Important Instructions:

Objective:

This assessment is designed to evaluate your understanding of Linux system administration concepts through multiple-choice questions (MCQ) and scenario-based questions.

Assessment Structure:

- **MCQ Section**:
  - Total Questions: 30
  - Marks per Question: 2
  - Total Marks: 60
- **Scenario-Based Questions**:
  - Total Questions: 4
  - Marks per Question: 10
  - Total Marks: 40 (4 questions out of 4)

Assessment Format:

- **MCQ Section**:
  - The MCQ section will be conducted on Quizizz platform. Link: https://quizizz.com/join?gc=050963
  - Access link will be provided during the assessment session.
  - Answer all questions within the stipulated time.
- **Scenario-Based Questions**:
  - Attempt any 4 out of 4 scenario-based questions.
  - Write your responses in a document or PDF format.
  - Include your name and registration number on the document.
  - Upload the document to the provided Google Form link: https://forms.gle/AVbzhZZUQSv5JQ9a9

Time Allocation:

- Total Time: 90 Minutes
  - MCQ Section: 30 Minutes
  - Scenario-Based Questions: 40 Minutes
  - Document preparation and uploading: 20 Minutes

Instructions:

1. **MCQ Section**:
   - Access the Quizizz link provided.
   - Answer all 30 multiple-choice questions within 30 minutes.

- Ensure you submit your responses before the time elapses.

2. **Scenario-Based Questions**:
   - Choose any 4 out of 4 scenario-based questions.
   - Read each scenario carefully and provide concise and accurate responses.
   - Write your responses in a document or PDF format.
   - Include your name and registration number at the top of the document.
   - Ensure your answers are well-organized and clearly written.
   - Upload the document to the provided Google Form link within last 20 minutes.
3. **Submission**:
   - Submit the document containing your responses to the scenario-based questions via the provided Google Form link.
   - Ensure the document is uploaded before the end of the assessment.
4. **Note**:
   - Follow the assessment guidelines carefully.
   - Manage your time efficiently to attempt all sections within the allocated time.
   - Contact the invigilator in case of any technical issues or clarifications.

Best of Luck!

Set A

Question 1: Use firewalld to create and apply a new zone for a specific network interface, allowing only ICMP (ping) and SSH traffic.

Instructions:

1. Install firewalld if it is not already installed on your system.
2. Start and enable the firewalld service.
3. Create a new zone named customzone.
4. Add rules to customzone to allow only ICMP and SSH traffic.
5. Assign customzone to a specific network interface (e.g., eth0).
6. Verify the configuration using firewall-cmd and test by pinging the machine and attempting SSH access.

Question 2: Set up a cron job to automate the backup of a directory every day at midnight.

Instructions:

1. Create a directory named backup in your home directory.
2. Write a shell script named backup.sh that copies the contents of a specified directory (e.g., /home/username/data) to the backup directory.
3. Make the script executable.
4. Schedule a cron job to run the backup.sh script every day at midnight.
5. Verify that the cron job is scheduled and test it by manually running the script.

Question 3: Create a compressed archive of a directory using tar.

Instructions:

1. Create a directory named project in your home directory.
2. Inside the project directory, create three text files: file1.txt, file2.txt, and file3.txt.
3. Use the tar command to create a compressed archive named project.tar.gz of the project directory.
4. Verify the contents of the archive using the tar command.

Question 4: Extract and update an existing tar archive.

Instructions:

1. Extract the project.tar.gz archive created in the previous lab question to a new directory named project_extracted.
2. Create a new text file named file4.txt inside the project_extracted directory.
3. Update the original project.tar.gz archive to include the new file4.txt.
4. Verify that file4.txt has been added to the project.tar.gz archive by listing its contents.

Set B

Question 1: Use tar to create incremental backups of a directory.

Instructions:

1. Create a directory named backup_test in your home directory and add several files to it.
2. Create a full backup of the backup_test directory named backup_full.tar.
3. Make some changes to the files in the backup_test directory (e.g., add new files or modify existing ones).
4. Create an incremental backup of the backup_test directory named backup_incremental.tar using a snapshot file to keep track of changes.
5. Verify the contents of both the full and incremental backups.

Question 2: Configure a Linux machine as an NFS server to share a directory with client machines.

Instructions:

1. Install the necessary NFS packages on your Linux server.
2. Create a directory named /srv/nfs_share on the server.
3. Modify the /etc/exports file to share the /srv/nfs_share directory with client machines on the same network.
4. Set the appropriate permissions on the /srv/nfs_share directory to allow read and write access for clients.
5. Start and enable the NFS server services.
6. Verify the NFS exports using the appropriate command.

Ouestion 3: Create and manage disk partitions using the fdisk utility.

Instructions:

1. Identify the disk to be partitioned (e.g., /dev/sdb) using the lsblk or fdisk -l command.
2. Use the fdisk utility to create a new partition on the disk.
3. Format the new partition with the ext4 filesystem.
4. Mount the new partition to a directory named /mnt/new_partition.
5. Verify the partition by listing the contents of the mounted directory.

Question 4: Create and manage logical volumes using the Logical Volume Manager (LVM).

Instructions:

1. Install the necessary LVM packages if they are not already installed.
2. Initialize a physical volume (PV) on a new disk (e.g., `/dev/sdc`).
3. Create a volume group (VG) named `vg_data` using the initialized physical volume.
4. Create a logical volume (LV) named `lv_data` within the `vg_data` volume group with a size of 10GB.
5. Format the logical volume with the `ext4` filesystem.
6. Mount the logical volume to a directory named `/mnt/lv_data`.
7. Verify the logical volume by listing the contents of the mounted directory.