LP ASSIGNMENT 4

1. Command used:
   bash
   grep '.*' /etc/passwd |cut -d: -f1 | tee usernames.txt

   - cut -d: -f1 – extracts only the usernames
   - tee – saves them into usernames.txt while also displaying them on screen

2. To troubleshoot a binary not in $PATH:
   Commands used:
   - bash
     which binary_name

     which – checks if the binary exists in the current $PATH

   - bash
     sudo find / -type f -name binary_name 2>/dev/null

     find – searches in directories

   - bash
     locate binary_name

     locate – faster search using indexed database

   - Once it's found add the binary's directory to $PATH:
     bash
     export PATH=$PATH:/path/to/binary

3. Command used:
   bash
   find /var/log -name "*.log" -mtime -1 |tee log_report.txt
   - find – finds all .log files modified in last 24 hrs
   - tee – saves it in log_report.txt

4. shutdown -r now : This command initiates a clean shutdown, kills processes safely, then reboots.
   reboot : This command directly reboots the system.

5. Command used:
   bash
   ./script.sh 2>&1 | tee debug_output.txt
   - It redirects both standard output and errors into debug_output.txt while displaying them.

6. Three real world linux applications in industries:
   - Embedded systems: Linux powers IoT devices,routers,automotive systems etc
   - Servers : Web servers such as Apache,Ngnix run on linux for reliability and scalability
   - Cloud/DevOps : AWS.Azure and Google cloud rely heavily on linux Virtual machine for deployment

7. Application Software:

   Programs designed for end-users to perform specific tasks.

   Example: LibreOffice (document editing), Firefox (web browsing).

   System Software:

   Core software that manages hardware and provides a platform for applications.

   Example: Linux kernel, device drivers.

   Utility Software:

   Special tools that help in system monitoring, maintenance, and management.

   Example: grep, tar, top.

8.

- Open-source operating systems, such as Linux, provide free access to their source code. This allows users and developers to study, modify, and redistribute the software according to their needs. They are generally free of cost, highly customizable, and maintained by large communities that offer updates and support. Open-source systems are also more transparent, as users can see how the system works internally.
- On the other hand, proprietary operating systems, such as Windows and macOS, keep their source code closed and controlled by the vendor. Users cannot legally modify or redistribute them. These systems usually require purchasing a license, offer limited customization, and rely on official vendor support for updates and troubleshooting. Proprietary systems often prioritize ease of use and commercial support but sacrifice transparency and flexibility.

9. Command used:
   bash
   uname -r

10. Commands used:
    - head – displays the first lines of a file
      bash
      head filename.txt
    - tail – displays the last lines of a file
      bash
      tail filename.txt