

ssh student3_10@37.139.32.56

ssh student3_10@37.139.32.56 -D localhost:8080

ssh -i /home/igor/Зарпозки/id_rsa_student3_10 student3_10@37.139.32.56 -D localhost:8080

yarn jar /usr/hdp/current/hadoop-mapreduce-client/hadoop-mapreduce-examples.jar

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
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timelineserver      run the timeline server
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ yarn jar /usr/hdp/current/hadoop-mapreduce-client/hadoop-mapreduce-examples.jar
An example program must be given as the first argument.
Valid program names are:
aggregatewordcount: An Aggregate based map/reduce program that counts the words in the input files.
aggregatewordhist: An Aggregate based map/reduce program that computes the histogram of the words in the input files.
bbp: A map/reduce program that uses Bailey-Borwein-Plouffe to compute exact digits of Pi.
dbcount: An example job that count the pageview counts from a database.
distbbp: A map/reduce program that uses a BBP-type formula to compute exact bits of Pi.
grep: A map/reduce program that counts the matches of a regex in the input.
join: A job that effects a join over sorted, equally partitioned datasets
multifilewc: A job that counts words from several files.
pentomino: A map/reduce tile laying program to find solutions to pentomino problems.
pi: A map/reduce program that estimates Pi using a quasi-Monte Carlo method.
randomtextwriter: A map/reduce program that writes 10GB of random textual data per node.
randomwriter: A map/reduce program that writes 10GB of random data per node.
secondarysort: An example defining a secondary sort to the reduce.
sort: A map/reduce program that sorts the data written by the random writer.
sudoku: A sudoku solver.
teragen: Generate data for the terasort
terasort: Run the terasort
teravalidate: Checking results of terasort

wordstandarddeviation: A map/reduce program that counts the standard deviation of the length of the words in the input files.
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ yarn jar /usr/hdp/current/hadoop-mapreduce-client/hadoop-mapreduce-examples.jar pi
Usage: org.apache.hadoop.examples.QuasiMonteCarlo <nMaps> <nSamples>
Generic options supported are:
-conf <configuration file>      specify an application configuration file
-D <property=value>             define a value for a given property
-fs <file:///|hdfs://namenode:port> specify default filesystem URL to use, overrides 'fs.defaultFS' property from configurations.
-jt <local|resourcemanager:port> specify a ResourceManager
-files <file1,...>              specify a comma-separated list of files to be copied to the map reduce cluster
-libjars <jar1,...>             specify a comma-separated list of jar files to be included in the classpath
-archives <archive1,...>        specify a comma-separated list of archives to be unarchived on the compute machines

The general command line syntax is:
command [genericOptions] [commandOptions]


[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

Application application_1617990284451_0134 — Mozilla Firefox

Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~

Application application_1617990284451_0134

10.0.0.7:8088/cluster/app/application_1617990284451_0134



Application applicat

Cluster

About

Nodes

Node Labels

Applications

NEW

NEW SAVING

SUBMITTED

ACCEPTED

RUNNING

FINISHED

FAILED

KILLED

Scheduler

Tools

Kill Application

User: student3_10

Name: QuasiMonteCarlo

Application Type: MAPREDUCE

Application Tags:

Application Priority: 0 (Higher Integer value indicates higher priority)

YarnApplicationState: ACCEPTED: waiting for AM container to be allocated, launched and register with RM

Queue: default

FinalStatus Reported by AM: Application has not completed yet.

Started: Sun Apr 11 17:07:23 +0000 2021

Elapsed: 6mins, 7sec

Tracking URL: ApplicationMaster

Log Aggregation Status: NOT_START

Application Timeout (Remaining Time): Unlimited

Diagnostics: [Sun Apr 11 17:11:25 +0000 2021] Application is added to the scheduler and is not yet started. Resource Request = <memory:2048, vCores:1>; Queue Resource Limit for AM = <memory:2048, vCores:1>;

Unmanaged Application: false

Application Node Label expression: <Not set>

AM container Node Label expression: <DEFAULT_PARTITION>

Total Num

Total

Resou

Number of Non-AM Contain

Aggre

Show 20 entries

Attempt ID

Started

Node

Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~

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Total time spent by all reduce tasks (ms)=12977

Total vcore-milliseconds taken by all map tasks=136363

Total vcore-milliseconds taken by all reduce tasks=12977

Total megabyte-milliseconds taken by all map tasks=279271424

Total megabyte-milliseconds taken by all reduce tasks=26576896

Map-Reduce Framework

Map input records=32

Map output records=64

Map output bytes=576

Map output materialized bytes=896

Input split bytes=6070

Combine input records=0

Combine output records=0

Reduce input groups=2

Reduce shuffle bytes=896

Reduce input records=64

Reduce output records=0

Spilled Records=128

Shuffled Maps =32

Failed Shuffles=0

Merged Map outputs=32

GC time elapsed (ms)=3020

CPU time spent (ms)=60490

Physical memory (bytes) snapshot=45430976512

Virtual memory (bytes) snapshot=123505754112

Total committed heap usage (bytes)=42563796992

Peak Map Physical memory (bytes)=1427566592

Peak Map Virtual memory (bytes)=3694972928

Peak Reduce Physical memory (bytes)=211456000

Peak Reduce Virtual memory (bytes)=5504983040

Shuffle Errors

BAD_ID=0

CONNECTION=0

IO_ERROR=0

WRONG_LENGTH=0

WRONG_MAP=0

WRONG_REDUCE=0

File Input Format Counters

Bytes Read=3776

File Output Format Counters

Bytes Written=97


Job Finished in 615.743 seconds

Estimated value of Pi is 3.14147500000000000000

[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]\$

All Applications

10.0.0.7:8088/cluster/apps



All Applications

Cluster

About

Nodes

Node Labels

Applications

NEW

NEW SAVING

SUBMITTED

ACCEPTED

RUNNING

FINISHED

FAILED

KILLED

Scheduler

Tools

Cluster Metrics

Apps Submitted	Apps Pending	Apps Running	Apps Completed	Containers Running	Memory Used
136	0	7	129	21	21 GB

Cluster Nodes Metrics

Active Nodes	Decommissioning Nodes	Decommissioned Nodes
6	0	0

Scheduler Metrics

Scheduler Type	Scheduling Resource Type	Minimum Allocation
Capacity Scheduler	[memory-mb (unit=Mi), vcores]	<memory:512, vCores:1>

Show 20 entries

ID	User	Name	Application Type	Queue	Application Priority	StartTime	FinishTime	State	Final
application_1617990284451_0135	zeppelin	Zeppelin	SPARK	default	0	Sun Apr 11 20:07:55 2021	N/A	RUNNING	UNDE

Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~

Файл Правка Вид Терминал Вкладки Справка

igor@igor-MS-7888:~/BigData. Введение в экосистему Hadoop/3. YARN & MR\$ scp license student3_10@37.139.32.56:.
license 100% 4590 432.2KB/s 00:00
igor@igor-MS-7888:~/BigData. Введение в экосистему Hadoop/3. YARN & MR\$ scp Mapper.py student3_10@37.139.32.56:.
Mapper.py 100% 412 62.9KB/s 00:00
igor@igor-MS-7888:~/BigData. Введение в экосистему Hadoop/3. YARN & MR\$ ssh student3_10@37.139.32.56 -D localhost:8080
Last login: Sun Apr 11 16:59:14 2021 from 109.252.26.235
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]\$ ls
license Mapper.py Reducer.py urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]\$

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
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[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ cat license
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July 22, 1999

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Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка

those 1
BSD 1
Unix 1
files 1
containing 1
it 1
is 1
hereby 1
deleted 1
in 1
its 1
entirety. 1
William 1
Hoskins 1
Director, 1
Office 1
of 1
Technology 1
Licensing 1
University 1
of 1
California, 1
Berkeley 1
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```


vim Reducer.py
ls

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка
with  1
with  1
with  1
within 1
within 1
without 1
without 1
work  1
written 1
X3,   1
X3,   1
X3J11 1
you   1
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ vim Reducer.py
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ls
license Mapper.py Reducer.py urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка
TO,    1
TORT   1
UC     1
University 1
Unix   1
updated. 1
us     1
use    1
USE,   1
USE    1
used   1
Version 1
versions 1
views  1
WARRANTIES, 1
WARRANTIES 1
was     1
Washington, 1
WAY     1
WHETHER 1
William 1
```

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
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ty.

William Hoskins
Director, Office of Technology Licensing
University of California, Berkeley[student3_10@bigdataanalytics2-head-shdpt-v31-
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

```
yarn jar /usr/hdp/current/hadoop-mapreduce-client/hadoop-streaming.jar -input test -output result -mapper "python3.7 Mapper.py" -reducer "python3.7 Reducer.py" -file Mapper.py -file Reducer.py
```

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
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9288 0028 m 000001
Job failed as tasks failed. failedMaps:1 failedReduces:0 killedMaps:0 killedReduces: 0

21/04/12 06:55:25 INFO mapreduce.Job: Counters: 12
  Job Counters
    Failed map tasks=7
    Killed map tasks=1
    Killed reduce tasks=1
    Launched map tasks=7
    Other local map tasks=5
    Data-local map tasks=1
    Rack-local map tasks=1
    Total time spent by all maps in occupied slots (ms)=116692
    Total time spent by all reduces in occupied slots (ms)=0
    Total time spent by all map tasks (ms)=29173
    Total vcore-milliseconds taken by all map tasks=29173
    Total megabyte-milliseconds taken by all map tasks=59746304
21/04/12 06:55:25 ERROR streaming.StreamJob: Job not successful!
Streaming Command Failed!
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ yarn jar /usr/hdp/current/hadoop-mapreduce-client/hadoop-streaming.jar
-input test -output result -mapper "python Mapper.py" -reducer "python Reducer.py" -file Mapper.py -file Reducer.py
```

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
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0.7:8050
21/04/12 07:06:12 INFO client.AHSPProxy: Connecting to Application History server at bigdataanalytics2-head-shdpt-v31-1-0.nov
alocal/10.0.0.7:10200
21/04/12 07:06:12 ERROR streaming.StreamJob: Error Launching job : Output directory hdfs://bigdataanalytics2-head-shdpt-v31-
1-0.novalocal:8020/user/student3_10/result already exists
Streaming Command Failed!
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ yarn jar /usr/hdp/3.1.4.0-315/hadoop-mapreduce-client/hadoop-streaming
.jar -input test -output result -mapper "python Mapper.py" -reducer "python Reducer.py" -file Mapper.py -file Reducer.py
JAR does not exist or is not a normal file: /usr/hdp/3.1.4.0-315/hadoop-mapreduce-client/hadoop-streaming.jar
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ yarn jar /usr/hdp/current/hadoop-mapreduce-client/hadoop-streaming.jar
-input test -output result -mapper "python Mapper.py" -reducer "python Reducer.py" -file Mapper.py -file Reducer.py
21/04/12 07:07:20 WARN streaming.StreamJob: -file option is deprecated, please use generic option -files instead.
packageJobJar: [Mapper.py, Reducer.py] [/usr/hdp/3.1.4.0-315/hadoop-mapreduce/hadoop-streaming-3.1.1.3.1.4.0-315.jar] /var/l
ib/ambari-agent/tmp/hadoop_java_io_tmpdir/streamjob793783987850635747.jar tmpDir=null
21/04/12 07:07:22 INFO client.RMPProxy: Connecting to ResourceManager at bigdataanalytics2-head-shdpt-v31-1-0.novalocal/10.0.
0.7:8050
21/04/12 07:07:22 INFO client.AHSPProxy: Connecting to Application History server at bigdataanalytics2-head-shdpt-v31-1-0.nov
alocal/10.0.0.7:10200
21/04/12 07:07:22 INFO client.RMPProxy: Connecting to ResourceManager at bigdataanalytics2-head-shdpt-v31-1-0.novalocal/10.0.
0.7:8050
21/04/12 07:07:22 INFO client.AHSPProxy: Connecting to Application History server at bigdataanalytics2-head-shdpt-v31-1-0.nov
alocal/10.0.0.7:10200
21/04/12 07:07:22 ERROR streaming.StreamJob: Error Launching job : Output directory hdfs://bigdataanalytics2-head-shdpt-v31-
1-0.novalocal:8020/user/student3_10/result already exists
Streaming Command Failed!
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ls
license Mapper.py Reducer.py urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ head urbandict.csv
```

```
head -n 1 urbandict.csv
```

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка
21/04/12 07:07:22 INFO client.RMPProxy: Connecting to ResourceManager at bigdataanalytics2-head-shdpt-v31-1-0.novalocal/10.0.0.7:8050
21/04/12 07:07:22 INFO client.AHSPProxy: Connecting to Application History server at bigdataanalytics2-head-shdpt-v31-1-0.novalocal/10.0.0.7:10200
21/04/12 07:07:22 INFO client.RMPProxy: Connecting to ResourceManager at bigdataanalytics2-head-shdpt-v31-1-0.novalocal/10.0.0.7:8050
21/04/12 07:07:22 INFO client.AHSPProxy: Connecting to Application History server at bigdataanalytics2-head-shdpt-v31-1-0.novalocal/10.0.0.7:10200
21/04/12 07:07:22 ERROR streaming.StreamJob: Error Launching job : Output directory hdfs://bigdataanalytics2-head-shdpt-v31-1-0.novalocal:8020/user/student3_10/result already exists
Streaming Command Failed!
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ls
license Mapper.py Reducer.py urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ head urbandict.csv
word_id,word,up_votes,down_votes,author,definition
0000007,Janky,296,255,dc397b2f,"Undesirable; less-than optimum."
0000008,slumpin',16,37,dc397b2f,"low down and funky, but [knee deep] enough to ride to."
0000009,yayeeyay,19,27,dc397b2f,"affirmation; suggestion of encouragement, approval, or interest."
0000012,hard-core,162,96,d1610749,"anything out of our league that can be good or bad."
0000013,brutal,12,45,40ecelef,"anything that makes you sweat"
0000014,skanky,9,48,485e4db7,"Anything of or pertaining to a $10,000 hooker."
0000015,ho-bag,26,27,b37fba05,"a term of endearment, used affectionately for your roommate. First used in the schools' parking lot after an incident with the hall monitors."
0000016,massive,36,45,b9dcf126,"really really good. excellently good."
0000017,wtf,183,99,a6c97ba3,"what the fuck? ;; use it in place of expletives. a more polite alternative."
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ head -n 1 urbandict.csv
word_id,word,up_votes,down_votes,author,definition
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

head urbandict.csv > urbandict_test.csv
cat vehicles.csv | python Mapper.py
Удалем резалт: hdfs dfs -rm -r result
Просмотр: cat vehicles.csv | python3.7 mapper.py

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка
dodge 9295
toyota 15995
nissan 3998
ford 31500
kia 0
kia 0
kia 0
jeep 0
ford 0
chevrolet 0
hyundai 3395
chevrolet 11995
mercedes-benz 15995
ram 3300
honda 5995
chevrolet 5495
chevrolet 14800
audi 7500
6500
7500
rover 41995
ford 6998
bmw 7500
mercedes-benz 1500
hyundai 11900
mercedes-benz 4800
toyota 12995
ford 11900
ram 29513
volkswagen 5500
hyundai 10995
ford 14900
chevrolet 17900
ram 8500
audi 9999
ford 13900
500
12990
chevrolet 9990
chevrolet 14900
chevrolet 4990
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ cat vehicles.csv | python3.7 mapper.py
```

cat vehicles.csv | python3.7 mapper.py | sort | python3.7 reducer.py

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0~  
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File "Reducer.py", line 11  
SyntaxError: Non-ASCII character '\xd1' in file Reducer.py on line 11, but no encoding declared; see http://www.python.org/peps/pep-0263.html for details  
File "Mapper.py", line 7  
SyntaxError: Non-ASCII character '\xd1' in file Mapper.py on line 7, but no encoding declared; see http://www.python.org/peps/pep-0263.html for details  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ cat vehicles.csv | python3.7 Mapper.py | sort | python3.7 Reducer.py  
Traceback (most recent call last):  
  File "Reducer.py", line 18, in <module>  
    word, count = line.split('\t', 1)  
ValueError: not enough values to unpack (expected 2, got 1)  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ vim mapper.py  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ cat vehicles.csv | python3.7 mapper.py | sort | python3.7 reducer.py  
acura 12143246  
alfa-romeo 894208  
aston-martin 915150  
audi 27500345  
bmw 53041036  
buick 9414316  
cadillac 24267276  
chevrolet 1452593447  
chrysler 10874364  
datsun 280918  
dodge 44587781  
ferrari 4808024  
fiat 2931321  
ford 275376101  
gmc 2873750514  
harley-davidson 328464  
honda 59867277  
hyundai 21931470  
infiniti 13550397  
jaguar 6137143  
jeep 69589094  
kia 19559407  
land rover 94400  
lexus 30034843  
lincoln 7796232  
mazda 14377882  
mercedes-benz 65436510  
mercury 1162558  
mini 7507965  
mitsubishi 3672210  
morgan 74977  
nissan 67049248  
pontiac 3417008  
porsche 17043208  
ram 92764848  
rover 9843502  
saturn 885346  
subaru 30836333  
tesla 10943535  
toyota 134519824  
volkswagen 26791675  
volvo 8615208  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

scp mapper.py student3_10@37.139.32.56:.
wc -l vehicles.csv
head -n 100000 vehicles.csv > small.csv
Посмотреть что хранится: ls -alh
Почистить/удалить файлы: rm
Посмотреть сколько строк в файле: wc -l <имя.файла>
wc -l urbandict.csv

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0~  
Файл  Правка  Вид  Терминал  Вкладки  Справка  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ls  
mapper.py Mapper.py reducer.py Reducer.py urbandict.csv vehicles.csv  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ^C  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ls -alh  
итого 844M  
drwx----- 4 student3_10 student3_10 4,0K anp 15 18:24 .  
drwxr-xr-x. 218 root root 12K anp 15 07:07 ..  
-rw----- 1 student3_10 student3_10 11K anp 15 18:21 .bash_history  
-rw-r--r-- 1 student3_10 student3_10 18 aar 8 2019 .bash_logout  
-rw-r--r-- 1 student3_10 student3_10 193 aar 8 2019 .bash_profile  
-rw-r--r-- 1 student3_10 student3_10 231 aar 8 2019 .bashrc  
-rw-rw-r-- 1 student3_10 student3_10 529 anp 13 19:31 mapper.py  
-rw-rw-r-- 1 student3_10 student3_10 520 anp 13 19:14 Mapper.py  
drwxrwxr-x 2 student3_10 student3_10 4,0K anp 3 18:35 .oracle_jre_usage  
-rw-rw-r-- 1 student3_10 student3_10 1,2K anp 13 20:23 reducer.py  
-rw-rw-r-- 1 student3_10 student3_10 1,2K anp 13 20:09 Reducer.py  
drwx----- 2 student3_10 student3_10 4,0K anp 3 18:40 .ssh  
-rw-rw-r-- 1 student3_10 student3_10 514M anp 15 18:25 urbandict.csv  
-rw-rw-r-- 1 student3_10 student3_10 331M anp 13 17:56 vehicles.csv  
-rw----- 1 student3_10 student3_10 2,2K anp 13 20:09 viminfo  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ wc -l urbandict.csv  
2580925 urbandict.csv  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ^C  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

head -n 100000 vehicles.csv > vehicles.csv
head -n 1290462 urbandict.csv > urbandict_new.csv


```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0~
Файл  Правка  Вид  Терминал  Вкладки  Справка
-rw-r--r-- 1 student3_10 student3_10 2,2K апр 13 20:09 .viminfo
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ wc -l urbandict.csv
2580925 urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ^C
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ head -n 1290462 urbandict.csv > urbandict_new.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ls -alh
итого 1,1G
drwxr-xr-x. 4 student3_10 student3_10 4,0K апр 15 18:53 .
drwxr-xr-x. 218 root root 12K апр 15 07:07 ..
-rw-r--r-- 1 student3_10 student3_10 11K апр 15 18:21 .bash_history
-rw-r--r-- 1 student3_10 student3_10 18 аэр 8 2019 .bash_logout
-rw-r--r-- 1 student3_10 student3_10 193 аэр 8 2019 .bash_profile
-rw-r--r-- 1 student3_10 student3_10 231 аэр 8 2019 .bashrc
-rw-rw-r-- 1 student3_10 student3_10 529 апр 13 19:31 mapper.py
-rw-rw-r-- 1 student3_10 student3_10 520 апр 13 19:14 Mapper.py
drwxrwxr-x 2 student3_10 student3_10 4,0K апр 3 18:35 .oracle_jre_usage
-rw-rw-r-- 1 student3_10 student3_10 1,2K апр 13 20:23 reducer.py
-rw-rw-r-- 1 student3_10 student3_10 1,2K апр 13 20:09 Reducer.py
drwxr-xr-x 2 student3_10 student3_10 4,0K апр 3 18:40 .ssh
-rw-rw-r-- 1 student3_10 student3_10 514M апр 15 18:25 urbandict.csv
-rw-rw-r-- 1 student3_10 student3_10 246M апр 15 18:53 urbandict_new.csv
-rw-rw-r-- 1 student3_10 student3_10 331M апр 13 17:56 vehicles.csv
-rw-r--r-- 1 student3_10 student3_10 2,2K апр 13 20:09 .viminfo
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

rm urbandict.csv

mv small.csv viholes.csv

Переименовываю файл

mv urbandict_new.csv urbandict.csv

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0~
Файл  Правка  Вид  Терминал  Вкладки  Справка
-rw-rw-r-- 1 student3_10 student3_10 1,2K апр 13 20:09 Reducer.py
drwxr-xr-x. 2 student3_10 student3_10 4,0K апр 3 18:40 .ssh
-rw-rw-r-- 1 student3_10 student3_10 246M апр 15 18:53 urbandict_new.csv
-rw-rw-r-- 1 student3_10 student3_10 331M апр 13 17:56 vehicles.csv
-rw-r--r-- 1 student3_10 student3_10 2,2K апр 13 20:09 .viminfo
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ mv urbandict_new.csv urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ ls -alh
итого 576M
drwxr-xr-x. 4 student3_10 student3_10 4,0K апр 15 19:03 .
drwxr-xr-x. 218 root root 12K апр 15 07:07 ..
-rw-r--r-- 1 student3_10 student3_10 11K апр 15 18:21 .bash_history
-rw-r--r-- 1 student3_10 student3_10 18 аэр 8 2019 .bash_logout
-rw-r--r-- 1 student3_10 student3_10 193 аэр 8 2019 .bash_profile
-rw-r--r-- 1 student3_10 student3_10 231 аэр 8 2019 .bashrc
-rw-rw-r-- 1 student3_10 student3_10 529 апр 13 19:31 mapper.py
-rw-rw-r-- 1 student3_10 student3_10 520 апр 13 19:14 Mapper.py
drwxrwxr-x 2 student3_10 student3_10 4,0K апр 3 18:35 .oracle_jre_usage
-rw-rw-r-- 1 student3_10 student3_10 1,2K апр 13 20:23 reducer.py
-rw-rw-r-- 1 student3_10 student3_10 1,2K апр 13 20:09 Reducer.py
drwxr-xr-x 2 student3_10 student3_10 4,0K апр 3 18:40 .ssh
-rw-rw-r-- 1 student3_10 student3_10 246M апр 15 18:53 urbandict.csv
-rw-rw-r-- 1 student3_10 student3_10 331M апр 13 17:56 vehicles.csv
-rw-r--r-- 1 student3_10 student3_10 2,2K апр 13 20:09 .viminfo
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

Загружаю: hdfs dfs -put vehicles.csv .

Загружаю: hdfs dfs -put urbandict.csv .

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0~
Файл  Правка  Вид  Терминал  Вкладки  Справка
drwxr-xr-x. 4 student3_10 student3_10 4,0K апр 15 19:03 .
drwxr-xr-x. 218 root root 12K апр 15 07:07 ..
-rw-r--r-- 1 student3_10 student3_10 11K апр 15 18:21 .bash_history
-rw-r--r-- 1 student3_10 student3_10 18 аэр 8 2019 .bash_logout
-rw-r--r-- 1 student3_10 student3_10 193 аэр 8 2019 .bash_profile
-rw-r--r-- 1 student3_10 student3_10 231 аэр 8 2019 .bashrc
-rw-rw-r-- 1 student3_10 student3_10 529 апр 13 19:31 mapper.py
-rw-rw-r-- 1 student3_10 student3_10 520 апр 13 19:14 Mapper.py
drwxrwxr-x 2 student3_10 student3_10 4,0K апр 3 18:35 .oracle_jre_usage
-rw-rw-r-- 1 student3_10 student3_10 1,2K апр 13 20:23 reducer.py
-rw-rw-r-- 1 student3_10 student3_10 1,2K апр 13 20:09 Reducer.py
drwxr-xr-x 2 student3_10 student3_10 4,0K апр 3 18:40 .ssh
-rw-rw-r-- 1 student3_10 student3_10 246M апр 15 18:53 urbandict.csv
-rw-rw-r-- 1 student3_10 student3_10 331M апр 13 17:56 vehicles.csv
-rw-r--r-- 1 student3_10 student3_10 2,2K апр 13 20:09 .viminfo
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -put urbandict.csv .
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls
Found 5 items
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 18:00 .Trash
drwxr-xr-x - student3_10 student3_10 0 2021-04-13 20:35 .staging
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 18:20 lesson
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 17:36 test
-rw-r--r-- 2 student3_10 student3_10 257081603 2021-04-15 19:07 urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

Правильный просмотр размера файла: hdfs dfs -ls -lh

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка

-rw-rw-r-- 1 student3_10 student3_10 520 anp 13 19:14 Mapper.py
drwxrwxr-x 2 student3_10 student3_10 4,0K anp 3 18:35 .oracle_jre_usage
-rw-rw-r-- 1 student3_10 student3_10 1,2K anp 13 20:23 reducer.py
-rw-rw-r-- 1 student3_10 student3_10 1,2K anp 13 20:09 Reducer.py
drwx----- 2 student3_10 student3_10 4,0K anp 3 18:40 .ssh
-rw-rw-r-- 1 student3_10 student3_10 246M anp 15 18:53 urbandict.csv
-rw-rw-r-- 1 student3_10 student3_10 331M anp 13 17:56 vehicles.csv
-rw-rw-r-- 1 student3_10 student3_10 2,2K anp 13 20:09 .viminfo
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -put urbandict.csv .
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls
Found 5 items
drwx----- - student3_10 student3_10 0 2021-04-15 18:00 .Trash
drwx----- - student3_10 student3_10 0 2021-04-13 20:35 .staging
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 18:20 lesson
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 17:36 test
-rw-r--r-- 2 student3_10 student3_10 257081603 2021-04-15 19:07 urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls -h
Found 5 items
drwx----- - student3_10 student3_10 0 2021-04-15 18:00 .Trash
drwx----- - student3_10 student3_10 0 2021-04-13 20:35 .staging
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 18:20 lesson
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 17:36 test
-rw-r--r-- 2 student3_10 student3_10 245.2 M 2021-04-15 19:07 urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

Удаляем директорию **.Trash** со всем содержимым: `hdfs dfs -rm -r .Trash`

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка

.bash_history  .bash_profile  mapper.py      .oracle_jre_usage/  Reducer.py      urbandict.csv  .viminfo
.bash_logout  .bashrc        Mapper.py      reducer.py          .ssh/           vehicles.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -rm -r .Trash
Deleted .Trash
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls
Found 3 items
drwx----- - student3_10 student3_10 0 2021-04-13 20:35 .staging
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 19:19 lesson
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 17:36 test
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -rm -r .staging
21/04/15 19:24:53 INFO fs.TrashPolicyDefault: Moved: 'hdfs://bigdataanalytics2-head-shdpt-v31-1-0.novalocal:8020/user/student3_10/.staging' to trash at: hdfs://bigdataanalytics2-head-shdpt-v31-1-0.novalocal:8020/user/student3_10/.Trash/Current/user/student3_10/.staging
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls
Found 3 items
drwx----- - student3_10 student3_10 0 2021-04-15 19:24 .Trash
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 19:19 lesson
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 17:36 test
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -rm -r .Trash
Deleted .Trash
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls
Found 2 items
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 19:19 lesson
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 17:36 test
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

Проверка перемещённых файлов

`hdfs dfs -ls lesson`

`hdfs dfs -ls test`

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка

drwx----- - student3_10 student3_10 0 2021-04-13 20:35 .staging
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 19:19 lesson
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 17:36 test
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -rm -r .staging
21/04/15 19:24:53 INFO fs.TrashPolicyDefault: Moved: 'hdfs://bigdataanalytics2-head-shdpt-v31-1-0.novalocal:8020/user/student3_10/.staging' to trash at: hdfs://bigdataanalytics2-head-shdpt-v31-1-0.novalocal:8020/user/student3_10/.Trash/Current/user/student3_10/.staging
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls
Found 3 items
drwx----- - student3_10 student3_10 0 2021-04-15 19:24 .Trash
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 19:19 lesson
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 17:36 test
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -rm -r .Trash
Deleted .Trash
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls
Found 2 items
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 19:19 lesson
drwxr-xr-x - student3_10 student3_10 0 2021-04-15 17:36 test
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls lesson
Found 1 items
-rw-r--r-- 2 student3_10 student3_10 257081603 2021-04-15 19:07 lesson/urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls test
Found 1 items
-rw-r--r-- 2 student3_10 student3_10 346353924 2021-04-15 17:36 test/vehicles.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

Проверка размера моей папки: `hdfs dfs -du -h`

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -rm -r .staging
21/04/15 19:24:53 INFO fs.TrashPolicyDefault: Moved: 'hdfs://bigdataanalytics2-head-shdpt-v31-1-0.novalocal:8020/user/student3_10/.staging' to trash at: hdfs://bigdataanalytics2-head-shdpt-v31-1-0.novalocal:8020/user/student3_10/.Trash/Current/user/student3_10/.staging
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls
Found 3 items
drwx----- - student3_10 student3_10      0 2021-04-15 19:24 .Trash
drwxr-xr-x - student3_10 student3_10      0 2021-04-15 19:19 lesson
drwxr-xr-x - student3_10 student3_10      0 2021-04-15 17:36 test
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -rm -r .Trash
Deleted .Trash
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls
Found 2 items
drwxr-xr-x - student3_10 student3_10      0 2021-04-15 19:19 lesson
drwxr-xr-x - student3_10 student3_10      0 2021-04-15 17:36 test
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls lesson
Found 1 items
-rw-r--r--  2 student3_10 student3_10 257081603 2021-04-15 19:07 lesson/urbandict.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -ls test
Found 1 items
-rw-r--r--  2 student3_10 student3_10 346353924 2021-04-15 17:36 test/vehicles.csv
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -du -h
245.2 M 490.3 M lesson
330.3 M 660.6 M test
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ █
```

cat vehicles.csv | python3.7 mapper.py
cat vehicles.csv | python3.7 mapper.py | sort | python3.7 reducer.py

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка
jaguar/t6137143
jeep/t69589094
kia/t19559407
land rover/t94400
lexus/t30034843
lincoln/t7796232
mazda/t14377882
mercedes-benz/t65436510
mercury/t1162558
mini/t7507965
mitsubishi/t3672210
morgan/t74977
nissan/t67049248
pontiac/t3417008
porsche/t17043208
ram/t92764848
rover/t9843502
saturn/t885346
subaru/t30836333
tesla/t10943535
toyota/t134519824
volkswagen/t26791675
volvo/t8615208
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ █
```

current
Удалить: hdfs dfs -rm -r result
Посмотреть результат: hdfs dfs -cat result/part*
cat urbandict.csv | python3.7 mapper.py

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~  
Файл  Правка  Вид  Терминал  Вкладки  Справка  
319ff6a2  
97b18a12  
2cff5051  
c3cde12e  
ff17879  
a1901627  
c795a9ca  
a6c11229  
684aab14  
999a333b  
b8256651  
595b54e1  
45a1e4b9  
c795a9ca  
4dda8004  
76db3e41  
e1f4e3a3  
efda79c0  
53f9899f  
d6a93036  
4c2aba10  
6a6daf75  
2dd25d86  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ cat urbandict.csv | python3.7 mapper.py
```

hdfs dfs -rm r result

```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~  
Файл  Правка  Вид  Терминал  Вкладки  Справка  
-rw-rw-r-- 1 student3_10 student3_10 525 anp 16 21:27 mapper.py  
-rw-rw-r-- 1 student3_10 student3_10 529 anp 16 19:39 Mapper.py  
drwxrwxr-x 2 student3_10 student3_10 4,0K anp 3 18:35 .oracle_jre_usage  
-rw-rw-r-- 1 student3_10 student3_10 1,2K anp 16 21:33 reducer.py  
-rw-rw-r-- 1 student3_10 student3_10 1,2K anp 16 19:55 Reducer.py  
drwx----- 2 student3_10 student3_10 4,0K anp 3 18:40 .ssh  
-rw-rw-r-- 1 student3_10 student3_10 246M anp 15 18:53 urbandict.csv  
-rw-rw-r-- 1 student3_10 student3_10 331M anp 13 17:56 vehicles.csv  
-rw----- 1 student3_10 student3_10 3,7K anp 15 21:36 .viminfo  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ cat urbandict.csv | python3.7 mapper.py | sort | python3.7 Reducer.py  
^[[A^[[ATraceback (most recent call last):  
  File "Reducer.py", line 40, in <module>  
    print(current_word+'/'+t'+str(current_count))  
TypeError: unsupported operand type(s) for +: 'NoneType' and 'str'  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ cat urbandict.csv | python3.7 mapper.py | sort | python3.7 Reducer.py  
Traceback (most recent call last):  
  File "Reducer.py", line 40, in <module>  
    print(current_word+'/'+t'+str(current_count))  
TypeError: unsupported operand type(s) for +: 'NoneType' and 'str'  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ cat urbandict.csv | python3.7 mapper.py | sort | python3.7 reducer.py  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hdfs dfs -rm r result  
rm: `r': No such file or directory  
rm: `result': Is a directory  
[student3_10@bigdataanalytics2-head-shdpt-v31-1-0 ~]$
```

Для запуска распределенного вычисления воспользуемся командой:

```
yarn jar /usr/hdp/current/hadoop-mapreduce-client/hadoop-streaming.jar -input lesson -output result -mapper  
"python3.7 mapper.py" -reducer "python3.7 reducer.py" -file mapper.py -file reducer.py
```



```
Терминал - student3_10@bigdataanalytics2-head-shdpt-v31-1-0:~
Файл  Правка  Вид  Терминал  Вкладки  Справка
21/04/16 21:56:02 INFO mapreduce.Job: Job job_1618415779628_0247 running in uber mode : false
21/04/16 21:56:02 INFO mapreduce.Job: map 0% reduce 0%
21/04/16 21:56:12 INFO mapreduce.Job: Task Id : attempt_1618415779628_0247_m_000000_0, Status : FAILED
[2021-04-16 21:56:10.417]Container killed on request. Exit code is 137
[2021-04-16 21:56:10.431]Container exited with a non-zero exit code 137.
[2021-04-16 21:56:10.434]Killed by external signal

21/04/16 21:56:15 INFO mapreduce.Job: map 50% reduce 0%
21/04/16 21:56:23 INFO mapreduce.Job: map 100% reduce 0%
21/04/16 21:56:26 INFO mapreduce.Job: map 100% reduce 100%
21/04/16 21:56:26 INFO mapreduce.Job: Job job_1618415779628_0247 completed successfully
21/04/16 21:56:26 INFO mapreduce.Job: Counters: 56
  File System Counters
    FILE: Number of bytes read=15399937
    FILE: Number of bytes written=31517869
    FILE: Number of read operations=0
    FILE: Number of large read operations=0
    FILE: Number of write operations=0
    HDFS: Number of bytes read=257122730
    HDFS: Number of bytes written=0
    HDFS: Number of read operations=11
    HDFS: Number of large read operations=0
    HDFS: Number of write operations=2
  Job Counters
    Failed map tasks=1
    Launched map tasks=3
    Launched reduce tasks=1
    Other local map tasks=1
    Data-local map tasks=1
    Rack-local map tasks=1
    Total time spent by all maps in occupied slots (ms)=112752
    Total time spent by all reduces in occupied slots (ms)=31328
    Total time spent by all map tasks (ms)=28188
    Total time spent by all reduce tasks (ms)=7832
    Total vcore-milliseconds taken by all map tasks=28188
    Total vcore-milliseconds taken by all reduce tasks=7832
    Total megabyte-milliseconds taken by all map tasks=57729024
    Total megabyte-milliseconds taken by all reduce tasks=16039936
  Map-Reduce Framework
    Map input records=1290462
    Map output records=1290462
```

```
PycharmProjects - ~/BigData. Введение в экосистему Hadoop/4. Hive & HUE/mapper.py
File Edit View Navigate Code Refactor Run Tools Git Window Help
doop > 4. Hive & HUE > mapper.py runner [icons] Git: [icons]
mapper.py x reducer.py x
Project
1 1 #!/usr/bin/env python
2 2 """mapper.py"""
3
4 4 import sys
5
6 6 for line in sys.stdin:
7 7     # удаляем лишние пробелы
8 8     line = line.strip()
9 9     # делим строки на слова
10 10 words = line.split(',')
11 11 try:
12 12     word = words[4]
13 13     # price = words[5]
14 14     # добавляем значение для счетчика
15 15     # for word in words:
16 16     # выводим в output пару ключ и значение
17 17     print(word.lower()+'\t')
18 18 except Exception:
19 19     continue
20 20
Favorites
Git TODO Problems Python Packages Terminal Python Console Event Log
Nim toolchain: Cannot find Nim co... (30 minutes ago) 20:1 LF UTF-8 4 spaces Python 3.7 master
```

PycharmProjects - ~/BigData. Введение в экосистему Hadoop/4. Hive & HUE/reducer.py

FileEditViewNavigateCodeRefactorRunToolsGitWindowHelp

doop > 4. Hive & HUE > reducer.pyrunnerGit: ✓✓✓⌚↶⌕⚙

mapper.pyxreducer.pyx

Project

Commit

Structure

Favorites

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```
#!/usr/bin/env python
"""reducer.py"""

from operator import itemgetter
import sys

current_word = None
current_count = 0
word = None

# читаем строки из STDIN
for line in sys.stdin:
    line = line.strip()
    # line = line.lower()
    # удаляем пробелы в конце и начале строки
    # разделяем пары ключ и значение
    try:
        word, count = line.split('\t', 1)
    except Exception:
        continue
    # преобразуем значение в число
    try:
        count = int(count)
    except ValueError:
        # игнорируем ошибки
        continue

    # на Reduce приходят данные после фазы Sort
    # поэтому этот код будет работать
    if current_word == word:
        current_count += count
    else:
        if current_word:
            # пишем результат в STDOUT
            print(current_word+'\t'+str(current_count))
            current_count = count
            current_word = word
        # не забываем про последнее слово
        if current_word == word:
            print(current_word+'\t'+str(current_count))

for line in sys.stdin > else
```

⌕ Git

☰ TODO

🔍 Problems

📦 Python Packages

🖥 Terminal

🔌 Python Console

🔍 Event Log

Nim toolchain: Cannot find Nim co... (31 minutes ago)32:7 LUTF-8 4spacesPython 3.7master