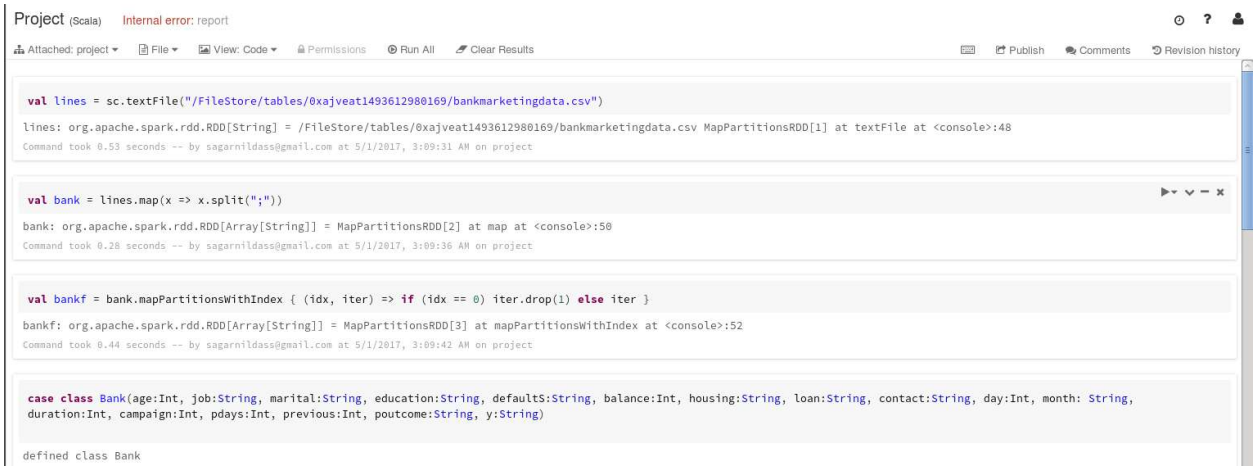
Project 1:Screenshots (Sagarnil Das)




```
val bankrdd = bankf.map(
      x => Bank(x(0).toInt,
               x(1).replaceAll("\"","")
              ,x(2).replaceAll("\"","")
              ,x(3).replaceAll("\"","")
              ,x(4).replaceAll("\"","")
              ,x(5).toInt
              ,x(6).replaceAll("\"","")
              ,x(7).replaceAll("\"","")
              ,x(8).replaceAll("\"","")
              ,x(9).toInt
              ,x(10).replaceAll("\"","")
              ,x(11).toInt
              ,x(12).toInt
              ,x(13).toInt
              ,x(14).toInt
              ,x(15).replaceAll("\"","")
              ,x(16).replaceAll("\"","")
             )
       )
```

```
bankrdd: org.apache.spark.rdd.RDD[Bank] = MapPartitionsRDD[4] at map at <console>:56
Command took 0.48 seconds -- by sagarnildass@gmail.com at 5/1/2017, 3:09:57 AM on project
```

```
val bankDF = bankrdd.toDF()
```

```
bankDF: org.apache.spark.sql.DataFrame = [age: int, job: string ... 15 more fields]
Command took 0.90 seconds -- by sagarnildass@gmail.com at 5/1/2017, 3:10:04 AM on project
```

```
val bankDF = bankrdd.toDF()
```

```
bankDF: org.apache.spark.sql.DataFrame = [age: int, job: string ... 15 more fields]
```

Command took 0.90 seconds -- by sagarnildass@gmail.com at 5/1/2017, 3:10:04 AM on project

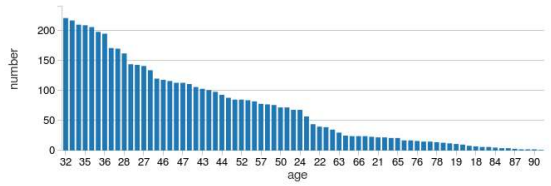
```
bankDF.registerTempTable("bank")
```

```
<console>:62: warning: method registerTempTable in class Dataset is deprecated: Use createOrReplaceTempView(viewName) instead.
              bankDF.registerTempTable("bank")
                     ^
```

Command took 0.20 seconds -- by sagarnildass@gmail.com at 5/1/2017, 3:10:11 AM on project

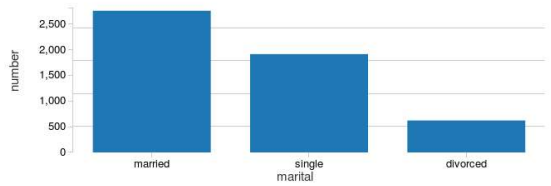
```
val age = sqlContext.sql("select age, count(*) as number from bank where y='yes' group by age order by number desc ")
display(age)
```

(1) Spark Jobs




```
val marital = sqlContext.sql("select marital, count(*) as number from bank where y='yes' group by marital order by number desc ")
display(marital)
```

(1) Spark Jobs



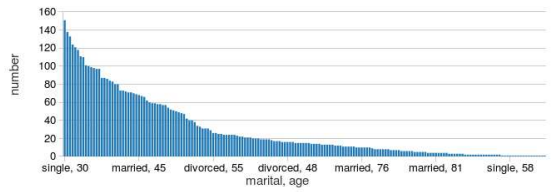
Plot Options...

Command took 1.28 seconds -- by sagarnildass@gmail.com at 4/30/2017, 9:40:30 PM on project

---

```
val age_marital = sqlContext.sql("select age, marital, count(*) as number from bank where y='yes' group by age,marital order by number desc ")
display(age_marital)
```

(1) Spark Jobs



Plot Options...

Command took 1.03 seconds -- by sagarnildass@gmail.com at 4/30/2017, 9:57:03 PM on project

```
import scala.reflect.runtime.universe
import org.apache.spark.SparkConf
import org.apache.spark.SparkContext
import org.apache.spark.ml.Pipeline
import org.apache.spark.ml.classification.LogisticRegression
import org.apache.spark.ml.feature.Bucketizer
import org.apache.spark.ml.feature.Normalizer
import org.apache.spark.ml.feature.StringIndexer
import org.apache.spark.ml.feature.VectorAssembler
import org.apache.spark.mllib.evaluation.BinaryClassificationMetrics
import org.apache.spark.sql.DataFrame
import org.apache.spark.sql.SQLContext
import org.apache.spark.sql.functions.mean
```

```
val ageRDD = sqlContext.udf.register("ageRDD",(age:Int) => {
      if (age < 20)
      "Teen"
      else if (age > 20 && age <= 32)
      "Young"
      else if (age > 33 && age <= 55)
      "Middle Aged"
      else
      "Old"
      })
```

```
ageRDD: org.apache.spark.sql.expressions.UserDefinedFunction = UserDefinedFunction(<function1>,StringType,Some(List(IntegerType)))
```

Command took 0.26 seconds -- by sagarnildass@gmail.com at 5/1/2017, 3:10:39 AM on project

```
val banknewDF = bankDF.withColumn("age",ageRDD(bankDF("age")))
```

```
banknewDF: org.apache.spark.sql.DataFrame = [age: string, job: string ... 15 more fields]
```

Command took 0.22 seconds -- by sagarnildass@gmail.com at 5/1/2017, 3:10:45 AM on project

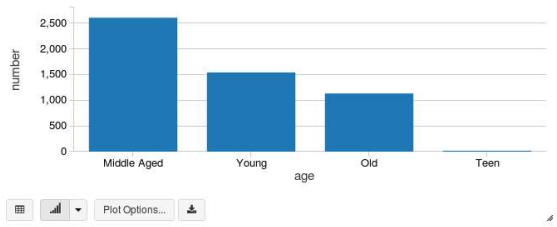
```
banknewDF.registerTempTable("bank_new")
```

```
<console>:68: warning: method registerTempTable in class Dataset is deprecated: Use createOrReplaceTempView(viewName) instead.
              banknewDF.registerTempTable("bank_new")
                        ^
```

Command took 0.13 seconds -- by sagarnildass@gmail.com at 5/1/2017, 3:11:02 AM on project

```
val age_target = sqlContext.sql("select age, count(*) as number from bank_new where y='yes' group by age order by number desc ")
display(age_target)
```

▸ (1) Spark Jobs



Command took 1.48 seconds -- by sagarnildass@gmail.com at 5/1/2017, 3:11:57 AM on project

```
val ageInd = new StringIndexer().setInputCol("age").setOutputCol("ageIndex")
```

```
ageInd: org.apache.spark.ml.feature.StringIndexer = strIdx_bac9b8f0c4da
```

Command took 0.59 seconds -- by sagarnildass@gmail.com at 5/1/2017, 4:34:04 AM on project

```
var strIndModel = ageInd.fit(banknewDF)
```

▸ (1) Spark Jobs

```
strIndModel: org.apache.spark.ml.feature.StringIndexerModel = strIdx_bac9b8f0c4da
```

Command took 2.69 seconds -- by sagarnildass@gmail.com at 5/1/2017, 4:34:27 AM on project

```
strIndModel.transform(banknewDF).select("age","ageIndex").show(5)
```

▸ (1) Spark Jobs

```
+-----------+--------+
|        age|ageIndex|
+-----------+--------+
|        Old|     2.0|
|Middle Aged|     0.0|
|        Old|     2.0|
|Middle Aged|     0.0|
|        Old|     2.0|
+-----------+--------+
only showing top 5 rows
```

Command took 1.29 seconds -- by sagarnildass@gmail.com at 5/1/2017, 4:34:43 AM on project