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# Big Data System Engineering with Scala

## Spring 2023

### Assignment No. 7

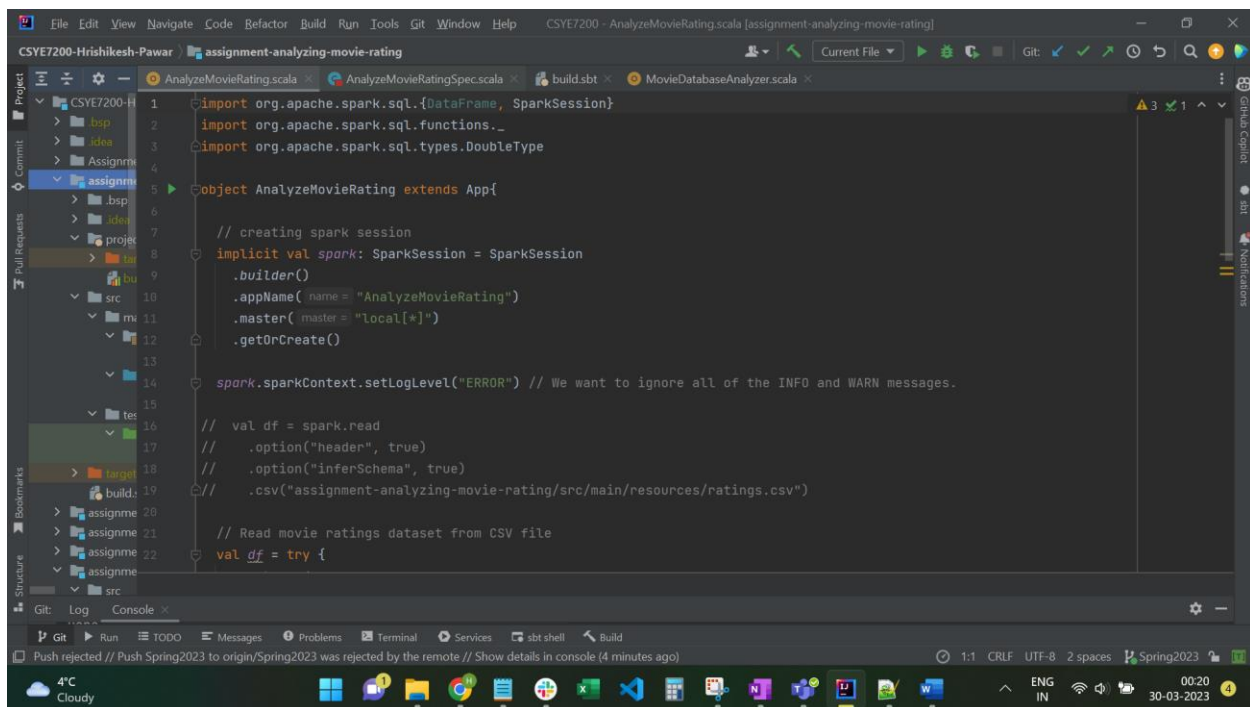


## -List of Tasks Implemented

1. Read the movie rating csv file into spark dataframe
2. Show the dataframe records on console
2. Calculate mean of movie ratings for each movie
3. Calculate standard deviation for each movie
4. Join the two results to form a final dataframe with both results
5. Add exception handling
6. Write test cases in Spec file

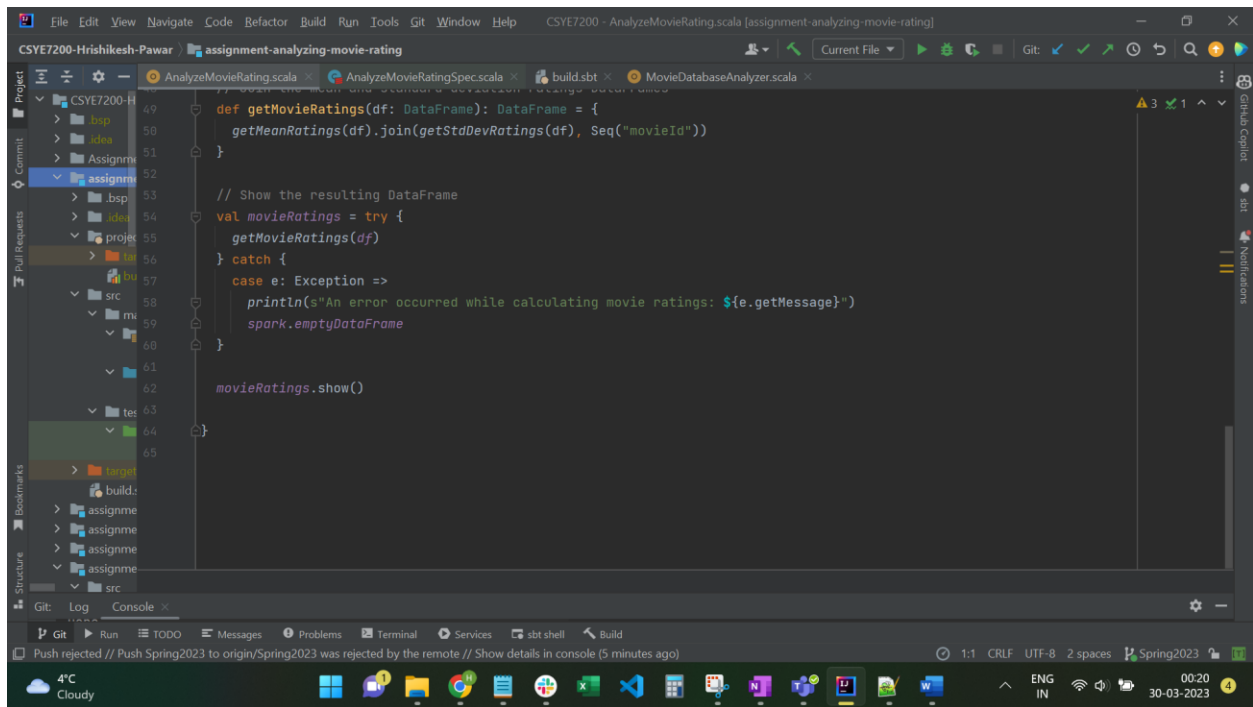
## -Code

### AnalyzeMovieRating.scala

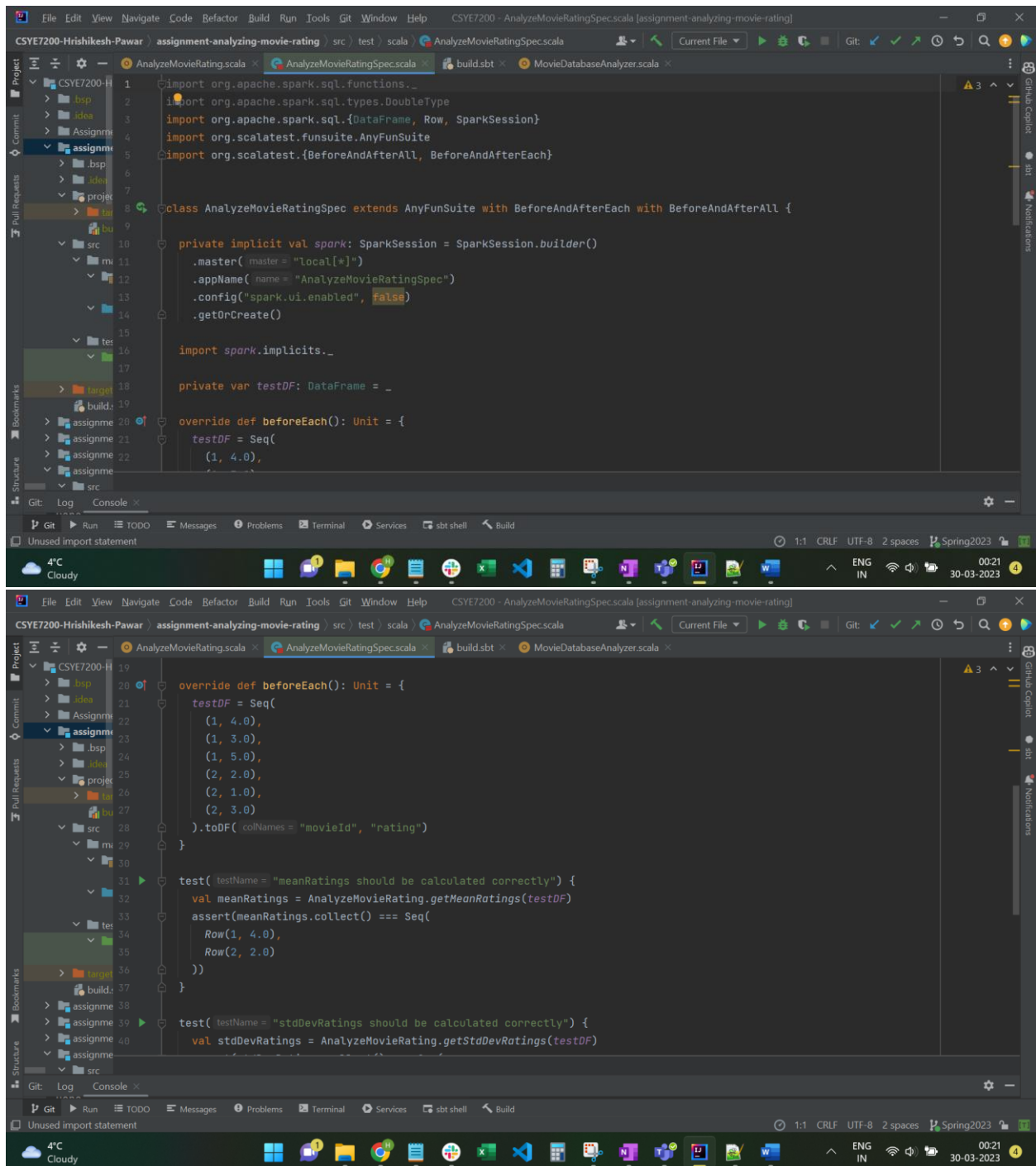


```
1 import org.apache.spark.sql.{DataFrame, SparkSession}
2 import org.apache.spark.sql.functions._
3 import org.apache.spark.sql.types.DoubleType
4
5 object AnalyzeMovieRating extends App{
6
7     // creating spark session
8     implicit val spark: SparkSession = SparkSession
9         .builder()
10        .appName( name = "AnalyzeMovieRating")
11        .master( master = "local[*]")
12        .getOrCreate()
13
14    spark.sparkContext.setLogLevel("ERROR") // We want to ignore all of the INFO and WARN messages.
15
16    // val df = spark.read
17    // .option("header", true)
18    // .option("inferSchema", true)
19    // .csv("assignment-analyzing-movie-rating/src/main/resources/ratings.csv")
20
21    // Read movie ratings dataset from CSV file
22    val df = try {
```

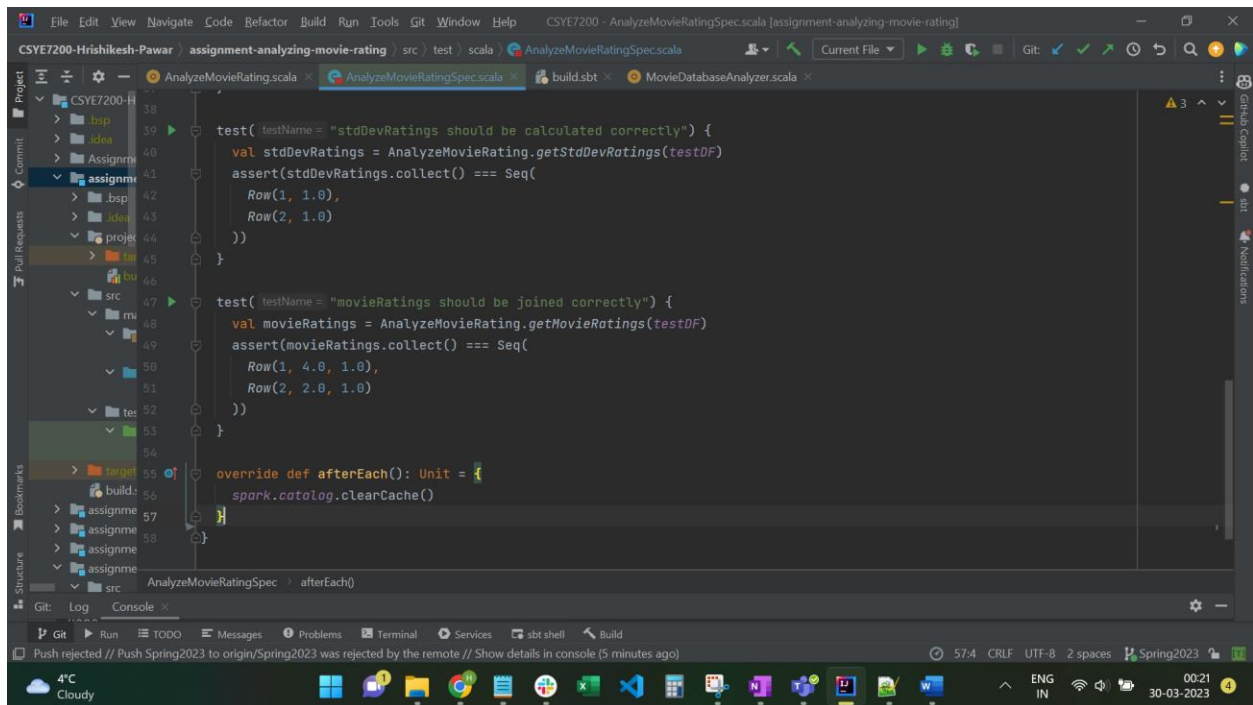
```
File Edit View Navigate Code Refactor Build Run Tools Git Window Help CSYE7200 - AnalyzeMovieRating.scala [assignment-analyzing-movie-rating]
CSYE7200-Hrishikesh-Pawar assignment-analyzing-movie-rating
AnalyzeMovieRating.scala AnalyzeMovieRatingSpec.scala build.sbt MovieDatabaseAnalyzer.scala
19 // .csv("assignment-analyzing-movie-rating/src/main/resources/ratings.csv")
20
21 // Read movie ratings dataset from CSV file
22 val df = try {
23     spark.read
24         .option("header", true)
25         .option("inferSchema", true)
26         .csv(path = "assignment-analyzing-movie-rating/src/main/resources/ratings.csv")
27 } catch {
28     case e: Exception =>
29         println(s"An error occurred while reading the ratings CSV file: ${e.getMessage}")
30         spark.emptyDataFrame
31 }
32
33 // Show the DataFrame
34 df.show()
35
36 // Calculate the mean rating for each movie
37 def getMeanRatings(df: DataFrame): DataFrame = {
38     df.groupBy(col = "movieId")
39         .agg(avg(columnName = "rating").cast(DoubleType).alias(alias = "mean_rating"))
40 }
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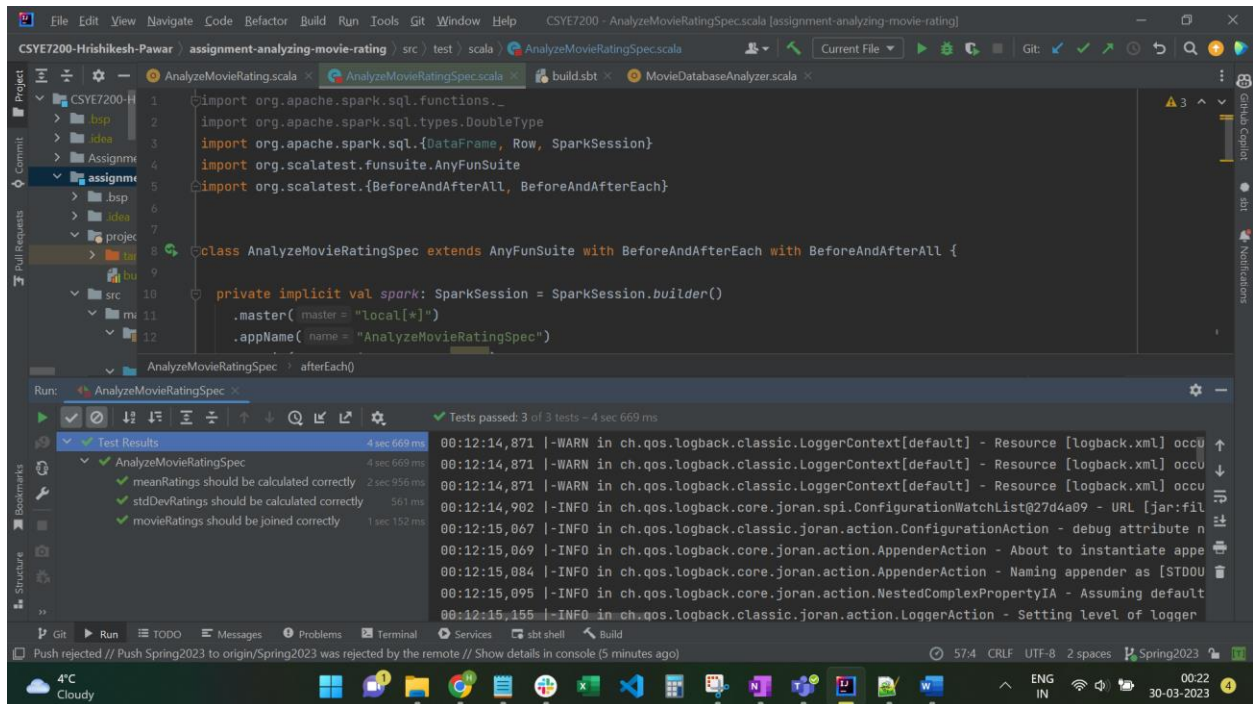
## AnalyzeMovieRatingSpec.scala



```
1 import org.apache.spark.sql.functions._
2 import org.apache.spark.sql.types.DoubleType
3 import org.apache.spark.sql.{DataFrame, Row, SparkSession}
4 import org.scalatest.funsuite.AnyFunSuite
5 import org.scalatest.{BeforeAndAfterAll, BeforeAndAfterEach}
6
7 class AnalyzeMovieRatingSpec extends AnyFunSuite with BeforeAndAfterEach with BeforeAndAfterAll {
8
9   private implicit val spark: SparkSession = SparkSession.builder()
10     .master("local[*]")
11     .appName("AnalyzeMovieRatingSpec")
12     .config("spark.ui.enabled", false)
13     .getOrCreate()
14
15   import spark.implicits._
16
17   private var testDF: DataFrame = _
18
19   override def beforeEach(): Unit = {
20     testDF = Seq(
21       (1, 4.0),
22
23     ).toDF("movieId", "rating")
24
25   test("meanRatings should be calculated correctly") {
26     val meanRatings = AnalyzeMovieRating.getMeanRatings(testDF)
27     assert(meanRatings.collect() == Seq(
28       Row(1, 4.0),
29       Row(2, 2.0)
30     ))
31
32   test("stdDevRatings should be calculated correctly") {
33     val stdDevRatings = AnalyzeMovieRating.getStdDevRatings(testDF)
```



## -Unit tests



## - GitHub Repo

<https://github.com/hrishikesh-pawar/CSYE7200-Hrishikesh-Pawar>

- **Dataset**

<https://www.kaggle.com/datasets/rounakbanik/the-movies-dataset>

ratings.csv file from the above link

GitHub does not allow a file over 100 MB so the push was getting rejected. For this reason, I have not pushed the ratings.csv file on GitHub. But to run the project, you can paste the ratings.csv file in this path:

assignment-analyzing-movie-rating/src/main/resources/ratings.csv