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**	BIG DATA AND HADOOP-LAB
Semester	7 AIDS	**Course Code**	22ADS704
Roll No	03	**Name of Student**	**Debasrita Chattopadhyay**

Practical Number	01
Course Outcome	1. Understand big data analytics and its business applications. 2. Analyze the HADOOP and Map Reduce technologies associated with big data analytics. 3. Apply Big Data analytics Using Pig and Hive.
Aim	Installation of Apache Hadoop on Linux System.
Problem Definition	Installation of Apache Hadoop on Linux System.
Theory (100 words)	Apache Hadoop is a free software framework for distributed storage and processing of large sets of data using the MapReduce programming model. It works on a cluster of commodity hardware with a high degree of scalability and fault-tolerance. The Hadoop ecosystem primarily consists of HDFS (Hadoop Distributed File System) for distributed storage and YARN (Yet Another Resource Negotiator) for resource management and job scheduling. To install Hadoop on a Linux system you have to install Java and enable SSH and also modify the core configuration files for pseudo-distributed mode or fully distributed mode.
Procedure and Execution (100 Words)	Steps of Implementation 1. Update the Linux system packages using sudo apt update. 2. Install Java Development Kit (JDK) using sudo apt install openjdk-11-jdk. 3. Verify Java installation with java -version. 4. Create a Hadoop user using sudo adduser hadoop. 5. Switch to the Hadoop user with su - hadoop. 6. Configure passwordless SSH using ssh-keygen -t rsa -P "" and cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys. 7. Download Hadoop from the official Apache website using wget. 8. Extract the Hadoop tar file using tar -xzf hadoop-x.y.z.tar.gz. 9. Move Hadoop to /usr/local/hadoop using sudo mv hadoop-x.y.z /usr/local/hadoop. 10. Set environment variables in .bashrc for JAVA_HOME and HADOOP_HOME.

	11. Edit configuration files (core-site.xml, hdfs-site.xml, mapred-site.xml, yarn-site.xml) in the Hadoop etc/hadoop directory. 12. Format the Hadoop namenode using hdfs namenode -format. 13. Start HDFS and YARN services using start-dfs.sh and start-yarn.sh. 14. Verify installation using jps command to check running daemons. 15. Access Hadoop web interface at http://localhost:9870/.
	Code: # 1. Update system packages sudo apt update -y # 2. Install Java sudo apt install openjdk-11-jdk -y # 3. Verify Java installation java -version # 4. Create a Hadoop user sudo adduser hadoop # 5. Switch to Hadoop user su - hadoop # 6. Configure passwordless SSH ssh-keygen -t rsa -P "" cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys chmod 600 ~/.ssh/authorized_keys ssh localhost # test SSH # 7. Download Hadoop (replace version if needed) wget https://downloads.apache.org/hadoop/common/hadoop-3.3.6/hadoop-3.3.6.tar.gz # 8. Extract Hadoop tar -xzf hadoop-3.3.6.tar.gz # 9. Move Hadoop to /usr/local directory sudo mv hadoop-3.3.6 /usr/local/hadoop

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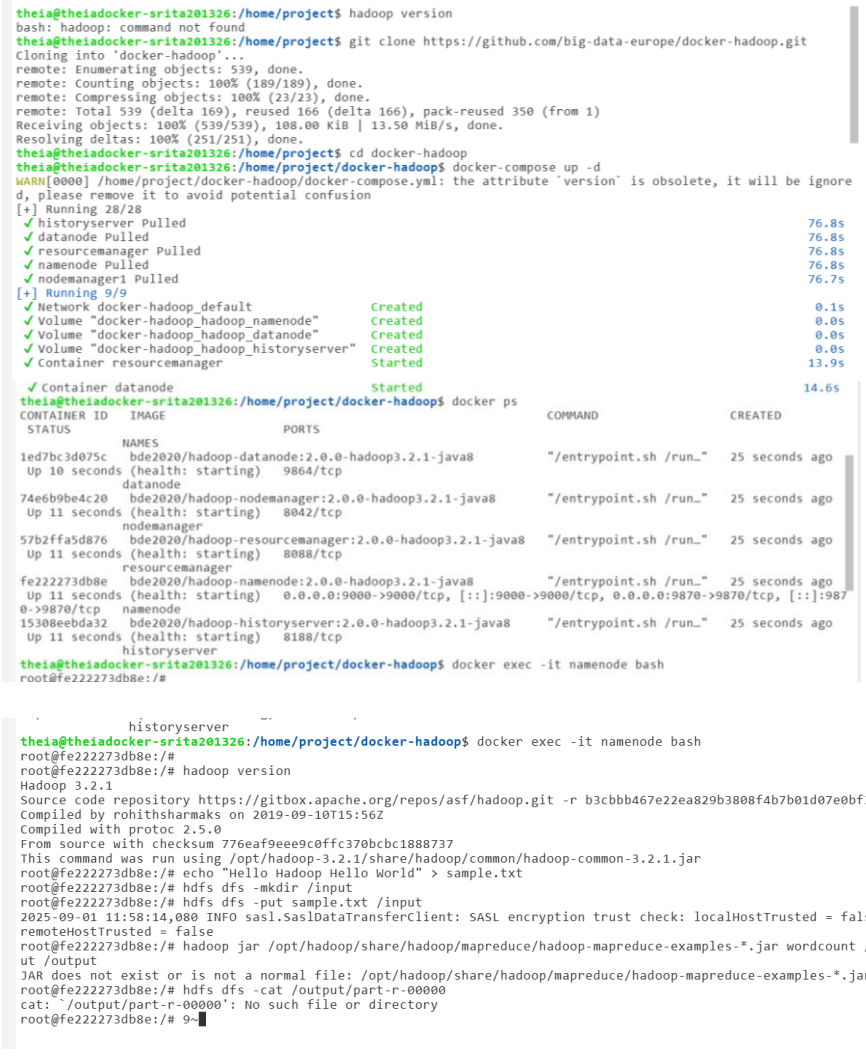
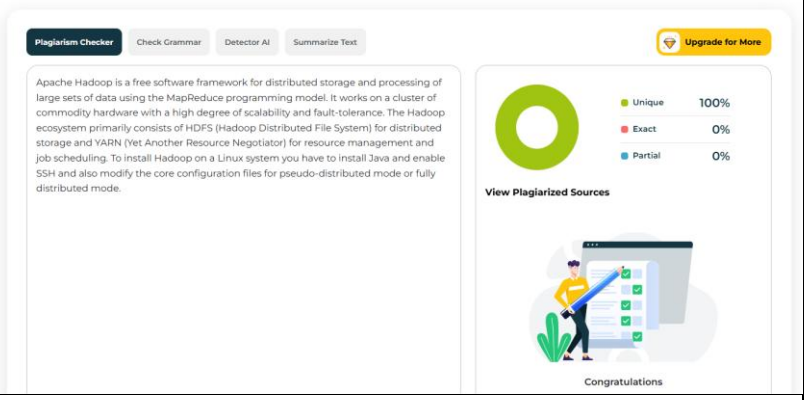
	# 10. Set environment variables nano ~/.bashrc
	Output: 
Output Analysis	Successful installation displays Hadoop daemons like NameNode, DataNode, ResourceManager, and NodeManager running, and the web UI confirms cluster health and status.
Link of student Github profile where	

lab assignment has been uploaded	
Conclusion	Installation of Apache Hadoop on Linux System implemented successfully.
Plag Report (Similarity index < 12%)	**Result** 
Date	**24 /07 / 25**