Департамент образования и науки города Москвы

Государственное автономное образовательное учреждение высшего образования города Москвы

«Московский городской педагогический университет»

Институт цифрового образования

Департамент информатики, управления и технологий

ДИСЦИПЛИНА:

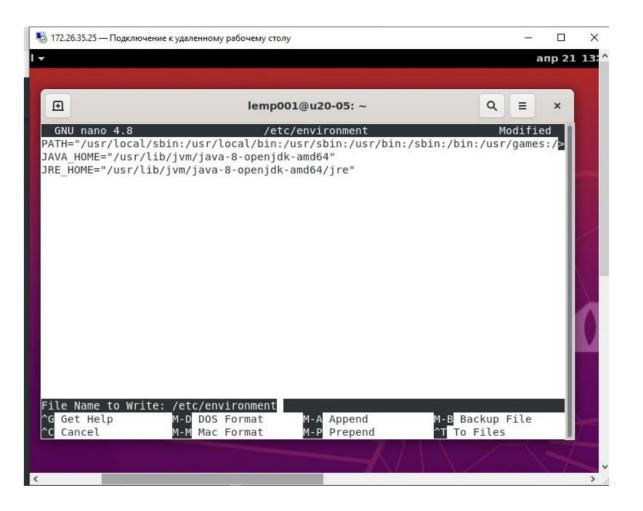**Инструменты для обработки и хранения больших данных**
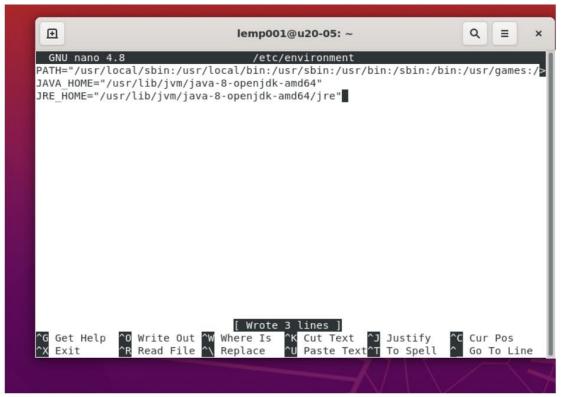
Отчет

Тема:

Introduction to HDFS

Выполнила: Олифир А. А., группа: АДЭУ-201

Преподаватель: Босенко Т. М.

Москва

2023

```
lemp001@u20-05:~$ sudo apt-get install openjdk-8-jdk
[sudo] password for lemp001:
Sorry, try again.
[sudo] password for lemp001:
Sorry, try again.
[sudo] password for lemp001:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libfwupdplugin1
  libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  ca-certificates-java fonts-dejavu-extra java-common libatk-wrapper-java
  libatk-wrapper-java-jni libice-dev libpthread-stubs0-dev libsm-dev
  libx11-dev libxau-dev libxcb1-dev libxdmcp-dev libxt-dev
  openjdk-8-jdk-headless openjdk-8-jre openjdk-8-jre-headless
  x11proto-core-dev x11proto-dev xorg-sgml-doctools xtrans-dev
Suggested packages:
  default-jre libice-doc libsm-doc libx11-doc libxcb-doc libxt-doc
  openjdk-8-demo openjdk-8-source visualvm fonts-ipafont-gothic
  fonts-ipafont-mincho fonts-wqy-microhei fonts-wqy-zenhei
The following NEW packages will be installed:
```

```
lemp001@u20-05:~$ java -version
openjdk version "1.8.0_362"
OpenJDK Runtime Environment (build 1.8.0_362-8u362-ga-0ubuntu1~20.04.1-b09)
OpenJDK 64-Bit Server VM (build 25.362-b09, mixed mode)
```

```
lemp001@u20-05:~$ sudo nano /etc/environment
lemp001@u20-05:~$ sudo adduser hadoop
Adding user `hadoop' ...
Adding new group `hadoop' (1001) ...
Adding new user `hadoop' (1001) with group `hadoop' ...
Creating home directory `/home/hadoop' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for hadoop
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
```

lemp001@u20-05: ~

```
  GNU nano 4.8                    /etc/environment                    Modified
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/>
JAVA_HOME="/usr/lib/jvm/java-8-openjdk-amd64"
JRE_HOME="/usr/lib/jvm/java-8-openjdk-amd64/jre"
```

```
File Name to Write: /etc/environment
^G Get Help        M-D DOS Format      M-A Append       M-B Backup File
^C Cancel          M-M Mac Format      M-P Prepend      ^T To Files
```

lemp001@u20-05: ~

```
  GNU nano 4.8                    /etc/environment
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/>
JAVA_HOME="/usr/lib/jvm/java-8-openjdk-amd64"
JRE_HOME="/usr/lib/jvm/java-8-openjdk-amd64/jre"
```

```
                              [ Wrote 3 lines ]
^G Get Help   ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos
^X Exit       ^R Read File  ^\ Replace    ^U Paste Text ^T To Spell   ^  Go To Line
```
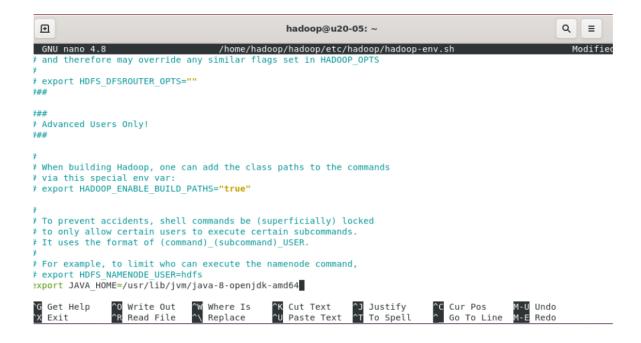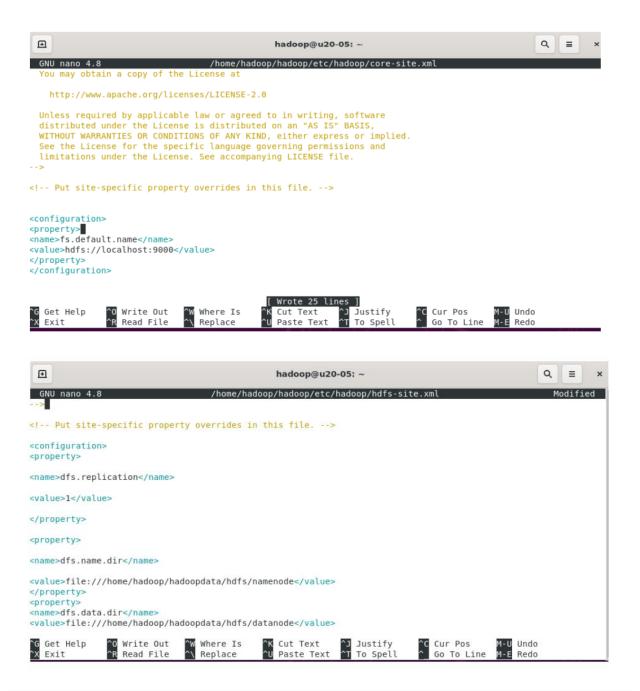
```
lemp001@u20-05:~$ sudo su hadoop
hadoop@u20-05:/home/lemp001$ cd
hadoop@u20-05:~$ ssh-keygen -t rsa -N "" -f /home/hadoop/.ssh/id_rsa
Generating public/private rsa key pair.
Created directory '/home/hadoop/.ssh'.
Your identification has been saved in /home/hadoop/.ssh/id_rsa
Your public key has been saved in /home/hadoop/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:L3DUzsZBt3OcoxNP7iq/pfAvPl5CGGw1IdBmMV4h7Bw hadoop@u20-05
The key's randomart image is:
+---[RSA 3072]----+
|        .+*.Bo    |
|         =EB + .  |
|        .=B.+ *   |
|       . =o+ O .  |
|      . S * + o   |
|       o o . o    |
|        . o . +   |
|         ..oo*    |
|           =0=.   |
+----[SHA256]-----+
hadoop@u20-05:~$ cat /home/hadoop/.ssh/id_rsa.pub >> /home/hadoop/.ssh/authorized_keys
hadoop@u20-05:~$ chmod 0600 /home/hadoop/.ssh/authorized_keys
hadoop@u20-05:~$ 
```

```
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-51-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

87 updates can be applied immediately.
1 of these updates is a standard security update.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.
*** System restart required ***

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

hadoop@u20-05:~$ exit
logout
Connection to localhost closed.

hadoop@u20-05:~$ wget https://archive.apache.org/dist/hadoop/common/hadoop-3.1.2/hadoop-3.1.2.tar.gz
--2023-04-21 13:51:40--  https://archive.apache.org/dist/hadoop/common/hadoop-3.1.2/hadoop-3.1.2.tar.gz
Resolving archive.apache.org (archive.apache.org)... 138.201.131.134, 2a01:4f8:172:2ec5::2
Connecting to archive.apache.org (archive.apache.org)|138.201.131.134|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 332433589 (317M) [application/x-gzip]
Saving to: 'hadoop-3.1.2.tar.gz'

hadoop-3.1.2.tar.gz      100%[===========================================>] 317,03M   710KB/s    in 7m 50s

2023-04-21 13:59:31 (690 KB/s) - 'hadoop-3.1.2.tar.gz' saved [332433589/332433589]
```

```
  GNU nano 4.8                                    .bashrc
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $- in
    *i*) ;;
        *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
HISTFILESIZE=2000

# check the window size after each command and, if necessary,
                              [ Read 117 lines ]
^G Get Help     ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos      M-U Undo
^X Exit         ^R Read File    ^\ Replace      ^U Paste Text   ^T To Spell     ^  Go To Line   M-E Redo
```

```
hadoop@u20-05:~$ mv hadoop-3.1.2 hadoop
hadoop@u20-05:~$ nano .bashrc
hadoop@u20-05:~$ source .bashrc
hadoop@u20-05:~$ 
```

```
  GNU nano 4.8            /home/hadoop/hadoop/etc/hadoop/hadoop-env.sh                      Modified
# and therefore may override any similar flags set in HADOOP_OPTS
#
# export HDFS_DFSROUTER_OPTS=""
###

###
# Advanced Users Only!
###

#
# When building Hadoop, one can add the class paths to the commands
# via this special env var:
# export HADOOP_ENABLE_BUILD_PATHS="true"

#
# To prevent accidents, shell commands be (superficially) locked
# to only allow certain users to execute certain subcommands.
# It uses the format of (command)_(subcommand)_USER.
#
# For example, to limit who can execute the namenode command,
# export HDFS_NAMENODE_USER=hdfs
export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
^G Get Help     ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos      M-U Undo
^X Exit         ^R Read File    ^\ Replace      ^U Paste Text   ^T To Spell     ^  Go To Line   M-E Redo
```

```
GNU nano 4.8                    /home/hadoop/hadoop/etc/hadoop/core-site.xml
  You may obtain a copy of the License at

    http://www.apache.org/licenses/LICENSE-2.0

  Unless required by applicable law or agreed to in writing, software
  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License. See accompanying LICENSE file.
-->

<!-- Put site-specific property overrides in this file. -->


<configuration>
<property>█
<name>fs.default.name</name>
<value>hdfs://localhost:9000</value>
</property>
</configuration>


                              [ Wrote 25 lines ]
^G Get Help    ^O Write Out   ^W Where Is    ^K Cut Text    ^J Justify     ^C Cur Pos     M-U Undo
^X Exit        ^R Read File    ^\ Replace     ^U Paste Text  ^T To Spell    ^  Go To Line  M-E Redo
```

```
GNU nano 4.8                    /home/hadoop/hadoop/etc/hadoop/hdfs-site.xml                Modified
-->█

<!-- Put site-specific property overrides in this file. -->

<configuration>
<property>

<name>dfs.replication</name>

<value>1</value>

</property>

<property>

<name>dfs.name.dir</name>

<value>file:///home/hadoop/hadoopdata/hdfs/namenode</value>
</property>
<property>
<name>dfs.data.dir</name>
<value>file:///home/hadoop/hadoopdata/hdfs/datanode</value>
^G Get Help    ^O Write Out   ^W Where Is    ^K Cut Text    ^J Justify     ^C Cur Pos     M-U Undo
^X Exit        ^R Read File    ^\ Replace     ^U Paste Text  ^T To Spell    ^  Go To Line  M-E Redo
```

```
<configuration>
<property>

<name>mapreduce.framework.name</name>

<value>yarn</value>

</property>

<property>

<name>yarn.app.mapreduce.am.env</name>

<value>HADOOP_MAPRED_HOME=${HADOOP_HOME}</value>

</property>

<property>

<name>mapreduce.map.env</name>

<value>HADOOP_MAPRED_HOME=${HADOOP_HOME}</value>

</property>
█
```

```xml
<value>HADOOP_MAPRED_HOME=${HADOOP_HOME}</value>

</property>

<property>

<name>mapreduce.map.env</name>

<value>HADOOP_MAPRED_HOME=${HADOOP_HOME}</value>

</property>

<property>

<name>mapreduce.reduce.env</name>

<value>HADOOP_MAPRED_HOME=${HADOOP_HOME}</value>

</property>
</configuration>
```

```
^G Get Help    ^O Write Out   ^W Where Is    ^K Cut Text    ^J Justify     ^C Cur Pos     M-U Undo
^X Exit        ^R Read File    ^\ Replace     ^U Paste Text  ^T To Spell    ^  Go To Line  M-E Redo
```

```xml
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License. See accompanying LICENSE file.
-->
<configuration>

<!-- Site specific YARN configuration properties -->
<property>

<name>yarn.nodemanager.aux-services</name>

<value>mapreduce_shuffle</value>

</property>

<property>

<name>yarn.nodemanager.resource.memory-mb</name>

<value>16384</value>

</property>
```

```
File Name to Write: /home/hadoop/hadoop/etc/hadoop/yarn-site.xml
^G Get Help              M-D DOS Format          M-A Append              M-B Backup File
^C Cancel               M-M Mac Format          M-P Prepend             ^T To Files
```

```
hadoop@u20-05:~$ hadoop fs -mkdir /user
2023-04-21 14:35:21,671 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... u
sing builtin-java classes where applicable
hadoop@u20-05:~$ hadoop fs -mkdir /user/hadoop
2023-04-21 14:35:36,377 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... u
sing builtin-java classes where applicable
hadoop@u20-05:~$ hadoop fs -put /var/log/dpkg.log /user/hadoop/dpkg.log
2023-04-21 14:37:15,148 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... u
sing builtin-java classes where applicable
hadoop@u20-05:~$
```

Hadoop   Overview   Datanodes   Datanode Volume Failures   Snapshot   Startup Progress   Utilities ▾

Browse Directory

/user/hadoop   Go!

Show 25 ▾ entries   Search:

	Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name	
☐	-rw-r--r--	hadoop	supergroup	314.76 KB	Apr 21 14:37	1	128 MB	dpkg.log	🗑

Showing 1 to 1 of 1 entries   Previous 1 Ne

Hadoop, 2018.

```
hadoop@u20-05:~$ hadoop fs -cat /user/hadoop/test_output/part-r-00000
2023-04-21 14:44:23,238 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform..
asses where applicable
0.10.2-0ubuntu0.20.04.1 4
0.11.0-0ubuntu0.20.04.1 6
0.136ubuntu6.7  12
0.17-2  48
0.18.2-2        4
0.18.2-2ubuntu0.1       6
0.19.5-1ubuntu1 4
0.19.5-1ubuntu1.1       6
0.24-1ubuntu3   68
0.36-6ubuntu1   4
0.37.1-1        14
0.38.4-0ubuntu1 4
0.38.4-0ubuntu2.1       6
0.4-1   7
0.72    7
0.86.1-0ubuntu1 16
0.86.1-0ubuntu1.1       24
0.9.12-1        7
06:14:20        7
06:14:21        8
06:14:25        5
06:14:26        5
06:14:27        13
06:14:28        2
```

Show 20 ▾ entries

ID	User ◇	Name ◇	Application Type ◇	Queue ◇	Application Priority ◇	StartTime ◇	FinishTime ◇	State ◇	FinalStatus ◇	Running Containers ◇	Allo C V
application_1682076545743_0001	hadoop	word count	MAPREDUCE	default	0	Fri Apr 21 14:40:56 +0300 2023	Fri Apr 21 14:41:18 +0300 2023	FINISHED	SUCCEEDED	N/A	N/A

Showing 1 to 1 of 1 entries

ФАУСТ

```
olifir@olifir-VirtualBox:~$ git clone https://github.com/BosenkoTM/Big-Data-Storage-an
git
Клонирование в «Big-Data-Storage-and-Processing-Tools»…
remote: Enumerating objects: 123, done.
remote: Counting objects: 100% (27/27), done.
remote: Compressing objects: 100% (27/27), done.
remote: Total 123 (delta 12), reused 0 (delta 0), pack-reused 96
Получение объектов: 100% (123/123), 19.72 MiB | 2.47 MiB/s, готово.
Определение изменений: 100% (37/37), готово.
olifir@olifir-VirtualBox:~$ ▯
```

```
oop@olifir-VirtualBox:~$ hadoop jar hadoop/share/hadoop/mapreduce/hadoop-mapreduce-examples-3.1.2.jar wordcount /user/hadoop/Faust_1.txt /user/had
Faust_1_Output
23-05-04 00:18:42,401 WARN util.NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applic

23-05-04 00:18:45,379 INFO client.RMProxy: Connecting to ResourceManager at /0.0.0.0:8032
23-05-04 00:18:47,354 INFO mapreduce.JobResourceUploader: Disabling Erasure Coding for path: /tmp/hadoop-yarn/staging/hadoop/.staging/job_1683142072
_0001
23-05-04 00:18:48,430 INFO input.FileInputFormat: Total input files to process : 1
023-05-04 00:18:48,854 INFO mapreduce.JobSubmitter: number of splits:1
023-05-04 00:18:49,834 WARN hdfs.DataStreamer: Caught exception
ava.lang.InterruptedException
        at java.lang.Object.wait(Native Method)
        at java.lang.Thread.join(Thread.java:1257)
        at java.lang.Thread.join(Thread.java:1331)
        at org.apache.hadoop.hdfs.DataStreamer.closeResponder(DataStreamer.java:986)
        at org.apache.hadoop.hdfs.DataStreamer.endBlock(DataStreamer.java:640)
        at org.apache.hadoop.hdfs.DataStreamer.run(DataStreamer.java:810)
023-05-04 00:18:49,848 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1683142072057_0001
023-05-04 00:18:49,853 INFO mapreduce.JobSubmitter: Executing with tokens: []
2023-05-04 00:18:50,769 INFO conf.Configuration: resource-types.xml not found
2023-05-04 00:18:50,771 INFO resource.ResourceUtils: Unable to find 'resource-types.xml'.
2023-05-04 00:18:51,976 INFO impl.YarnClientImpl: Submitted application application_1683142072057_0001
2023-05-04 00:18:52,214 INFO mapreduce.Job: The url to track the job: http://olifir-VirtualBox:8088/proxy/application_1683142072057_0001/
2023-05-04 00:18:52,215 INFO mapreduce.Job: Running job: job_1683142072057_0001
```

```
    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=1340963
    File Output Format Counters
            Bytes Written=63683
```
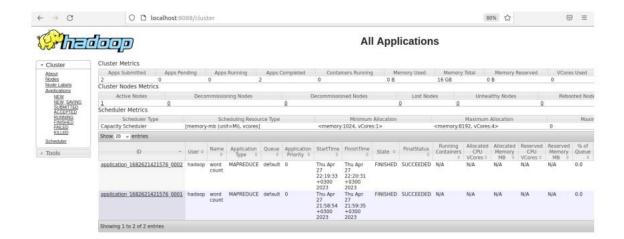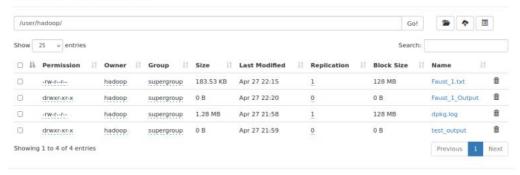
```
hadoop@olifir-VirtualBox:~$ sudo apt update
[sudo] password for sokolova:
Hit:1 http://ru.archive.ubuntu.com/ubuntu bionic InRelease
Hit:2 http://ru.archive.ubuntu.com/ubuntu bionic-updates InRelease
Hit:3 http://ru.archive.ubuntu.com/ubuntu bionic-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu bionic-security InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
291 packages can be upgraded. Run 'apt list --upgradable' to see them.
hadoop@olifir-VirtualBox:~$ sudo apt install git
hadoop@olifir-VirtualBox:~$ git --version
git version 2.17.1

hadoop@olifir-VirtualBox:~$ git clone https://github.com/BosenkoTM/Big-D
ata-Storage-and-Processing-Tools.git
Cloning into 'Big-Data-Storage-and-Processing-Tools'...
remote: Enumerating objects: 123, done.
remote: Counting objects: 100% (27/27), done.
remote: Compressing objects: 100% (27/27), done.
remote: Total 123 (delta 12), reused 0 (delta 0), pack-reused 96
Receiving objects: 100% (123/123), 19.72 MiB | 1.40 MiB/s, done.
Resolving deltas: 100% (37/37), done.
hadoop@olifir-VirtualBox:~$ hadoop fs -put Big-Data-Storage-and-Processing-Tools/p
tice/Faust_1.txt /user/hadoop/Faust_1.txt
2023-04-27 22:15:52,107 WARN util.NativeCodeLoader: Unable to load native-hadoop lib
y for your platform... using builtin-java classes where applicable
hadoop@olifir-VirtualBox:~$ hadoop jar hadoop/share/hadoop/mapreduce/hadoop-mapreduce
-examples-3.1.2.jar wordcount /user/hadoop/Faust_1.txt /user/hadoop/Faust_1_Output
```

All Applications

localhost:8088/cluster

Browse Directory

/user/hadoop/   Go!

Show 25 entries   Search:

		Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name	
☐		-rw-r--r--	hadoop	supergroup	183.53 KB	Apr 27 22:15	1	128 MB	Faust_1.txt	🗑
☐		drwxr-xr-x	hadoop	supergroup	0 B	Apr 27 22:20	0	0 B	Faust_1_Output	🗑
☐		-rw-r--r--	hadoop	supergroup	1.28 MB	Apr 27 21:58	1	128 MB	dpkg.log	🗑
☐		drwxr-xr-x	hadoop	supergroup	0 B	Apr 27 21:59	0	0 B	test_output	🗑

Showing 1 to 4 of 4 entries   Previous 1 Next

Hadoop, 2018.

```
hadoop@olifir-VirtualBox: hadoop fs -get /user/hadoop/Faust_1_Output/part-
r-00000 Faust_1_Output.csv
2023-04-27 22:21:42,293 WARN util.NativeCodeLoader: Unable to load native-hado
op library for your platform... using builtin-java classes where applicable
hadoop@olifir-VirtualBox: head -10 Faust_1_Output.csv
"Allein,        1
"Alles   1
"Als     1
"Der     1
"Die     2
"Er      2
"Ich     4
"Im      1
"Mein    1
"Nur     1
hadoop@olifir-VirtualBox:~$ █
```

Open ▼   ⛁

```
"Allein,          1
"Alles   1
"Als     1
"Der     1
"Die     2
"Er      2
"Ich     4
"Im      1
"Mein    1
"Nur     1
"Rette   1
"So      1
"Uhu!    1
"Wenn    1
"Wie".   1
```

```
hadoop@olifir-VirtualBox:~$ hadoop fs -put Big-Data-Storage-and-Processing-Tools/prac
tice/Faust_1.txt /user/hadoop/Faust_1.txt
2023-04-27 22:25:55,998 WARN util.NativeCodeLoader: Unable to load native-hadoop librar
y for your platform... using builtin-java classes where applicable
put: `/user/hadoop/Faust_1.txt': File exists
hadoop@olifir-VirtualBox:~$ hadoop jar hadoop/share/hadoop/mapreduce/hadoop-mapreduce
-examples-3.1.2.jar grep /user/hadoop/Faust_1.txt /user/hadoop/Faust_1_Count_Output 'Fa
ust'
```

← → C   ○ ▢ localhost:8088/cluster   80% ☆   ▽ ≡

hadoop   **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	Memory Total	Memory Reserved	VCores
4	0	1	3	1	2 GB	16 GB	0 B	1

Cluster Nodes Metrics

Active Nodes	Decommissioning Nodes	Decommissioned Nodes	Lost Nodes	Unhealthy Nodes	Reboo
1	0	0	0	0	0

Scheduler Metrics

Scheduler Type	Scheduling Resource Type	Minimum Allocation	Maximum Allocation	
Capacity Scheduler	[memory-mb (unit=Mi), vcores]	<memory:1024, vcores:1>	<memory:8192, vcores:4>	0

Show 20 ✓ entries

ID	User	Name	Application Type	Queue	Application Priority	StartTime	FinishTime	State	FinalStatus	Running Containers	Allocated CPU VCores	Allocated Memory MB	Reserved CPU VCores	Reserved Memory MB	% of Queue
application_1682621421576_0004	hadoop	grep-sort	MAPREDUCE	default	0	Thu Apr 27 22:27:26 +0300 2023	N/A	ACCEPTED	UNDEFINED	1	1	2048	0	0	12.5
application_1682621421576_0003	hadoop	grep-search	MAPREDUCE	default	0	Thu Apr 27 22:26:57 +0300 2023	Thu Apr 27 22:27:23 +0300 2023	FINISHED	SUCCEEDED	N/A	N/A	N/A	N/A	N/A	0.0
application_1682621421576_0002	hadoop	word count	MAPREDUCE	default	0	Thu Apr 27 22:19:33 +0300 2023	Thu Apr 27 22:20:31 +0300 2023	FINISHED	SUCCEEDED	N/A	N/A	N/A	N/A	N/A	0.0
application_1682621421576_0001	hadoop	word count	MAPREDUCE	default	0	Thu Apr 27 21:58:54 +0300 2023	Thu Apr 27 21:59:35 +0300 2023	FINISHED	SUCCEEDED	N/A	N/A	N/A	N/A	N/A	0.0

Showing 1 to 4 of 4 entries

```
                  bytes written=9
hadoop@olifir-VirtualBox:~$ hadoop fs -get /user/hadoop/Faust_1_Count_Output/part-r-0
0000 Faust_1_Count_Output.csv
2023-04-27 22:29:23,655 WARN util.NativeCodeLoader: Unable to load native-hadoop librar
y for your platform... using builtin-java classes where applicable
hadoop@olifir-VirtualBox:~$ cat Faust_1_Count_Output.csv
50      Faust
```

Open ▼   ▣   **part-r-00000**   Save   ≡   ⊖ ⊡ ⊗
                                       ~/Downloads

50   Faust|

Browse Directory

| /user/hadoop | | | | | | Go! | 📁 ↑ ▦ |

Show 25 ✓ entries   Search:

☐ ↕	Permission	Owner	Group	Size	Last Modified	Replication	Block Size	Name	↕
☐	-rw-r--r--	hadoop	supergroup	183.53 KB	Apr 27 22:15	1	128 MB	Faust_1.txt	🗑
☐	drwxr-xr-x	hadoop	supergroup	0 B	Apr 27 22:28	0	0 B	Faust_1_Count_Output	🗑
☐	drwxr-xr-x	hadoop	supergroup	0 B	Apr 27 22:20	0	0 B	Faust_1_Output	🗑
☐	-rw-r--r--	hadoop	supergroup	1.28 MB	Apr 27 21:58	1	128 MB	dpkg.log	🗑
☐	drwxr-xr-x	hadoop	supergroup	0 B	Apr 27 21:59	0	0 B	test_output	🗑

Showing 1 to 5 of 5 entries   Previous **1** Next

Hadoop, 2018.