# LAPORAN KUIS 1 MATA KULIAH BIG DATA



# Dosen Pengampu:

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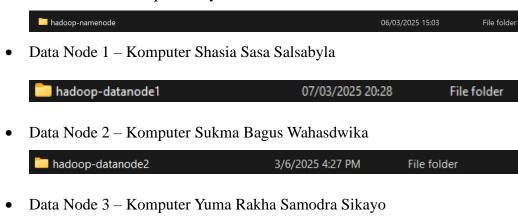
# **Disusun Oleh:**

Shasia Sasa Salsabyla	NIM. 2241720029
Sukma Bagus Wahasdwika	NIM. 2241720223
Triyana Dewi Fatmawati	NIM. 2241720206
Yuma Rakha Samodra Sikayo	NIM. 2241720194

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

# Bagian 1: Mengunduh VM Hadoop Polinema

• Name Node – Komputer Triyana Dewi Fatmawati



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_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 100

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

• Data Node 2 – Komputer Sukma Bagus Wahasdwika : **192.168.96.131** 

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

- 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
192.168.96.151 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
192.168.96.193 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
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 3 – Komputer Yuma Rakha Samodra Sikayo

```
# 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
```

- 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).

# Name Node – Komputer Triyana Dewi Fatmawati

```
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
```

# Soal dan Pengerjaan

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 10.8.26108.3323]
(c) Microsoft Corporation. All rights reserved.
(c) Microsoft Rights Marcolland.
(c) Microsoft Rights Right
```

• Data Node 1 – Komputer Shasia Sasa Salsabyla

```
C:\User\acer\screwnedce\x + \forall color=\x + \forall color=\x
```

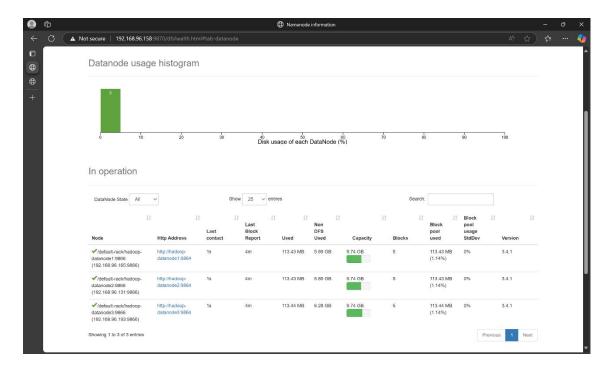
• Data Node 2 – Komputer Sukma Bagus Wahasdwika

```
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 96.158)' can't be established.
ED25519 key fingerprint is SHA2266.819thV=H689-EGXCA3Vyg4M7pbesIvsSS=ElhöqkH0E.
This host key is known by the following other names/addresses:
C:\Users\sukma bagus\sukma bagus\ssh\known hosts:1: 172.29.247.62
Are you sure you want to continue connecting (yes/no/[Fingerprint])? y
Please type 'yes', 'no' or the fingerprint: yes
Narning: Prement's addees to the fingerprint: yes
Narning: Prement's addees to the fingerprint: yes
Narning: Prement's addees to the fingerprint (yes)
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 information as of Tue Mar 11 03:13:09 AM UTC 2025
System lead: 0.43
Usage of (: 63.18 of 9.7468
Usa
```

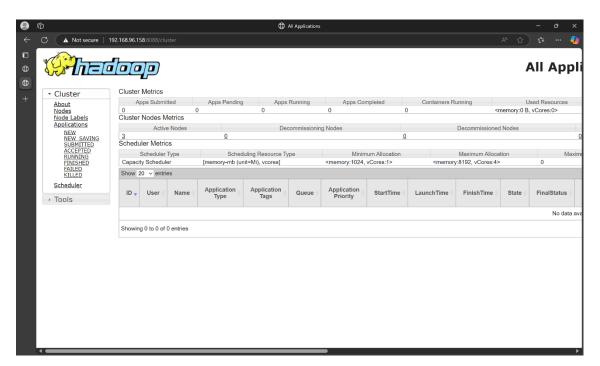
• Data Node 3 – Komputer Yuma Rakha Samodra Sikayo

```
C:\Users\USER>ssh hadoop@192.168.96.158
The authenticity of host '192.168.96.158 (192.168.96.158)' can't be established. ED25519 key fingerprint is $M4256:BJW15M68+EGxXCmXyguMYpbcsIvsSs+Eih@qkH0E. This host key is known by the following other names/addresses:
C:\Users\USER\Ssh\Kommon.basts.1: 772.99.247.6
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes warning; Permanently added '192.168.96.158' (ED35519) to the list of known hosts. Namogongb5:168.96.158' passormon. 158' (ED35519) to the list of known hosts. Namogongb5:168.96.158' passormon.
**Superment https://help.ubuntu.com
**Support: https://help.ubuntu.com
**Support: https://landscape.canonical.com
**Support: https://landsca
```

# Setelah di cek pada http://192.168.96.158:9870/dfshealth.html



# Setelah di cek pada <a href="http://192.168.96.158:8088/cluster">http://192.168.96.158:8088/cluster</a>



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 /

```
amenode:~$ 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
                           hadoopuser
```

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
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 : 2241726194
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
-rw-r-r-- 3 hadoop supergroup 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
-rw-r--r- 3 hadoop supergroup
-rw-r--r- 3 hadoop supergroup
-rw-r--r- 3 hadoop-namenode:~$ | 64 2025-03-11 04:21 /22_YumaRakhaSamodraSikayo/Kel3_Kuis1_yuma.txt
```

# Kesimpulan

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

