

**LINUX LAB FILE**

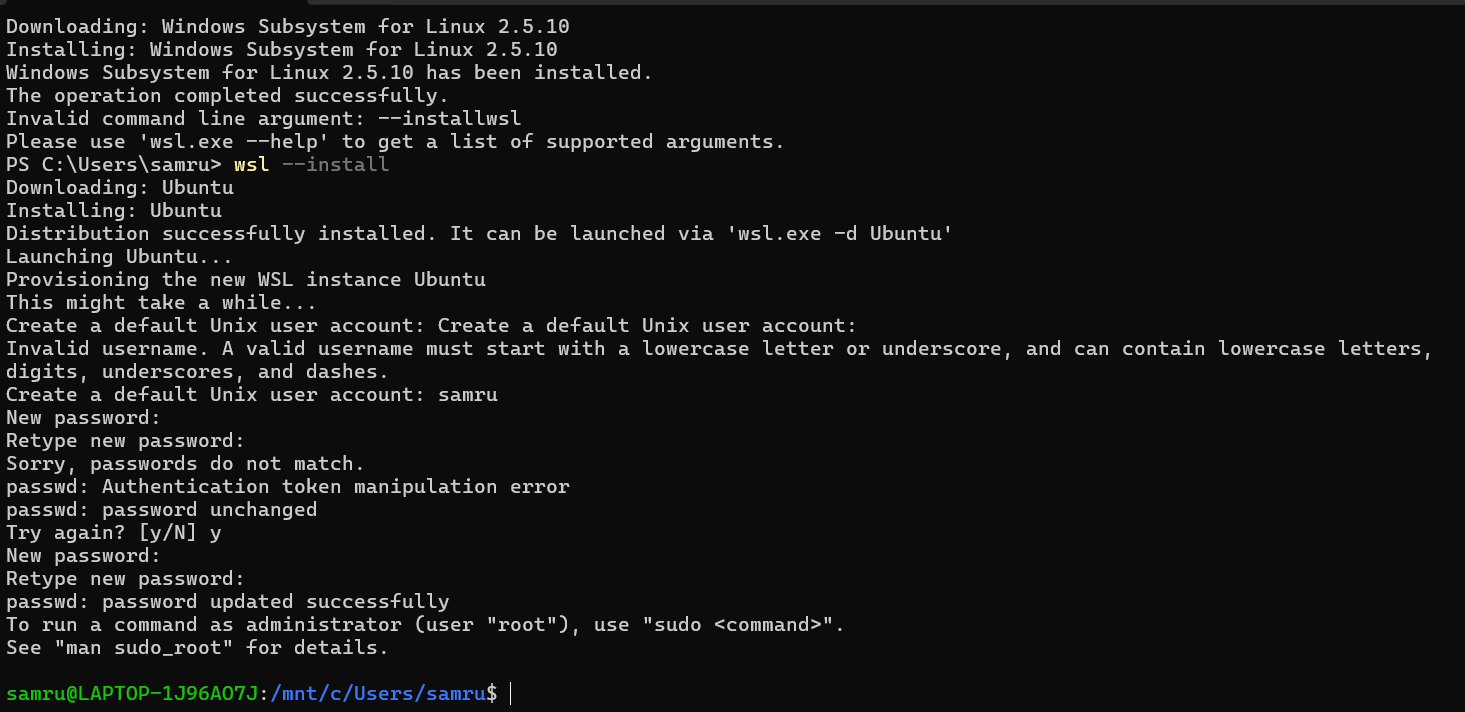
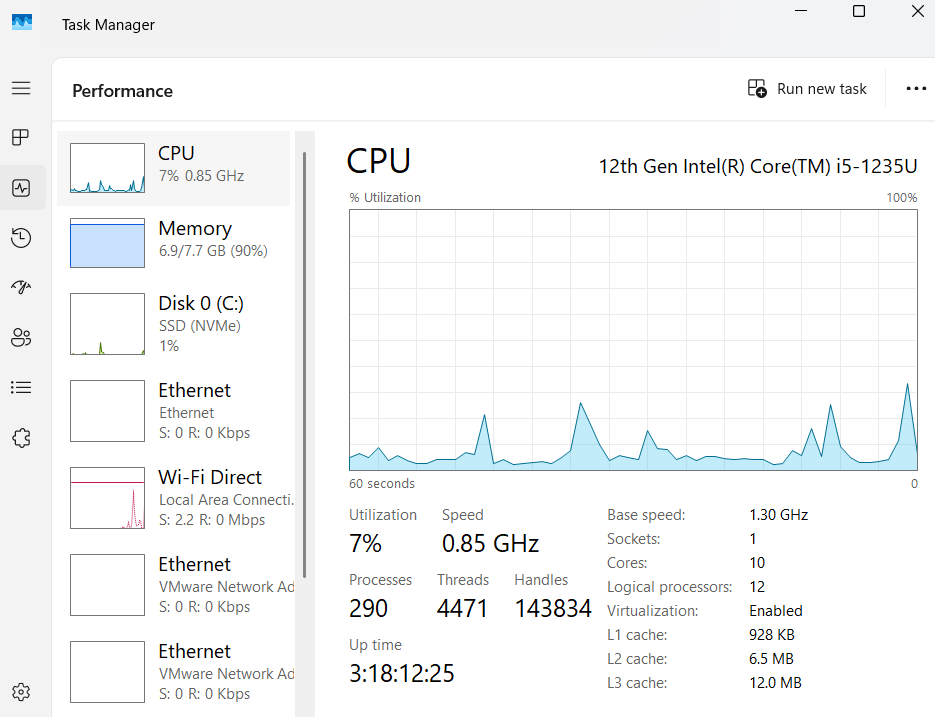
**Name : Ashutosh Shrivastava**

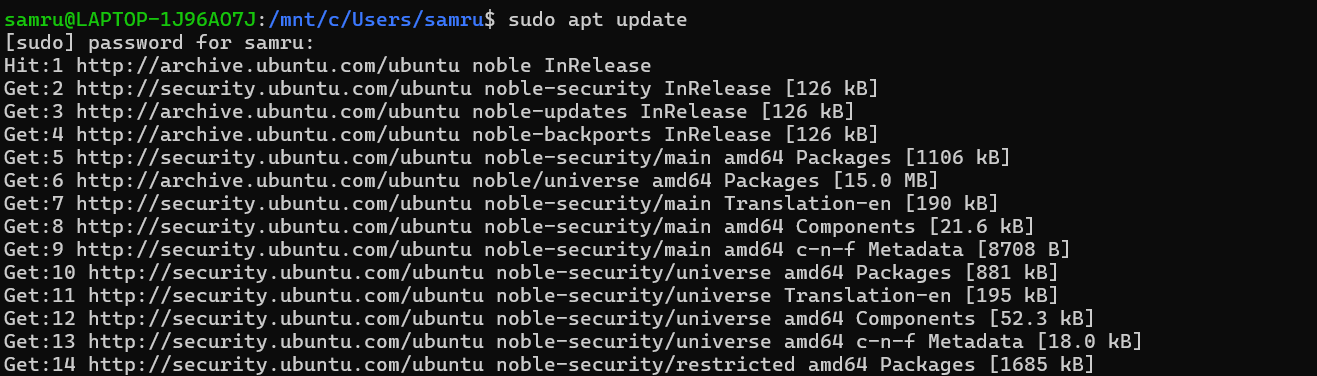
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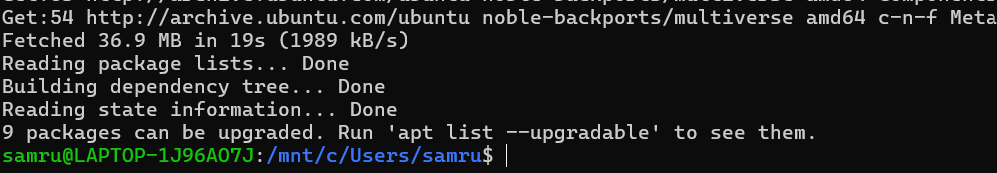
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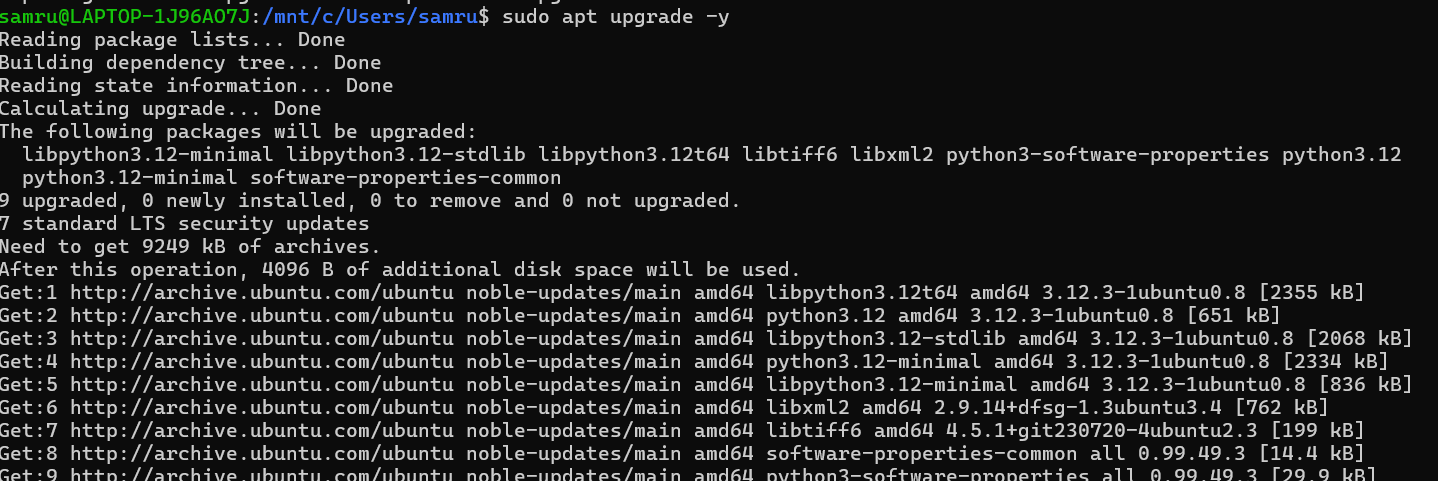
**Course :B.tech computer science**

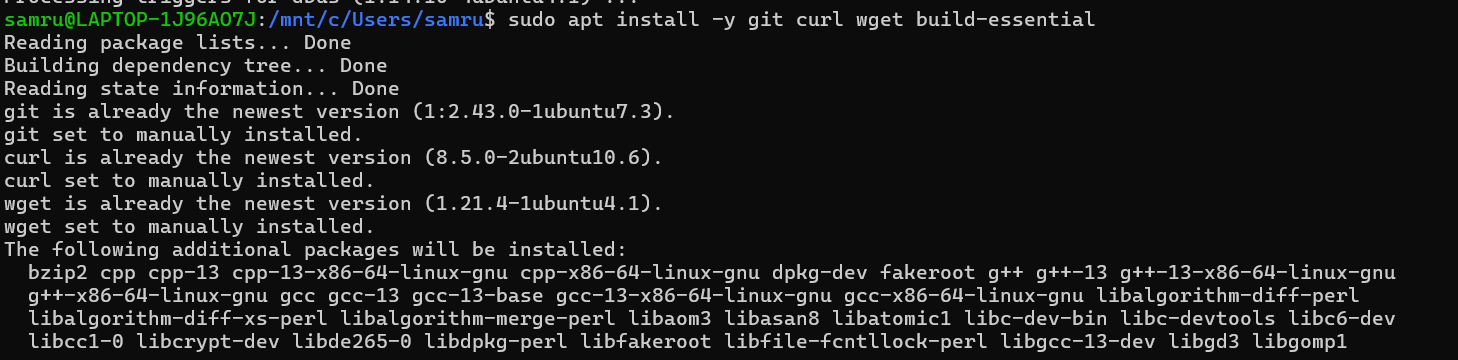
**EXPERIMENT :1**

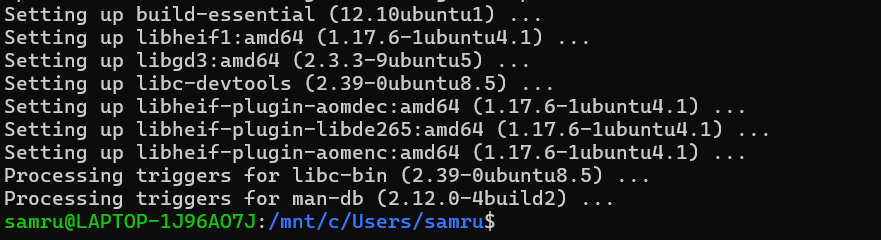


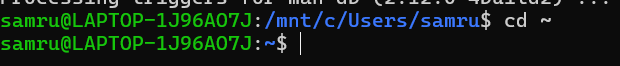


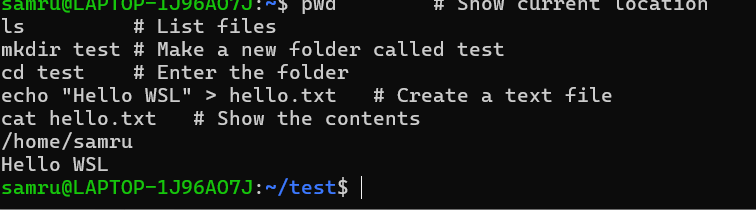




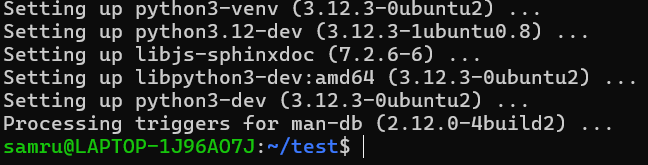


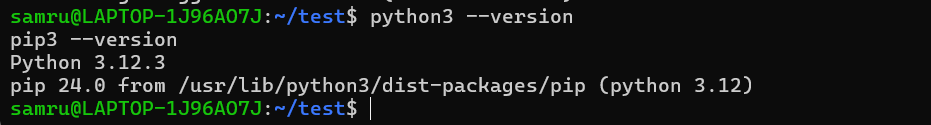


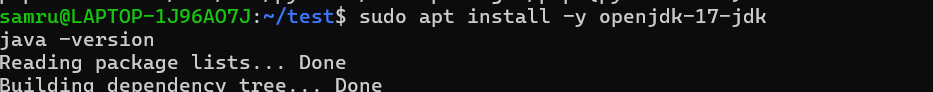


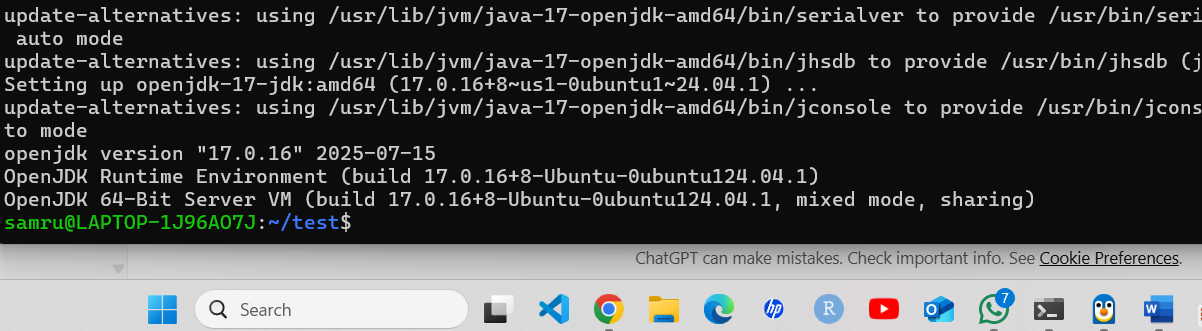


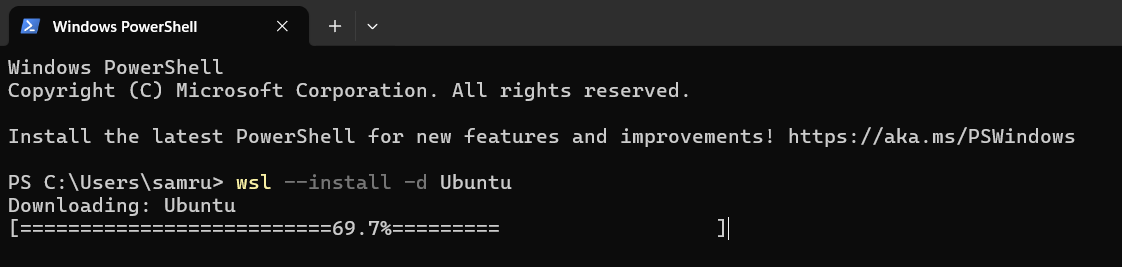


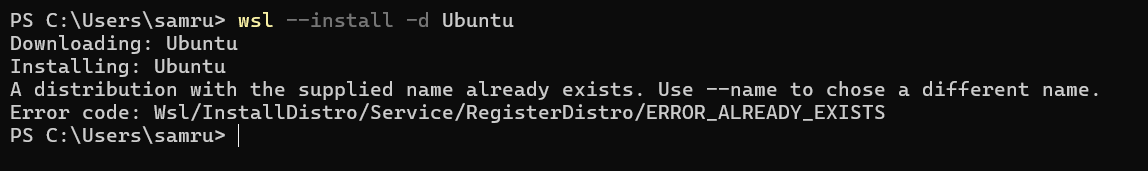


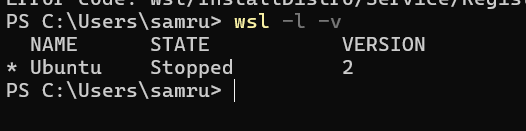


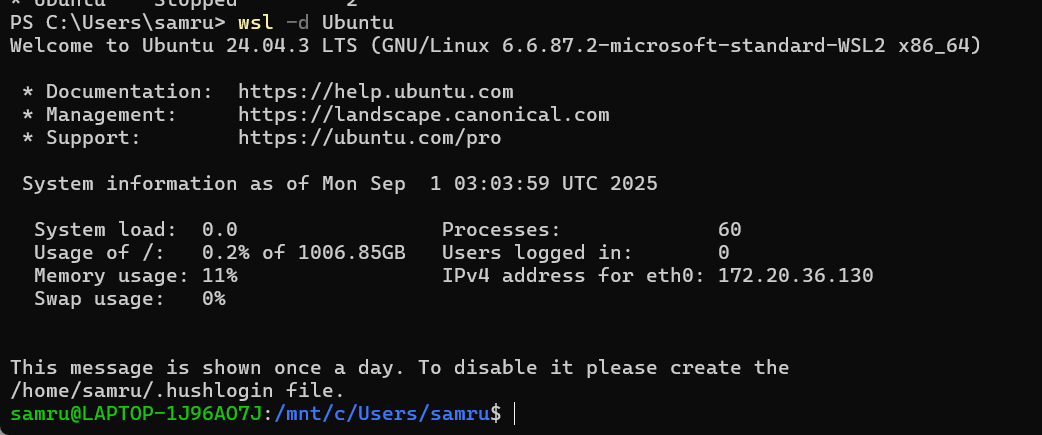




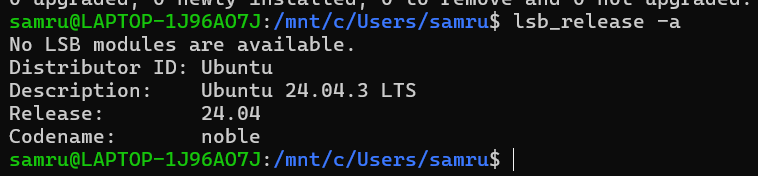


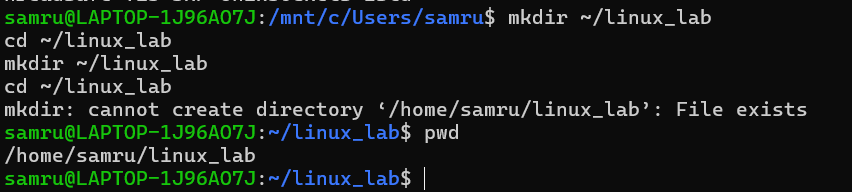
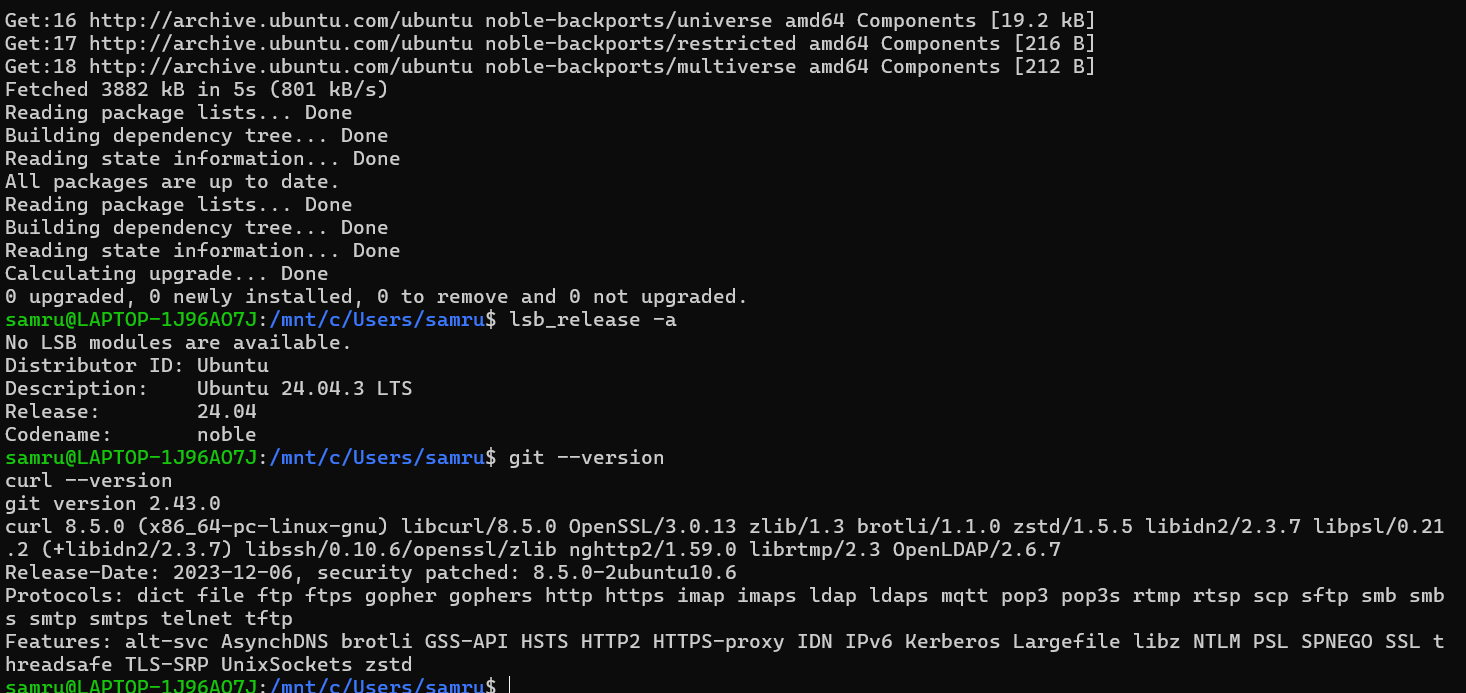


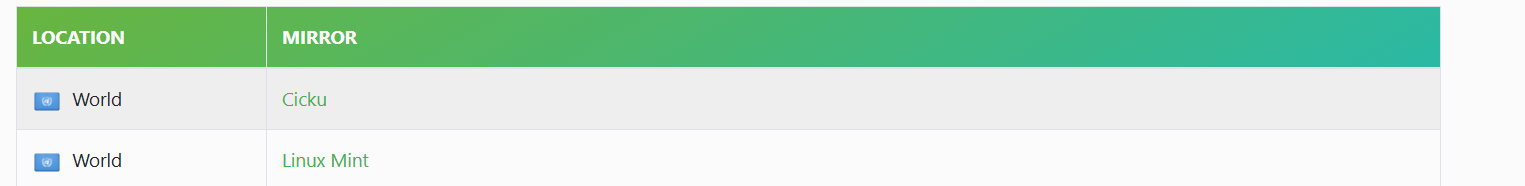
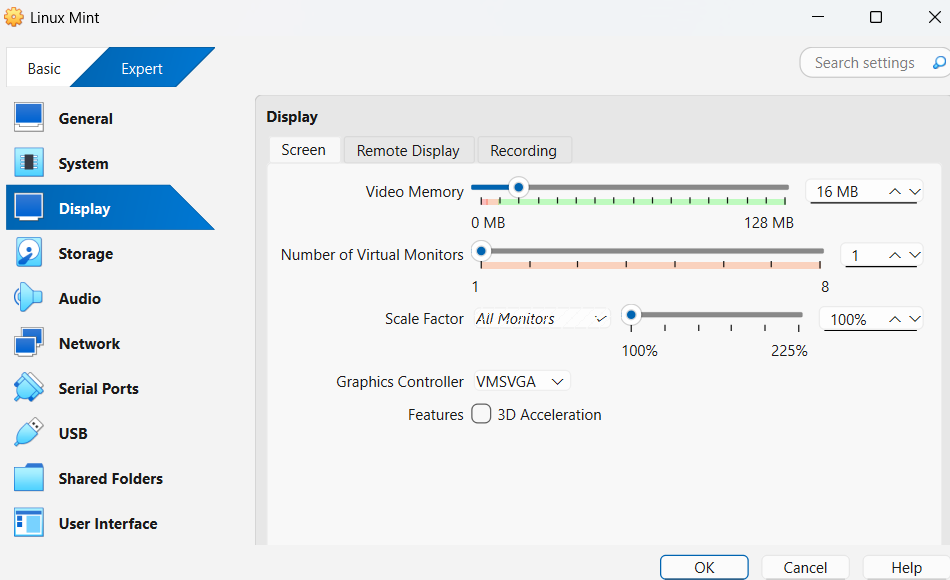


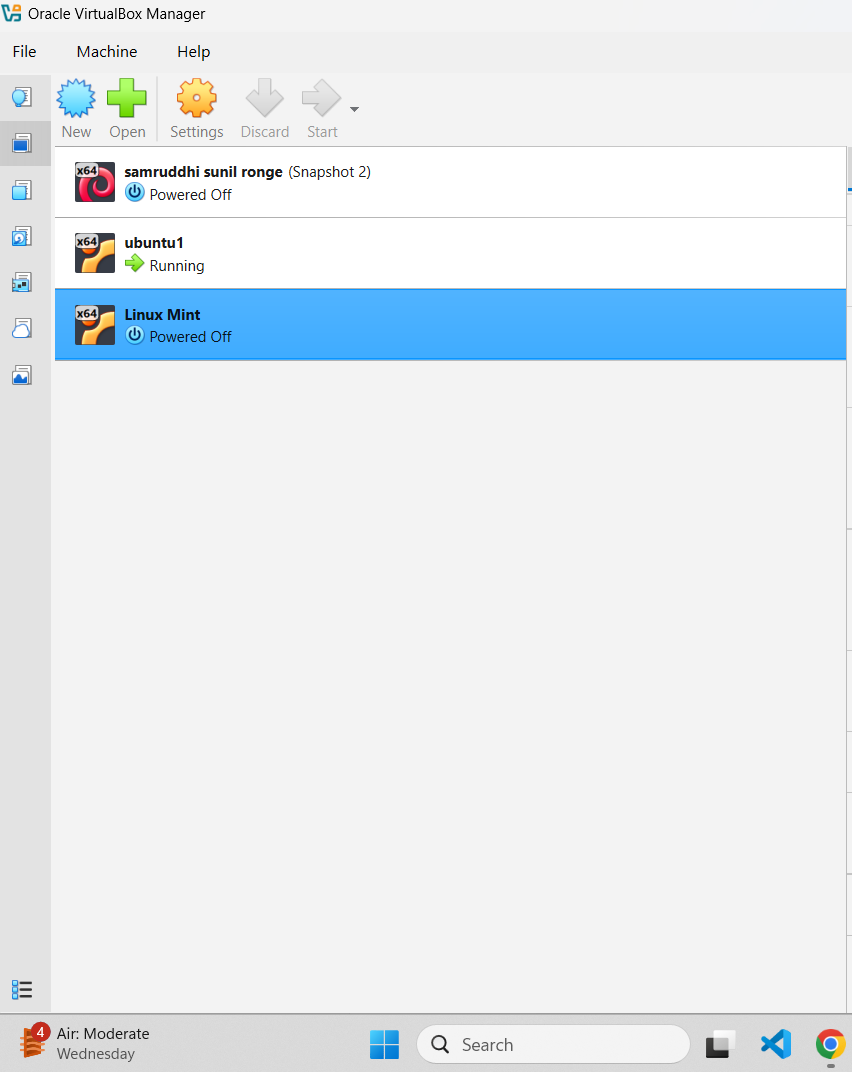


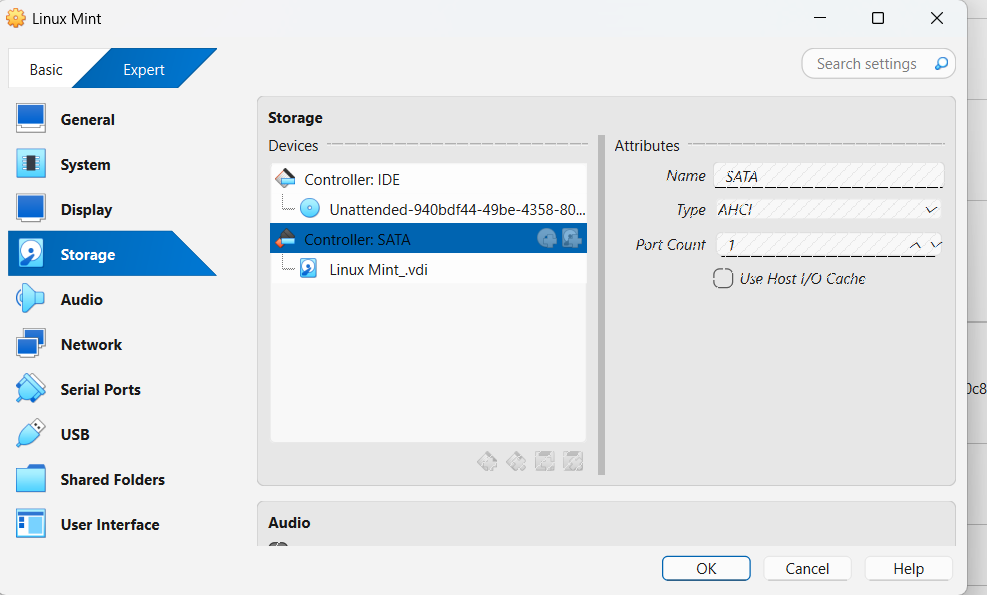


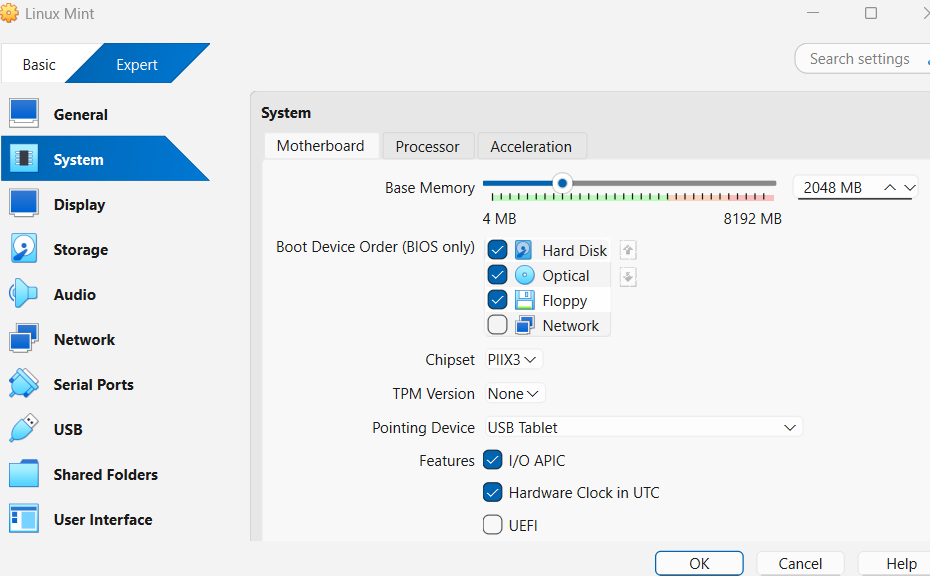












**EXPERIMENT :2**

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AI-generated content may be incorrect.

A screenshot of a computer program

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A screenshot of a computer

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**EXPERIEMENT 3**

**Basic File Operations**

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**A computer screen shot of a computer program

AI-generated content may be incorrect.**

**Lab section 2:**

**A screenshot of a computer program

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**A screenshot of a computer program

AI-generated content may be incorrect.**

**EXPERIMENT 4**

**A white and blue text with a white rectangle

AI-generated content may be incorrect.**

**A computer screen shot of a program

AI-generated content may be incorrect.**

**A screenshot of a computer program

AI-generated content may be incorrect.**

**A screen shot of a computer

AI-generated content may be incorrect.**

**EXPERIMENT 5:**

**A computer screen with white text

AI-generated content may be incorrect.**

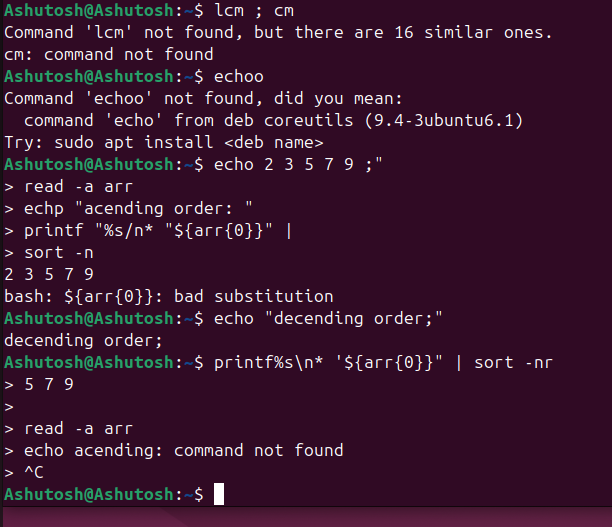
**A computer screen shot of a program

AI-generated content may be incorrect.**

**A computer screen with white and green text

AI-generated content may be incorrect.**

**EXPERIMENT 6:**

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**A screenshot of a computer program

AI-generated content may be incorrect.**

**A screenshot of a computer program

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**A screenshot of a computer program

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**A computer screen shot of a program

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**A computer screen shot of a program

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**Experiment 7:**

**A screenshot of a computer screen

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**A screenshot of a computer

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**A computer screen shot of a program

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**Experiment 8:**

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**A screenshot of a computer program

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**A computer screen shot of a program code

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**A screenshot of a computer program

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**ASSIGNMENT 1:**

**A screenshot of a computer program

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**A screenshot of a computer program

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**EXPERIMENT 9: Shell programming**

Theory:

1.System performance monitoring system performance is tracked using CPU. Memory.disk.and network usage.

. top:LIVE CPU & MEMORY USAGE PER PROCESS.

. htop:Improved version of top (interactive).

. free -h:Memory usage in human – readable form

. df -h:Disk space usage.

. isotat: Input/output statistics.

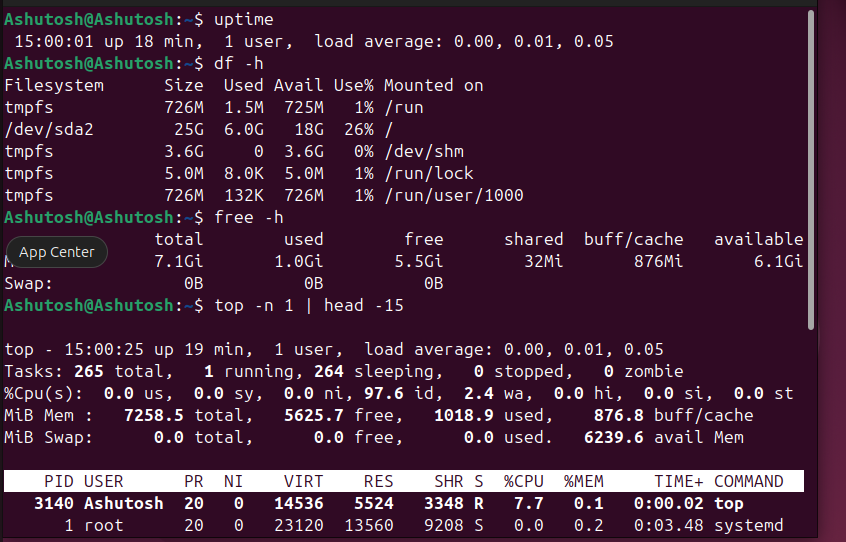
. uptime: system load average (1,5,15 minutes).

2.System Security and User Management Linux is multi-User. ti-user. Security involves controlling file permissions, users, and groups.

* whoami: Displays current user.
* id: User & group info.
* adduser <name>: Add a new user.
* passwd <name>: Set/change password.
* groups: Display user’s groups.
* chmod: Change permissions (read, write, execute).
* chown: Change ownership.

Lab Execution (Commands to Run):

Part A: Performance Monitoring

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AI-generated content may be incorrect.**

**EXPERIMENT 10: Shell Programming - Complete Guide**

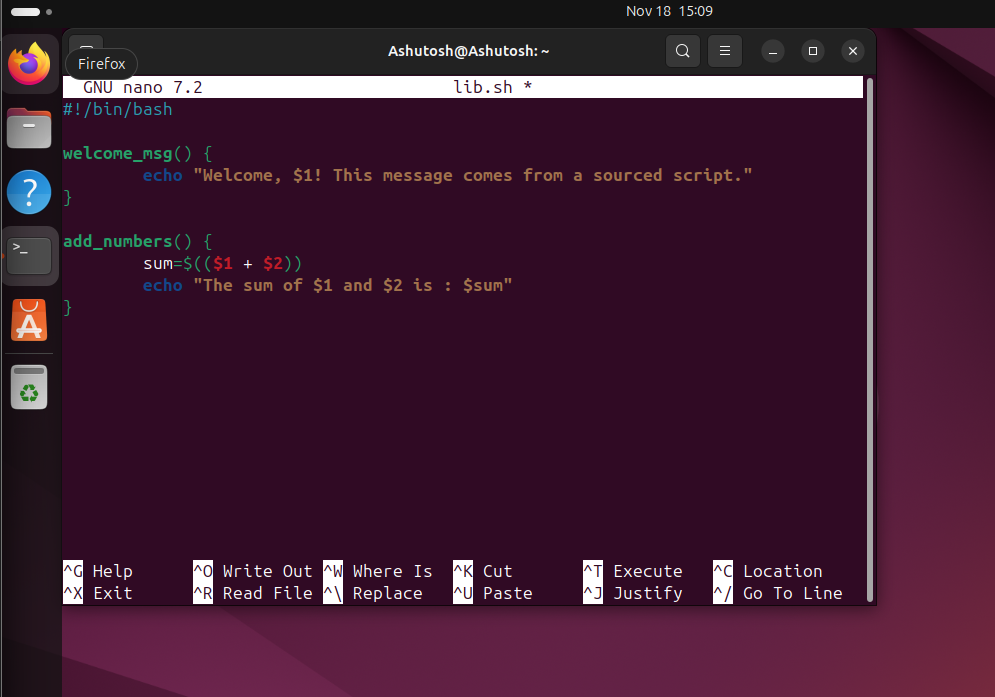
Theory:

1. Modular and Reusable Code Modular programming means breaking down a program into smaller, independent, and reusable components. In shell scripting, this is achieved through Functions and Sourcing Scripts.

* Functions: Named blocks of code that can be called multiple times to improve readability and reduce duplication.
* Sourcing Scripts: Using . script.sh or source script.sh to include external scripts. This makes functions and variables from the sourced file available in the current script without creating a subshell.

2. Script Optimization Techniques

* Avoid unnecessary subshells: Each $(command) creates a new process.
* Use built-in string operations: Bash built-ins are faster than external commands like sed or awk.
* Minimize loops: Use shell expansions where possible.



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**EXPERIMENT 11: Interacting with Users: Interactive Shell Scripts**

**Theory:**

1. Interactive Shell Scripts Interactive scripts engage users in two-way communication, making programs more user-friendly. Key components include the read command and the select command.

A. User Input with read

* Reads input from standard input (keyboard).
* Stores input in variables.
* Common Flags:
  + -p: Prompt with input.
  + -s: Silent input (for passwords).
  + -t: Timeout (in seconds).
  + -n: Read N characters.

B. Menu Systems with select

* Creates interactive menus automatically.
* Provides numbered options for user selection.
* Has a built-in loop for handling user choices.

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**EXPERIMENT 12: Building a Rule-Based Expert System - Complete Guide**

Theory:

1. Process Automation and Job Scheduling

* cron: Time-based job scheduler for repetitive tasks.
  + Syntax: minute hour day month day\_of\_week command
  + Example: 0 9 \* \* \* /home/user/backup.sh (Executes daily at 9 AM).
    - at: One-time job scheduling.
  + Example: echo "backup.sh" | at 2:00 AM tomorrow.

2. Services and Daemons System service management is handled using systemctl.

* systemctl start service: Start a service.
* systemctl stop service: Stop a service.
* systemctl status service: Check service status.
* systemctl enable service: Enable auto-start at boot.

