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
NAAC A++
Ph.: 07104-237919, 234623, 329249, 329250 Fax: 07104-232376, Website: www.ycce.edu

Department of Computer Technology

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**	**HPC Lab**
Semester	**7**	**Course Code**	**22ADS706**
Roll No	**03**	**Name of Student**	**Debasrita Chattopadhyay**

Practical Number	01
Course Outcome	1.Understand and Apply Parallel Programming Concepts 2. Analyse and Improve Program Performance. 3. Demonstrate Practical Skills in HPC Tools and Environments.
Aim	Introduction to Linux and HPC Environment
Problem Definition	Implement basic Linux commands and understand HPC Environment
Theory (100 words)	Linux is an operating system based on the Unix operating system and open-source. Its open-source features, stability, flexibility, and security have made it a popular choice for research and server environments. Linux gives you the ability to support multiple users, and multitasking, and does so reliably, which can be advantageous in a high-stress environment. High-Performance Computing, or HPC, refers to the function of supercomputers and computing clusters to solve problems requiring substantial computing capabilities. Instead of using a single, capable processor, HPC takes as many as thousands of processors in parallel to complete large-scale simulations, surveys and scientific research tasks such as weather prediction, molecular modelling, and machine learning.
Procedure and Execution (100 Words)	**Step 1:** Understand Linux Basics `pwd` → show current directory `ls` → list files `cd` → change directory `cp`, `mv`, `rm` → copy, move, delete files `chmod`, `chown` → change permissions/ownership `top`, `htop` → monitor running processes **Step 2:** Explore the Linux File System Step 3: Work with the Shell Use shell interpreters (e.g., `bash`, `zsh`) for command execution.

Step 3: Linux in HPC Environment
5.1. Use Linux as the primary OS in HPC clusters due to efficiency and flexibility.

Step 4: Resource Management
6.1. Learn about job scheduling systems (e.g., SLURM, PBS, LSF).

Commands

cd HPC
touch first.sh
ls
mkdir YCCE
ls
expr 5+3
touch prog.txt
touch first.txt
cat first.txt
cp first.txt second.txt
cat second.txt
ps
lscpu
sort first.txt
cal August 2025

Output:

```
lab1@localhost ~]$ pwd
ome/lab1
lab1@localhost ~]$ mkdir
kdir: missing operand
y 'mkdir --help' for more information.
lab1@localhost ~]$ mkdir HPC
lab1@localhost ~]$ ls
                khushipractical.c  ospr3.c      paru7.c   pr9.c          Public
.c              mayur              ospr4.c      paru.c    prac2          s44
3.c             mayur.c            ospr5.c      parut.c   prac2.c        sample
hitya           mspa               ospr8.c      p.c       prac6.c        sample.c
out             mspa2_50.c         p4.c         Pictures  prac9.c        samplec
sktop           mspa2.c            p6.c         ppp6.c    practical3.c   shell.c
irection.c      mspa3_50.c         page.c       pppp3.c   practical6.c   simple
cuments         mspa4.c            pagerep1.c   pr3       practical.c    sospr8.c
wnloads         mspa.c             pagerep.c    pr3.c     practicalr3.c  Templates
le.c            Music              par_2.c      pr4.c     practicle5     test.c
rsha.c          os3.c              parc2.c      pr5.c     practicle.c    vedanti
html            os5.c              parth.c      pr7.c     pratical9.c    vedanti.c
```

```
[lab1@localhost ~]$ cd HPC
[lab1@localhost HPC]$ touch first.sh
[lab1@localhost HPC]$ ls
first.sh
[lab1@localhost HPC]$ mkdir YCCE
[lab1@localhost HPC]$ ls
first.sh  YCCE
[lab1@localhost HPC]$ expr 5 + 3
8
[lab1@localhost HPC]$ touch prog.txt
[lab1@localhost HPC]$ touch first.txt
[lab1@localhost HPC]$ cat first.txt
Welcome to HPC lab !
This is Debasrita Chattopadhyay.
[lab1@localhost HPC]$ cp first.txt second.txt
[lab1@localhost HPC]$ cat second.txt
Welcome to HPC lab !
This is Debasrita Chattopadhyay.
[lab1@localhost HPC]$ mv prog.txt renamed.txt
```

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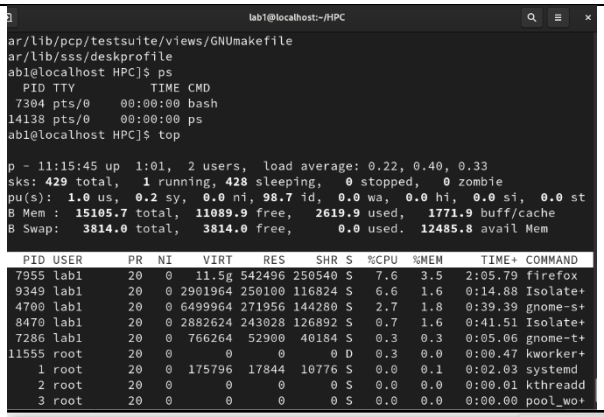

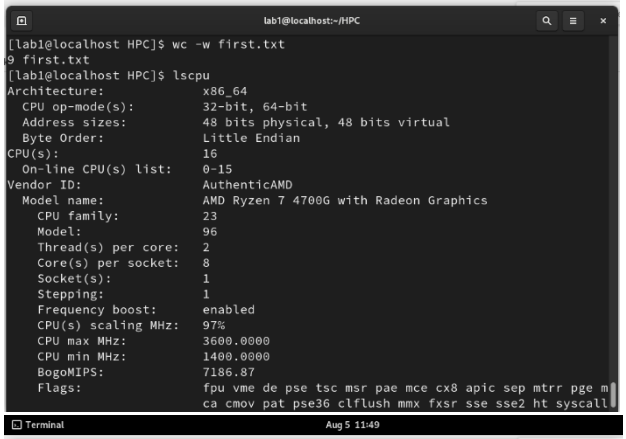

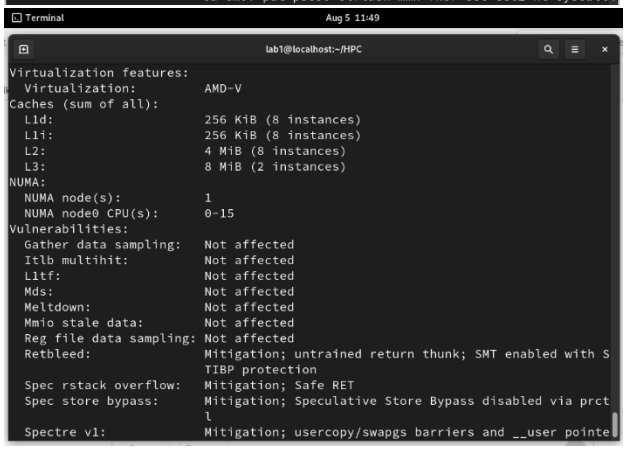

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	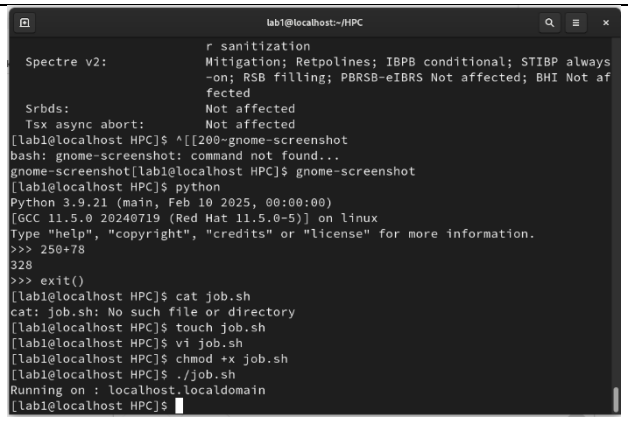 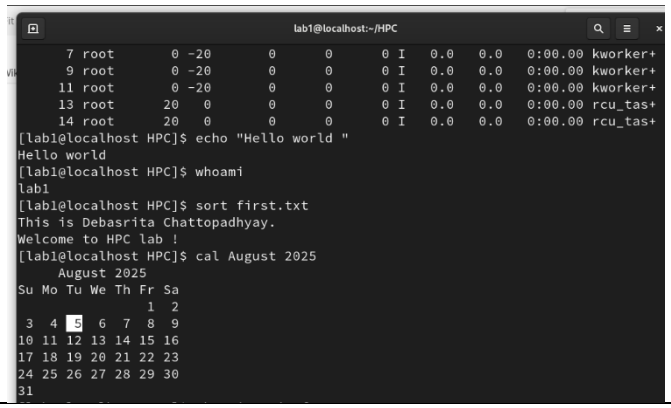
Output Analysis	Output Analysis in Linux/HPC involves checking correctness, performance, scalability, and errors using system commands, scheduler logs, and profiling/debugging tools.
Link of student Github profile where lab assignment has been uploaded	https://github.com/srita2003/HPC_Practicals/blob/main/03_Practical%20No_01_HPC.pdf
Conclusion	Introduction to Linux and HPC Environment implemented successfully.

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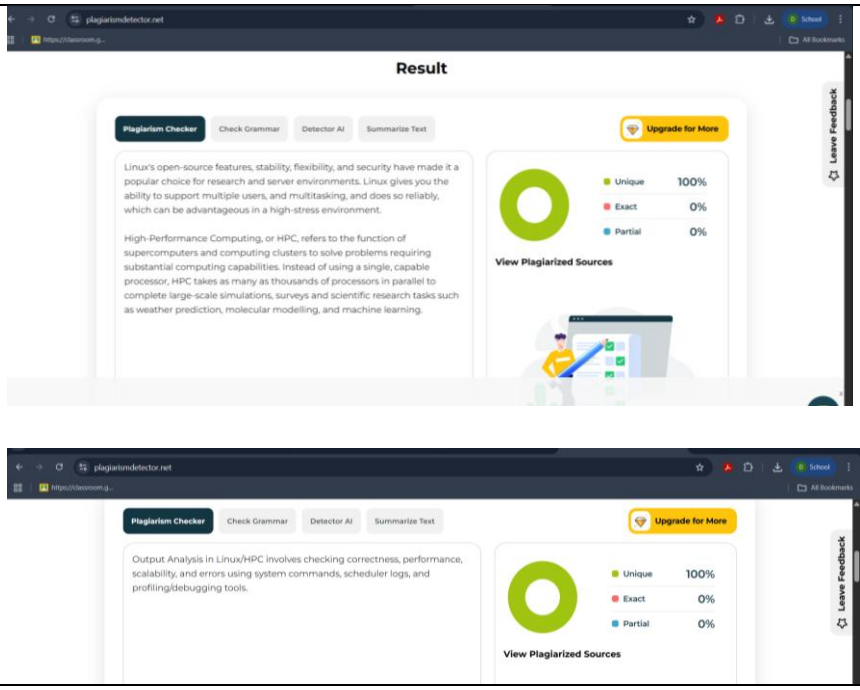
Plag Report (Similarity index < 12%)	
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