Nagar Yuwak Shikshan Sanstha's
Yeshwantrao Chavan College of Engineering
(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)
Hingna Road, Wanadongri, Nagpur - 441 110
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Department of Artificial Intelligence & Data Science

Vision of the Department

To be a well-known centre for pursuing computer education through innovative pedagogy, value-based education and industry collaboration.

Mission of the Department

To establish learning ambience for ushering in computer engineering professionals in core and multidisciplinary area by developing Problem-solving skills through emerging technologies.

Session 2025-2026

Vision: Dream of where you want.	**Mission:** Means to achieve Vision

Program Educational Objectives of the program (PEO): (broad statements that describe the professional and career accomplishments)

PEO1	**Preparation**	**P: Preparation**	**Pep-CL abbreviation pronounce as Pep-si-lL easy to recall**
PEO2	**Core Competence**	**E: Environment (Learning Environment)**	
PEO3	**Breadth**	**P: Professionalism**	
PEO4	**Professionalism**	**C: Core Competence**	
PEO5	**Learning Environment**	**L: Breadth (Learning in diverse areas)**	

Program Outcomes (PO): (statements that describe what a student should be able to do and know by the end of a program)

Keywords of POs:
Engineering knowledge, Problem analysis, Design/development of solutions, Conduct Investigations of Complex Problems, Engineering Tool Usage, The Engineer and The World, Ethics, Individual and Collaborative Team work, Communication, Project Management and Finance, Life-Long Learning

PSO Keywords: Cutting edge technologies, Research

"I am an engineer, and I know how to apply engineering knowledge to investigate, analyse and design solutions to complex problems using tools for entire world following all ethics in a collaborative way with proper management skills throughout my life." *to contribute to the development of cutting-edge technologies and Research*.

Integrity: I will adhere to the Laboratory Code of Conduct and ethics in its entirety.

Name and Signature of Student and Date
(Signature and Date in Handwritten)

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Session	2025-26 (ODD)	**Course Name**	BDH Lab
Semester	7 AIDS	**Course Code**	22ADS703
Roll No	21	**Name of Student**	**Sanskruti.Paunikar**

Practical Number	**1**
Course Outcome	**CO1:-** 1. Understand big data analytics and its business applications. **CO2:-** Analyze the HADOOP and Map Reduce technologies associated with big data analytics. **CO3:-** Apply Big Data analytics Using Pig and Hive.
Aim	Installation of Apache Hadoop on Linux System.
Problem Definition	
Theory (100 words)	Apache Hadoop installation on a Linux system involves setting up Java, configuring Hadoop binaries, and preparing the environment for distributed data processing. First, install Java (Hadoop's dependency). Then, download and extract the Hadoop package to a desired directory. Configure core-site.xml, hdfs-site.xml, mapred-site.xml, and yarn-site.xml files to define storage paths and resource management. Set environment variables for Hadoop and Java in `.bashrc`. Format the Hadoop Name Node and start HDFS and YARN daemons using start-dfs.sh and start-yarn.sh scripts. Finally, verify installation via the web interface or Hadoop command-line tools for successful cluster operation.
Procedure and Execution (100 Words)	Steps of Implementation:- 1. Update System: sudo apt update && sudo apt upgrade -y 2. Install Java: sudo apt install openjdk-11-jdk -y 3. Create Hadoop User: sudo adduser hadoop && su - hadoop 4. Enable SSH: ssh-keygen -t rsa -P "" && cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys 5. Download Hadoop: wget https://downloads.apache.org/hadoop/common/hadoop-3.3.6/hadoop-3.3.6.tar.gz tar -xzf hadoop-3.3.6.tar.gz && sudo mv hadoop-3.3.6 /usr/local/hadoop

6. Set Environment Variables: Add Hadoop and Java paths in ~/.bashrc.
7. Configure Files: Edit core-site.xml, hdfs-site.xml, mapred-site.xml, yarn-site.xml.
8. Format NameNode:
   hdfs namenode -format
9. Start Services:
   start-dfs.sh && start-yarn.sh
10. Verify:
    Run jps and check UIs →

- NameNode: http://localhost:9870
- ResourceManager: http://localhost:8088

Code:

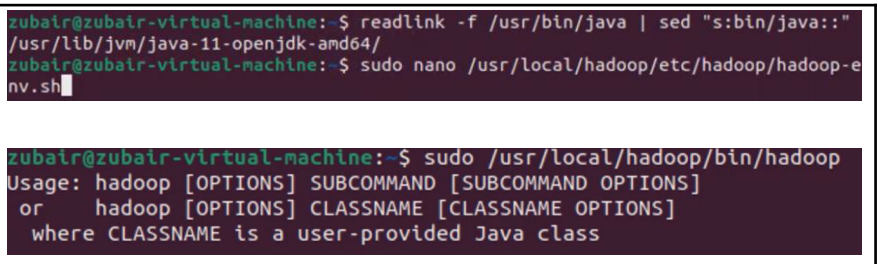
```
zubair@zubair-virtual-machine:~$ java --version
openjdk 11.0.14.1 2022-02-08
OpenJDK Runtime Environment (build 11.0.14.1+1-Ubuntu-0ubuntu1)
OpenJDK 64-Bit Server VM (build 11.0.14.1+1-Ubuntu-0ubuntu1, mixed mode, sharing
)
zubair@zubair-virtual-machine:~$
```


```
zubair@zubair-virtual-machine:~$ sudo wget https://downloads.apache.org/hadoop/c
ommon/hadoop-3.3.2/hadoop-3.3.2.tar.gz.sha512
[sudo] password for zubair:
--2022-04-20 07:58:10--  https://downloads.apache.org/hadoop/common/hadoop-3.3.2
/hadoop-3.3.2.tar.gz.sha512
Resolving downloads.apache.org (downloads.apache.org)... 88.99.95.219, 135.181.2
14.104, 2a01:4f8:10a:201a::2, ...
Connecting to downloads.apache.org (downloads.apache.org)|88.99.95.219|:443... c
onnected.
HTTP request sent, awaiting response... 200 OK
Length: 160 [text/plain]
Saving to: 'hadoop-3.3.2.tar.gz.sha512'

hadoop-3.3.2.tar.gz 100%[===================>]     160  --.-KB/s    in 0s

2022-04-20 07:58:10 (21.4 MB/s) - 'hadoop-3.3.2.tar.gz.sha512' saved [160/160]
```

```
zubair@zubair-virtual-machine:~$ cd Downloads/
zubair@zubair-virtual-machine:~/Downloads$ sudo mv hadoop-3.3.2 /usr/local/hadoo
p
```

	
Output Analysis	After installation, Hadoop services such as NameNode, DataNode, ResourceManager, and NodeManager start successfully. The web interfaces display cluster information and running nodes. The hadoop fs -ls / command confirms access to HDFS, verifying that Hadoop is properly configured and operational.
Link of student Github profile where lab assignment has been uploaded	https://github.com/sanskruti-1234/BDH.git
Conclusion	Installing Apache Hadoop on Linux provides a robust environment for distributed data storage and parallel processing. Once set up, the framework can efficiently handle large-scale datasets, forming the foundation for big data analytics and scalable computation.
Plag Report (Similarity index < 12%)	
Date	30/10/2025