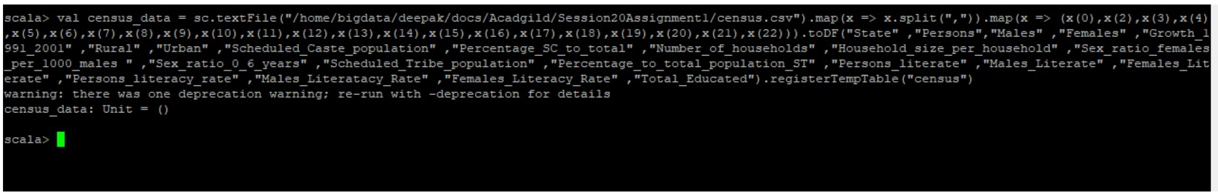
Session 20 Assignment 1

First, read the data from the csv file

```
val census_data =
sc.textFile("/home/bigdata/deepak/docs/Acadgild/Session20Assignment1/census.csv").map(x =>
x.split(",")).map(x =>
(x(0),x(2),x(3),x(4),x(5),x(6),x(7),x(8),x(9),x(10),x(11),x(12),x(13),x(14),x(15),x(16),x(17),x(18),x(19),x(20),x(
21),x(22))).toDF("State" ,"Persons","Males" ,"Females" ,"Growth_1991_2001" ,"Rural" ,"Urban"
,"Scheduled_Caste_population" ,"Percentage_SC_to_total" ,"Number_of_households"
,"Household_size_per_household" ,"Sex_ratio_females_per_1000_males " ,"Sex_ratio_0_6_years"
,"Scheduled_Tribe_population" ,"Percentage_to_total_population_ST" ,"Persons_literate"
,"Males_Literate" ,"Females_Literate" ,"Persons_literacy_rate" ,"Males_Literatacy_Rate"
,"Females_Literacy_Rate" ,"Total_Educated").registerTempTable("census")
```

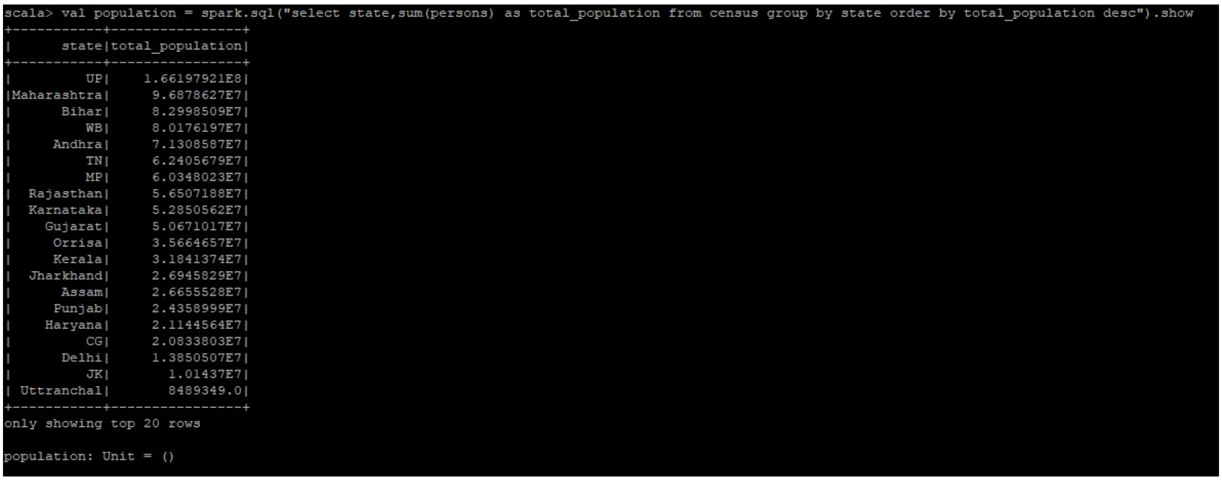


```
scala> val census_data = sc.textFile("/home/bigdata/deepak/docs/Acadgild/Session20Assignment1/census.csv").map(x => x.split(",")).map(x => (x(0),x(2),x(3),x(4)
,x(5),x(6),x(7),x(8),x(9),x(10),x(11),x(12),x(13),x(14),x(15),x(16),x(17),x(18),x(19),x(20),x(21),x(22))).toDF("State" ,"Persons","Males" ,"Females" ,"Growth_1
991_2001" ,"Rural" ,"Urban" ,"Scheduled_Caste_population" ,"Percentage_SC_to_total" ,"Number_of_households" ,"Household_size_per_household" ,"Sex_ratio_females
_per_1000_males " ,"Sex_ratio_0_6_years" ,"Scheduled_Tribe_population" ,"Percentage_to_total_population_ST" ,"Persons_literate" ,"Males_Literate" ,"Females_Lit
erate" ,"Persons_literacy_rate" ,"Males_Literatacy_Rate" ,"Females_Literacy_Rate" ,"Total_Educated").registerTempTable("census")
warning: there was one deprecation warning; re-run with -deprecation for details
census_data: Unit = ()

scala> 
```

1. **Find out the state wise population and order by state**

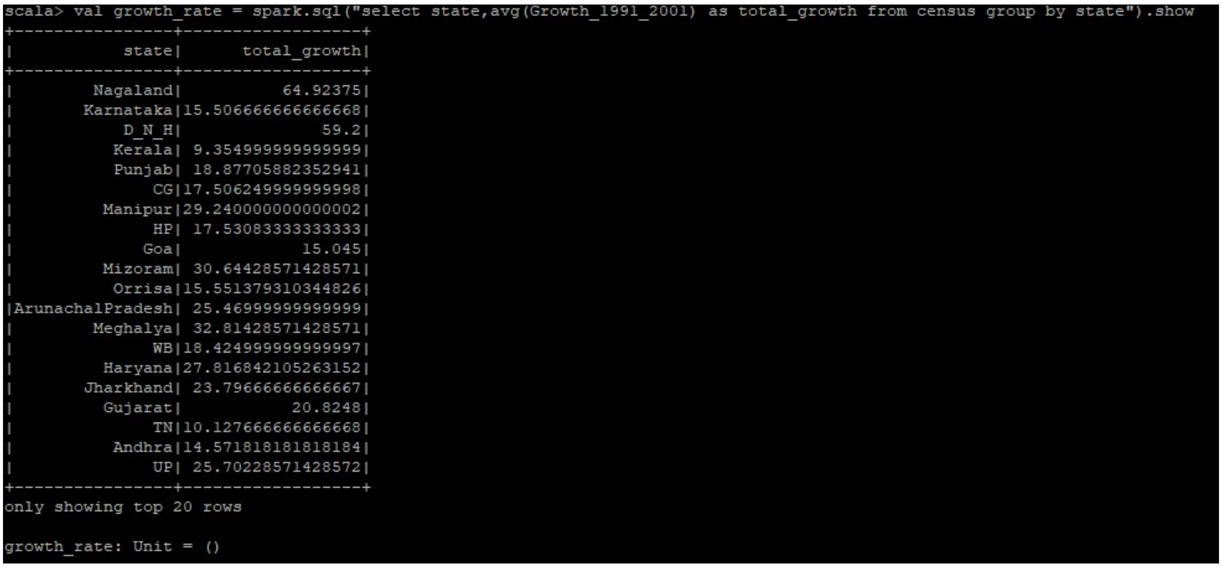
```
val population = spark.sql("select state,sum(persons) as total_population from census group by state order
by total_population desc").show
```



```
scala> val population = spark.sql("select state,sum(persons) as total_population from census group by state order by total_population desc").show
+-----------+----------------+
|      state|total_population|
+-----------+----------------+
|         UP|    1.66197921E8|
|Maharashtra|     9.6878627E7|
|      Bihar|     8.2998509E7|
|         WB|     8.0176197E7|
|     Andhra|     7.1308587E7|
|         TN|     6.2405679E7|
|         MP|     6.0348023E7|
|  Rajasthan|     5.6507188E7|
|  Karnataka|     5.2850562E7|
|    Gujarat|     5.0671017E7|
|     Orrisa|     3.5664657E7|
|     Kerala|     3.1841374E7|
|  Jharkhand|     2.6945829E7|
|      Assam|     2.6655528E7|
|     Punjab|     2.4358999E7|
|    Haryana|     2.1144564E7|
|         CG|     2.0833803E7|
|      Delhi|     1.3850507E7|
|         JK|       1.01437E7|
| Uttranchal|       8489349.0|
+-----------+----------------+
only showing top 20 rows

population: Unit = ()
```

2. **Find out the Growth Rate of Each State Between 1991-2001**
   val growth_rate = spark.sql("select state,avg(Growth_1991_2001) as total_growth from census group by state").show

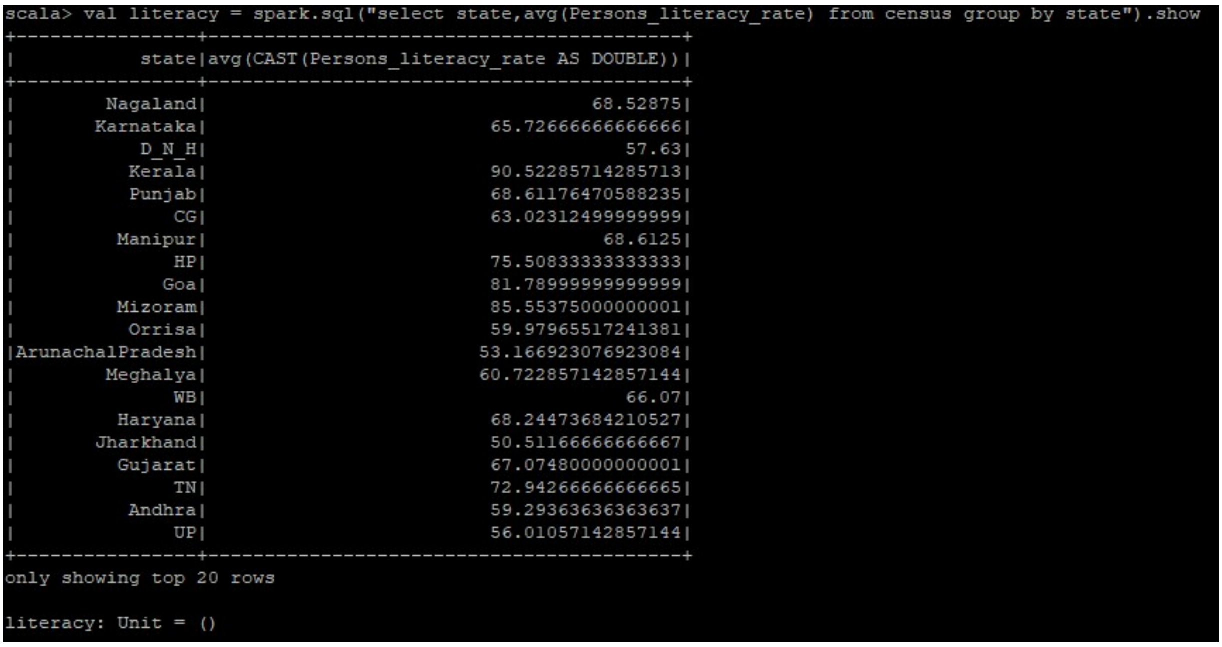


```
scala> val growth_rate = spark.sql("select state,avg(Growth_1991_2001) as total_growth from census group by state").show
+----------------+------------------+
|           state|      total_growth|
+----------------+------------------+
|        Nagaland|          64.92375|
|       Karnataka|15.506666666666668|
|           D_N_H|              59.2|
|          Kerala| 9.354999999999999|
|          Punjab| 18.87705882352941|
|              CG|17.506249999999998|
|         Manipur|29.240000000000002|
|              HP| 17.53083333333333|
|             Goa|            15.045|
|         Mizoram| 30.64428571428571|
|          Orrisa|15.551379310344826|
|ArunachalPradesh| 25.46999999999999|
|        Meghalya| 32.81428571428571|
|              WB|18.424999999999997|
|         Haryana|27.816842105263152|
|       Jharkhand| 23.79666666666667|
|         Gujarat|           20.8248|
|              TN|10.127666666666668|
|          Andhra|14.571818181818184|
|              UP| 25.70228571428572|
+----------------+------------------+
only showing top 20 rows

growth_rate: Unit = ()
```

3. **Find the literacy rate of each state**

val literacy = spark.sql("select state,avg(Persons_literacy_rate) from census group by state").show

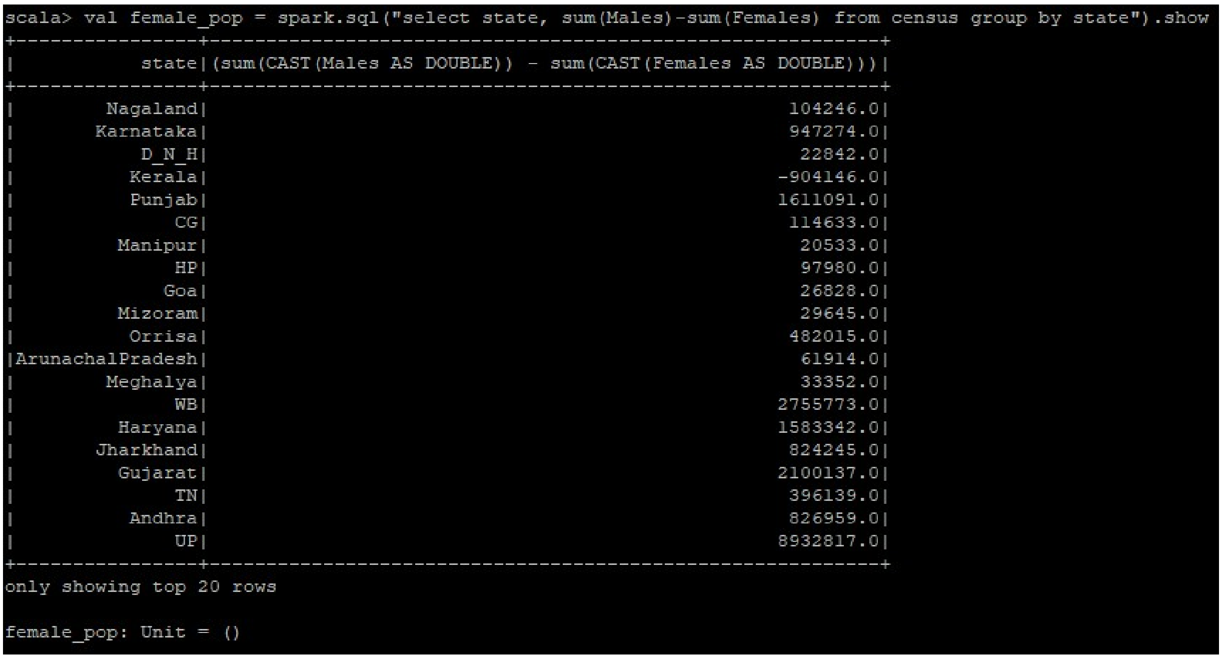


```
scala> val literacy = spark.sql("select state,avg(Persons_literacy_rate) from census group by state").show
+----------------+------------------------------------------+
|           state|avg(CAST(Persons_literacy_rate AS DOUBLE))|
+----------------+------------------------------------------+
|        Nagaland|                                  68.52875|
|       Karnataka|                         65.72666666666666|
|           D_N_H|                                     57.63|
|          Kerala|                         90.52285714285713|
|          Punjab|                         68.61176470588235|
|              CG|                         63.02312499999999|
|         Manipur|                                   68.6125|
|              HP|                         75.50833333333333|
|             Goa|                         81.78999999999999|
|         Mizoram|                         85.55375000000001|
|          Orrisa|                         59.97965517241381|
|ArunachalPradesh|                        53.166923076923084|
|        Meghalya|                        60.722857142857144|
|              WB|                                     66.07|
|         Haryana|                         68.24473684210527|
|       Jharkhand|                         50.51166666666667|
|         Gujarat|                         67.07480000000001|
|              TN|                         72.94266666666665|
|          Andhra|                         59.29363636363637|
|              UP|                         56.01057142857144|
+----------------+------------------------------------------+
only showing top 20 rows

literacy: Unit = ()
```

4. **Find out the States with More Female Population**

val female_pop = spark.sql("select state, sum(Males)-sum(Females) from census group by state").show

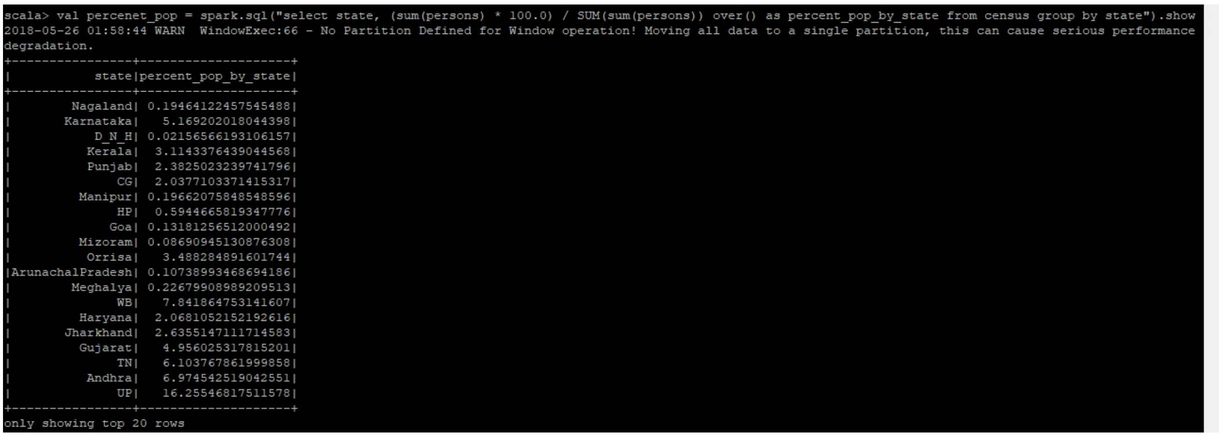


```
scala> val female_pop = spark.sql("select state, sum(Males)-sum(Females) from census group by state").show
+----------------+-----------------------------------------------------------+
|           state|(sum(CAST(Males AS DOUBLE)) - sum(CAST(Females AS DOUBLE)))|
+----------------+-----------------------------------------------------------+
|        Nagaland|                                                   104246.0|
|       Karnataka|                                                   947274.0|
|           D_N_H|                                                    22842.0|
|          Kerala|                                                  -904146.0|
|          Punjab|                                                  1611091.0|
|              CG|                                                   114633.0|
|         Manipur|                                                    20533.0|
|              HP|                                                    97980.0|
|             Goa|                                                    26828.0|
|         Mizoram|                                                    29645.0|
|          Orrisa|                                                   482015.0|
|ArunachalPradesh|                                                    61914.0|
|        Meghalya|                                                    33352.0|
|              WB|                                                  2755773.0|
|         Haryana|                                                  1583342.0|
|       Jharkhand|                                                   824245.0|
|         Gujarat|                                                  2100137.0|
|              TN|                                                   396139.0|
|          Andhra|                                                   826959.0|
|              UP|                                                  8932817.0|
+----------------+-----------------------------------------------------------+
only showing top 20 rows

female_pop: Unit = ()
```

5. **Find out the Percentage of Population in Every State**

val percenet_pop = spark.sql("select state, (sum(persons) * 100.0) / SUM(sum(persons)) over() as percent_pop_by_state from census group by state").show



```
scala> val percenet_pop = spark.sql("select state, (sum(persons) * 100.0) / SUM(sum(persons)) over() as percent_pop_by_state from census group by state").show
2018-05-26 01:58:44 WARN  WindowExec:66 - No Partition Defined for Window operation! Moving all data to a single partition, this can cause serious performance
degradation.
+----------------+--------------------+
|           state|percent_pop_by_state|
+----------------+--------------------+
|        Nagaland| 0.19464122457545488|
|       Karnataka|   5.169202018044398|
|           D_N_H| 0.02156566193106157|
|          Kerala|  3.1143376439044568|
|          Punjab|  2.3825023239741796|
|              CG|  2.0377103371415317|
|         Manipur| 0.19662075848548596|
|              HP|  0.5944665819347776|
|             Goa| 0.13181256512000492|
|         Mizoram| 0.08690945130876308|
|          Orrisa|   3.488284891601744|
|ArunachalPradesh| 0.10738993468694186|
|        Meghalya| 0.22679908989209513|
|              WB|   7.841864753141607|
|         Haryana|  2.0681052152192616|
|       Jharkhand|  2.6355147111714583|
|         Gujarat|   4.956025317815201|
|              TN|   6.103767861999858|
|          Andhra|   6.974542519042551|
|              UP|   16.25546817511578|
+----------------+--------------------+
only showing top 20 rows
```