**ASSIGNMENT COVER PAGE**

**Please fill in all the required details for your assignment to be accepted.**

|  |  |  |  |
| --- | --- | --- | --- |
| Student’s Name | PAUL ZIPPORAH OCHANYA | | |
| Student’s Matric No | 0102303133 | | |
| Year/Semester | Final Year | | |
| Program | Computer Science (Cyber Security & Network Technology) | | |
| Subject Name / Subject Code | LNXA 371 | | |
| Lecturer’s Name | MR JAFAR | | |
| Assignment Title | Linux Administration | | |
| No. of Page (excluding this page) |  | | |
| Required words |  | Actual of words |  |
| Soft copy included | Yes / No | | |
| **DECLARATION BY STUDENTS:**  *I certify that this assignment is my own work in my own words. All resources have been acknowledged and the content has not been previously submitted for assessment to LINCOLN or elsewhere. I also confirm that I have kept a copy of this assignment.*  Sign: Zipporah Date: 8/9/2025 | | | |

Linux Administration Tasks.

Submission: Students should push their documentation and scripts to GitHub and invite sheikjafar32@gmail.com for review.

Total Marks: 100

Instructions: Complete all tasks, Each task must include stepby-step documentation, commands used, and screenshots. Push your work to GitHub before the end of the day.

Tasks and Marks Allocation

1. User & Group Management Automation (7Marks)

Write a Bash script to create 5 new users, add them to a group `devteam`, set their passwords, and force them to change password on first login.

1. File Permissions & ACLs Project (6Marks)

Create a shared directory `/shared\_data` where group members can read/write but not delete others' files. Use ACL to grant read-only access to one extra user outside the group.

1. Apache Virtual Hosts Setup (7Marks)

Configure Apache to host two websites (`site1.local`, `site2.local`) with separate document roots and logs.

1. SSL/TLS Implementation (6Marks)

Generate a self-signed SSL certificate using `openssl` and enable HTTPS for one of your virtual hosts.

1. MySQL Remote Access & Security (7Marks)

Configure MySQL to allow secure remote connections, create a database and user with least privilege for remote access.

1. Firewall Configuration (6Marks)

Configure `ufw` or `iptables` to allow only HTTP(80), HTTPS(443), SSH(22), and MySQL(3306) from a specific IP range.

1. System Monitoring Script (6Marks)

Write a script to log CPU, Memory, and Disk usage every 5 minutes into `/var/log/sys\_health.log` and set as a cron job.

1. Log Rotation Setup (6Marks)

Configure `logrotate` for a custom application log to rotate daily, compress old logs, and keep only 7 days.

1. DNS Server Setup (7Marks)

Install and configure `bind9` as a local caching DNS server with a custom zone for `myuniversity.local`.

1. SSH Key Authentication + Hardening (6Marks)

Configure SSH key-based login, disable password authentication, and disable root login in `sshd\_config`.

1. Systemd Service Creation (6Marks)

Write a simple script and create a `systemd` service to run it automatically at boot.

1. Disk Partitioning & Mounting (7Marks)

Create a new partition, format as ext4, mount it permanently using `/etc/fstab`, and test reboot persistence.

1. Postfix Mail Server (Local Only) (6Marks)

Install and configure Postfix for local mail delivery and send a test mail between users.

1. Backup & Restore Project (6Marks)

Write a script to back up `/var/www/html` to `/backup/` with a timestamp and test restoring.

1. Containerization Challenge (8Marks)

Install Docker/Podman, create a container running Nginx, map it to port 8080, and verify service.

