

Module 6 Cheat Sheet: Monitoring and Tuning

Package/Method	Description	Code Example
agg()	Used to get the aggregate values like count, sum, avg, min, and max for each group.	<pre>agg_df = df.groupBy("column_name").agg({"column_to_aggregate": "sum"})</pre>
cache()	Apache Spark transformation that is often used on a DataFrame, data set, or RDD when you want to perform more than one	<pre>df = spark.read.csv("customer.csv") df.cache()</pre>

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	<p>action. cache() caches the specified DataFrame, data set, or RDD in the memory of your cluster's workers. Since cache() is a transformation, the caching operation takes place only when a Spark action (for example, count(), show(), take(), or write()) is also used on the same DataFrame, Dataset, or RDD in a single action.</p>	

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cd	Used to move efficiently from the existing working directory to different directories on your system.	<p>Basic syntax of the cd command:</p> <pre>cd [options]! [directory]</pre> <p>Example 1: Change directory location to folder1.</p> <pre>cd /usr/local/folder1</pre> <p>Example 2: Get back to the previous working directory.</p> <pre>cd -</pre> <p>Example 3: Move up one level from the present working directory tree.</p> <pre>cd ..</pre>
def	Used to define a function. It is placed before a function name that is provided by the user to create a user-	<pre>def greet(name):</pre> <p>This function takes a name as a parameter and prints a greeting.</p> <pre> print(f"Hello, {name}!")</pre> <p>Calling the function:</p>

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	defined function.	<pre>greet("John")</pre>
docker exec	Runs a new command in a running container. Only runs while the container's primary process is running, and it is not restarted if the container is restarted.	<pre>docker exec -it container_name command_to_run docker exec -it my_container /bin/bash</pre>
docker rm	Used to remove one or more containers.	<p>To remove a single container by name or ID:</p> <pre>docker rm container_name_or_id</pre> <p>To remove multiple containers by specifying their names or IDs:</p> <pre>docker rm container1_name_or_id container2_name_or_id</pre> <p>To remove all stopped containers:</p>

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		<pre>docker rm \$(docker ps -aq)</pre>
docker run	It runs a command in a new container, getting the image and starting the container if needed.	<pre>docker run [OPTIONS] IMAGE [COMMAND] [ARG...]</pre>
for	The <i>for</i> loop operates on lists of items. It repeats a set of commands for every item in a list.	<pre>fruits = ["apple", "banana", "cherry"]</pre> <p>Iterating through the list using a <i>for</i> loop for fruit in fruits:</p> <pre>print(f"I like {fruit}s")</pre>
groupby()	Used to collect the identical data into groups on DataFrame and perform count, sum, avg, min, max functions	<pre>import pandas as pd</pre> <p>Sample DataFrame:</p> <pre>data = {'Category': ['A', 'B', 'A', 'B', 'A', 'B'], 'Value': [10, 20, 15, 25, 30, 35]} df = pd.DataFrame(data)</pre>

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	on the grouped data.	<p>Grouping by "Category" and performing aggregation operations:</p> <pre>grouped = df.groupby('Category').agg({'Value': ['count', 'sum', 'mean', 'min', 'max']}) print(grouped)</pre>
repartition()	Used to increase or decrease the RDD or DataFrame partitions by number of partitions or by a single column name or multiple column names.	<p>Create a sample DataFrame:</p> <pre>data = [("John", 25), ("Peter", 30), ("Julie", 35), ("David", 40), ("Eva", 45)] columns = ["Name", "Age"] df = spark.createDataFrame(data, columns)</pre> <p>Show the current number of partitions.</p> <pre>print("Number of partitions before repartitioning: ", df.rdd.getNumPartitions())</pre> <p>Repartition the DataFrame to 2 partitions.</p> <pre>df_repartitioned = df.repartition(2)</pre> <p>Show the number of partitions after repartitioning.</p> <pre>print("Number of partitions after repartitioning: ", df_repartitioned.rdd.getNumPartitions())</pre> <p>Stop the SparkSession.</p>

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		<pre>spark.stop()</pre>
return	Used to end the execution of the function call and returns the result (value of the expression following the return keyword) to the caller.	<pre>def add_numbers(a, b): result = a + b return result</pre> <p>Calling the function and capturing the returned value:</p> <pre>sum_result = add_numbers(5, 6)</pre> <p>Printing the result.</p> <pre>print("The sum is:", sum_result)</pre> <p>Output.</p> <pre>The sum is: 11</pre>
show()	Spark DataFrame show() is used to display the contents of the DataFrame in a	<pre>df.show()</pre>

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	table row and column format. By default, it shows only 20 rows, and the column values are truncated at 20 characters.	
spark.read.csv(path)	Using this, you can read a CSV file with fields delimited by pipe, comma, tab (and many more) into a Spark DataFrame.	<pre>from pyspark.sql import SparkSession</pre> <p>Create a SparkSession.</p> <pre>spark = SparkSession.builder.appName("CSVReadExample").getOrCreate()</pre> <p>Read a CSV file into a Spark DataFrame.</p> <pre>df = spark.read.csv("path_to_csv_file.csv", header=True, inferSchema=True)</pre> <p>Show the first few rows of the DataFrame.</p> <pre>df.show()</pre> <p>Stop the SparkSession.</p>

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		<pre>spark.stop()</pre>
wget	Stands for web get. The wget is a free noninteractive file downloader command. Noninteractive means that it can work in the background when the user is not logged in.	<p>Basic syntax of the wget command; commonly used options are [-V], [-h], [-b], [-e], [-o], [-a], [</p> <pre>wget [options]! [URL]!</pre> <p>Example 1: Specifies to download file.txt over HTTP website URL into the working directory.</p> <pre>wget http://example.com/file.txt</pre> <p>Example 2: Specifies to download the archive.zip over HTTP website URL in the background and returns ; command prompt in the interim.</p> <pre>wget -b http://www.example.org/files/archive.zip</pre>
withColumn()	Transformation function of DataFrame which is used to change the value, convert the datatype of an existing column, create a new column,	<p>Sample DataFrame:</p> <pre>data = [("John", 25), ("Peter", 30), ("David", 35)] columns = ["Name", "Age"] df = spark.createDataFrame(data, columns)</pre> <p>Using withColumn to create a new column and change values</p>

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	and many more.	<pre>updated_df = df \ .withColumn("DoubleAge", col("Age") * 2) # Create a new column "DoubleAge" by doubling the updated_df = updated_df \ .withColumn("AgeGroup", when(col("Age") <= 30, "Young") .when((col("Age") > 30) & (col("Age") <= 40), "Middle-aged") .otherwise("Old")) # Create a new column "AgeGroup" based on conditions updated_df.show() Stop the SparkSession. spark.stop()</pre>

Changelog

Date	Version	Changed by	Change Description
2023-09-20	2.0	Kunal Merchant	QC reviewed
2023-09-18	1.0	Sameeksha Saxena	Initial version created