.spark.sql.SparkSession

object SparkExample {
  def main(args: Array[String]): Unit = {
    // Initialize Spark session
    val spark = SparkSession.builder()
      .appName("Simple Spark Example")
      .master("local")
      .getOrCreate()

    // Create a simple DataFrame
    val data = Seq(("Ankit", 25), ("Ravi", 30), ("Sita", 28), ("John", 35))
    val df = spark.createDataFrame(data).toDF("Name", "Age")

    // Show the DataFrame
    df.show()

    // Perform a simple transformation: filtering rows where age is greater than 28
    val filteredDf = df.filter(df("Age") > 28)

    // Show the transformed DataFrame
    filteredDf.show()

    // Stop Spark session
    spark.stop()
  }
}
```

Expected Output:

```
+-----+---+
| Name|Age|
+-----+---+
|Ankit| 25|
| Ravi| 30|
| Sita| 28|
| John| 35|
+-----+---+

+-----+---+
| Name|Age|
+-----+---+
| Ravi| 30|
| John| 35|
+-----+---+
```

8. Install and Check Java Version:

```
$ java -version
```

Output:

```
java version "1.8.0_251"
Java(TM) SE Runtime Environment (build 1.8.0_251-b08)
Java HotSpot(TM) 64-Bit Server VM (build 25.251-b08, mixed mode)
```

9. Install Scala on Ubuntu:

```
$ cd ~/Downloads
$ wget http://www.scala-lang.org/files/archive/scala-2.11.7.deb
$ sudo dpkg -i scala-2.11.7.deb
$ scala –version
```

Output:

```
Scala code runner version 2.11.7 -- Copyright 2002-2015, LAMP/EPFL
```

Scala Program using Apache Spark:

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```
    // Stop Spark session
    spark.stop()
  }
}
```

Expected Output:

```
+-----+---+
| Name|Age|
+-----+---+
|Ankit| 25|
| Ravi| 30|
| Sita| 28|
| John| 35|
+-----+---+

+-----+---+
| Name|Age|
+-----+---+
| Ravi| 30|
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```