1. Download and Install Anaconda

[Anaconda | The World's Most Popular Data Science Platform]

While installing, click on: just me(recommended)
Add Anaconda3 to my PATH environment variables

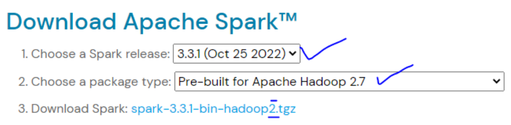
2. Download and Install latest Java software

https://www.oracle.com/java/technologies/downloads/#jdk19-windows

3. Download and Extract spark-3.3.1-bin-hadoop2
   cut past the extracted file n C-drive

For Hadoop to work in cmd : Type in Google Download Apache Spark

[Downloads | Apache Spark]



Download Apache Spark™

1. Choose a Spark release: 3.3.1 (Oct 25 2022)
2. Choose a package type: Pre-built for Apache Hadoop 2.7
3. Download Spark: spark-3.3.1-bin-hadoop2.tgz

click step 3it'll direct to below link

https://dlcdn.apache.org/spark/spark-3.3.1/spark-3.3.1-bin-hadoop2.tgz

Download winutils.exe from this link

[winutils/winutils.exe at master · steveloughran/winutils (github.com)] **select** *(Hadoop 2.7.1)*

Copy past it in spark-3.3.1-bin-hadoop2/bin

cut past the extracted file(spark-3.3.1-bin-hadoop2) in C-drive

NOTE: Just copy past "spark-3.3.1-bin-hadoop2(with_winutils)" it contains all

4. Press windows type '**Edit the system environment**'
   Open Environmental Variable
   - **System variables** click on new
     Variable name: SPARK_HOME
     Variable values: Browse C:\spark-3.3.1-bin-hadoop2
     Variable name: HADOOP_HOME
     Variable values: Browse C:\spark-3.3.1-bin-hadoop2
   - **User Variable:**
     path: *edit: New*: **%SPARK_HOME%**\bin press Enter
     %JAVA_HOME%\bin press Enter
     New: *Variable name*: PYTHONPATH
     Variable values: **%SPARK_HOME%**\hadoop3\python\lib\py4j-0.10.9.5-src.zip (Also:

%SPARK_HOME%\hadoop3\python\lib;%SPARK_HOME%\hadoop3\python;%SPARK_HOME%\hadoop3\python\lib\py4j-0.10.9.5-src.zip
, click on- Browse file: C:\spark-3.3.1-bin-hadoop2\python\lib\py4j-0.10.9.5-src.zip)

Ok, ok, ok

5. Open cmd, type java then javac
   C:\Users\syeds>conda create -n spark
   conda activate spark
   conda install openjdk
   pip install findspark
   Pyspark
   ## **Quit()** to Quit**, cntl+c**: to terminate, **cls** to clear, Conda create -n spark --clone base
   Jupyter notebook

To Start Again: open cmd, **conda activate spark,** jupyter notebook

```
import findspark
findspark.init()
import pyspark
```

1. from **pyspark** import **SparkContext**, **SparkConf**

```
conf= SparkConf().setAppName("app").setMaster("local")

sc= SparkContext(conf=conf)
```

sc o/p:

```
SparkContext
Spark UI    (Note: you can open Spark UI and check the reports, Analysis. Etc)
Version v3.3.0
Master local
AppName app
```

2. from **pyspark.sql** import **SparkSession**

```
spark = SparkSession .builder \
.appName("Python Spark SQL basic example") \
.config("spark.some.config.option", "some-value") \  # .config is Optional
.getOrCreate()
spark
```

o/p: SparkSession - in-memory

```
SparkContext
Spark UI
Version v3.3.0
Master local
AppName app
```

To get o/p passing code.py and i/p using cmd:

Type in cmd: conda activate spark

If necessary libraries not install, then you can install it in cmd only **Ex.** pip install pandas
conda install pyarrow

python code.py input-path output-path (if in code arguments passed is 3)

python code.py input-path1 input-path2 input-path3 …. n output-path (if in code arguments passed is n)

Ex. are shown below.

```
import sys
import pandas as pd
import pyspark
from pyspark.sql import SparkSession
from pyspark.sql.functions import *

from datetime import datetime

import uuid
from pyspark.sql.types import *

if __name__ == "__main__":  # make sure to follow the indentation I,e space between if statement
    if (len(sys.argv) != 3):
        print("USAGE: file.py [input-folder] [output-folder]")
        sys.exit(0)
                             OR
if __name__ == "__main__":
    if (len(sys.argv) != n): # if arguments are 7 i,e 0 for code.py (1 to 5th i/p) (6th o/p)
        print("USAGE: file.py [input-folder1] [input-folder2] [input-folder3]…(n-2) [output-folder]")
        sys.exit(0)

    spark = SparkSession \
        .builder \
        .appName("NYTrip") \
        .getOrCreate()

    df = spark.read.parquet(sys.argv[1])
                   OR
    Df1 = spark.read .option("header", "true").csv(sys.argv[1])
    Df2 = spark.read .option("header", "true").csv(sys.argv[2])
    .
    .
    Dfn = spark.read .option("header", "true").csv(sys.argv[n-2])


    Df = df.filter(df.c1 > 2.0) # perform the transactions here

       Df \
        .write \
        .partitionBy("c1", "c2", ..”nth") \ # if needed
        .format("parquet") \ # format may be any
        .save(sys.argv[3]) or .save(sys.argv[6]) or .save(sys.argv[n-1])
```