**Session 2025-2026**

| **Vision:** Dream of where you want. | **Mission:** 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 | **Preparation** | **P: Preparation** | **Pep-CL abbreviation**  **pronounce as Pep-si-lL easy to recall** |
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| 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)

| **Session** | **2025-26 (ODD)** | | **Course Name** | **HPC Lab** | |
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| **Semester** | **7** | | **Course Code** | **22ADS706** | |
| **Roll No** | **04** | | **Name of Student** | [**Divya Pimple**](mailto:divyapimple2@gmail.com) | |
|  |  | |  |  |  |
| Practical Number | | **01** | | | |
| Course Outcome | |  | | | |
| Aim | | **Introduction to Linux and HPC Environment** | | | |
| Problem Definition | |  | | | |
| Theory  (100 words) | | High-Performance Computing (HPC) uses a set of processors working together to solve a problem quicker via a process called parallel computing. Rather than having one processor do everything, a large problem is broken down into smaller units of work that can be done at the same time. Generally, there are two types of parallelism: data parallelism, where the same task is done using various datasets, and task parallelism, where concurrent jobs are executed concurrently. HPC systems can be built with either shared memory (where all the processors share RAM) or distributed memory (where each processor has its own memory and communicates using MPI) or a method that combines both. Modern HPC depends heavily on GPUs that run thousands of threads concurrently. Parallel programming will produce reasonably faster programs (as opposed to serial programs), manage large datasets and assist with advanced scientific simulations. Since the vast majority of HPC clusters run on the Linux operating system, which is free, since it is stable and reliable, it is customizable and because it gives scientists and engineers the flexibility and tools they require for high-performance tasks, etc. | | | |
| Procedure and Execution  (100 Words) | | Algorithm:   * mkdir HPC * ls * cd mkdir first.sh * touch first.sh * cal may 2026 * gnome-screenshot | | | |
| Code:   * wc -c first.txt * sort first.txt * ls > output.txt * cat output.txt * command > output.txt 2>&1 | | | |
| Output: | | | |
| Output Analysis | | In this practical all the basic commands like creating file putting input and retrieving it by giving basic commands of linux like mkdir [first.sh](http://first.sh) to create file and cal may 2026 command gives calender of year 2026 for may month likewise all the commands has successfully executed. | | | |
| Link of student Github profile where lab assignment has been uploaded | |  | | | |
| Conclusion | | The practical to perform practical on introduction to linux and hpc commands have successfully executed. | | | |
| Plag Report (Similarity index < 12%) | |  | | | |
| Date | | **05/08/2025** | | | |