4ITRC2 Operating System Lab

Lab Assignment - 1

Part 1

Outputs of the following commands

1. **pwd** – Prints the current working directory.
2. **cd** – Changes the directory.
3. **ls** – Lists files and directories.
4. **mkdir** – Creates a new directory.
5. **rm** – Removes files or directories.
6. **touch** – Creates an empty file or updates the timestamp.
7. **hostname** – Displays the system's hostname.
8. **cat** – Displays file contents or concatenates files.
9. **chmod** – Changes file permissions.
10. **echo** – Prints text or variables to the terminal.
11. **grep** – Searches for a pattern in a file.
12. **fgrep** – Searches for a fixed string (faster grep).
13. **mv** – Moves or renames files.
14. **cp** – Copies files or directories.
15. **more** – Views file contents page by page (forward only).
16. **less** – Views file contents with scrolling (forward/backward).
17. **wc** – Counts lines, words, and characters in a file.
18. **awk** – Pattern scanning and text processing.
19. **sed** – Stream editor for modifying text in files.
20. **tail** – Displays the last few lines of a file.

Part 2

Answers to the following Questions: (you need to supply commands)

1. ***How to navigate to a Specific Directory?***
   ```
   cd /path/to/directory
   ```

2. ***How to see detailed information about files and directories using ls?***
   ```
   ls -l
   ```

3. ***How to create multiple directories in Linux using `mkdir` command?***
   ```
   mkdir dir1 dir2 dir3
   ```

4. ***How to remove multiple files at once with rm?***
   ```
   rm file1 file2 file3
   ```

5. ***Can rm be used to delete directories?***
   ```
   rm -r directory_name
   ```

6. ***How Do You Copy Files and Directories in Linux?***
   ```
   cp file1 destination/
   ``` (for files)
   ```
   cp -r dir1 destination/
   ``` (for directories)

7. ***How to Rename a file in Linux Using mv Command?***
   ```
   mv old_filename new_filename
   ```

8. ***How to Move Multiple files in Linux Using mv Command?***
   ```
   mv file1 file2 file3 destination/
   ```

9. ***How to Create Multiple Empty Files by Using Touch Command in Linux?***
   ```
   touch file1 file2 file3
   ```

10. ***How to View the Content of Multiple Files in Linux?***
    ```
    cat file1 file2
    ```

11. ***How to Create a file and add content in Linux Using `cat` Command?***
    ```
    cat > filename
    ```

12. ***How to Append the Contents of One File to the End of Another File using `cat` command?***
    ```
    cat file1 >> file2
    ```

13. ***How to use `cat` command if the file has a lot of content and can't fit in the terminal?***
```
cat filename | less
```

14. ***How to Merge Contents of Multiple Files Using `cat` Command?***
```
cat file1 file2 > merged_file
```

15. ***How to use `cat` Command to Append to an Existing File?***
```
cat >> filename
```

16. ***What is `chmod 777`, `chmod 755`, and `chmod +x` or `chmod a+x`?***
- `chmod 777 file` → Full permissions (read, write, execute for all).
- `chmod 755 file` → Read & execute for all, write only for owner.
- `chmod +x file` or `chmod a+x file` → Makes file executable.

17. ***How to find the number of lines that match the given string/pattern?***
```
grep -c "pattern" filename
```

18. ***How to display the files that contain the given string/pattern?***
```
grep -l "pattern" *
```

19. ***How to show the line number of a file with the line matched?***
```
grep -n "pattern" filename
```

20. ***How to match the lines that start with a string using grep?***
```
grep "^string" filename
```

21. ***Can the `sort` command be used to sort files in descending order by default?***
No, use `sort -r filename` for descending order.

22. ***How can I sort a file based on a specific column using the `sort` command?***
```
sort -k column_number filename
```