**4ITRC2 Operating System Lab Assignment 2**

**Aim:**

To study and understand Ubuntu commands.

**To Perform:**

Execute different commands and provide their outputs.

**Part 1: Execute the Following Commands and Submit Outputs**

1. pwd – Print working directory
2. cd – Change directory
3. ls – List files and directories
4. mkdir – Create new directories
5. rm – Remove files or directories
6. touch – Create an empty file
7. hostname – Display system’s hostname
8. cat – View and concatenate files
9. chmod – Change file permissions
10. echo – Print text or variables to standard output
11. grep – Search for patterns within a file
12. fgrep – Fixed-string search using grep
13. mv – Move or rename files and directories
14. cp – Copy files and directories
15. more – View file contents page by page
16. less – View file contents interactively
17. wc – Count words, lines, characters in a file
18. awk – Text processing and pattern scanning
19. sed – Stream editor for modifying text
20. tail – View the last lines of a file

**Part 2: Answer the Following Questions (Provide Commands)**

1. How to navigate to a specific directory?  
   **Command:** cd /path/to/directory
2. How to see detailed information about files and directories using ls?  
   **Command:** ls -l
3. How to create multiple directories in Linux using mkdir command?  
   **Command:** mkdir dir1 dir2 dir3
4. How to remove multiple files at once with rm?  
   **Command:** rm file1 file2 file3
5. Can rm be used to delete directories?  
   **Command:** rm -r directory\_name
6. How do you copy files and directories in Linux?  
   **Command:** cp source\_file destination (for files)  
   **Command:** cp -r source\_directory destination (for directories)
7. How to rename a file in Linux using mv command?  
   **Command:** mv old\_filename new\_filename
8. How to move multiple files in Linux using mv command?  
   **Command:** mv file1 file2 file3 destination\_directory
9. How to create multiple empty files using touch command?  
   **Command:** touch file1 file2 file3
10. How to view the content of multiple files in Linux?  
    **Command:** cat file1 file2
11. How to create a file and add content in Linux using cat command?  
    **Command:** cat > filename (then type content and press Ctrl+D to save)
12. How to append the contents of one file to another using cat command?  
    **Command:** cat source\_file >> destination\_file
13. How to use cat when a file has too much content to fit in the terminal?  
    **Command:** cat filename | less or cat filename | more
14. How to merge contents of multiple files using cat command?  
    **Command:** cat file1 file2 > merged\_file
15. How to use cat command to append to an existing file?  
    **Command:** cat >> filename (then type content and press Ctrl+D to save)
16. What is chmod 777, chmod 755, and chmod +x or chmod a+x?  
    **Commands:**
    * chmod 777 filename (full permissions to everyone)
    * chmod 755 filename (read, write, execute for owner; read, execute for others)
    * chmod +x filename (adds execute permission)
    * chmod a+x filename (adds execute permission for all users)
17. How to find the number of lines that match a given string/pattern?  
    **Command:** grep -c "pattern" filename
18. How to display files that contain a specific string/pattern?  
    **Command:** grep -l "pattern" \*
19. How to show the line number of a file where a pattern is matched?  
    **Command:** grep -n "pattern" filename
20. How to match lines that start with a string using grep?  
    **Command:** grep "^pattern" filename
21. Can the sort command sort files in descending order by default?  
    **Answer:** No, by default, sort sorts in ascending order. Use sort -r for descending order.
22. How to sort a file based on a specific column using the sort command?  
    **Command:** sort -k column\_number filename