LAPORAN JOBSHEET 7

BIG DATA

Oleh:

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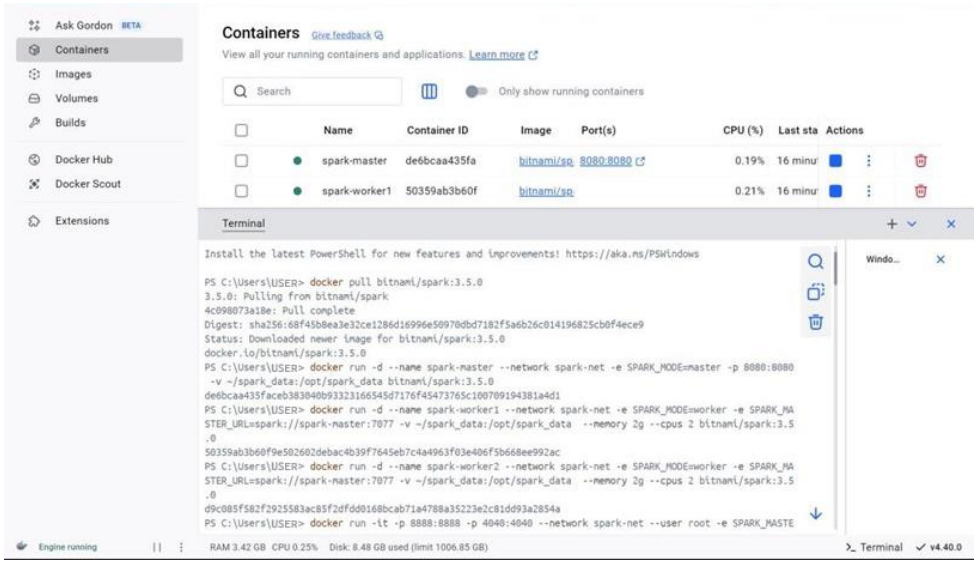
SIB 3E

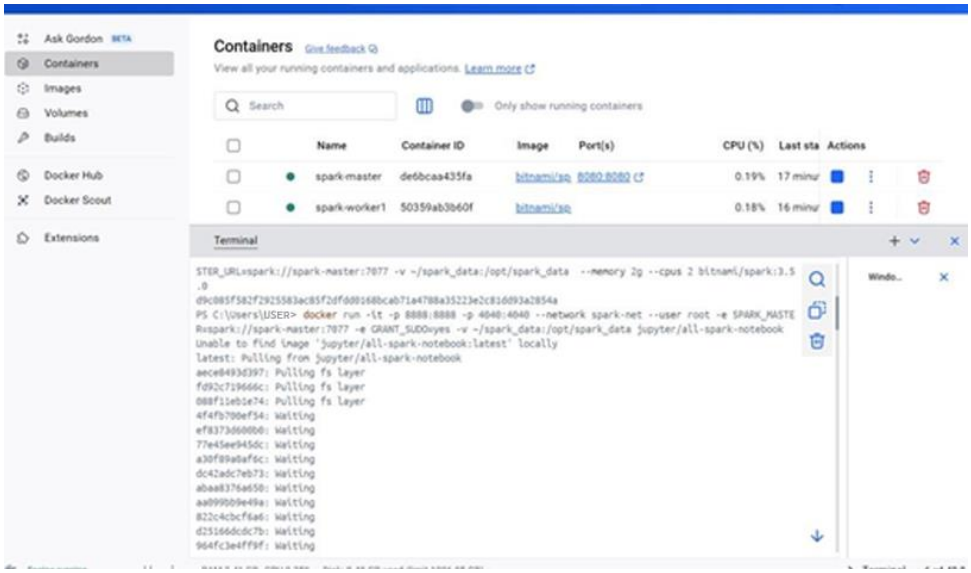
PROGAM STUDI D-IV SISTEM INFORMASI BISNIS

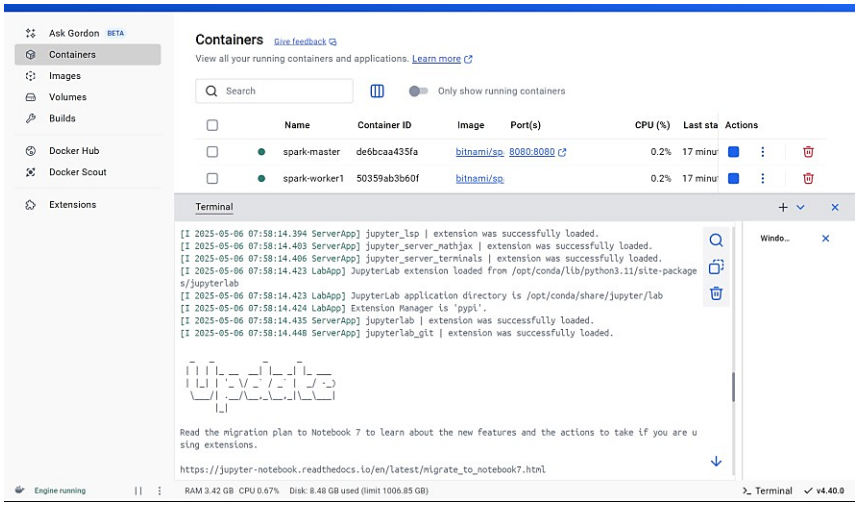
JURUSAN TEKNOLOGI INFORMASI

POLITEKNIK NEGERI MALANG

```
PS C:\Users\USER> wsl -l -v
  NAME              STATE           VERSION
* docker-desktop    Running         2
PS C:\Users\USER> docker pull apache/spark:latest
latest: Pulling from apache/spark
b100ab72b3e9: Pull complete
c74c7c34259b: Pull complete
053e658edcf9: Pull complete
2fd40b3fb58e: Pull complete
215ed5a63843: Pull complete
ead058ffaa09: Pull complete
4f4fb700ef54: Pull complete
d4ebd433e6b9: Pull complete
3eaf8f3f646b: Pull complete
357990f05276: Pull complete
8f0df7ed423b: Pull complete
Digest: sha256:2ecf9cab4a1d0df1052731636f6029f6e80489fbd9ad0d24aaa31061f8aa8eea
Status: Downloaded newer image for apache/spark:latest
docker.io/apache/spark:latest
PS C:\Users\USER>
```






Ask Gordon BETA
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Search
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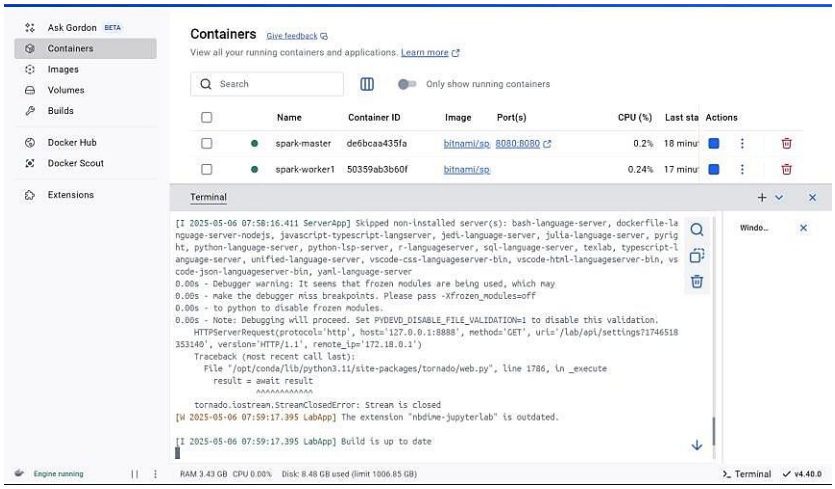
Name
Container ID
Image
Port(s)
CPU (%)
Last sta
Actions
spark-master
de6bcaa435fa
bitnami/sp
8080:8080
0.2%
17 minu
spark-worker1
50359ab3b60f
bitnami/sp
0.2%
17 minu
Terminal
[I 2025-05-06 07:58:14.394 ServerApp] jupyter_lsp | extension was successfully loaded.
[I 2025-05-06 07:58:14.403 ServerApp] jupyter_server_nathjax | extension was successfully loaded.
[I 2025-05-06 07:58:14.406 ServerApp] jupyter_server_terminals | extension was successfully loaded.
[I 2025-05-06 07:58:14.423 LabApp] JupyterLab extension loaded from /opt/conda/lib/python3.11/site-packages/jupyterlab
[I 2025-05-06 07:58:14.423 LabApp] JupyterLab application directory is /opt/conda/share/jupyter/lab
[I 2025-05-06 07:58:14.424 LabApp] Extension Manager is 'pypi'.
[I 2025-05-06 07:58:14.435 ServerApp] jupyterlab | extension was successfully loaded.
[I 2025-05-06 07:58:14.448 ServerApp] jupyterlab_git | extension was successfully loaded.
Read the migration plan to Notebook 7 to learn about the new features and the actions to take if you are using extensions.
https://jupyter-notebook.readthedocs.io/en/latest/migrate_to_notebook7.html
Windo...
Engine running
RAM 3.42 GB CPU 0.67% Disk: 8.48 GB used (limit 1006.85 GB)
Terminal
v4.40.0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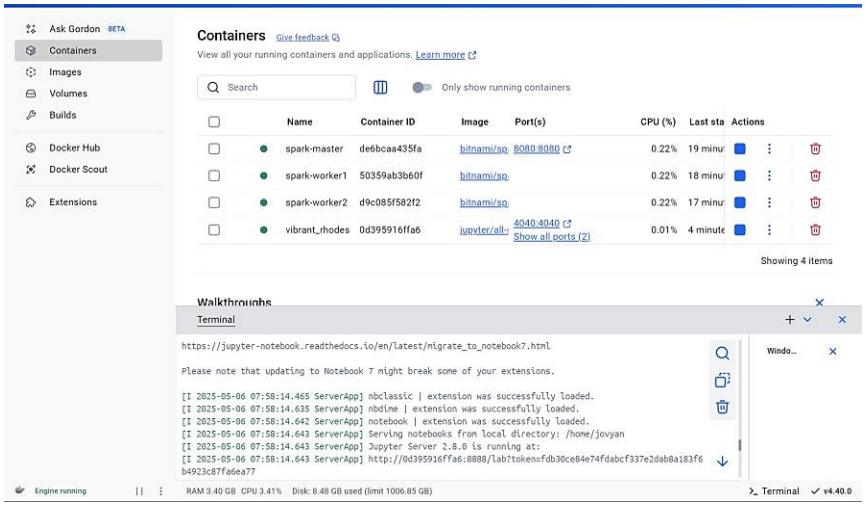
View all your running containers and applications. Learn more
Search
Only show running containers
Name
Container ID
Image
Port(s)
CPU (%)
Last sta
Actions
spark-master
de6bcaa435fa
bitnami/sp
8080:8080
0.2%
18 minu
spark-worker1
50359ab3b60f
bitnami/sp
0.24%
17 minu
Terminal
[I 2025-05-06 07:58:16.411 ServerApp] Skipped non-installed server(s): bash-language-server, dockerfile-language-server-nodejs, javascript-typescript-langserver, jedi-language-server, julia-language-server, pyright, python-language-server, python-lsp-server, r-languageserver, sql-language-server, texlab, typescript-language-server, unified-language-server, vscode-css-languageserver-bin, vscode-html-languageserver-bin, vscode-json-languageserver-bin, yaml-language-server
0.00s - Debugger warning: It seems that frozen modules are being used, which may
0.00s - make the debugger miss breakpoints. Please pass -Xfrozen_modules=off
0.00s - to python to disable frozen modules.
0.00s - Note: Debugging will proceed. Set PYDEVD_DISABLE_FILE_VALIDATION=1 to disable this validation.
HTTPServerRequest(protocol='http', host='127.0.0.1:8888', method='GET', uri='/lab/api/settings?1746518353140', version='HTTP/1.1', remote_ip='172.18.0.1')
Traceback (most recent call last):
File "/opt/conda/lib/python3.11/site-packages/tornado/web.py", line 1786, in _execute
result = await result
^^^^^^^^^^^^
tornado.iostream.StreamClosedError: Stream is closed
[W 2025-05-06 07:59:17.395 LabApp] The extension "nbdime-jupyterlab" is outdated.
[I 2025-05-06 07:59:17.395 LabApp] Build is up to date
Windo...
Engine running
RAM 3.43 GB CPU 0.00% Disk: 8.48 GB used (limit 1006.85 GB)
Terminal
v4.40.0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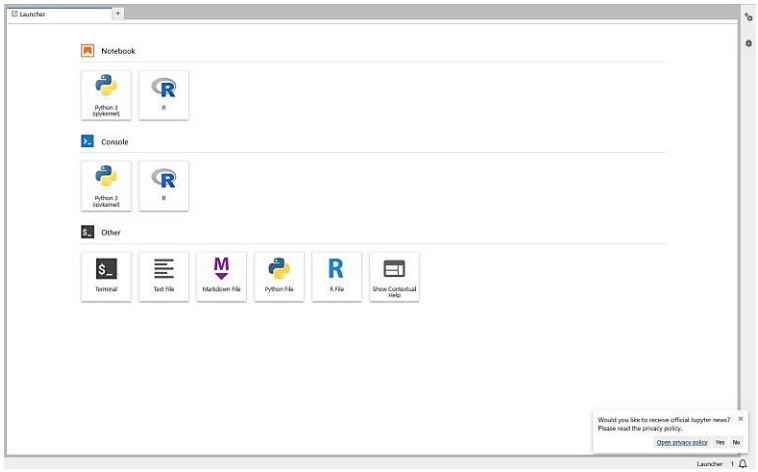
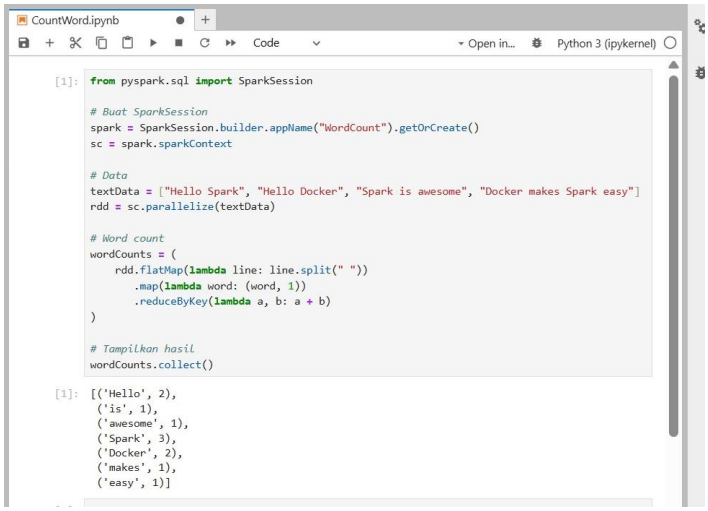
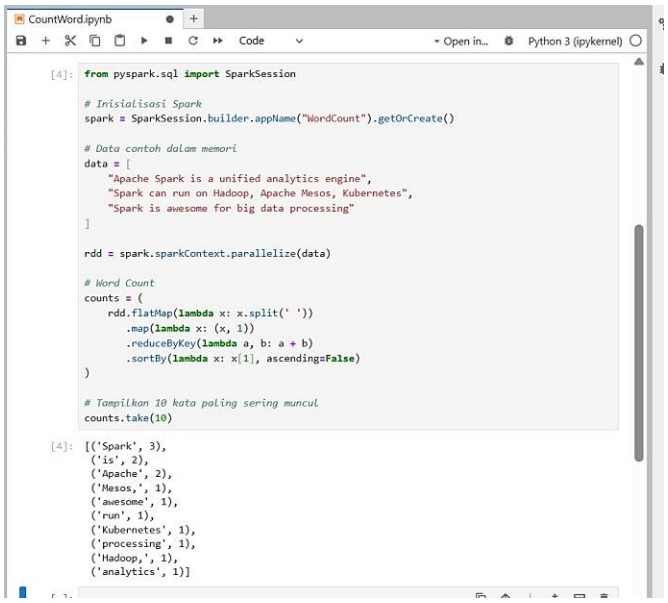
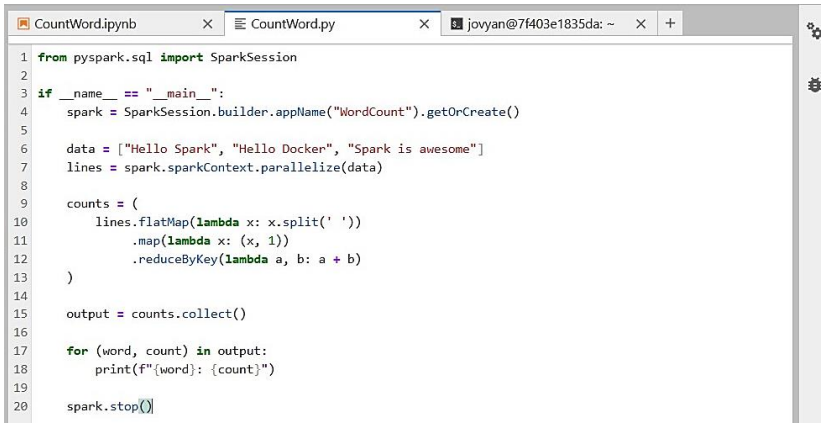
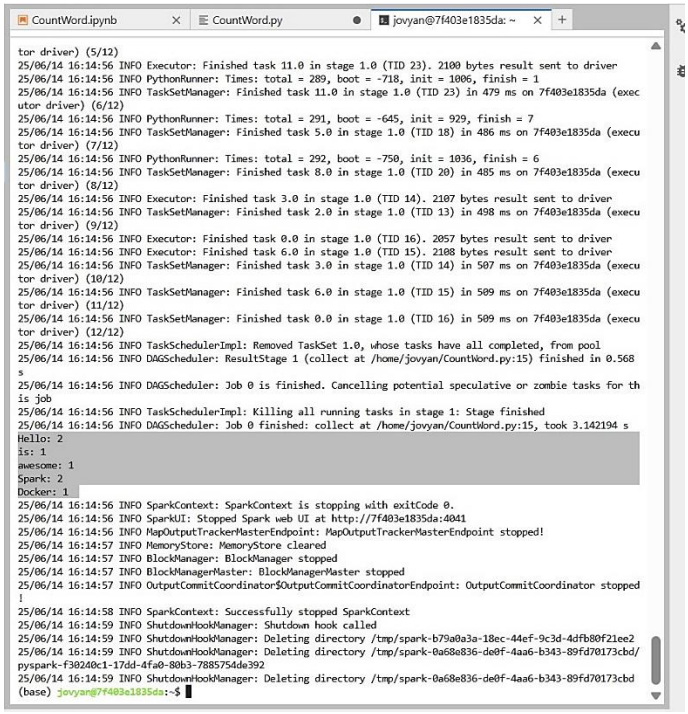
Search
Only show running containers
Name
Container ID
Image
Port(s)
CPU (%)
Last sta
Actions
spark-master
de6bcaa435fa
bitnami/sp
8080:8080
0.22%
19 minu
spark-worker1
50359ab3b60f
bitnami/sp
0.22%
18 minu
spark-worker2
d9c085f582f2
bitnami/sp
0.22%
17 minu
vibrant_rhodes
0d395916ffa6
jupyter/all-
4040:4040
Show all ports (2)
0.01%
4 minute
Showing 4 items
Walkthroughs
Terminal
https://jupyter-notebook.readthedocs.io/en/latest/migrate_to_notebook7.html
Please note that updating to Notebook 7 might break some of your extensions.
[I 2025-05-06 07:58:14.465 ServerApp] nbclassic | extension was successfully loaded.
[I 2025-05-06 07:58:14.635 ServerApp] nbdime | extension was successfully loaded.
[I 2025-05-06 07:58:14.642 ServerApp] notebook | extension was successfully loaded.
[I 2025-05-06 07:58:14.643 ServerApp] Serving notebooks from local directory: /home/jovyan
[I 2025-05-06 07:58:14.643 ServerApp] Jupyter Server 2.8.0 is running at:
[I 2025-05-06 07:58:14.643 ServerApp] http://0d395916ffa6:8888/lab?token=fdb30ce84e74fdabcf337e2dab8a183f6b4923c87fa6ea77
Windo...
Engine running
RAM 3.40 GB CPU 3.41% Disk: 8.48 GB used (limit 1006.85 GB)
Terminal
v4.40.0


Launcher
Notebook
Python 3 (ipykernel)
R
Console
Python 3 (ipykernel)
R
Other
Terminal
Text File
Markdown File
Python File
R File
Show Contextual Help
Would you like to receive official Jupyter news?
Please read the privacy policy.
Open privacy policy
Yes
No
Launcher


CountWord.ipynb
Code
Open in...
Python 3 (ipykernel)
[1]:
from pyspark.sql import SparkSession
# Buat SparkSession
spark = SparkSession.builder.appName("WordCount").getOrCreate()
sc = spark.sparkContext
# Data
textData = ["Hello Spark", "Hello Docker", "Spark is awesome", "Docker makes Spark easy"]
rdd = sc.parallelize(textData)
# Word count
wordCounts = (
rdd.flatMap(lambda line: line.split(" "))
.map(lambda word: (word, 1))
.reduceByKey(lambda a, b: a + b)
)
# Tampilkan hasil
wordCounts.collect()
[1]:
[('Hello', 2),
('is', 1),
('awesome', 1),
('Spark', 3),
('Docker', 2),
('makes', 1),
('easy', 1)]


CountWord.ipynb
Code
Open in...
Python 3 (ipykernel)
[4]:
from pyspark.sql import SparkSession
# Inisialisasi Spark
spark = SparkSession.builder.appName("WordCount").getOrCreate()
# Data contoh dalam memori
data = [
"Apache Spark is a unified analytics engine",
"Spark can run on Hadoop, Apache Mesos, Kubernetes",
"Spark is awesome for big data processing"
]
rdd = spark.sparkContext.parallelize(data)
# Word Count
counts = (
rdd.flatMap(lambda x: x.split(' '))
.map(lambda x: (x, 1))
.reduceByKey(lambda a, b: a + b)
.sortBy(lambda x: x[1], ascending=False)
)
# Tampilkan 10 kata paling sering muncul
counts.take(10)
[4]:
[('Spark', 3),
('is', 2),
('Apache', 2),
('Mesos,', 1),
('awesome', 1),
('run', 1),
('Kubernetes', 1),
('processing', 1),
('Hadoop,', 1),
('analytics', 1)]


CountWord.ipynb
CountWord.py
jovyan@7f403e1835da: ~
from pyspark.sql import SparkSession
if __name__ == "__main__":
spark = SparkSession.builder.appName("WordCount").getOrCreate()
data = ["Hello Spark", "Hello Docker", "Spark is awesome"]
lines = spark.sparkContext.parallelize(data)
counts = (
lines.flatMap(lambda x: x.split(' '))
.map(lambda x: (x, 1))
.reduceByKey(lambda a, b: a + b)
)
output = counts.collect()
for (word, count) in output:
print(f"{word}: {count}")
spark.stop()


CountWord.ipynb
CountWord.py
jovyan@7f403e1835da: ~
tor driver) (5/12)
25/06/14 16:14:56 INFO Executor: Finished task 11.0 in stage 1.0 (TID 23). 2100 bytes result sent to driver
25/06/14 16:14:56 INFO PythonRunner: Times: total = 289, boot = -718, init = 1006, finish = 1
25/06/14 16:14:56 INFO TaskSetManager: Finished task 11.0 in stage 1.0 (TID 23) in 479 ms on 7f403e1835da (exec
utor driver) (6/12)
25/06/14 16:14:56 INFO PythonRunner: Times: total = 291, boot = -645, init = 929, finish = 7
25/06/14 16:14:56 INFO TaskSetManager: Finished task 5.0 in stage 1.0 (TID 18) in 486 ms on 7f403e1835da (execu
tor driver) (7/12)
25/06/14 16:14:56 INFO PythonRunner: Times: total = 292, boot = -750, init = 1036, finish = 6
25/06/14 16:14:56 INFO TaskSetManager: Finished task 8.0 in stage 1.0 (TID 20) in 485 ms on 7f403e1835da (execu
tor driver) (8/12)
25/06/14 16:14:56 INFO Executor: Finished task 3.0 in stage 1.0 (TID 14). 2107 bytes result sent to driver
25/06/14 16:14:56 INFO TaskSetManager: Finished task 2.0 in stage 1.0 (TID 13) in 498 ms on 7f403e1835da (execu
tor driver) (9/12)
25/06/14 16:14:56 INFO Executor: Finished task 0.0 in stage 1.0 (TID 16). 2057 bytes result sent to driver
25/06/14 16:14:56 INFO Executor: Finished task 6.0 in stage 1.0 (TID 15). 2108 bytes result sent to driver
25/06/14 16:14:56 INFO TaskSetManager: Finished task 3.0 in stage 1.0 (TID 14) in 507 ms on 7f403e1835da (execu
tor driver) (10/12)
25/06/14 16:14:56 INFO TaskSetManager: Finished task 6.0 in stage 1.0 (TID 15) in 509 ms on 7f403e1835da (execu
tor driver) (11/12)
25/06/14 16:14:56 INFO TaskSetManager: Finished task 0.0 in stage 1.0 (TID 16) in 509 ms on 7f403e1835da (execu
tor driver) (12/12)
25/06/14 16:14:56 INFO TaskSchedulerImpl: Removed TaskSet 1.0, whose tasks have all completed, from pool
25/06/14 16:14:56 INFO DAGScheduler: ResultStage 1 (collect at /home/jovyan/CountWord.py:15) finished in 0.568
s
25/06/14 16:14:56 INFO DAGScheduler: Job 0 is finished. Cancelling potential speculative or zombie tasks for th
is job
25/06/14 16:14:56 INFO TaskSchedulerImpl: Killing all running tasks in stage 1: Stage finished
25/06/14 16:14:56 INFO DAGScheduler: Job 0 finished: collect at /home/jovyan/CountWord.py:15, took 3.142194 s
Hello: 2
is: 1
awesome: 1
Spark: 2
Docker: 1
25/06/14 16:14:56 INFO SparkContext: SparkContext is stopping with exitCode 0.
25/06/14 16:14:56 INFO SparkUI: Stopped Spark web UI at http://7f403e1835da:4041
25/06/14 16:14:56 INFO MapOutputTrackerMasterEndpoint: MapOutputTrackerMasterEndpoint stopped!
25/06/14 16:14:57 INFO MemoryStore: MemoryStore cleared
25/06/14 16:14:57 INFO BlockManager: BlockManager stopped
25/06/14 16:14:57 INFO BlockManagerMaster: BlockManagerMaster stopped
25/06/14 16:14:57 INFO OutputCommitCoordinator$OutputCommitCoordinatorEndpoint: OutputCommitCoordinator stopped
!
25/06/14 16:14:58 INFO SparkContext: Successfully stopped SparkContext
25/06/14 16:14:59 INFO ShutdownHookManager: Shutdown hook called
25/06/14 16:14:59 INFO ShutdownHookManager: Deleting directory /tmp/spark-b79a0a3a-18ec-44ef-9c3d-4dfb80f21ee2
25/06/14 16:14:59 INFO ShutdownHookManager: Deleting directory /tmp/spark-0a68e836-de0f-4aa6-b343-89fd70173cbd/
pyspark-f30240c1-17dd-4fa0-80b3-7885754de392
25/06/14 16:14:59 INFO ShutdownHookManager: Deleting directory /tmp/spark-0a68e836-de0f-4aa6-b343-89fd70173cbd
(base) jovyan@7f403e1835da:~$