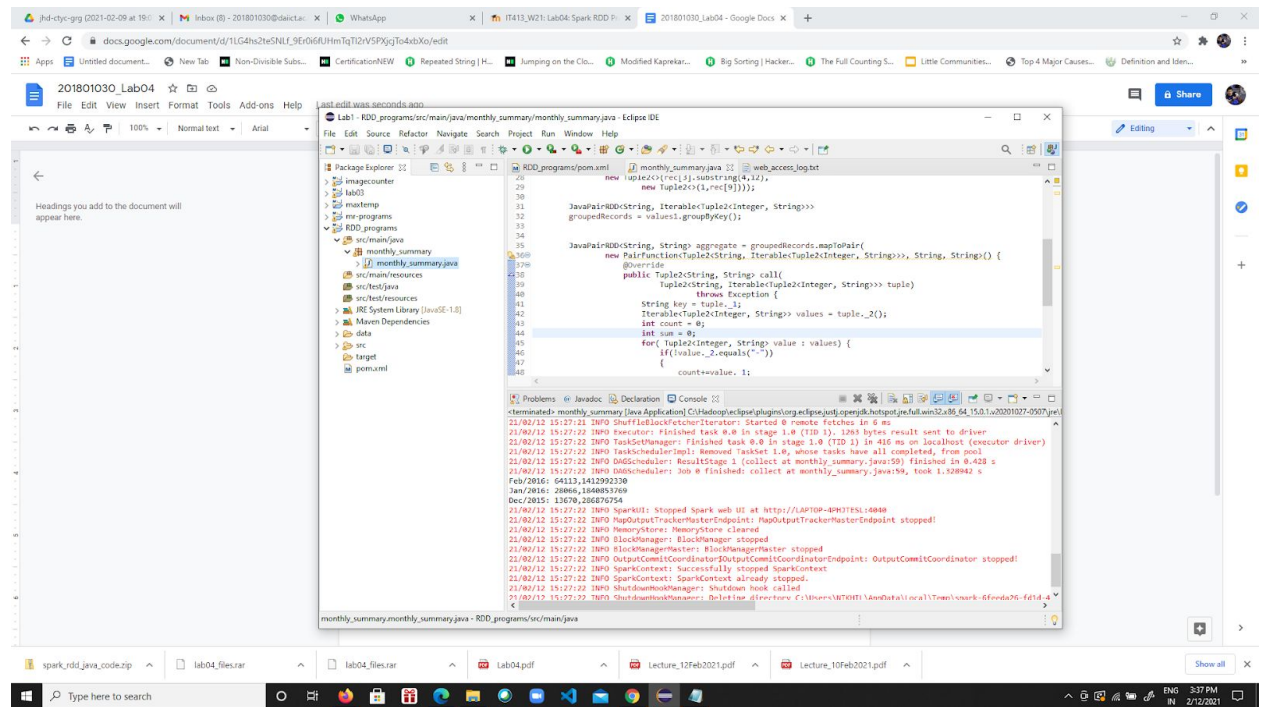
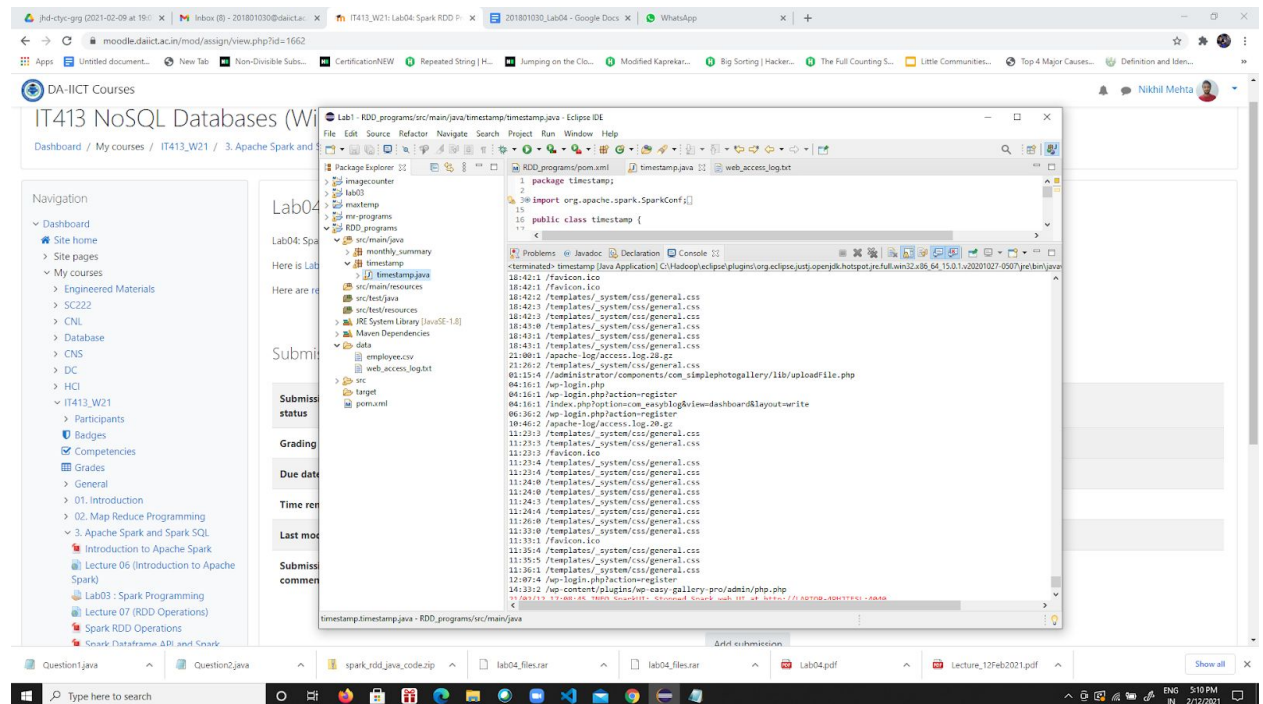


1.



2.



3.

The screenshot shows a dual-screen setup. On the left, a WPS Office spreadsheet titled 'Customers.csv' displays a table of customer data. On the right, an Eclipse IDE is open with a Java project named 'RDD_programs'. The IDE shows the 'revenue.java' file, which implements a MapReduce program to calculate revenue by state. The console window at the bottom of the IDE displays the execution output, showing the results of the MapReduce job.

Customers.csv Data:

ID	CustomerID	Amount	State
1	111	550	TX
2	112	780	TX
3	113	830	TX
4	114	320	TX
5	115	280	TX
6	111	980	TX
7	112	320	TX
8	113	825	TX
9	114	855	TX
10	115	355	TX
11	111	899	TX
12	112	799	TX
13	113	620	TX
14	114	718	TX
15	115	634	TX
16	111	873	TX
17	112	824	TX
18	113	413	TX
19	114	440	TX
20	115	845	TX

revenue.java Code:

```
//Join the two RDDs
JavaPairRDD<String, Tuple2<String, String>> joined = CustomerID_Amount.join(CustomerID_State);

//List of Tuple2<String, Tuple2<String, String>> output3 = joined.collect();
//output3.forEach( tuple -> System.out.println(tuple));

//List of Tuple2<String, String> output3 = CustomerID_Amount .collect();
//output3.forEach( tuple -> System.out.println(tuple));

JavaPairRDD<String, String> New_RDD
= joined.mapToPair((rec->
    new Tuple2<>(rec._2._1, rec._2._2)));

//JavaPairRDD<String, Integer> requiredPair = New_RDD.mapToPair((rec-> new Tuple2<String, Integer>(rec._1, Integer.parseInt(rec._2)));
JavaPairRDD<String, Integer> answer = requiredPair.reduceByKey((v1,v2)->v1+v2);

//List of Tuple2<String, Integer> output = answer.collect();
//output.forEach( tuple -> System.out.println(tuple._1 + " : " + tuple._2));

sc.stop();
sc.close();
```

Console Output:

```
21/02/16 00:23:29 INFO DAGScheduler: ResultStage 3 (collect at revenue.java:57) Finished in 0.840 s
21/02/16 00:23:29 INFO DAGScheduler: Job # Finished: collect at revenue.java:57, took 0.558196 s
Washington : 2064
Maharashtra : 2188
Gujarat : 2302
Scotland : 2193
Texas : 2223
21/02/16 00:23:29 INFO SparkUI: Stopped Spark web UI at http://LAPTOP-4PM37T9S:4040
21/02/16 00:23:29 INFO MapOutputTrackerMasterEndpoint: MapOutputTrackerMasterEndpoint stopped!
21/02/16 00:23:29 INFO MemoryStore: MemoryStore cleared
21/02/16 00:23:29 INFO BlockManager: BlockManager stopped
21/02/16 00:23:29 INFO BlockManagerMaster: BlockManagerMaster stopped
```