lab-1-22mcb1002

April 10, 2023

1 Spark Installation

```
[2]: !apt-get install openjdk-8-jdk-headless -qq > /dev/null
     !wget -q https://downloads.apache.org/spark/spark-3.2.3/spark-3.2.3-bin-hadoop3.
      ↪2.tgz
     !tar -xvf spark-3.2.3-bin-hadoop3.2.tgz
     !pip install -q findspark
```

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spark-3.2.3-bin-hadoop3.2/
spark-3.2.3-bin-hadoop3.2/LICENSE
spark-3.2.3-bin-hadoop3.2/NOTICE
spark-3.2.3-bin-hadoop3.2/R/
spark-3.2.3-bin-hadoop3.2/R/lib/
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/DESCRIPTION
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/INDEX
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/Meta/
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/Meta/Rd.rds
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/Meta/features.rds
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/Meta/hsearch.rds
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spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/Meta/nsInfo.rds
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spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/Meta/vignette.rds
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spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/R/
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/R/SparkR
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/R/SparkR.rdb
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/R/SparkR.rdx
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spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/doc/index.html
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/doc/sparkr-vignettes.R
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/doc/sparkr-vignettes.Rmd
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/doc/sparkr-vignettes.html
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/help/
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/help/AnIndex
spark-3.2.3-bin-hadoop3.2/R/lib/SparkR/help/SparkR.rdb
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spark-3.2.3-bin-hadoop3.2/README.md
spark-3.2.3-bin-hadoop3.2/RELEASE
spark-3.2.3-bin-hadoop3.2/bin/
spark-3.2.3-bin-hadoop3.2/bin/beeline
spark-3.2.3-bin-hadoop3.2/bin/beeline.cmd
spark-3.2.3-bin-hadoop3.2/bin/docker-image-tool.sh
spark-3.2.3-bin-hadoop3.2/bin/find-spark-home
spark-3.2.3-bin-hadoop3.2/bin/find-spark-home.cmd
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spark-3.2.3-bin-hadoop3.2/conf/fairscheduler.xml.template
spark-3.2.3-bin-hadoop3.2/conf/log4j.properties.template
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channel/BGRA_alpha_60.png
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spark-3.2.3-bin-
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18-02/grayscale.jpg
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spark-3.2.3-bin-
hadoop3.2/examples/src/main/java/org/apache/spark/examples/JavaWordCount.java
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vaAFTSurvivalRegressionExample.java
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vaBisectingKMeansExample.java
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vaBucketedRandomProjectionLSHExample.java
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vaBucketizerExample.java
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vaChiSqSelectorExample.java
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vaChiSquareTestExample.java
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vaDCTExample.java
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vaDecisionTreeClassificationExample.java
spark-3.2.3-bin-hadoop3.2/examples/src/main/java/org/apache/spark/examples/ml/Ja
vaDecisionTreeRegressionExample.java
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vaFMClassifierExample.java
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vaFMRegressorExample.java
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vaFPGrowthExample.java
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vaGaussianMixtureExample.java
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vaGeneralizedLinearRegressionExample.java
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vaGradientBoostedTreeClassifierExample.java
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vaGradientBoostedTreeRegressorExample.java
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vaIndexToStringExample.java
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vaInteractionExample.java
spark-3.2.3-bin-hadoop3.2/examples/src/main/java/org/apache/spark/examples/ml/Ja
vaIsotonicRegressionExample.java
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vaKMeansExample.java
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vaLDAExample.java
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vaLabeledDocument.java
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vaLinearRegressionWithElasticNetExample.java
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vaLinearSVCExample.java
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vaLogisticRegressionSummaryExample.java
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vaLogisticRegressionWithElasticNetExample.java
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vaMaxAbsScalerExample.java
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vaMinHashLSHExample.java
spark-3.2.3-bin-hadoop3.2/examples/src/main/java/org/apache/spark/examples/ml/Ja
vaMinMaxScalerExample.java
spark-3.2.3-bin-hadoop3.2/examples/src/main/java/org/apache/spark/examples/ml/Ja
vaModelSelectionViaCrossValidationExample.java
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vaModelSelectionViaTrainValidationSplitExample.java
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vaMulticlassLogisticRegressionWithElasticNetExample.java
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vaMultilayerPerceptronClassifierExample.java
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vaNGramExample.java
spark-3.2.3-bin-hadoop3.2/examples/src/main/java/org/apache/spark/examples/ml/Ja

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vaNaiveBayesExample.java
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vaNormalizerExample.java
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vaOneHotEncoderExample.java
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vaOneVsRestExample.java
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vaPCAExample.java
spark-3.2.3-bin-hadoop3.2/examples/src/main/java/org/apache/spark/examples/ml/Ja
vaPipelineExample.java
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vaRandomForestRegressorExample.java
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vaSQLTransformerExample.java
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vaStandardScalerExample.java
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vaStopWordsRemoverExample.java
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vaStringIndexerExample.java
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vaSummarizerExample.java
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vaTfIdfExample.java
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vaTokenizerExample.java
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vaUnivariateFeatureSelectorExample.java
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vaVarianceThresholdSelectorExample.java
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vaVectorAssemblerExample.java
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vaVectorIndexerExample.java
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spark-3.2.3-bin-hadoop3.2/examples/src/main/java/org/apache/spark/examples/ml/Ja
vaVectorSlicerExample.java
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/JavaAssociationRulesExample.java
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/JavaBinaryClassificationMetricsExample.java
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/JavaBisectingKMeansExample.java
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/JavaChiSqSelectorExample.java
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/JavaCorrelationsExample.java
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/JavaDecisionTreeClassificationExample.java
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/JavaDecisionTreeRegressionExample.java
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/JavaElementwiseProductExample.java
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/JavaGaussianMixtureExample.java
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/JavaGradientBoostingClassificationExample.java
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/JavaGradientBoostingRegressionExample.java
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/JavaHypothesisTestingExample.java
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/JavaHypothesisTestingKolmogorovSmirnovTestExample.java
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/JavaIsotonicRegressionExample.java
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/JavaKernelDensityEstimationExample.java
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/JavaLBFGSExample.java
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/JavaLatentDirichletAllocationExample.java
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/JavaLogisticRegressionWithLBFGSExample.java
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/JavaMulticlassClassificationMetricsExample.java
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/JavaPCAExample.java
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/JavaSVMWithSGDExample.java
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/JavaStratifiedSamplingExample.java
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avaSparkSQLExample.java
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ive/JavaSparkHiveExample.java

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treaming/JavaStructuredComplexSessionization.java
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treaming/JavaStructuredSessionization.java
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ming/JavaDirectKerberizedKafkaWordCount.java
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ming/JavaNetworkWordCount.java
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sifier_example.py
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sion_with_elastic_net.py
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etrics_example.py
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ification_example.py
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ogorov_smirnov_test_example.py
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spark-3.2.3-bin-
hadoop3.2/examples/src/main/python/streaming/network_wordcount.py
spark-3.2.3-bin-
hadoop3.2/examples/src/main/python/streaming/network_wordjoinsentiments.py
spark-3.2.3-bin-hadoop3.2/examples/src/main/python/streaming/queue_stream.py
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spark-3.2.3-bin-
hadoop3.2/examples/src/main/python/streaming/recoverable_network_wordcount.py
spark-3.2.3-bin-
hadoop3.2/examples/src/main/python/streaming/sql_network_wordcount.py
spark-3.2.3-bin-
hadoop3.2/examples/src/main/python/streaming/stateful_network_wordcount.py
spark-3.2.3-bin-hadoop3.2/examples/src/main/python/transitive_closure.py
spark-3.2.3-bin-hadoop3.2/examples/src/main/python/wordcount.py
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/RSparkSQLExample.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/data-manipulation.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/dataframe.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/als.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/bisectingKmeans.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/decisionTree.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/fmClassifier.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/fmRegressor.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/fpm.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/gaussianMixture.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/gbt.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/glm.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/isoreg.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/kmeans.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/kstest.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/lda.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/lm_with_elastic_net.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/logit.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/ml.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/mlp.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/naiveBayes.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/powerIterationClustering.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/prefixSpan.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/randomForest.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/survreg.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/ml/svmLinear.R
spark-3.2.3-bin-hadoop3.2/examples/src/main/r/streaming/
spark-3.2.3-bin-
hadoop3.2/examples/src/main/r/streaming/structured_network_wordcount.R
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spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/META-INF/services/
spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/META-
INF/services/org.apache.spark.sql.SparkSessionExtensionsProvider
spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/META-
INF/services/org.apache.spark.sql.jdbc.JdbcConnectionProvider
spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/dir1/
spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/dir1/dir2/
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spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/dir1/dir2/file2.parquet
spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/dir1/file1.parquet
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spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/employees.json
spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/full_user.avsc
spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/kv1.txt
spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/people.csv
spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/people.json
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spark-3.2.3-bin-hadoop3.2/examples/src/main/resources/users.orc
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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/DFSR
eadWriteTest.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/Driv
erSubmissionTest.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/Exce
ptionHandlingTest.scala
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spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/HdfsTest.scala
spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/LocalALS.scala
spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/LocalFileLR.scala
spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/LocalKMeans.scala
spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/LocalLR.scala
spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/LocalPi.scala
spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/LogQuery.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/Mult
iBroadcastTest.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/Simp
leSkewedGroupByTest.scala
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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/SkewedGroupByTest.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/SparkALS.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/SparkHdfsLR.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/SparkKMeans.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/SparkLR.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/SparkPageRank.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/SparkPi.scala
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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/SparkTC.scala
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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/extensions/AgeExample.scala
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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/extensions/SessionExtensionsWithoutLoader.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/extensions/SparkSessionExtensionsTest.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/AggregateMessagesExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/Analytics.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/ComprehensiveExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/ConnectedComponentsExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/LiveJournalPageRank.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/PageRankExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/SSSPExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/SynthBenchmark.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/graphx/TriangleCountingExample.scala

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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/
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FTSurvivalRegressionExample.scala
spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/ALSExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/B
inarizerExample.scala
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isectingKMeansExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/B
ucketedRandomProjectionLSHExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/B
ucketizerExample.scala
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hiSqSelectorExample.scala
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hiSquareTestExample.scala
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orrelationExample.scala
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ountVectorizerExample.scala
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ataFrameExample.scala
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ecisionTreeClassificationExample.scala
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ecisionTreeExample.scala
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ecisionTreeRegressionExample.scala
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eveloperApiExample.scala
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lementwiseProductExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/E
stimatorTransformerParamExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/F
MClassifierExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/F
MRegressorExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/F
PGrowthExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/F
eatureHasherExample.scala
spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/GBTExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/G
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aussianMixtureExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/GeneralizedLinearRegressionExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/GradientBoostedTreeClassifierExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/GradientBoostedTreeRegressorExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/ImputerExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/IndexToStringExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/InteractionExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/IsotonicRegressionExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/KMeansExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/LDAExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/LinearRegressionExample.scala
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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/LogisticRegressionExample.scala
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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/LogisticRegressionWithElasticNetExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/MaxAbsScalerExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/MinHashLSHExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/MinMaxScalerExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/ModelSelectionViaCrossValidationExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/ModelSelectionViaTrainValidationSplitExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/MulticlassLogisticRegressionWithElasticNetExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/MultilayerPerceptronClassifierExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/NGramExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/N

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aiveBayesExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/N
ormalizerExample.scala
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neHotEncoderExample.scala
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neVsRestExample.scala
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olynomialExpansionExample.scala
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owerIterationClusteringExample.scala
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refixSpanExample.scala
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uantileDiscretizerExample.scala
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FormulaExample.scala
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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/S
QLTransformerExample.scala
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topWordsRemoverExample.scala
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tringIndexerExample.scala
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ummarizerExample.scala
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fIdfExample.scala
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okenizerExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/U
naryTransformerExample.scala
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nivariateFeatureSelectorExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/ml/V
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arianceThresholdSelectorExample.scala
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ectorAssemblerExample.scala
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b/AbstractParams.scala
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b/AssociationRulesExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/BinaryClassification.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/BinaryClassificationMetricsExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/BisectingKMeansExample.scala
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b/ChiSqSelectorExample.scala
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b/Correlations.scala
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b/CorrelationsExample.scala
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b/CosineSimilarity.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/DecisionTreeClassificationExample.scala
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b/DecisionTreeRegressionExample.scala
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b/DecisionTreeRunner.scala
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b/DenseKMeans.scala
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b/ElementwiseProductExample.scala
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b/FPGrowthExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/GaussianMixtureExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/GradientBoostedTreesRunner.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli

b/GradientBoostingClassificationExample.scala
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b/GradientBoostingRegressionExample.scala
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b/HypothesisTestingExample.scala
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b/HypothesisTestingKolmogorovSmirnovTestExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/IsotonicRegressionExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/KMeansExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/KernelDensityEstimationExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/LBFGSExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/LDAExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/LatentDirichletAllocationExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/LogisticRegressionWithLBFGSExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/MovieLensALS.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/MultiLabelMetricsExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/MulticlassMetricsExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/MultivariateSummarizer.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/NaiveBayesExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/NormalizerExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/PCAOnRowMatrixExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/PCAOnSourceVectorExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/PMMLModelExportExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/PowerIterationClusteringExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/PrefixSpanExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/RandomForestClassificationExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/RandomForestRegressionExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli

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b/RandomRDDGeneration.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/RankingMetricsExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/RecommendationExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/SVDExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/SVMWithSGDExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/SampledRDDs.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/SimpleFPGrowth.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/SparseNaiveBayes.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/StandardScalerExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/StratifiedSamplingExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/StreamingKMeansExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/StreamingLinearRegressionExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/StreamingLogisticRegression.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/StreamingTestExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/SummaryStatisticsExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/TFIDFExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/TallSkinnyPCA.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/TallSkinnySVD.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/mlli
b/Word2VecExample.scala
spark-3.2.3-bin-
hadoop3.2/examples/src/main/scala/org/apache/spark/examples/pythonconverters/
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/pyth
onconverters/AvroConverters.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/
RDDRelation.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/
SQLDataSourceExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/
SimpleTypedAggregator.scala
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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/SparkSQLExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/UserDefinedScalar.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/UserDefinedTypedAggregation.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/UserDefinedUntypedAggregation.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/hive/
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/hive/SparkHiveExample.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/jdbc/
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/jdbc/ExampleJdbcConnectionProvider.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/streaming/
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/streaming/StructuredComplexSessionization.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/streaming/StructuredKafkaWordCount.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/streaming/StructuredKerberizedKafkaWordCount.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/streaming/StructuredNetworkWordCount.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/streaming/StructuredNetworkWordCountWindowed.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/sql/streaming/StructuredSessionization.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/streaming/
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/streaming/CustomReceiver.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/streaming/DirectKafkaWordCount.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/streaming/DirectKerberizedKafkaWordCount.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/streaming/HdfsWordCount.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/streaming/NetworkWordCount.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/streaming/QueueStream.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/streaming/RawNetworkGrep.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/streaming/RecoverableNetworkWordCount.scala

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spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/stre
aming/SqlNetworkWordCount.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/stre
aming/StatefulNetworkWordCount.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/stre
aming/StreamingExamples.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/stre
aming/clickstream/
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/stre
aming/clickstream/PageViewGenerator.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scala/org/apache/spark/examples/stre
aming/clickstream/PageViewStream.scala
spark-3.2.3-bin-hadoop3.2/examples/src/main/scripts/
spark-3.2.3-bin-hadoop3.2/examples/src/main/scripts/getGpusResources.sh
spark-3.2.3-bin-hadoop3.2/jars/
spark-3.2.3-bin-hadoop3.2/jars/HikariCP-2.5.1.jar
spark-3.2.3-bin-hadoop3.2/jars/JLargeArrays-1.5.jar
spark-3.2.3-bin-hadoop3.2/jars/JTransforms-3.1.jar
spark-3.2.3-bin-hadoop3.2/jars/RoaringBitmap-0.9.0.jar
spark-3.2.3-bin-hadoop3.2/jars/ST4-4.0.4.jar
spark-3.2.3-bin-hadoop3.2/jars/activation-1.1.1.jar
spark-3.2.3-bin-hadoop3.2/jars/aircompressor-0.21.jar
spark-3.2.3-bin-hadoop3.2/jars/algebra_2.12-2.0.1.jar
spark-3.2.3-bin-hadoop3.2/jars/annotations-17.0.0.jar
spark-3.2.3-bin-hadoop3.2/jars/antlr-runtime-3.5.2.jar
spark-3.2.3-bin-hadoop3.2/jars/antlr4-runtime-4.8.jar
spark-3.2.3-bin-hadoop3.2/jars/aopalliance-repackaged-2.6.1.jar
spark-3.2.3-bin-hadoop3.2/jars/arpack-2.2.1.jar
spark-3.2.3-bin-hadoop3.2/jars/arpack_combined_all-0.1.jar
spark-3.2.3-bin-hadoop3.2/jars/arrow-format-2.0.0.jar
spark-3.2.3-bin-hadoop3.2/jars/arrow-memory-core-2.0.0.jar
spark-3.2.3-bin-hadoop3.2/jars/arrow-memory-netty-2.0.0.jar
spark-3.2.3-bin-hadoop3.2/jars/arrow-vector-2.0.0.jar
spark-3.2.3-bin-hadoop3.2/jars/audience-annotations-0.5.0.jar
spark-3.2.3-bin-hadoop3.2/jars/automaton-1.11-8.jar
spark-3.2.3-bin-hadoop3.2/jars/avro-1.10.2.jar
spark-3.2.3-bin-hadoop3.2/jars/avro-ipc-1.10.2.jar
spark-3.2.3-bin-hadoop3.2/jars/avro-mapred-1.10.2.jar
spark-3.2.3-bin-hadoop3.2/jars/blas-2.2.1.jar
spark-3.2.3-bin-hadoop3.2/jars/bonecp-0.8.0.RELEASE.jar
spark-3.2.3-bin-hadoop3.2/jars/breeze-macros_2.12-1.2.jar
spark-3.2.3-bin-hadoop3.2/jars/breeze_2.12-1.2.jar
spark-3.2.3-bin-hadoop3.2/jars/cats-kernel_2.12-2.1.1.jar
spark-3.2.3-bin-hadoop3.2/jars/chill-java-0.10.0.jar
spark-3.2.3-bin-hadoop3.2/jars/chill_2.12-0.10.0.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-cli-1.2.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-codec-1.15.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-collections-3.2.2.jar
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spark-3.2.3-bin-hadoop3.2/jars/commons-compiler-3.0.16.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-compress-1.21.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-crypto-1.1.0.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-dbcp-1.4.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-io-2.8.0.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-lang-2.6.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-lang3-3.12.0.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-logging-1.1.3.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-math3-3.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-net-3.1.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-pool-1.5.4.jar
spark-3.2.3-bin-hadoop3.2/jars/commons-text-1.10.0.jar
spark-3.2.3-bin-hadoop3.2/jars/compress-lzf-1.0.3.jar
spark-3.2.3-bin-hadoop3.2/jars/core-1.1.2.jar
spark-3.2.3-bin-hadoop3.2/jars/curator-client-2.13.0.jar
spark-3.2.3-bin-hadoop3.2/jars/curator-framework-2.13.0.jar
spark-3.2.3-bin-hadoop3.2/jars/curator-recipes-2.13.0.jar
spark-3.2.3-bin-hadoop3.2/jars/datanucleus-api-jdo-4.2.4.jar
spark-3.2.3-bin-hadoop3.2/jars/datanucleus-core-4.1.17.jar
spark-3.2.3-bin-hadoop3.2/jars/datanucleus-rdbms-4.1.19.jar
spark-3.2.3-bin-hadoop3.2/jars/derby-10.14.2.0.jar
spark-3.2.3-bin-hadoop3.2/jars/dropwizard-metrics-hadoop-
metrics2-reporter-0.1.2.jar
spark-3.2.3-bin-hadoop3.2/jars/flatbuffers-java-1.9.0.jar
spark-3.2.3-bin-hadoop3.2/jars/generex-1.0.2.jar
spark-3.2.3-bin-hadoop3.2/jars/gson-2.2.4.jar
spark-3.2.3-bin-hadoop3.2/jars/guava-14.0.1.jar
spark-3.2.3-bin-hadoop3.2/jars/hadoop-client-api-3.3.1.jar
spark-3.2.3-bin-hadoop3.2/jars/hadoop-client-runtime-3.3.1.jar
spark-3.2.3-bin-hadoop3.2/jars/hadoop-shaded-guava-1.1.1.jar
spark-3.2.3-bin-hadoop3.2/jars/hadoop-yarn-server-web-proxy-3.3.1.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-beeline-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-cli-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-common-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-exec-2.3.9-core.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-jdbc-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-llap-common-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-metastore-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-serde-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-service-rpc-3.1.2.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-shims-0.23-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-shims-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-shims-common-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-shims-scheduler-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-storage-api-2.7.2.jar
spark-3.2.3-bin-hadoop3.2/jars/hive-vector-code-gen-2.3.9.jar
spark-3.2.3-bin-hadoop3.2/jars/hk2-api-2.6.1.jar
spark-3.2.3-bin-hadoop3.2/jars/hk2-locator-2.6.1.jar
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spark-3.2.3-bin-hadoop3.2/jars/hk2-utils-2.6.1.jar
spark-3.2.3-bin-hadoop3.2/jars/htrace-core4-4.1.0-incubating.jar
spark-3.2.3-bin-hadoop3.2/jars/httpclient-4.5.13.jar
spark-3.2.3-bin-hadoop3.2/jars/httpcore-4.4.14.jar
spark-3.2.3-bin-hadoop3.2/jars/istack-commons-runtime-3.0.8.jar
spark-3.2.3-bin-hadoop3.2/jars/ivy-2.5.0.jar
spark-3.2.3-bin-hadoop3.2/jars/jackson-annotations-2.12.3.jar
spark-3.2.3-bin-hadoop3.2/jars/jackson-core-2.12.3.jar
spark-3.2.3-bin-hadoop3.2/jars/jackson-core-asl-1.9.13.jar
spark-3.2.3-bin-hadoop3.2/jars/jackson-databind-2.12.3.jar
spark-3.2.3-bin-hadoop3.2/jars/jackson-dataformat-yaml-2.12.3.jar
spark-3.2.3-bin-hadoop3.2/jars/jackson-datatype-jsr310-2.11.2.jar
spark-3.2.3-bin-hadoop3.2/jars/jackson-mapper-asl-1.9.13.jar
spark-3.2.3-bin-hadoop3.2/jars/jackson-module-scala_2.12-2.12.3.jar
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spark-3.2.3-bin-hadoop3.2/jars/jakarta.inject-2.6.1.jar
spark-3.2.3-bin-hadoop3.2/jars/jakarta.servlet-api-4.0.3.jar
spark-3.2.3-bin-hadoop3.2/jars/jakarta.validation-api-2.0.2.jar
spark-3.2.3-bin-hadoop3.2/jars/jakarta.ws.rs-api-2.1.6.jar
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spark-3.2.3-bin-hadoop3.2/jars/janino-3.0.16.jar
spark-3.2.3-bin-hadoop3.2/jars/javassist-3.25.0-GA.jar
spark-3.2.3-bin-hadoop3.2/jars/javax.jdo-3.2.0-m3.jar
spark-3.2.3-bin-hadoop3.2/jars/javolution-5.5.1.jar
spark-3.2.3-bin-hadoop3.2/jars/jaxb-api-2.2.11.jar
spark-3.2.3-bin-hadoop3.2/jars/jaxb-runtime-2.3.2.jar
spark-3.2.3-bin-hadoop3.2/jars/jcl-over-slf4j-1.7.30.jar
spark-3.2.3-bin-hadoop3.2/jars/jdo-api-3.0.1.jar
spark-3.2.3-bin-hadoop3.2/jars/jersey-client-2.34.jar
spark-3.2.3-bin-hadoop3.2/jars/jersey-common-2.34.jar
spark-3.2.3-bin-hadoop3.2/jars/jersey-container-servlet-2.34.jar
spark-3.2.3-bin-hadoop3.2/jars/jersey-container-servlet-core-2.34.jar
spark-3.2.3-bin-hadoop3.2/jars/jersey-hk2-2.34.jar
spark-3.2.3-bin-hadoop3.2/jars/jersey-server-2.34.jar
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spark-3.2.3-bin-hadoop3.2/jars/joda-time-2.10.10.jar
spark-3.2.3-bin-hadoop3.2/jars/jodd-core-3.5.2.jar
spark-3.2.3-bin-hadoop3.2/jars/jpam-1.1.jar
spark-3.2.3-bin-hadoop3.2/jars/json-1.8.jar
spark-3.2.3-bin-hadoop3.2/jars/json4s-ast_2.12-3.7.0-M11.jar
spark-3.2.3-bin-hadoop3.2/jars/json4s-core_2.12-3.7.0-M11.jar
spark-3.2.3-bin-hadoop3.2/jars/json4s-jackson_2.12-3.7.0-M11.jar
spark-3.2.3-bin-hadoop3.2/jars/json4s-scalap_2.12-3.7.0-M11.jar
spark-3.2.3-bin-hadoop3.2/jars/jsr305-3.0.0.jar
spark-3.2.3-bin-hadoop3.2/jars/jta-1.1.jar
spark-3.2.3-bin-hadoop3.2/jars/jul-to-slf4j-1.7.30.jar
spark-3.2.3-bin-hadoop3.2/jars/kryo-shaded-4.0.2.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-client-5.4.1.jar
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spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-admissionregistration-5.4.1.jar
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spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-apps-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-autoscaling-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-batch-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-certificates-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-common-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-coordination-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-core-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-discovery-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-events-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-extensions-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-flowcontrol-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-metrics-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-networking-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-node-5.4.1.jar
spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-policy-5.4.1.jar
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spark-3.2.3-bin-hadoop3.2/jars/kubernetes-model-scheduling-5.4.1.jar
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spark-3.2.3-bin-hadoop3.2/python/pyspark/broadcast.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/cloudpickle/
spark-3.2.3-bin-hadoop3.2/python/pyspark/cloudpickle/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/cloudpickle/cloudpickle.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/cloudpickle/cloudpickle_fast.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/cloudpickle/compat.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/conf.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/conf.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/context.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/context.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/daemon.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/files.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/files.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/find_spark_home.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/install.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/java_gateway.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/join.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/_typing.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/base.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/base.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/classification.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/classification.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/clustering.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/clustering.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/common.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/common.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/evaluation.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/evaluation.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/feature.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/feature.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/fpm.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/fpm.pyi
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spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/functions.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/functions.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/image.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/image.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/linalg/
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/linalg/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/linalg/__init__.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/param/
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/param/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/param/__init__.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/param/_shared_params_code_gen.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/param/_shared_params_code_gen.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/param/shared.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/param/shared.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/pipeline.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/pipeline.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/recommendation.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/recommendation.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/regression.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/regression.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/stat.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/stat.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_algorithms.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_base.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_evaluation.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_feature.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_image.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_linalg.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_param.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_persistence.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_pipeline.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_stat.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_training_summary.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_tuning.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_util.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tests/test_wrapper.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tree.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tree.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tuning.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/tuning.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/util.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/util.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/wrapper.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/ml/wrapper.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/__init__.py
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spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/_typing.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/classification.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/classification.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/clustering.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/clustering.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/common.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/common.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/evaluation.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/evaluation.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/feature.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/feature.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/fpm.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/fpm.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/linalg/
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/linalg/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/linalg/__init__.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/linalg/distributed.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/linalg/distributed.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/random.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/random.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/recommendation.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/recommendation.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/regression.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/regression.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/KernelDensity.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/KernelDensity.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/__init__.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/_statistics.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/_statistics.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/distribution.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/distribution.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/test.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/stat/test.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/tests/
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/tests/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/tests/test_algorithms.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/tests/test_feature.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/tests/test_linalg.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/tests/test_stat.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/mllib/tests/test_streaming_algorithms.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/tests/test_util.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/tree.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/tree.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/util.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/mllib/util.pyi
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spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/_typing.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/accessors.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/base.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/categorical.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/config.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/base.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/binary_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/boolean_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/categorical_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/complex_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/date_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/datetime_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/null_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/num_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/string_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/data_type_ops/udt_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/datetimes.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/exceptions.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/extensions.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/frame.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/generic.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/groupby.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/indexes/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/indexes/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/indexes/base.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/indexes/category.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/indexes/datetimes.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/indexes/multi.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/indexes/numeric.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/indexing.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/internal.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/missing/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/missing/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/missing/common.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/missing/frame.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/missing/groupby.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/missing/indexes.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/missing/series.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/missing/window.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/ml.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/mlflow.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/namespace.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/numpy_compat.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/plot/
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spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/plot/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/plot/core.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/plot/matplotlib.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/plot/plotly.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/series.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/spark/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/spark/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/spark/accessors.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/spark/functions.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/spark/utils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/sql_processor.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/strings.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/data_type_ops/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/data_type_ops/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_base.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_binary_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_boolean_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_categorical_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_complex_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_date_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_datetime_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_null_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_num_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_string_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/test_udt_ops.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/data_type_ops/testing_utils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/indexes/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/indexes/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/indexes/test_base.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/indexes/test_category.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/indexes/test_datetime.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/plot/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/plot/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/plot/test_frame_plot.py
spark-3.2.3-bin-
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hadoop3.2/python/pyspark/pandas/tests/plot/test_frame_plot_matplotlib.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/plot/test_frame_plot_plotly.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/plot/test_series_plot.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/plot/test_series_plot_matplotlib.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/plot/test_series_plot_plotly.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_categorical.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_config.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_csv.py
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spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/test_dataframe_conversion.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_dataframe_spark_io.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_default_index.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_expanding.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_extension.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_frame_spark.py
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spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_indexing.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_indexops_spark.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_internal.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_namespace.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_numpy_compat.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_ops_on_diff_frames.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/test_ops_on_diff_frames_groupby.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_ops_on_diff_frames_gr
oupby_expanding.py
spark-3.2.3-bin-
hadoop3.2/python/pyspark/pandas/tests/test_ops_on_diff_frames_groupby_rolling.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_repr.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_reshape.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_rolling.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_series.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_series_conversion.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_series_datetime.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_series_string.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_spark_functions.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_sql.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_stats.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_typedef.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_utils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/tests/test_window.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/typedef/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/typedef/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/typedef/string_typehints.py
```

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spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/typedef/typehints.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/usage_logging/
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/usage_logging/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/usage_logging/usage_logger.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/utils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/pandas/window.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/profiler.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/profiler.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/py.typed
spark-3.2.3-bin-hadoop3.2/python/pyspark/python/
spark-3.2.3-bin-hadoop3.2/python/pyspark/python/pyspark/
spark-3.2.3-bin-hadoop3.2/python/pyspark/python/pyspark/shell.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/rdd.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/rdd.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/rddsampler.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/information.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/information.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/profile.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/profile.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/requests.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/requests.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/tests/
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/tests/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/resource/tests/test_resources.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/resultiterable.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/resultiterable.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/serializers.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/shell.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/shuffle.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/__init__.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/_typing.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/avro/
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/avro/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/avro/functions.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/avro/functions.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/catalog.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/catalog.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/column.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/column.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/conf.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/conf.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/context.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/context.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/dataframe.py
```

```
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/dataframe.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/functions.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/functions.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/group.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/group.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/_typing/
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/_typing/__init__.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/_typing/protocols/
spark-3.2.3-bin-
hadoop3.2/python/pyspark/sql/pandas/_typing/protocols/__init__.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/_typing/protocols/frame.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/_typing/protocols/series.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/conversion.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/conversion.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/functions.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/functions.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/group_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/group_ops.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/map_ops.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/map_ops.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/serializers.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/typehints.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/types.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/pandas/utils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/readwriter.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/readwriter.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/session.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/session.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/streaming.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/streaming.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_arrow.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_catalog.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_column.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_conf.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_context.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_dataframe.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_datasources.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_functions.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_group.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_pandas_cogrouped_map.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_pandas_grouped_map.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_pandas_map.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_pandas_udf.py
spark-3.2.3-bin-
```

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hadoop3.2/python/pyspark/sql/tests/test_pandas_udf_grouped_agg.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_pandas_udf_scalar.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_pandas_udf_typehints.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_pandas_udf_window.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_readwriter.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_serde.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_session.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_streaming.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_types.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_udf.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/tests/test_utils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/types.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/types.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/udf.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/udf.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/utils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/window.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/sql/window.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/statcounter.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/statcounter.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/status.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/status.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/storagelevel.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/storagelevel.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/context.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/context.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/dstream.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/dstream.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/kinesis.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/kinesis.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/listener.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/listener.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/tests/
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/tests/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/tests/test_context.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/tests/test_dstream.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/tests/test_kinesis.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/tests/test_listener.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/streaming/util.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/taskcontext.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/taskcontext.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/testing/
spark-3.2.3-bin-hadoop3.2/python/pyspark/testing/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/testing/mllibutils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/testing/mlutils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/testing/pandasutils.py
```

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spark-3.2.3-bin-hadoop3.2/python/pyspark/testing/sqlutils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/testing/streamingutils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/testing/utils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/__init__.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_appsubmit.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_broadcast.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_conf.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_context.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_daemon.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_install_spark.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_join.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_pin_thread.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_profiler.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_rdd.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_rddbarrier.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_readwrite.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_serializers.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_shuffle.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_taskcontext.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_util.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/tests/test_worker.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/traceback_utils.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/util.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/util.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/version.py
spark-3.2.3-bin-hadoop3.2/python/pyspark/version.pyi
spark-3.2.3-bin-hadoop3.2/python/pyspark/worker.py
spark-3.2.3-bin-hadoop3.2/python/pyspark.egg-info/
spark-3.2.3-bin-hadoop3.2/python/pyspark.egg-info/PKG-INFO
spark-3.2.3-bin-hadoop3.2/python/pyspark.egg-info/SOURCES.txt
spark-3.2.3-bin-hadoop3.2/python/pyspark.egg-info/dependency_links.txt
spark-3.2.3-bin-hadoop3.2/python/pyspark.egg-info/requires.txt
spark-3.2.3-bin-hadoop3.2/python/pyspark.egg-info/top_level.txt
spark-3.2.3-bin-hadoop3.2/python/run-tests
spark-3.2.3-bin-hadoop3.2/python/run-tests-with-coverage
spark-3.2.3-bin-hadoop3.2/python/run-tests.py
spark-3.2.3-bin-hadoop3.2/python/setup.cfg
spark-3.2.3-bin-hadoop3.2/python/setup.py
spark-3.2.3-bin-hadoop3.2/python/test_coverage/
spark-3.2.3-bin-hadoop3.2/python/test_coverage/conf/
spark-3.2.3-bin-hadoop3.2/python/test_coverage/conf/spark-defaults.conf
spark-3.2.3-bin-hadoop3.2/python/test_coverage/coverage_daemon.py
spark-3.2.3-bin-hadoop3.2/python/test_coverage/sitecustomize.py
spark-3.2.3-bin-hadoop3.2/python/test_support/
spark-3.2.3-bin-hadoop3.2/python/test_support/SimpleHTTPServer.py
spark-3.2.3-bin-hadoop3.2/python/test_support/hello/
spark-3.2.3-bin-hadoop3.2/python/test_support/hello/hello.txt
```

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spark-3.2.3-bin-hadoop3.2/python/test_support/hello/sub_hello/
spark-3.2.3-bin-hadoop3.2/python/test_support/hello/sub_hello/sub_hello.txt
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/ages.csv
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/ages_newlines.csv
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/_SUCCESS
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/b=0/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/b=0/c=0/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/b=0/c=0/.part-
r-00000-829af031-b970-49d6-ad39-30460a0be2c8.orc.crc
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/b=0/c=0/part-r
-00000-829af031-b970-49d6-ad39-30460a0be2c8.orc
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/b=1/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/b=1/c=1/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/b=1/c=1/.part-
r-00000-829af031-b970-49d6-ad39-30460a0be2c8.orc.crc
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/orc_partitioned/b=1/c=1/part-r
-00000-829af031-b970-49d6-ad39-30460a0be2c8.orc
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/_SUCCESS
spark-3.2.3-bin-
hadoop3.2/python/test_support/sql/parquet_partitioned/_common_metadata
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/_metadata
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2014/
spark-3.2.3-bin-
hadoop3.2/python/test_support/sql/parquet_partitioned/year=2014/month=9/
spark-3.2.3-bin-
hadoop3.2/python/test_support/sql/parquet_partitioned/year=2014/month=9/day=1/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2014/
month=9/day=1/.part-r-00008.gz.parquet.crc
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2014/
month=9/day=1/part-r-00008.gz.parquet
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/
spark-3.2.3-bin-
hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/month=10/
spark-3.2.3-bin-
hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/month=10/day=25/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/
month=10/day=25/.part-r-00002.gz.parquet.crc
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/
month=10/day=25/.part-r-00004.gz.parquet.crc
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/
month=10/day=25/part-r-00002.gz.parquet
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/
month=10/day=25/part-r-00004.gz.parquet
spark-3.2.3-bin-
hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/month=10/day=26/
```

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spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/
month=10/day=26/.part-r-00005.gz.parquet.crc
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/
month=10/day=26/part-r-00005.gz.parquet
spark-3.2.3-bin-
hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/month=9/
spark-3.2.3-bin-
hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/month=9/day=1/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/
month=9/day=1/.part-r-00007.gz.parquet.crc
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/parquet_partitioned/year=2015/
month=9/day=1/part-r-00007.gz.parquet
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/people.json
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/people1.json
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/people_array.json
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/people_array_utf16le.json
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/streaming/
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/streaming/text-test.txt
spark-3.2.3-bin-hadoop3.2/python/test_support/sql/text-test.txt
spark-3.2.3-bin-hadoop3.2/python/test_support/userlib-0.1.zip
spark-3.2.3-bin-hadoop3.2/python/test_support/userlibrary.py
spark-3.2.3-bin-hadoop3.2/sbin/
spark-3.2.3-bin-hadoop3.2/sbin/decommission-slave.sh
spark-3.2.3-bin-hadoop3.2/sbin/decommission-worker.sh
spark-3.2.3-bin-hadoop3.2/sbin/slaves.sh
spark-3.2.3-bin-hadoop3.2/sbin/spark-config.sh
spark-3.2.3-bin-hadoop3.2/sbin/spark-daemon.sh
spark-3.2.3-bin-hadoop3.2/sbin/spark-daemons.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-all.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-history-server.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-master.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-mesos-dispatcher.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-mesos-shuffle-service.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-slave.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-slaves.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-thriftserver.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-worker.sh
spark-3.2.3-bin-hadoop3.2/sbin/start-workers.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-all.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-history-server.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-master.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-mesos-dispatcher.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-mesos-shuffle-service.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-slave.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-slaves.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-thriftserver.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-worker.sh
spark-3.2.3-bin-hadoop3.2/sbin/stop-workers.sh
```

```
spark-3.2.3-bin-hadoop3.2/sbin/workers.sh
spark-3.2.3-bin-hadoop3.2/yarn/
spark-3.2.3-bin-hadoop3.2/yarn/spark-3.2.3-yarn-shuffle.jar
```

Set Java Home

```
[3]: import os
     os.environ["JAVA_HOME"] = "/usr/lib/jvm/java-8-openjdk-amd64"
     os.environ["SPARK_HOME"] = "/content/spark-3.2.3-bin-hadoop3.2"
```

Perform Testing

```
[4]: import findspark
     findspark.init()
     from pyspark.sql import SparkSession
     spark = SparkSession.builder.master("local[*]").getOrCreate()
```

Use google drive for data

```
[7]: df = spark.read.csv("/content/drive/MyDrive/Big data framework and tech/
     ↪supermarket_sale.csv", header=True, inferSchema=True)
```

```
[8]: df.printSchema()
```

```
root
 |-- Invoice ID: string (nullable = true)
 |-- Branch: string (nullable = true)
 |-- City: string (nullable = true)
 |-- Customer type: string (nullable = true)
 |-- Gender: string (nullable = true)
 |-- Product line: string (nullable = true)
 |-- Unit price: double (nullable = true)
 |-- Quantity: integer (nullable = true)
 |-- Tax 5%: double (nullable = true)
 |-- Total: double (nullable = true)
 |-- Date: string (nullable = true)
 |-- Time: string (nullable = true)
 |-- Payment: string (nullable = true)
 |-- cogs: double (nullable = true)
 |-- gross margin percentage: double (nullable = true)
 |-- gross income: double (nullable = true)
 |-- Rating: double (nullable = true)
```

```
[9]: df.show(5)
```

```
+----------+------+--------+------------+------+------------------+--------
--+--------+-------+-------+--------+-----+----------+------+--------------
-------+-----------+------+
```

```
| Invoice ID|Branch|    City|Customer type|Gender|    Product line|Unit
price|Quantity| Tax 5%|   Total|   Date| Time|   Payment|  cogs|gross margin
percentage|gross income|Rating|
+----------+------+--------+------------+------+------------------+-------
--+-------+------+-------+--------+-----+----------+------+---------------
-------+-----------+------+
|750-67-8428|    A|  Yangon|      Member|Female|  Health and beauty|
74.69|       7|26.1415|548.9715| 1/5/2019|13:08|    Ewallet|522.83|
4.761904762|    26.1415|   9.1|
|226-31-3081|    C|Naypyitaw|      Normal|Female|Electronic access…|
15.28|       5|   3.82|   80.22| 3/8/2019|10:29|       Cash|  76.4|
4.761904762|      3.82|   9.6|
|631-41-3108|    A|  Yangon|      Normal|  Male|  Home and lifestyle|
46.33|       7|16.2155|340.5255| 3/3/2019|13:23|Credit card|324.31|
4.761904762|    16.2155|   7.4|
|123-19-1176|    A|  Yangon|      Member|  Male|  Health and beauty|
58.22|       8| 23.288| 489.048|1/27/2019|20:33|    Ewallet|465.76|
4.761904762|    23.288|   8.4|
|373-73-7910|    A|  Yangon|      Normal|  Male|  Sports and travel|
86.31|       7|30.2085|634.3785| 2/8/2019|10:37|    Ewallet|604.17|
4.761904762|    30.2085|   5.3|
+----------+------+--------+------------+------+------------------+-------
--+-------+------+-------+--------+-----+----------+------+---------------
-------+-----------+------+
only showing top 5 rows
```

[10]: `df.count()`

[10]: 1000

[11]: `df.describe()`

[11]: DataFrame[summary: string, Invoice ID: string, Branch: string, City: string,
Customer type: string, Gender: string, Product line: string, Unit price: string,
Quantity: string, Tax 5%: string, Total: string, Date: string, Time: string,
Payment: string, cogs: string, gross margin percentage: string, gross income:
string, Rating: string]

[12]: `df.describe().show()`

```
+-------+----------+------+--------+------------+------+------------------+-
----------------+----------------+----------------+----------------+-----
---+-----+-------+----------------+--------------------+----------------+
-----------------+
|summary| Invoice ID|Branch|    City|Customer type|Gender|    Product line|
Unit price|        Quantity|        Tax 5%|       Total|   Date|
Time|Payment|           cogs|gross margin percentage|   gross income|
```

```
Rating|
+-------+----------+------+-------+------------+------+------------------+-
----------------+----------------+----------------+-----
---+-----+------+----------------+--------------------+----------------+
----------------+
|  count|      1000|  1000|   1000|        1000|  1000|              1000|
1000|            1000|            1000|            1000|   1000|  1000|
1000|            1000|            1000|            1000|
1000|
|   mean|      null|  null|   null|        null|  null|              null|
55.67212999999998|            5.51|15.379369000000002|322.96674900000005|
null|  null|    null|307.58738000000034|
4.761904762000062|15.379369000000002|  6.972700000000003|
| stddev|      null|  null|   null|        null|  null|
null|26.494628347919786|2.9234305954556956|  11.70882548099866|
245.8853351009718|    null|  null|   null|234.17650961997333|
0.0|  11.70882548099866|1.7185802943791213|
|    min|101-17-6199|      A|Mandalay|       Member|Female|Electronic access…|
10.08|            1|          0.5085|          10.6785|1/1/2019|10:00|
Cash|            10.17|          4.761904762|          0.5085|
4.0|
|    max|898-04-2717|      C|  Yangon|       Normal|  Male|   Sports and travel|
99.96|           10|           49.65|
1042.65|3/9/2019|20:59|Ewallet|            993.0|           4.761904762|
49.65|            10.0|
+-------+----------+------+-------+------------+------+------------------+-
----------------+----------------+----------------+-----
---+-----+------+----------------+--------------------+----------------+
----------------+
```

[13]:
```python
from pyspark.sql.functions import max, min
```

[15]:
```python
spark = SparkSession.builder.appName("MaxMinExample").getOrCreate()

max_value = df.select(max("Quantity")).collect()[0][0]

min_value = df.select(min("Quantity")).collect()[0][0]

range = max_value - min_value;
print("Range is: ", range)
```

Range is: 9