**Lab Assignment: Linux User Management and System Administration**

**Objective**

In this lab, you will practice basic user and group management, file permissions, process management, task scheduling, resource monitoring, and package management in a Linux environment.

**Time Limit**

1 hour

**Prerequisites**

* Access to a Linux system (e.g., Ubuntu, CentOS) with sudo privileges.
* Basic familiarity with the Linux command line.

**Tasks**

**1. User and Group Management**

* **Create a new user account** named "devuser" with the following specifications:
  + Home directory: /home/devuser
  + Shell: /bin/bash
  + Comment: "Developer User"
* **Create a new group** named "developers".
* **Add "devuser" to the "developers" group**.
* **Verify** the user and group setup.  
  *Expected Output:* Should show "devuser" with "developers" in the group list.

**2. File Permissions**

* **Switch to "devuser"**.
* **Create a directory** named "projects" in the home directory.
* **Set permissions** on "projects" so that:
  + The owner has read, write, and execute permissions (rwx).
  + The group has read and write permissions (rw-).
  + Others have no permissions (---).
* **Verify** the permissions.  
  *Expected Output:* Should show drwxrw---- followed by ownership details.

**3. Process Management**

* While logged in as "devuser", **start a background process** using the sleep command for 1000 seconds.
* **List processes** to find the PID of the sleep process.  
  *Expected Output:* Look for "sleep 1000" and note its PID.
* **Terminate the sleep process** using its PID.
* **Confirm** the process is terminated.  
  *Expected Output:* "sleep 1000" should no longer appear in the process list.

**4. Task Scheduling**

* As "devuser", **create a script** named "hello.sh" in the "projects" directory with the following content:

bash

#!/bin/bash

echo "Hello, World!"

* **Make the script executable**.
* **Schedule a cron job** to run the script every minute.
* **Verify** the script runs (wait 1 minute).  
  *Hint:* You may check system logs or look for output manually.

**5. Resource Monitoring**

* **Exit back to your original user**.
* **Check memory usage**.  
  *Action:* Note the "used" and "available" memory values.
* **Monitor processes**.  
  *Action:* Observe for a few seconds, then exit the monitoring tool.

**6. Package Management**

* **Install the "htop" package**.
* **Run "htop"** to monitor resources briefly.  
  *Action:* Explore the interface, then exit.
* **Remove the "htop" package**.

**Documentation**

* For each task, record:
  + The commands you used.
  + Key outputs or observations (e.g., PID of the sleep process, permission settings, memory usage).
* Optional: Take screenshots or copy-paste terminal outputs.

**Submission**

* Submit a brief report (e.g., a text file or PDF) summarizing your actions and findings for each task.