PART B

Lab Assignment 12

PROBLEM STATEMENT:

Write a simple program in SCALA using Apache Spark framework

THEORY:

What is Scala?-

Scala is an acronym for "Scalable Language". It is a general-purpose programming language designed for the programmers who want to write programs in a concise, elegant, and type-safe way. Scala enables programmers to be more productive. Scala is developed as an object-oriented and functional programming language.

If you write a code in Scala, you will see that the style is similar to a scripting language. Even though Scala is a new language, it has gained enough users and has a wide community support. It is one of the most user-friendly languages.

Scala is pure Object-Oriented programming language

Scala is an object-oriented programming language. Everything in Scala is an object and any operations you perform is a method call. Scala, allow you to add new operations to existing classes with the help of implicit classes.One of the advantages of Scala is that it makes it very easy to interact with Java code. You can also write a Java code inside Scala class. The Scala supports advanced component architectures through classes and traits.

Scala is a functional language
Scala is a programming language that has implemented major functional programming concepts. In Functional programming, every computation is treated as a mathematical function which avoids states and mutable data. The functional programming exhibits following characteristics:

- Power and flexibility
- Simplicity
- Suitable for parallel processing

Installing Scala

Scala can be installed in any Unix or windows based system. Below are the steps to install for Ubuntu (14.04) for scala version 2.11.7. I am showing the steps for installing Scala (2.11.7) with Java version 7. It is necessary to install Java before installing Scala. You can also install latest version of Scala(2.12.1) as well.

Step 0: Open the Terminal
Step 1: Install Java

First Check if Java is present or not by running the following command :

   $ java -version

If JAVA is not present then install it by running the following commands :
   $ sudo apt-get update
   $ sudo apt-get install default-jdk

Step 2: Once Java is installed, we need to install Scala

   $ sudo apt-get install scala
   $ scala –version

   To check whether the scala is installed successfully or not
   scala
   println("Hello World")

Scala Basics Terms

Object: An entity that has state and behavior is known as an object. For example: table, person, car etc.

Class: A class can be defined as a blueprint or a template for creating different objects which defines itsproperties and behavior.

Method: It is a behavior of a class. A class can contain one or more than one method. For example: depositcan be considered a method of bank class.

Closure: Closure is any function that closes over the environment in which it's defined. A closure returns valuedepends on the value of one or more variables which is declared outside this closure.

Traits: Traits are used to define object types by specifying the signature of the supported methods. It is likeinterface in java.

Procedure &

Code:- SIMPLE

SCALA

PROGRAM:-
/ SCALA PROGRAM TO PRINT HELLO, WORLD!
// BY USING OBJECT-
ORIENTED APPROACH

```scala
object Hello {
    def main(args: Array[String]) = {
        println("Hello, world")
```

```
      }
}
```

Compile a Scala Program

To run any Scala program, you first need to compile it. "Scala" is the compiler whichtakes source program as an argument and generates object files as output.

Let's start compiling your "HelloWorld" program using the following steps:

1. For compiling it, you first need to paste this program into a text file then you

need to save this program as HelloWorld.scala

2. Now you need change your working directory to the directory where your program is saved

3. After changing the directory you can compile

the program by issuing thecommand.

scalac HelloWorld.scala

4. After compiling, you will get Helloworld.class as an output in the same

directory. If you can see the file,you have successfully compiled the above

program.

5. **Running Scala Program**

   After compiling, you can now run the program

   using the following command -

   scala HelloWorld

   Where, HelloWorld is class name

CONCLUSION:

Students have installed and executed Scala Program successfully.