

**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**

<b>Vision:</b> Dream of where you want.	<b>Mission:</b> Means to achieve Vision
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**Program Educational Objectives of the program (PEO):** (broad statements that describe the professional and career accomplishments)

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

**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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<b>Session</b>	2025-26 (ODD)	<b>Course Name</b>	BIG DATA AND HADOOP-LAB
<b>Semester</b>	7 AIDS	<b>Course Code</b>	22ADS704
<b>Roll No</b>	03	<b>Name of Student</b>	Debasrita Chattopadhyay

<b>Practical Number</b>	02
<b>Course Outcome</b>	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.
<b>Aim</b>	Implementation of File management operations in Hadoop.
<b>Problem Definition</b>	Implementation of File management operations in Hadoop.
<b>Theory</b> (100 words)	. The Hadoop Distributed File System (HDFS) is a scalable and resistant file system storing large data sets over multiple machines capable of supporting distributed storage systems utilizing parallel processing capabilities. In HDFS file management includes creating directories, transferring files, listing files, reading files, copying and moving files and deleting files. These file management commands are executed using Hadoop shell commands to communicate with the NameNode and DataNodes to manage files across the cluster efficiently.
<b>Procedure and Execution</b> (100 Words)	<b>Steps of Implementation</b> <ul style="list-style-type: none"> <li>• Start Hadoop services (HDFS and YARN).</li> <li>• Create a main directory in HDFS.</li> <li>• Create a subdirectory inside the main directory.</li> <li>• Create a sample text file in the local file system.</li> <li>• Upload the local file to the HDFS directory.</li> <li>• List all files present in the HDFS directory.</li> <li>• Display the contents of the uploaded file.</li> <li>• Copy the file within HDFS to create a duplicate.</li> <li>• Rename or move the copied file to a new name.</li> <li>• Delete the renamed file from HDFS.</li> <li>• Delete the created directory from HDFS.</li> <li>• Verify that the directory and files are deleted successfully.</li> </ul>



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	<pre>Code: #!/bin/bash # File: file_management.sh # Description: Demonstrates basic file management operations in Hadoop (HDFS)  # Step 1: Start Hadoop services echo "Starting Hadoop services..." start-dfs.sh start-yarn.sh  # Step 2: Create a directory in HDFS echo "Creating /user directory in HDFS..." hdfs dfs -mkdir /user  # Step 3: Create a subdirectory echo "Creating /user/hadoop directory in HDFS..." hdfs dfs -mkdir /user/hadoop  # Step 4: Create a local sample file echo "Creating a local file sample.txt..." echo "Hello Hadoop Distributed File System!" &gt; sample.txt  # Step 5: Upload the local file to HDFS echo "Uploading sample.txt to /user/hadoop/..." hdfs dfs -put sample.txt /user/hadoop/  # Step 6: List files in the directory echo "Listing files in /user/hadoop/..." hdfs dfs -ls /user/hadoop/  # Step 7: Display file contents echo "Displaying contents of sample.txt..." hdfs dfs -cat /user/hadoop/sample.txt  # Step 8: Copy file within HDFS echo "Copying file to sample_copy.txt..." hdfs dfs -cp /user/hadoop/sample.txt /user/hadoop/sample_copy.txt  # Step 9: Rename/move the copied file echo "Renaming sample_copy.txt to data_renamed.txt..." hdfs dfs -mv /user/hadoop/sample_copy.txt /user/hadoop/data_renamed.txt</pre>
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```
# Step 10: Delete the renamed file
echo "Deleting data_renamed.txt..."
hdfs dfs -rm /user/hadoop/data_renamed.txt

# Step 11: Delete the directory
echo "Deleting /user/hadoop directory..."
hdfs dfs -rm -r /user/hadoop

# Step 12: Verify deletion
echo "Listing /user directory after deletion..."
hdfs dfs -ls /user

echo "HDFS File Management Operations completed
successfully!"
```

### Output:

```
Problems theia@theiadocker-srita201326: /home/project X
theia@theiadocker-srita201326: /home/project$ docker exec -it namenode bash
root@fe22273db8e: /#
```

```
Problems theia@theiadocker-srita201326: /home/project X
theia@theiadocker-srita201326: /home/project$ docker exec -it namenode bash
root@fe22273db8e: /# hdfs dfs -ls /
Found 2 items
drwxr-xr-x - root supergroup 0 2025-09-01 11:58 /input
drwxr-xr-x - root supergroup 0 2025-09-01 11:56 /rmstate
root@fe22273db8e: /#
```

```
Problems theia@theiadocker-srita201326: /home/project X
theia@theiadocker-srita201326: /home/project$ docker exec -it namenode bash
root@fe22273db8e: /# hdfs dfs -ls /
Found 2 items
drwxr-xr-x - root supergroup 0 2025-09-01 11:58 /input
drwxr-xr-x - root supergroup 0 2025-09-01 11:56 /rmstate
root@fe22273db8e: /# hdfs dfs -mkdir /prac2
root@fe22273db8e: /# hdfs dfs -ls /
Found 3 items
drwxr-xr-x - root supergroup 0 2025-09-01 11:58 /input
drwxr-xr-x - root supergroup 0 2025-09-01 12:16 /prac2
drwxr-xr-x - root supergroup 0 2025-09-01 11:56 /rmstate
root@fe22273db8e: /#
```






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	<pre>drwxr-xr-x - root supergroup 0 2025-09-01 12:16 /prac2 drwxr-xr-x - root supergroup 0 2025-09-01 11:56 /rmstate root@fe22273db8e:/# echo "Hello, this is Hadoop Practice 2" &gt; sample.txt root@fe22273db8e:/# cat sample.txt Hello, this is Hadoop Practice 2 root@fe22273db8e:/# hdfs dfs -put sample.txt /prac2/ 2025-09-01 12:17:44,432 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false root@fe22273db8e:/# hdfs dfs -ls /prac2 Found 1 items -rw-r--r-- 3 root supergroup 33 2025-09-01 12:17 /prac2/sample.txt root@fe22273db8e:/# hdfs dfs -cat /prac2/sample.txt 2025-09-01 12:18:26,684 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false Hello, this is Hadoop Practice 2 root@fe22273db8e:/# hdfs dfs -cp /prac2/sample.txt /prac2/sample_copy.txt 2025-09-01 12:18:46,049 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false 2025-09-01 12:18:46,394 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false root@fe22273db8e:/# hdfs dfs -ls /prac2 Found 2 items -rw-r--r-- 3 root supergroup 33 2025-09-01 12:17 /prac2/sample.txt -rw-r--r-- 3 root supergroup 33 2025-09-01 12:18 /prac2/sample_copy.txt root@fe22273db8e:/# hdfs dfs -mv /prac2/sample_copy.txt /prac2/renamed_sample.txt root@fe22273db8e:/#</pre>  <pre>Problems theia@theiadocker-srita201326:/home/project X Hello, this is Hadoop Practice 2 root@fe22273db8e:/# hdfs dfs -put sample.txt /prac2/ 2025-09-01 12:17:44,432 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false root@fe22273db8e:/# hdfs dfs -ls /prac2 Found 1 items -rw-r--r-- 3 root supergroup 33 2025-09-01 12:17 /prac2/sample.txt root@fe22273db8e:/# hdfs dfs -cat /prac2/sample.txt 2025-09-01 12:18:26,684 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false Hello, this is Hadoop Practice 2 root@fe22273db8e:/# hdfs dfs -cp /prac2/sample.txt /prac2/sample_copy.txt 2025-09-01 12:18:46,049 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false 2025-09-01 12:18:46,394 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false root@fe22273db8e:/# hdfs dfs -ls /prac2 Found 2 items -rw-r--r-- 3 root supergroup 33 2025-09-01 12:17 /prac2/sample.txt -rw-r--r-- 3 root supergroup 33 2025-09-01 12:18 /prac2/sample_copy.txt root@fe22273db8e:/# hdfs dfs -mv /prac2/sample_copy.txt /prac2/renamed_sample.txt get: ./downloaded_sample.txt: File exists root@fe22273db8e:/# cat downloaded_sample.txt Hello, this is Hadoop Practice 2 root@fe22273db8e:/#</pre>  <pre>Problems theia@theiadocker-srita201326:/home/project X 2025-09-01 12:18:26,684 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false Hello, this is Hadoop Practice 2 root@fe22273db8e:/# hdfs dfs -cp /prac2/sample.txt /prac2/sample_copy.txt 2025-09-01 12:18:46,049 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false 2025-09-01 12:18:46,394 INFO sasl.SaslDataTransferClient: SASL encryption trust check: localHostTrusted = false, remoteHostTrusted = false root@fe22273db8e:/# hdfs dfs -ls /prac2 Found 2 items -rw-r--r-- 3 root supergroup 33 2025-09-01 12:17 /prac2/sample.txt -rw-r--r-- 3 root supergroup 33 2025-09-01 12:18 /prac2/sample_copy.txt root@fe22273db8e:/# hdfs dfs -mv /prac2/sample_copy.txt /prac2/renamed_sample.txt get: ./downloaded_sample.txt: File exists root@fe22273db8e:/# cat downloaded_sample.txt Hello, this is Hadoop Practice 2 root@fe22273db8e:/# hdfs dfs -rm /prac2/renamed_sample.txt deleted /prac2/renamed_sample.txt root@fe22273db8e:/# hdfs dfs -rm -r /prac2 deleted /prac2 root@fe22273db8e:/# hdfs dfs -ls / Found 2 items drwxr-xr-x - root supergroup 0 2025-09-01 11:58 /input drwxr-xr-x - root supergroup 0 2025-09-01 11:56 /rmstate root@fe22273db8e:/#</pre>
Output Analysis	All file management commands executed successfully, confirming the creation, manipulation, and deletion of files and directories in HDFS, demonstrating efficient distributed file handling in Hadoop.
Link of student Github profile where lab assignment has been uploaded	
Conclusion	Implementation of File management operations in Hadoop implemented successfully.





Nagar Yuwak Shikshan Sanstha's

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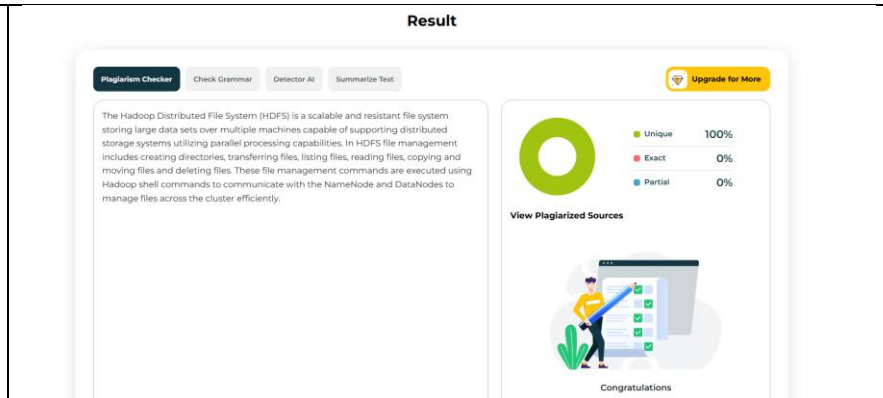
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