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BigData Assignment 3

Setting up spark:

- First I made sure everything was up to date by running commands sudo apt-get update and sudo apt-get upgrade
- Then I installed scala using sudo apt install scala and confirmed the installation using scala -version

```
tracy@Tracy-PC:~$ scala -version
Scala code runner version 2.11.12 -- Copyright 2002-2017, LAMP/EPFL
tracy@Tracy-PC:~$
```

- I then updated the .bashrc to include the correct paths for scala

```
export SCALA_HOME=/home/tracy/scala
export PATH=$SCALA_HOME/bin:$PATH
```

- I then downloaded spark from apache.org using a wget command and a link I found on their website
- Then I unzipped the file using tar and changed the name of the new folder to spark in the file explorer of vscode

```
tracy@Tracy-PC:~$ echo $SCALA_HOME
                  https://downloads.apache.org/spark/spark-3.1.1/spark-3.1.1-bin-hadoop
2.7.tgzracy@Tracy-PC:~$ wget https://downloads.apache.org/spark/spark-3.1.1/spark-3.1.1-bin-
hadoop2.7.tg
--2021-03-03 19:06:05--  https://downloads.apache.org/spark/spark-3.1.1/spark-3.1.1-bin-hado
op2.7.tgz
Resolving downloads.apache.org (downloads.apache.org)... 88.99.95.219, 2a01:4f8:10a:201a::2
Connecting to downloads.apache.org (downloads.apache.org)|88.99.95.219|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 224374704 (214M) [application/x-gzip]
Saving to: ‘spark-3.1.1-bin-hadoop2.7.tgz’

spark-3.1.1-bin-hadoop2. 100%[=================================>] 213.98M  12.1MB/s    in 14s


2021-03-03 19:06:19 (15.6 MB/s) - ‘spark-3.1.1-bin-hadoop2.7.tgz’ saved [224374704/224374704
]

tracy@Tracy-PC:~$ tar -xf spark-3.1.1-bin-hadoop2.7.tgz
```

- After downloading and unzipping these files I added their path to the .bashrc file

```
export SPARK_HOME=/home/tracy/spark
export PATH=$SPARK_HOME/bin:$PATH
export PYSPARK_PYTHON=python3
```

- To confirm that everything is working properly I used the command pyspark to open an interactive python spark shell and tried a few command on the files for test.txt and peterman.txt

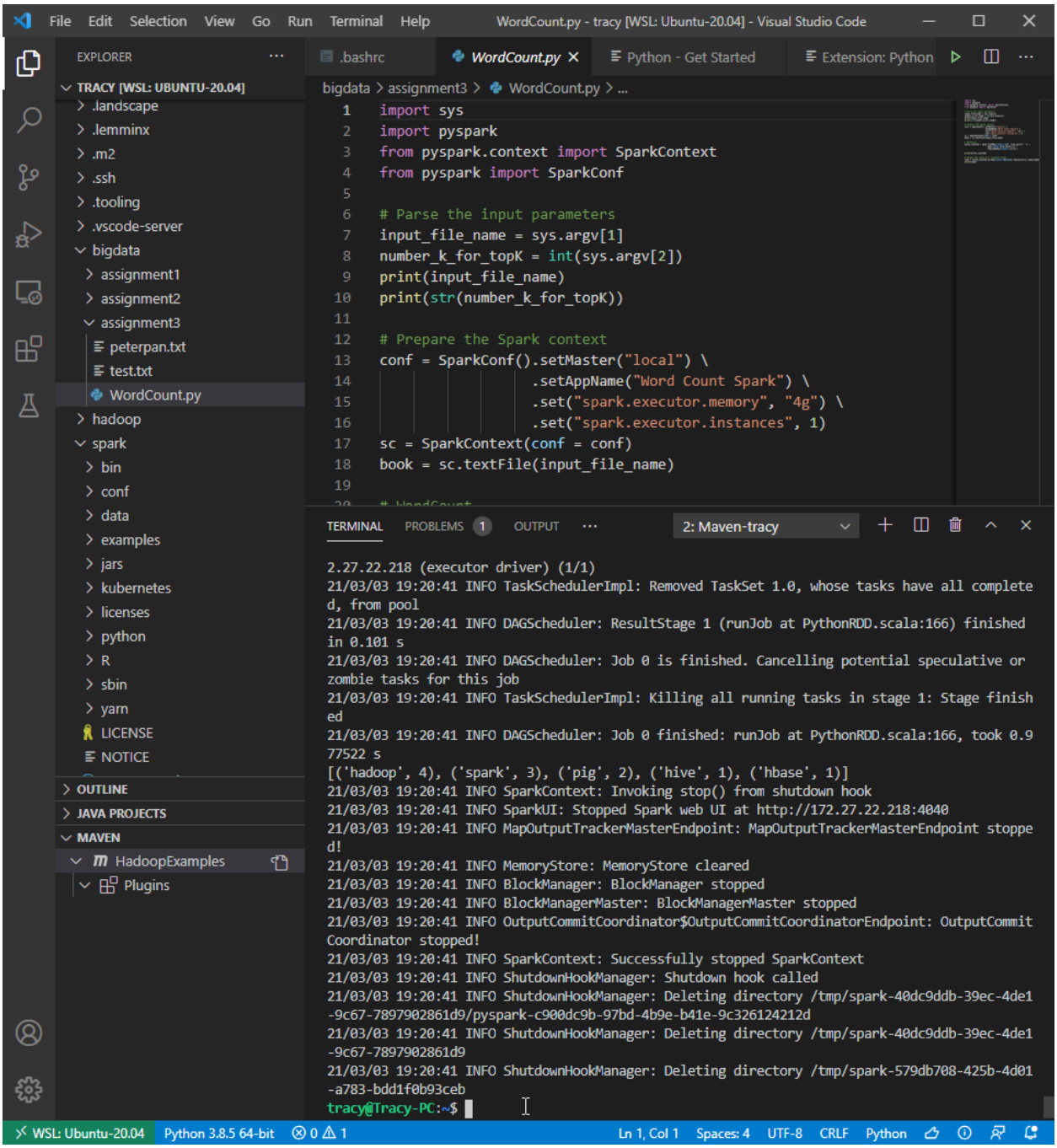
```
tracy@Tracy-PC:~$ pyspark
Python 3.8.5 (default, Jan 27 2021, 15:41:15)
[GCC 9.3.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
21/03/03 19:10:05 WARN Utils: Your hostname, Tracy-PC resolves to a loopback address: 127.0.
1.1; using 172.27.22.218 instead (on interface eth0)
21/03/03 19:10:05 WARN Utils: Set SPARK_LOCAL_IP if you need to bind to another address
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.spark.unsafe.Platform (file:/home/tracy/spa
rk/jars/spark-unsafe_2.12-3.1.1.jar) to constructor java.nio.DirectByteBuffer(long,int)
WARNING: Please consider reporting this to the maintainers of org.apache.spark.unsafe.Platfo
rm
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access o
perations
WARNING: All illegal access operations will be denied in a future release
21/03/03 19:10:08 WARN NativeCodeLoader: Unable to load native-hadoop library for your platf
orm... using builtin-java classes where applicable
Using Spark's default log4j profile: org/apache/spark/log4j-defaults.properties
Setting default log level to "WARN".
To adjust logging level use sc.setLogLevel(newLevel). For SparkR, use setLogLevel(newLevel).
Welcome to
      ____              __
     / __/__  ___ _____/ /__
    _\ \/ _ \/ _ `/ __/  '_/
   /__ / .__/\_,_/_/ /_/\_\   version 3.1.1
      /_/

Using Python version 3.8.5 (default, Jan 27 2021 15:41:15)
Spark context Web UI available at http://172.27.22.218:4040
Spark context available as 'sc' (master = local[*], app id = local-1614816609328).
SparkSession available as 'spark'.
>>> lines = sc.textFile("/home/tracy/bigdata/assignment3/test.txt")
>>> lines.count()
\3
>>> lines.count()
3
>>> lines.first()
'hadoop spark hadoop'
>>> book1 = sc.textFile("/home/tracy/bigdata/assignment3/peterpan.txt")
>>> book1.count()
6649
>>>
```

- These commands create an RDD called lines and book1 by passing the file path of the files to the textFile() function of spark context object

- After downloading the WordCount.py from iCollege I ran the command

  spark-submit /home/tracy/bigdata/assignment3/WordCount.py /home/tracy/bigdata/assignment3/test.txt 5

- Where the first argument is the python file that spark is going to be running, the second argument is the location of the data that the WordCount.py is going to act on and the third argument is the number of topK words that will be returned with their counts

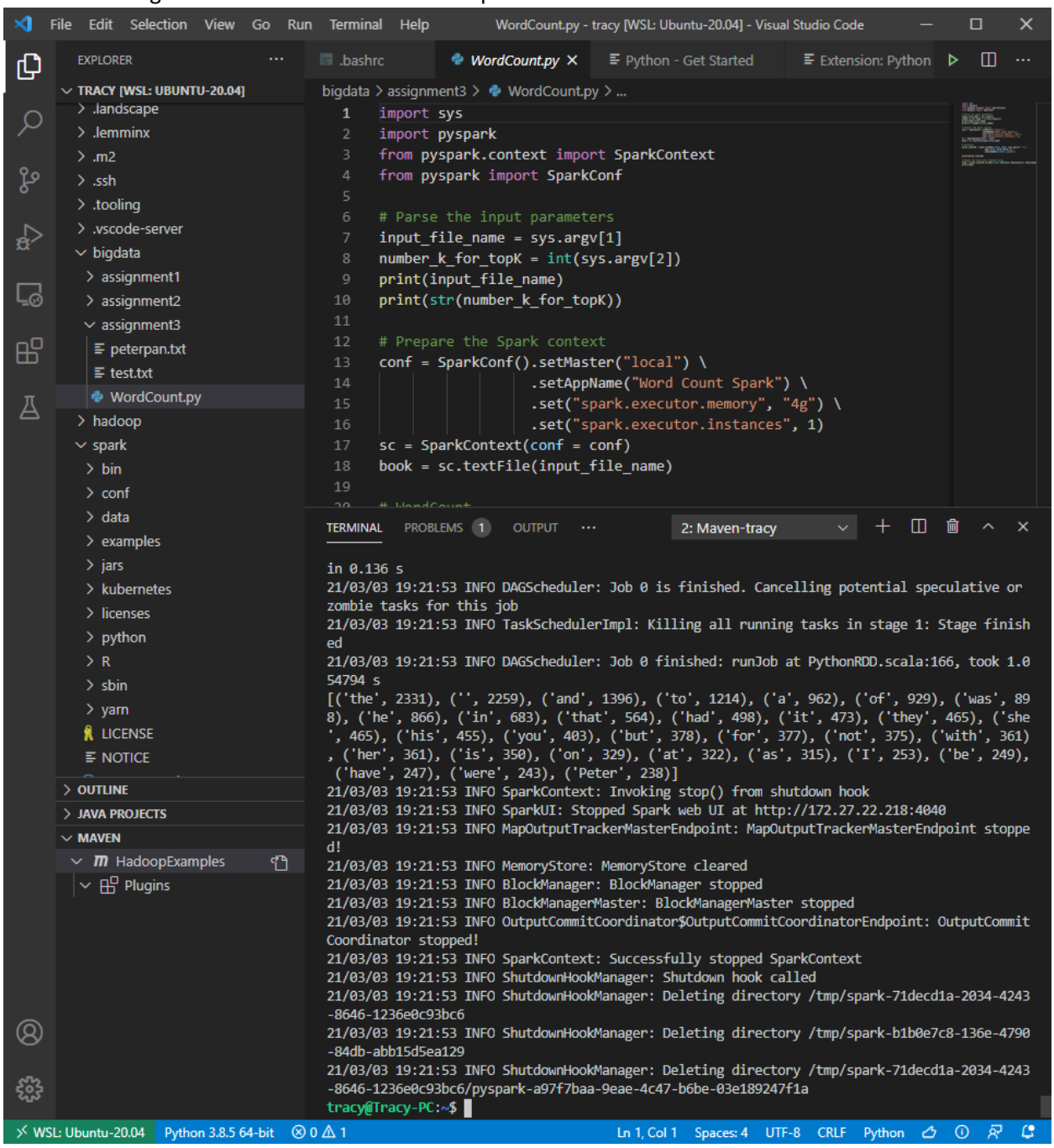


- In this case what was returned was [('hadoop', 4), ('spark', 3), ('pig', 2), ('hive', 1), ('hbase', 1)] which are the 5 most used words in test.txt file

- I repeated this same process but for the peterpan.txt file using command

  spark-submit /home/tracy/bigdata/assignment3/WordCount.py /home/tracy/bigdata/assignment3/peterpan.txt 30

- Where each argument functions the same as explained above



- This time though it will return the 30 most used words in the file
- Output: [('the', 2331), ('', 2259), ('and', 1396), ('to', 1214), ('a', 962), ('of', 929), ('was', 898), ('he', 866), ('in', 683), ('that', 564), ('had', 498), ('it', 473), ('they', 465), ('she', 465), ('his', 455), ('you', 403), ('but', 378), ('for', 377), ('not', 375), ('with', 361), ('her', 361), ('is', 350), ('on', 329), ('at', 322), ('as', 315), ('I', 253), ('be', 249), ('have', 247), ('were', 243), ('Peter', 238)]