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## **Spark Tutorial**

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installation-on-windows/)

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spark/spark-installation-on-

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scala-intellij/)

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spark/sparksession-explained-

with-examples/)

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**Spark RDD Tutorial** 

Spark RDD - Parallelize (https://sparkbyexamples.com/ apache-spark-rdd/how-tocreate-an-rdd-usingparallelize/)

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(https://sparkbyexamples.com/author/admin/) -

Apache Spark

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FAQ's In Spask/wipth Rollema Replaced (in Isparkused to rename one column or multiple

DataFrame column names. Depends on

columns might get simple to complex, especially when a column is nested with

More strubtips://sparkbywamples.com/)

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<u>Spark RDD – Read text file</u> (https://sparkbyexamples.com/ apache-spark-rdd/spark-readmultiple-text-files-into-a-singlerdd/)

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<u>Spark RDD – Create Empty</u> RDD

(https://sparkbyexamples.com/ apache-spark-rdd/spark-howto-create-an-empty-rdd/)

<u>Spark RDD – Transformations</u> (<u>https://sparkbyexamples.com/apache-spark-rdd/spark-rdd-transformations/</u>)

<u>Spark RDD – Actions</u> (<u>https://sparkbyexamples.com/apache-spark-rdd/spark-rdd-actions/)</u>

<u>Spark RDD – Pair Functions</u> (https://sparkbyexamples.com/ apache-spark-rdd/spark-pairrdd-functions/)

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<u>Spark RDD – Shuffle Partitions</u> (<u>https://sparkbyexamples.com/spark/spark-shuffle-partitions/</u>)

<u>Spark RDD – Cache vs Persist</u> (https://sparkbyexamples.com/ <u>spark/spark-difference-</u> <u>between-cache-and-persist/)</u>

<u>Spark RDD – Persistance</u>
<u>Storage Levels</u>
(<a href="https://sparkbyexamples.com/spark/spark-persistence-storage-levels/">https://sparkbyexamples.com/spark/spark-persistence-storage-levels/</a>)

In this article, I will explain how to rename a DataFrame column with multiple use cases like rename selected multiple columns, nested struct columns, all columns with Scala examples.

- Using withColumnRenamed To rename Spark DataFrame column name
- Using withColumnRenamed To rename multiple columns
- Using StructType To rename nested column on Spark DataFrame
- 4. <u>Using Select To rename nested</u> columns
- Using withColumn To rename nested columns
- 6. <u>Using col() function To Dynamically</u> rename all or multiple columns
- Using toDF() To rename all or multiple columns

First, let's create our data for our examples, we are using Row class as we convert this data to Spark DataFrame (https://sparkbyexamples.com/spark/different-ways-to-create-a-spark-dataframe/).

```
val data = Seq(Row(Row("James ",
    Row(Row("Michael ","Rose",""),
    Row(Row("Robert ","","Williams
    Row(Row("Maria ","Anne","Jones
    Row(Row("Jen","Mary","Brown"),
)
```

## Our base schema

(https://sparkbyexamples.com/spark/sparkschema-explained-with-examples/)with nested structure.

<u>Spark RDD – Broadcast</u>
<u>Variables</u>
(https://sparkbyexamples.com/
<u>spark/spark-broadcast-</u>
variables/)

<u>Spark RDD – Accumulator</u>
<u>Variables</u>
(<a href="https://sparkbyexamples.com/spark/spark-accumulators/">https://sparkbyexamples.com/spark/spark-accumulators/</a>)

Spark RDD – Convert RDD to
DataFrame
(https://sparkbyexamples.com/
apache-spark-rdd/convertspark-rdd-to-dataframedataset/)

## **Spark SQL Tutorial**

Spark SQL - Create

DataFrame
(https://sparkbyexamples.com/
spark/different-ways-to-createa-spark-dataframe/)

<u>Spark SQL – Select Columns</u> (https://sparkbyexamples.com/ <u>spark/spark-select-columns-</u> from-dataframe/)

<u>Spark SQL – Add and Update</u>
<u>Column (withColumn)</u>
(https://sparkbyexamples.com/
spark/spark-dataframewithcolumn/)

<u>Spark SQL – Rename Nested</u>
<u>Column</u>
(<a href="https://sparkbyexamples.com/spark/rename-a-column-on-spark-dataframes/">https://sparkbyexamples.com/spark/rename-a-column-on-spark-dataframes/</a>)

<u>Spark SQL – Drop column</u> (<u>https://sparkbyexamples.com/spark/spark-drop-column-from-dataframe-dataset/)</u>

<u>Spark SQL – Where | Filter</u> (https://sparkbyexamples.com/ spark/spark-dataframe-wherefilter/)

<u>Spark SQL – When Otherwise</u> (https://sparkbyexamples.com/ <u>spark/spark-case-when-otherwise-example/)</u>

```
val schema = new StructType()
    .add("name",new StructType()
    .add("firstname",StringType)
    .add("middlename",StringType
    .add("lastname",StringType))
    .add("dob",StringType)
    .add("gender",StringType)
    .add("salary",IntegerType)
```

Let's create the DataFrame by using parallelize (https://sparkbyexamples.com/apache-spark-rdd/how-to-create-an-rdd-using-parallelize/) and provide the above schema.

Ad removed. Details

```
val df = spark.createDataFrame(s
df.printSchema()
```

Below is our schema structure. I am not printing data here as it is not necessary for our examples. This schema has a nested structure.

<u>Spark SQL – Collect data to</u>
<u>Driver</u>
(<a href="https://sparkbyexamples.com/spark/spark-dataframe-collect/">https://sparkbyexamples.com/spark/spark-dataframe-collect/</a>)

<u>Spark SQL – Distinct</u> (<u>https://sparkbyexamples.com/spark/spark-remove-duplicate-rows/)</u>

<u>Spark SQL- Pivot Table</u>
<u>DataFrame</u>
(https://sparkbyexamples.com/
spark/how-to-pivot-table-andunpivot-a-spark-dataframe/)

<u>Spark SQL – Data Types</u> (<u>https://sparkbyexamples.com/spark/spark-sql-dataframe-data-types/</u>)

<u>Spark SQL - StructType |</u>
<u>StructField</u>
(https://sparkbyexamples.com/
<u>spark/spark-sql-structtype-on-</u>
dataframe/)

<u>Spark SQL – Schema</u> (https://sparkbyexamples.com/ spark/spark-schema-explainedwith-examples/)

<u>Spark SQL – Groupby</u> (https://sparkbyexamples.com/ spark/using-groupby-ondataframe/)

<u>Spark SQL – Sort DataFrame</u> (https://sparkbyexamples.com/ <u>spark/spark-how-to-sort-dataframe-column-explained/)</u>

<u>Spark SQL – Join Types</u> (<u>https://sparkbyexamples.com/spark/spark-sql-dataframe-join/)</u>

<u>Spark SQL – Union and</u>
<u>UnionAll</u>
(https://sparkbyexamples.com/
spark/spark-dataframe-unionand-union-all/)

<u>Spark SQL - map() vs</u> <u>mapPartitions()</u> (https://sparkbyexamples.com/ <u>spark/spark-map-vs-</u> <u>mappartitions-transformation/)</u>

## 1. Using Spark

## withColumnRenamed - To

## rename DataFrame column

### name

Spark has a withColumnRenamed() function on DataFrame to change a column name. This is the most straight forward approach; this function takes two parameters; the first is your existing column name and the second is the new column name you wish for.

### Syntax:



existingName — The existing column name you want to change

newName - New name of the column



Returns a new DataFrame (Dataset[Row]) with a column renamed. This is a no-op if the schema doesn't contain existingName.

### Example:

Spark SQL - foreach() vs foreachPartition() (https://sparkbyexamples.com/ spark/spark-foreachpartitionvs-foreach-explained/)

<u>Spark SQL - map() vs</u> <u>flatMap()</u> (<u>https://sparkbyexamples.com/spark/spark-map-vs-flatmap-with-examples/)</u>

Spark SQL - Persist and
Cache
(https://sparkbyexamples.com/
spark/spark-dataframe-cache-

and-persist-explained/)

<u>Spark SQL – UDF (User Defined Functions)</u>
(https://sparkbyexamples.com/spark/spark-sql-udf/)

<u>Spark SQL – Array (ArrayType)</u>
<u>Column</u>
(<a href="https://sparkbyexamples.com/spark/spark-array-arraytype-dataframe-column/">https://sparkbyexamples.com/spark/spark-array-arraytype-dataframe-column/</a>)

<u>Spark SQL – Map (MapType)</u> <u>column</u> (<u>https://sparkbyexamples.com/spark/spark-dataframe-map-maptype-column/)</u>

<u>Spark SQL – Flatten Nested</u>
<u>Struct Column</u>
(<a href="https://sparkbyexamples.com/spark/spark-flatten-nested-struct-column/">https://sparkbyexamples.com/spark/spark-flatten-nested-struct-column/</a>)

<u>Spark SQL – Flatten Nested</u>
<u>Array Column</u>
(<a href="https://sparkbyexamples.com/spark/spark-flatten-nested-array-column-to-single-column/">https://sparkbyexamples.com/spark/spark-flatten-nested-array-column-to-single-column/</a>)

<u>Spark SQL – Explode Array & Map Columns</u>
(https://sparkbyexamples.com/spark/explode-spark-array-and-map-dataframe-column/)

<u>Spark SQL – Sampling</u> (https://sparkbyexamples.com/ spark/spark-sampling-withexamples/)

The above example changes the column name from "dob" to "DateOfBirth" on spark DataFrame. Note that withColumnRenamed function returns a new DataFrame and doesn't modify the current DataFrame.

# 2. UsingwithColumnRenamed – Torename multiple columns

To change multiple column names, we should chain withColumnRenamed functions as shown below.

This creates a new DataFrame "df2" after renaming dob and salary columns.

# Using Spark StructType – To rename a nested column in Dataframe

Changing a column name on nested data is not straight forward and we can do this by creating a new schema with new <a href="DataFrame columns using StructType">DataFrame columns using StructType</a>

<u>Spark SQL – Partitioning</u>
(https://sparkbyexamples.com/
<u>spark/spark-partitioning-understanding/)</u>

## **Spark SQL Functions**

<u>Spark SQL String Functions</u> (https://sparkbyexamples.com/ <u>spark/usage-of-spark-sql-</u> <u>string-functions/)</u>

<u>Spark SQL Date and</u>
<u>Timestamp Functions</u>
(https://sparkbyexamples.com/
<u>spark/spark-sql-date-and-time-functions/)</u>

<u>Spark SQL Array Functions</u>
(https://sparkbyexamples.com/
<u>spark/spark-sql-array-</u>
<u>functions/)</u>

<u>Spark SQL Map Functions</u> (<u>https://sparkbyexamples.com/spark/spark-sql-map-functions/</u>)

<u>Spark SQL Sort Functions</u> (<u>https://sparkbyexamples.com/</u> spark/spark-sql-sort-functions/)

Spark SQL Aggregate
Functions
(https://sparkbyexamples.com/
spark/spark-sql-aggregatefunctions/)

<u>Spark SQL Window Functions</u> (https://sparkbyexamples.com/ <u>spark/spark-sql-window-functions/)</u>

<u>Spark SQL JSON Functions</u> (<u>https://sparkbyexamples.com/spark/spark-most-used-json-functions-with-examples/</u>)

## **Spark Data Source API**

<u>Spark – Read & Write CSV file</u> (https://sparkbyexamples.com/ spark/spark-read-csv-file-intodataframe/)

<u>Spark – Read and Write JSON file</u>
(https://sparkbyexamples.com/

(https://sparkbyexamples.com/spark/spark-sql-structtype-on-dataframe/) and use it using cast function as shown below.

```
val schema2 = new StructType()
    .add("fname",StringType)
    .add("middlename",StringType
    .add("lname",StringType)

df.select(col("name").cast(schem col("dob"),
    col("gender"),
    col("salary"))
    .printSchema()
```

This statement renames firstname to fname and lastname to Iname within name structure.

# 4. Using Select – To rename nested elements.

Let's see another way to change nested columns by transposing the structure to flat.

```
df.select(col("name.firstname").
    col("name.middlename").as("mna
    col("name.lastname").as("lname
    col("dob"),col("gender"),col("
    .printSchema()

root
|-- fname: string (nullable = true)
|-- mname: string (nullable = true)
|-- dob: string (nullable = true)
|-- gender: string (nullable = true)
|-- gender: string (nullable = true)
|-- string (nullable = true)
|-- string (nullable = true)
|-- string (nullable = true)
```

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<u>spark/spark-read-and-write-json-file/)</u>

<u>Spark – Read & Write Parquet</u> <u>file</u>

(https://sparkbyexamples.com/spark/spark-read-write-dataframe-parquet-example/)

<u>Spark – Read & Write XML file</u> (<u>https://sparkbyexamples.com/spark/spark-read-write-xml/</u>)

<u>Spark – Read & Write Avro</u> <u>files</u> (<u>https://sparkbyexamples.com/spark/read-write-avro-file-spark-dataframe/</u>)

<u>Spark – Read & Write Avro</u> <u>files (Spark version 2.3.x or earlier)</u> (<u>https://sparkbyexamples.com/spark/using-avro-data-files-from-spark-sql-2-3-x/)</u>

<u>Spark – Read & Write HBase</u> <u>using "hbase-spark" Connector</u> (<u>https://sparkbyexamples.com/spark/spark-read-write-using-hbase-spark-connector/)</u>

Spark – Read & Write from HBase using Hortonworks (https://sparkbyexamples.com/spark/create-spark-dataframe-from-hbase-using-hortonworks/)

<u>Spark – Read & Write ORC file</u> (https://sparkbyexamples.com/ <u>spark/spark-read-orc-file-into-dataframe/)</u>

<u>Spark – Read Binary File</u> (https://sparkbyexamples.com/ <u>spark/spark-read-binary-file-</u> into-dataframe/)

# Spark Streaming & Kafka

<u>Spark Streaming –</u>
<u>OutputModes</u>
(https://sparkbyexamples.com/
<u>spark/spark-streaming-</u>
outputmode/)

# 5. Using Spark DataFramewithColumn – To renamenested columns

When you have nested columns on Spark DatFrame and if you want to rename it, use withColumn on a data frame object to create a new column from an existing and we will need to drop the existing column. Below example creates a "fname" column from "name.firstname" and drops the "name" column

# 6. Using col() function – ToDynamically rename all ormultiple columns

Another way to change all column names on Dataframe is to use col() function.

```
val old_columns = Seq("dob","gende
  val new_columns = Seq("DateOfE
  val columnsList = old_columns.
  val df5 = df4.select(columnsLidf5.printSchema()
```

# 7. Using toDF() – To change all columns in a Spark DataFrame

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Data Analytics <u>Spark Streaming – Reading</u>
<u>Files From Directory</u>
(<a href="https://sparkbyexamples.com/spark/spark-streaming-read-json-files-from-directory/">https://sparkbyexamples.com/spark/spark-streaming-read-json-files-from-directory/</a>)

<u>Spark Streaming – Reading</u>
<u>Data From TCP Socket</u>
(<a href="https://sparkbyexamples.com/spark/spark-streaming-from-tcp-socket/">https://sparkbyexamples.com/spark/spark-streaming-from-tcp-socket/</a>)

Spark Streaming — Processing Kafka Messages in JSON Format (https://sparkbyexamples.com/spark/spark-streaming-with-kafka/)

Spark Streaming – Processing Kafka messages in AVRO Format (https://sparkbyexamples.com/ spark/spark-streamingconsume-and-produce-kafka-

messages-in-avro-format/)

<u>Spark SQL Batch – Consume & Produce Kafka Message</u>
(https://sparkbyexamples.com/spark/spark-batch-processing-produce-consume-kafka-topic/)

When we have data in a flat structure (without nested), use toDF() with a new schema to change all column names.

```
val newColumns = Seq("newCol1","
val df = df.toDF(newColumns:_*)
```

The complete code can be downloaded from GitHub

(https://github.com/sparkbyexamples/spark-examples/blob/master/spark-sql-examples/src/main/scala/com/sparkbyexamples/spark/dataframe/RenameColDataFrame.scala)

### Conclusion:

This article explains withColumnRenamed() function and different ways to rename a single column, multiple, all, and nested columns on Spark DataFrame. Besides what explained here, we can also change column names using Spark SQL and the same concept can be used in PySpark.

Hope you like this article!!

Happy Learning.

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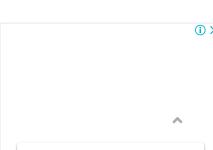
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