**Topic Name:**

The main aim of this lab session is to provide hands-on experience on

* Getting Help
* Basic Commands
* Navigation
* File System
* File operation
* Shell Globbing
* Extended globbing 33
* Set permission
* System monitoring
* Simple shell script

1. **Getting Help**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Task | Command Name | Syntax | Example | Screenshots |
| a | To get manual page for the known command |  |  |  |  |
| b | To get manual page for the unknown command |  |  |  |  |
| c | To know the source file binary |  |  |  |  |
| d | To know the path of the command |  |  |  |  |
| e | To know the command is external or internal |  |  |  |  |
| f | To get help for the internal command |  |  |  |  |
| g | To list out bash commands |  |  |  |  |
| h | To know the usage of the command |  |  |  |  |
| i | Alternate command to man –k |  |  |  |  |

1. **Basic Commands**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Task | Command Name | Syntax | Example | Screenshots |
| A | To print kernel version |  |  |  |  |
| B | To print default shell |  |  |  |  |
| C | To print currently logged in user |  |  |  |  |
| D | To list the contents from the given directory |  |  |  |  |
| E | To print the path of the current working directory |  |  |  |  |
| F | To clear the screen |  |  |  |  |
| G | To create empty files |  |  |  |  |
| H | To know disk usage |  |  |  |  |
| I | To know free space in the system |  |  |  |  |
| J | To know about the Linux release |  |  |  |  |

1. Use the date command to:

* Display the current date and time in YYYY-MM-DD HH:MM:SS format.
* Save the current date and time to a file named timestamp.log in your project directory. (Hint: >)

1. Use the cal command to:

* Display the calendar for the current month.
* Print the calendar for the next year and save it as calendar\_2025.txt

1. Create an alias vlsi\_tools for the ls command to list only Verilog (\*.v) and SPICE (\*.sp) files in a directory.
2. Remove the alias vlsi\_tools after verifying it works.
3. Use the touch command to:

* Create a file named design.log.
* Update the timestamp of the file to one day earlier.
* Verify the timestamp change using ls -l.

1. **Navigation**

|  |  |  |  |
| --- | --- | --- | --- |
| Task | Command | Syntax | Screenshots |
| To navigate home directory |  |  |  |
| To navigate to the parent directory |  |  |  |
| To navigate to the child directory |  |  |  |
| Alternate command to cd |  |  |  |
| To go back to the previous directory |  |  |  |
| To go to the root directory |  |  |  |

1. **File System**

|  |  |  |
| --- | --- | --- |
| **Task** | **Syntax** | **Command** |
| **How to identify the name of the file system** |  |  |

**Creating and Managing Files**

1. Use the touch command to create empty files:
   * design.v
   * netlist.sp
   * testbench.tb
2. Use ls to verify the files are created.
3. Use df and du to:
   * Display disk space usage.
   * Show the size of the files you created.

**Directory**

* 1. Create a directory named **VLSI\_Projects**.
  2. Navigate to the **VLSI\_Projects** directory.
  3. Create two subdirectories under **VLSI\_Projects**: **unit4** and **unit5**.
  4. Under **VLSI\_Projects**, create a directory structure for **Unit1** with the subdirectories: **Globbing** and **Basic** using a single command.
  5. Create subdirectories for **Unit2** with the subfolders **Sed** and **Awk** using a single command.
  6. Create subdirectories for **Unit3** with the following subfolders using a single command:

**Perl**

**Bash**

**Python**

**grep**

tcl

**File Management**

1. Navigate to the **Globbing** directory inside **Unit1**.
2. Create the following files in the **Globbing** directory:

simulation\_commands.txt, simulation1.log, simulation2.log

testbench1.v, testbench2.v

synth.tcl,synth2.tcl

report1.html, report2.html

script1.sh, Script2.sh

design1.v, design2.v, Design3.v

temp1.tmp, temp2.tmp, DesignAAA.v

1. **Globbing Exercises**
2. List all files starting with **design**.
3. List all files starting with **Design**.
4. List all files starting with **design** and ending in a number.
5. List all files starting with **design** and ending with a letter.
6. List all files starting with **Design** and having a digit as the fifth character.
7. List all files starting with a letter and ending in a number.
8. List all files that have exactly five characters.
9. List all files that start with **d** or **D** and end with **3** or **A**.
10. List all files that start with **d** or **D**, have **i** or **R** as the second character, and end in a number.
11. List all files that do not start with the letter **D**.
12. List all the files other than .sh files
13. List all the files with ,log and .v

**Extended Globbing**

Enable extended globbing and list files matching your choice of patterns.  
List files starting with **simulation** or **testbench** and ending in .txt.

1. **File Operations**

Add the content **"run simulation with command ./simulate"** to **simulation\_commands.txt**.

Change the timestamp of **simulation\_commands.txt** to yesterday.

Rename all .html files to .htm.

Copy all design files to both **unit4** and **unit5** directories.

1. **Working with Files**
2. Add commands which you learnt during lab session in the file commands.txt
3. Change the timestamp of the file to yesterday
4. Copy the contents from the file commands.txt to commands\_demo.txt
5. Rename the file commands\_demo.txt to duplicate
6. Rename all .html to .hldd
7. Delete the file duplicate
8. Copy the contents commands.txt to unit4 and unit5 (using relative path)
9. Delete the contents from unit5 (using absolute path)
10. Copy all the files using (interactive mode) from the folder globbing to unit5,
11. Navigate to root
12. List all the files under root
13. Explore all the folders (Do not delete any folder)
14. Navigate to /etc/passwd
15. Open the file passwd
16. Explore the file passwd
17. Navigate to /etc/group and explore
18. Working with file Permission / owner
19. Find the default permission for the file
20. Find the default permission for the directory
21. Change the permission of your choice using both numeric and mnemonic method
22. Change the owner of the file
23. **System Monitoring**
24. Use the free command to display system memory usage and explain its importance during VLSI simulations.
25. Use the top command to monitor system processes. Identify:
    * The most resource-intensive process.
    * How this impacts running VLSI tools.
26. **Difference between** 
    * + 1. GUI vs. CLI
        2. Terminal vs shell
        3. Command
        4. man vs info
        5. which vs. whereis
        6. locate vs. find
        7. help vs –help
27. Write a simple shell script to print your name and your hobbies!

**Interesting commands to Explore**

Banner

History

**Note:** Include your screenshots

**Evaluation :**

Marks : 10 (Deadline : 4 – Originality :3 – Completeness :3 )

Deadline: 13.08.2025

“All our dreams can come true if we have the courage to pursue them.” - Walt Disney