EX.NO. 8 **Roll no:210701518**

SET UP A SINGLE HADOOP CLUSTER AND SHOW THE PROCESS USING WEB UI

AIM:

To set-up one node Hadoop cluster.

PROCEDURE:

1. System Update
2. Install Java
3. Add a dedicated Hadoop user
4. Install SSH and setup SSH certificates
5. Check if SSH works
6. Install Hadoop
7. Modify Hadoop config files
8. Format Hadoop filesystem
9. Start Hadoop
10. Check Hadoop through web UI
11. Stop Hadoop

THEORY

Hadoop is an Apache open-source framework written in java that allows distributed processing of large datasets across clusters of computers using simple programming models. A Hadoop frame-worked application works in an environment that provides distributed storage and computation across clusters of computers. Hadoop is designed to scale up from a single server to thousands of machines, each offering local computation and storage.

HADOOP ARCHITECTURE

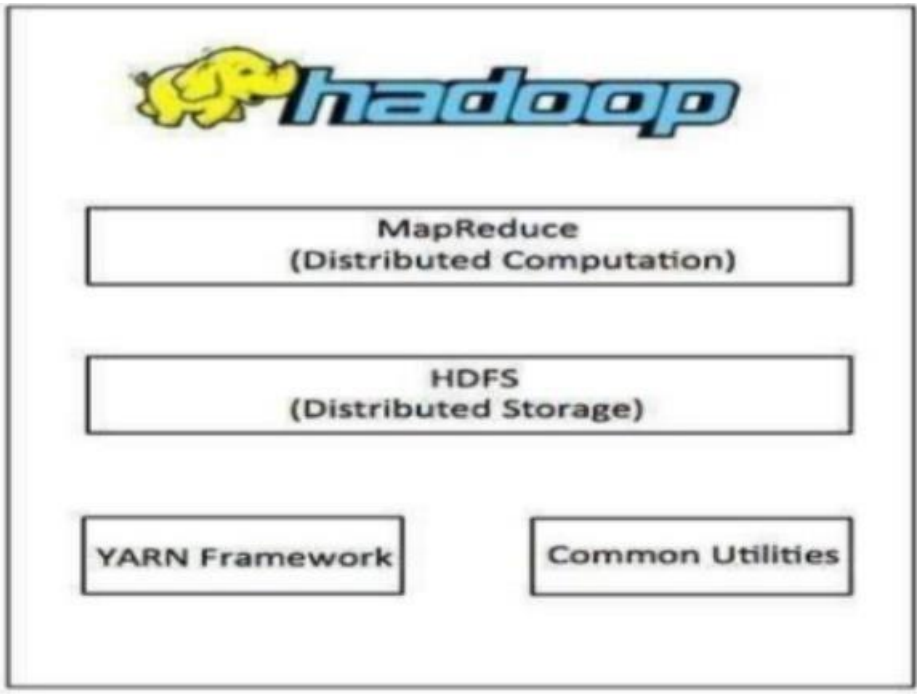
Hadoop framework includes following four modules:

Hadoop Common: These are Java libraries and utilities required by other Hadoop modules. These libraries provide filesystem and OS level abstractions and contain the necessary Java files and scripts required to start Hadoop.

Hadoop YARN: This is a framework for job scheduling and cluster resource management.

Hadoop Distributed File System (HDFS): A distributed file system that provides high throughput access to application data.

Hadoop MapReduce: This is a YARN-based system for parallel processing of large data sets. We can use following diagram to depict these four components available in Hadoop framework.



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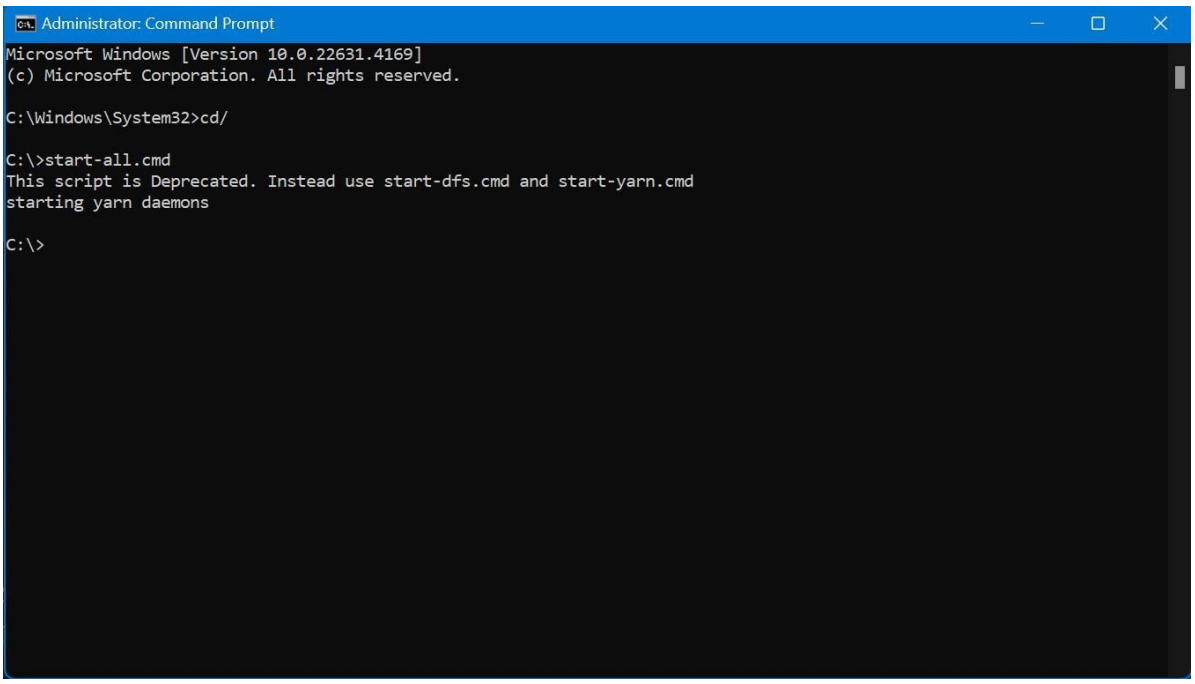

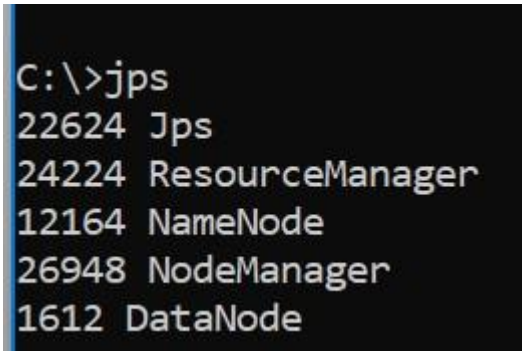

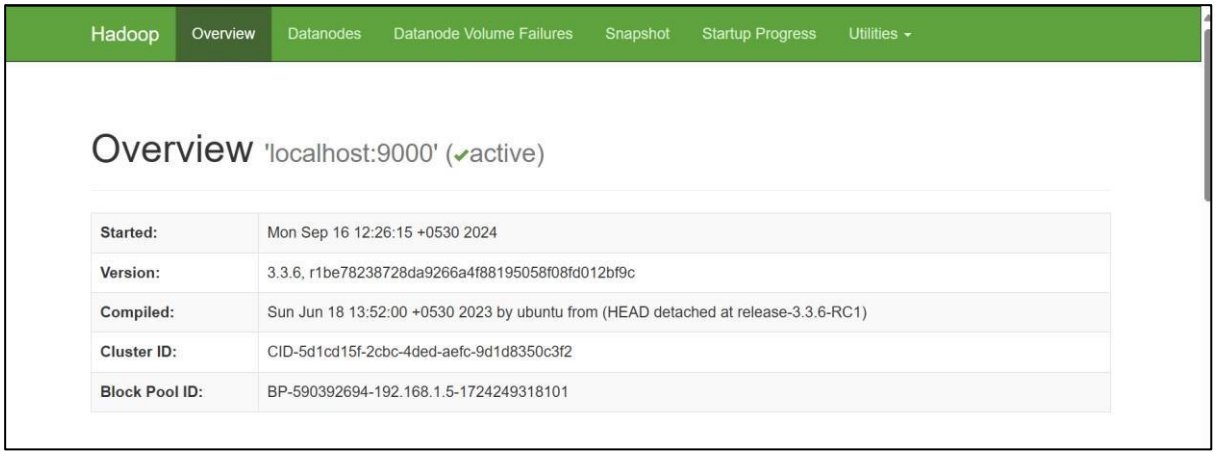

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Summary

Security is off.

Safemode is off.

79 files and directories, 24 blocks (24 replicated blocks, 0 erasure coded block groups) = 103 total filesystem object(s).

Heap Memory used 163.88 MB of 379.5 MB Heap Memory. Max Heap Memory is 889 MB.

Non Heap Memory used 51.34 MB of 52.75 MB Commited Non Heap Memory. Max Non Heap Memory is <unbounded>.

Configured Capacity:	217.09 GB
Configured Remote Capacity:	0 B
DFS Used:	42.05 MB (0.02%)
Non DFS Used:	176.49 GB
DFS Remaining:	40.56 GB (18.68%)
Block Pool Used:	42.05 MB (0.02%)
DataNodes usages% (Min/Median/Max/stdDev):	0.02% / 0.02% / 0.02% / 0.00%
Live Nodes	1 (Decommissioned: 0, In Maintenance: 0)
Dead Nodes	0 (Decommissioned: 0, In Maintenance: 0)

NameNode Journal Status

Current transaction ID: 433

Journal Manager	State
FileJournalManager(root=C:\hadoop-3.3.6\data\namenode)	EditLogFileOutputStream(C:\hadoop-3.3.6\data\namenode\current\edits_inprogress_0000000000000000433)

NameNode Storage

Storage Directory	Type	State
C:\hadoop-3.3.6\data\namenode	IMAGE_AND_EDITS	Active

DFS Storage Types

Storage Type	Configured Capacity	Capacity Used	Capacity Remaining	Block Pool Used	Nodes In Service
DISK	217.09 GB	42.05 MB (0.02%)	40.56 GB (18.68%)	42.05 MB	1

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RESULT:

Thus the set up of single hadoop cluster and show the process using web UI is completed successfully.