LAPORAN KUIS 1 MATA KULIAH BIG DATA



Dosen Pengampu:

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Disusun Oleh:

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PROGRAM STUDI D4 TEKNIK INFORMATIKA JURUSAN TEKNOLOGI INFORMASI POLITEKNIK NEGERI MALANG 2025

Bagian 1: Mengunduh VM Hadoop Polinema

Name Node – Komputer Triyana Dewi Fatmawati
 hadoop-namenode
 Data Node 1 – Komputer Shasia Sasa Salsabyla
 hadoop-datanode1
 Data Node 2 – Komputer Sukma Bagus Wahasdwika
 hadoop-datanode2
 3/6/2025 4:27 PM
 File folder
 Data Node 3 – Komputer Yuma Rakha Samodra Sikayo

Dari gambar diatas dapat dilihat bahwa, VM Hadoop Polinema telah terunduh pada masing-masing komputer anggota kelompok.

05/03/2025 15:20

File folder

Bagian 2: Menjalankan VM Hadoop

hadoop-datanode3

• Name Node – Komputer Triyana Dewi Fatmawati

```
Ubuntu 24.04.2 LTS hadoop-namenode tty1
hadoop-namenode login: _
```

• Data Node 1 – Komputer Shasia Sasa Salsabyla

```
Ubuntu 24.04.2 LTS hadoop-datanode1 tty1
hadoop-datanode1 login: _
```

• Data Node 2 – Komputer Sukma Bagus Wahasdwika

```
Ubuntu 24.04.2 LTS hadoop-datanode2 tty1
hadoop-datanode2 login: _
```

Data Node 3 – Komputer Yuma Rakha Samodra Sikayo

```
Ubuntu 24.04.2 LTS hadoop-datanode3 tty3
hadoop-datanode3 login: _
```

Semua anggota kelompok telah berhasil menjalankan VirtualBox di semua komputer yang akan dijadikan cluster Hadoop.

Bagian 3 : Konfigurasi Cluster

- 1. Memastikan seluruh komputer anggota kelompok berada dalam satu jaringan yang sama.
- 2. Setelah berhasil login seperti pada bagian 2, setiap anggota kelompok melakukan **cek ip** address pada masing-masing VM dengan mengetikkan perintah **ip addr**.
 - Name Node Komputer Triyana Dewi Fatmawati : 192.168.96.158

• Data Node 1 – Komputer Shasia Sasa Salsabyla : 192.168.96.165

```
hadoopuser@hadoop-datanode1:~$ ip addr

1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo
valid_Ift forever preferred_Ift forever
inet6 ::1/128 scope host noprefixroute
valid_Ift forever preferred_Ift forever

2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 100

link/ether 08:00:27:91:4b:9a brd ff:ff:ff:ff:ff
inet 192.168.96.165/24 metric 100 brd 192.168.96.255 scope global dynamic enp0s3
valid_Ift 3585sec preferred_Ift 3585sec
inet6 fe80::a00:27ff:fe91:4b9a/64 scope link
valid_Ift forever preferred_Ift forever
```

Data Node 2 – Komputer Sukma Bagus Wahasdwika : 192.168.96.131

• Data Node 3 – Komputer Yuma Rakha Samodra Sikayo : **192.168.96.193**

```
iphadoopuser@hadoop-datanode3:~$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 10
0
link/ether 08:00:27:a6:58:94 brd ff:ff:ff:ff:
    inet 192.168.96.193/24 metric 100 brd 192.168.96.255 scope global dynamic enp0s3
        valid_lft 3569sec preferred_lft 3569sec
    inet6 fe80::a00:27ff:fea6:5894/64 scope link
        valid_lft forever preferred_lft forever
hadoopuser@hadoop-datanode3:~$
```

- 3. Melakukan edit file /etc/hosts dengan menggunakan perintah sudo nano /etc/hosts sesuai dengan ip address masing masing komputer. Sehingga setiap komputer dapat tersambung
 - Name Node Komputer Triyana Dewi Fatmawati

```
GNU nano 7.2 /etc/hosts *

127.0.0.1 localhost

# The following lines are desirable for IPv6 capable hosts
::1 ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters

# Hadoop cluster nodes
192.168.96.158 hadoop-namenode
192.168.96.155 hadoop-datanode1
192.168.96.131 hadoop-datanode2
192.168.96.193 hadoop-datanode3
```

• Data Node 1 – Komputer Shasia Sasa Salsabyla

```
GNU nano 7.2 /etc/hosts *

127.0.0.1 localhost

# The following lines are desirable for IPv6 capable hosts
::1 ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters

# Hadoop cluster nodes
192.168.96.158 hadoop-namenode
192.168.96.165 hadoop-datanode1
192.168.96.131_hadoop-datanode2
192.168.96.193 hadoop-datanode3
```

• Data Node 2 – Komputer Sukma Bagus Wahasdwika

```
🌠 hadoop-datanode2 [Running] - Oracle VirtualBox
      Machine
                View
                       Input
                              Devices
                                      Help
 GNU nano 7.2
127.0.0.1 localhost
 The following lines are desirable for IPv6 capable hosts
        ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
 f02::1 ip6-allnodes
ff02::2 ip6-allrouters
 Hadoop cluster nodes
192.168.96.158 hadoop-namenode
192.168.96.165 hadoop-datanode1
192.168.96.131 hadoop-datanode2
192.168.96.193 hadoop-datanode3
```

• Data Node 3 – Komputer Yuma Rakha Samodra Sikayo

- 4. Setelah memastikan semua komputer telah melakukan perintah point 3. Lakukan perintah dibawah ini pada komputer NameNode
 - 1) **start-dfs.sh** : Memulai layanan HDFS (NameNode, DataNode, dan Secondary NameNode).
 - 2) start-yarn.sh: Memulai layanan YARN (ResourceManager, NodeManager).
 - 3) **Jps :** Mengecek proses Java yang berjalan (memastikan layanan Hadoop seperti NameNode, DataNode, ResourceManager, dan NodeManager aktif).

```
hadoopuser@hadoop-namenode:~$ start-dfs.sh
Starting namenodes on [hadoop-namenode]
Starting datanodes
Starting secondary namenodes [hadoop-namenode]
hadoopuser@hadoop-namenode:~$ start-yarn.sh
Starting resourcemanager
Starting nodemanagers
hadoopuser@hadoop-namenode:~$ jps
1440 SecondaryNameNode
1650 ResourceManager
1235 NameNode
1748 Jps
hadoopuser@hadoop-namenode:~$ _
```

5. Setelah NameNode berhasil melakukan perintah. Selanjutnya setiap komputer DataNode melakukan perintah **jps** untuk memastikan bahwa proses Hadoop seperti DataNode dan NodeManager berjalan dengan benar.

```
hadoopuser@hadoop-datanode1:~$ jps
1188 NodeManager
1036 DataNode
1278 Jps
```

1. Terhubunglah ke cluster kelompok Anda melalui terminal dari komputer Anda masing-masing.

Pengerjaan:

Dari komputer fisik, buka terminal/cmd dan jalankan perintah SSH **ssh hadoopuser@192.168.96.158** (memakai IP namenode), lalu memasukkan password yaitu **hadoop.** Jika berhasil, prompt terminal akan berubah seperti pengerjaan anggota kelompok kami berikut:

• Name Node – Komputer Triyana Dewi Fatmawati

```
Microsoft Windows (Version 10.0.26100.3323)
(c) Microsoft Corporation. All rights reserved.

C. Nicrosoft Corporation. All rights reserved.

C. Viusers/NIRVAM DF2-sh Madogog092.168, 96.158
The authenticity of host 192.168.96.158 (192.168.96.158)' can't be established.
ED25519 key fingerprint is Mi2826:BiPMrsi689;FGXXCmXyypWr7pbcsTvsSsEiNogleHOE.
This host key is known by the following other names/addresses:

C. Viusers/NIRVAM DF2-sh Sid286:BiPWrsi689;FGXXCmXyypWr7pbcsTvsSsEiNogleHOE.
C. Viusers/NIRVAM DF2-sh Sid286:BiPWrsi689;FGXXCmXyypWr7pbcsTvsSsEiNogleHOE.

C. Viusers/NIRVAM DF2-sh Sid286:BiPWrsi689;FGXXCmXyypWr7pbcsTvsSsEiNogleHOE.

C. Viusers/NIRVAM DF2-sh Sid286:BiPWrsi689;FGXCmXyypWr7pbcsTvsSsEiNogleHOE.

Are you sure you want to continue connecting (yes/nog/Fingerprint)]7 yes

Manages you sure you want to continue connecting (yes/nog/Fingerprint)]7 yes

welcome to Ubuntu 24, 40.12 LTS (GMU/Linux 6.80-53-generic x86_64)

** Documentation: https://help.ubuntu.com

** Nanagesent:

** Nanagesent:

** Nanagesent:

** Nanagesent:

** https://landscape.canonical.com

** Support:

** https://landscape.canonical.com

** Support:

** https://landscape.canonical.com

** Support:

** https://landscape.canonical.com

** Support:

** Nanagesent:

** Memory usage:

** Strictty confined Kubernetes makes edge and IoT secure. Learn how MicroK8s

just raised the bar for easy, resilient and secure K8s cluster deployment.

https://ubuntu.com/engage/secure-whernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

** updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.

See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a meek old.

** to check for new updates run: sudo apt update

Last login: Hon Feb 17 65:58:42 2025 from 192:168.2.161

** laddoop@hadoop-makende:-$
```

• Data Node 1 – Komputer Shasia Sasa Salsabyla

```
EX hadoop@hadoop.namemode: X + V

C:\User\Accep>sh hadoop@l92.168.96.158
The authenticity of host '192.168.96.158 (192.168.96.158)' can't be established.
ED25519 key fingerprint is SHA266.9]HVLSH68-JEGXKCMJXyguHYpbcsIvs55*Eih6qkHOE.
This host key is known by the following other names/addresser.

C:\User\Accep\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=\Color=
```

• Data Node 2 – Komputer Sukma Bagus Wahasdwika

```
C:\Users\sukma bagus>ssh hadoop &192.168.96.158
ssh: Could not resolve hostname hadoop: No such host is known.

C:\Users\sukma bagus>ssh hadoop@192.168.96.158 (192.168.96.158)' can't be established.
ED25310 key fingerprint is SH4256.5]#VLSH6051E6xXCmXXygHTPpbc51v555*Eih0qkH0E.
This host key is known by the following other names/Addresses:

Are you sure you want to continue connecting (yes/no/[fingerprint])? y
Please type 'yes', 'no' or the fingerprint: yes
Warning: Permanently added '192.168.96.158' (ED25519) to the list of known hosts.
hadoop@12.168.96.158' passmord:
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-53-generic x86_64)

* Documentation: https://help.ubuntu.com
* Support: https://landscape.canonical.com
* Support: https://wibuntu.com/pro

System information as of Tue Mar 11 03:13:09 AM UTC 2025

System information as of Tue Mar 11 03:13:09 AM UTC 2025

System load: 0.43

Usage of /: 63.1% of 9.746B

Usage of /: 63.1% of 9.746B

Samp usage: 0%

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
just raised the bar for easy, resilient and secure K8s cluster deployment.

https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

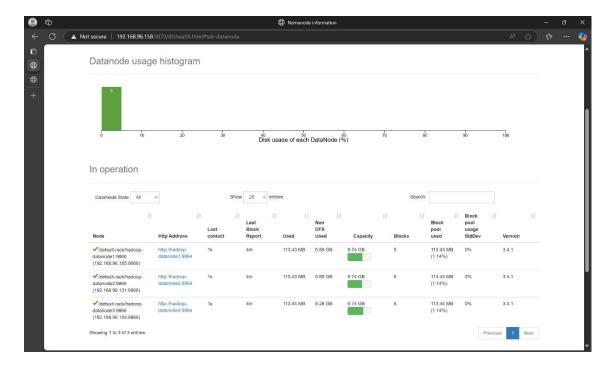
0 updates can be applied immediately.

Enable ESH Apps to receive additional future security updates.
See https://bubntu.com/ess or run: sudo pro status

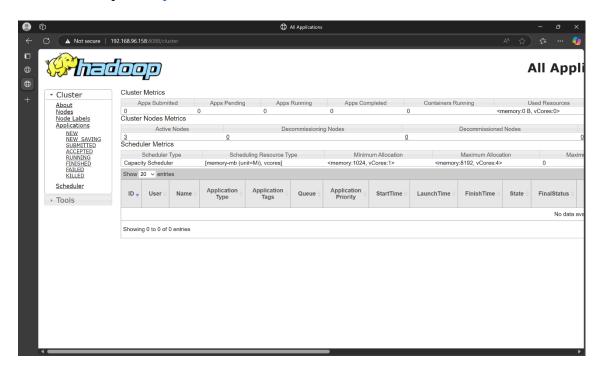
The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Tue Mar 11 03:18:34 2025 from 192.168.96.178
hadoop@finadep-maemedet*$
```

• Data Node 3 – Komputer Yuma Rakha Samodra Sikayo



Setelah di cek pada http://192.168.96.158:8088/cluster



2. Buatlah sebuah direktori di cluster Hadoop kelompok Anda masing-masing, dan beri nama sesuai nomor absen dan nama masing-masing dengan format **NoAbs NamaLengkap**, sesuai contoh berikut: 13 DanaAnagataNusantara.

Pengerjaan:

Setiap komputer menjalankan perintah **hadoop fs -mkdir /<NamaFolder>** untuk membuat file direktori

• Name Node – Komputer Triyana Dewi Fatmawati

```
hadoop@hadoop-namenode:~$ hadoop fs -mkdir /21_TriyanaDewiFatmawati
```

• Data Node 1 – Komputer Shasia Sasa Salsabyla

```
hadoop@hadoop-namenode:~$ hadoop fs -mkdir /18_ShasiaSasaSalsabyla
```

Data Node 2 – Komputer Sukma Bagus Wahasdwika

```
hadoop@hadoop-namenode:~$ hadoop fs -mkdir /20_SukmaBagusWahasdwika
```

• Data Node 3 – Komputer Yuma Rakha Samodra Sikayo

```
hadoop@hadoop-namenode:~$ hadoop fs -mkdir /22_YumaRakhaSamodrSikayo
```

Lakukan cek folder, apakah sudah berhasil terbuat, dengan melakukan perintah **hadoop fs** –**ls** /

```
Found 5 items
                                                                                  0 2025-03-11 04:02 /18_ShasiaSasaSalsabyla
0 2025-03-06 09:21 /20_SukmaBagusWahasdwika
0 2025-03-06 09:21 /21_TriyanaDewiFatmawati
0 2025-03-06 09:22 /22_YumaRakhaSamodraSikayo
0 2025-02-19 16:50 /yunhasnawa
drwxr-xr-x
                       - hadoop
                                              supergroup
drwxr-xr-x
                       - hadoop
                                              supergroup
drwxr-xr-x
                       - hadoop
                                              supergroup
drwxr-xr-x
                          hadoop
                                              supergroup
drwxr-xr-x
                       - hadoopuser supergroup
```

3. Unggahlah file TXT biasa yang berisi nama dan nomor absen Anda serta informasi lain yang tidak privat ke folder Anda masing-masing.

Pengerjaan:

Langkah awal yaitu membuat file TXT dengan melakukan perintah **nano <NamaFile>.txt** lalu isi file tersebut dengan nama, nim, dan absensi pada komputer setiap anggota.

• Name Node – Komputer Triyana Dewi Fatmawati



• Data Node 1 – Komputer Shasia Sasa Salsabyla

```
hadoop@hadoop-namenode:~$ nano Kel3_Kuis1_Shasia.txt

GNU nano 7.2

Kel3_Kuis1_Shasia.txt *

NAma: Shasia Sasa Salsabyla
NIM: 2241720029
No. Absen: 18
```

• Data Node 2 – Komputer Sukma Bagus Wahasdwika

```
hadoop@hadoop-namenode:~$ nano Kel3_Kuis1_Bagus.txt

GNU nano 7.2

Nama : Sukma Bagus Wahasdwika

NIM : 2241720223
Absensi : 20
```

• Data Node 3 – Komputer Yuma Rakha Samodra Sikayo

```
hadoop@hadoop-namenode:~$ nano Kel3_Kuis1_yuma.txt

GNU nano 7.2

Nama : Yuma Rakha Samodra Sikayo
NIM : 2241720194
Absensi : 22
```

Setelah file berhasil terbuat, upload file TXT tersebut menuju folder yang telah dibuat. Dengan perintah hadoop fs -put <NamaFile>.txt /< NamaFolderTujuan> . Setelah berhasil, lakukan cek apakah file tersebut berhasil diunggah dengan perintah hadoop fs -ls /< NamaFolder>

• Name Node – Komputer Triyana Dewi Fatmawati

```
hadoop@hadoop-namenode:~$ hadoop fs -put Kel3_Kuis1_Triyana.txt /21_TriyanaDewiFatmawati
hadoop@hadoop-namenode:~$ hadoop fs -ls /21_TriyanaDewiFatmawati
Found 1 items
-rw-r--r-- 3 hadoop supergroup 58 2025-03-11 04:20 /21_TriyanaDewiFatmawati/Kel3_Kuis1_Triyana.txt
```

• Data Node 1 – Komputer Shasia Sasa Salsabyla

```
hadoop@hadoop-namenode:~$ hadoop fs -put Kel3_Kuis1_Shasia.txt /18_ShasiaSasaSalsabyla
hadoop@hadoop-namenode:~$ hadoop fs -ls /18_ShasiaSasaSalsabyla
Found 1 items
-rw-r-r-- 3 hadoop supergroup 58 2025-03-11 04:02 /18_ShasiaSasaSalsabyla/Kel3_Kuis1_Shasia.txt
```

• Data Node 2 – Komputer Sukma Bagus Wahasdwika

```
hadoop@hadoop-namenode:~$ hadoop fs -put Kel3_Kuis1_Bagus.txt /20_SukmaBagusWahasdwika
hadoop@hadoop-namenode:~$ hadoop fs -ls /20_SukmaBagusWahasdwika
Found 1 items
Found 1 items
60 2025-03-11 04:22 /20_SukmaBagusWahasdwika/Kel3_Kuis1_Bagus.txt
hadoop@hadoop-namenode:-$
```

Data Node 3 – Komputer Yuma Rakha Samodra Sikayo

```
hadoop@hadoop-namenode:~$ hadoop fs -put Kel3_Kuis1_yuma.txt /22_YumaRakhaSamodraSikayo
hadoop@hadoop-namenode:~$ hadoop fs -ls /22_YumaRakhaSamodraSikayo
Found 1 items
64 2025-03-11 04:21 /22_YumaRakhaSamodraSikayo/Kel3_Kuis1_yuma.txt
hadoop@hadoop-namenode:~$
```

Kesimpulan

Setelah seluruh anggota kelompok berhasil melakukan langkah langkah praktikum diatas. Hasil direktori ataupun file dapat dilihat pada http://192.168.108.158:9870/explorer.html#/. Link ini akan menampilkan file dan direktori yag tersimpan pada cluster namenode.

