OPERATING SYSTEM LAB REPORT

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LAB REPORT

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Chapter 1: Introduction to Operating Systems

An Operating System (OS) is system software that manages computer hardware, software resources, and provides common services for computer programs. It acts as an intermediary between users and the computer hardware.

❖ Functions of an Operating System:

- ✓ 1. Process Management
- ✓ 2. Memory Management
- ✓ 3. File System Management
- ✓ 4. Device Management
- ✓ 5. Security and Access Control

❖ Examples of Operating Systems: Linux, Windows, macOS, and Android.

Chapter 2: Basic Linux Commands

Linux provides a command-line interface for interacting with the system. Here are some basic commands:

pwd: Displays the current working directory.
Example:
$ pwd
/home/user

ls: Lists files and directories.
Example:
$ ls
Documents Downloads Pictures

cd: Changes the directory.
Example :
$ cd Documents

mkdir: Creates a new directory.
Example:
$ mkdir my_folder

rmdir: Removes an empty directory.
Example:
$ rmdir my_folder

cp: Copies files or directories.
Example:
$ cp file1.txt file2.txt

mv: Moves or renames files.
Example:
$ mv old.txt new.txt

rm: Removes files.
Example:
$ rm unwanted.txt

cat: Displays the contents of a file.
Example:
$ cat notes.txt

chmod: Changes file permissions.

Example:

$ chmod 755 script.sh

Chapter 3: File Management in Linux

File management in Linux involves creating, editing, viewing, and organizing files and directories. Each file has permissions, ownership, and types.

Examples:

$ touch myfile.txt   → Create a new file

$ echo 'Hello World' > myfile.txt   → Add content

$ cat myfile.txt   → View file contents
Output:
Hello World

$ cp myfile.txt copy.txt   → Copy a file

$ mv copy.txt backup.txt   → Rename or move a file

$ rm backup.txt   → Delete a file

$ chmod 777 myfile.txt   → Give full permissions to all users

Chapter 4: User Management in Linux

Linux is a multi-user system, allowing multiple users to access and use resources securely.

Useful Commands:

$ adduser student → Create a new user

$ passwd student → Set or change password for user 'student'

$ whoami → Display current logged-in user
Output:
student

$ groups student → Show groups the user belongs to

$ su - student → Switch to another user account

$ deluser student → Remove a user from the system

User information is stored in '/etc/passwd' and group data in '/etc/group'.

Chapter 5: Basic Shell Programming

Shell scripting automates repetitive tasks by combining Linux commands into executable scripts.

Example 1: Print Hello World

#!/bin/bash
echo "Hello, World!"
Output:
Hello, World!

Example 2: Check Even or Odd Number

```
#!/bin/bash
echo "Enter a number:"
read num
if [ $((num % 2)) -eq 0 ]
then
  echo "Even number"
else
  echo "Odd number"
fi
Output:
Enter a number:
5
Odd number
```


Example 3: Simple Calculator

```
#!/bin/bash
echo "Enter two numbers:"
read a b
echo "Sum is: $((a + b))"
Output:
Enter two numbers:
4 6

Sum is: 10
```

Chapter 6: Conclusion

Throughout this lab, we explored basic Linux operations, including file management, user management, and shell scripting. These exercises build a strong foundation for understanding operating systems and their practical applications.

References

- ❖ Class lecture notes
- ❖ Linux manual pages
- ❖ Online tutorials (GeeksforGeeks, Ubuntu Docs, TutorialsPoint)