Operating System Lab 6

User Management

In Linux

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Part 1: User Management

Objective:

Learn how to create and manage user accounts and groups in a Linux system, including adding users to groups, managing user access, and securely removing users and groups from the system.

What is User Management?

User management refers to the process of controlling and organizing who has access to a computer system. It involves creating, managing, and deleting user accounts, assigning permissions, and defining policies that govern user interactions with the system.

Importance of User Management in Linux:

- Security: Proper user management is crucial for securing the system by restricting unauthorized access.
- Organization: It helps in organizing users by segregating tasks and permissions, making system administration more efficient.

Types of Users in Linux:

- **Regular User:** A user with limited privileges, typically used for daily activities like editing files and browsing the web.
- **Root User:** The superuser with full access to all commands and files on the system, capable of performing any administrative tasks.

Key Concepts in User Management:

- **UID (User ID)**: A unique numerical identifier assigned to each user, used by the system to identify and manage users.
- **GID (Group ID)**: A similar identifier but for groups, allowing the system to manage users by their group affiliations.
- **/etc/passwd** File: A file that contains information about all the users on the system,
- **/etc/shadow** File: A file that stores encrypted passwords of users, along with other security-related information like password expiration dates.
- **/etc/group** File: A file that contains information about the groups on the system.

How can I add a new user in Linux?

1- Create user account with useradd:

The useradd command in Linux is used to create a new user account on the system.

- Syntax:

sudo useradd [options] username

- Example:

sudo useradd Yazan

When you use this command, it creates the user with certain default settings unless specified otherwise. One of these default settings is the creation of a home directory for the user.

➢ What is set up for the user in the system:

Every user in a Linux system has some information stored in the /etc/passwd and /etc/shadow file, which includes:

- /etc/passwd

```
kali:x:1000:1000:,,,:/home/kali:/usr/bin/zsh
Ahmed:x:1001:1001::/home/Ahmed:/bin/bash
Sami:x:1002:1002::/home/Sami:/bin/bash
Yazan:x:1004:1005::/home/Yazan:/bin/sh
```

- /etc/shadow

```
statd:!:19778::::::
redis:!:19778::::::
postgres:!:19778::::::
mosquitto:!:19778::::::
inetsim:!:19778::::::
_gvm:!:19778::::::
kali:$y$j9T$hW9K52EOJBFsViQ7HRz370$//6l5BWkvHl3PTkK6qgZhGFTLOFKR/zVCEwjlZIwAq0:19778:0:99999:7:::
Ahmed:$y$j9T$Ra/pV2szk2Bm8ptO5BCSw.$hD2PsemtxWE9kINStMraPvD7J98gD.NopivFOz2Uvw.:19955:0:99999:7:::
Sami:$y$j9T$8S8OvZcwMAkHFQPDNGRrw1$NrC0×3Xf408fE9xUmaKykFVCAL.M0SKSS9dSw6jwXO0:19955:0:99999:7:::
Yazan:!:19957:0:99999:7:::
```

➢ Can I add a user in another way?

Yes, there are several ways to add a user. One method is to manually edit the files located in /etc/passwd and /etc/shadow, then create the user's home directory. Afterward, you would need to adjust the file permissions, set the owner and group, and copy necessary files from the /etc/skel directory, among other steps.

2- Change the User's Password with passwd

After creating a user account, it is necessary to set or change the user password to ensure the security of the account. The passwd command in Linux is used to manage and change user passwords.

- Syntax:

sudo passwd username

- The system will prompt you to enter a new password for the user.
- It will then prompt you to re-enter the password to confirm it.
- Important Note: If the user is added to the sudo group (or any administrative group), it's crucial that their password is particularly strong, as they will have elevated privileges.

3- Modify User Account with usermod:

The usermod command in Linux is used to modify an existing user account's attributes.

- Syntax:

sudo usermod [options] username

- "Save this information somewhere, we will come back to it later" ☺

➢ Can I prevent a user from entering the system?

- There are situations where you may need to temporarily prevent a user from logging into the system without deleting their account. This is a common administrative task when a user's account needs to be suspended for security reasons, during maintenance, or while on vacation.

- To temporarily prevent a user from logging into the system without deleting their account, you can simply place an exclamation mark (!) before the user's password in the /etc/passwd file.

- Example:

sudo usermod –L username

- Does this completely prevent the user from accessing their account?

- No, this method is not 100% foolproof. It can be bypassed using methods such as public key authentication, which allows the user to log in without needing a password.

- To effectively prevent the user from logging in, you should also change their shell to nologin. This will prevent any interactive login attempts, displaying a message that the account is not available.

- Example:

sudo usermod -s /bin/bash Yazan

4- Removing Users

When you need to remove a user from a Linux system, the process usually involves more than just deleting the account. You want to make sure that all associated resources and data are handled correctly to prevent problems.

- We can remove a user from our system using the following command:

- Syntax:

sudo userdel username

- After executing this command, consider the following steps:

    - Set the disk quota to zero.
    - Remove the user from local databases or phone lists.
    - Remove the user from aliases files or add email forwarding.
    - Remove the user's crontab file and any pending at jobs.
    - Terminate any running processes associated with the user.
    - Remove temporary files located in /var/tmp or /tmp.
    - Ensure the user is removed from passwd, shadow, and group files.
    - Remove the user's home directory (back it up first) and mail spool.

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Part 2: Working with Groups in Linux

Groups in Linux:

- A group is a collection of users that need to share access to files and other system resources.
- Groups can be used to grant access to files to a set of users instead of just a single user.
- Like users, groups have group names to make them easier to work with. Internally, the system distinguishes groups by the unique identification number assigned to them, the group ID or GID.
- The mapping of group names to GIDs is defined in databases of group account information. By default, systems use the /etc/group file to store information about local groups.
- Each line in the /etc/group file contains information about one group.

1- Creating a Group:

To create a new group, you can use the groupadd command.

- Syntax:

sudo groupadd groupname

2- Deleting a Group:

If you need to remove a group, you can use the groupdel command.

- Syntax:

sudo groupdel groupname

3- Adding a User to a Group

To add a user to a group, you can use the usermod command with the -aG option, which appends the user to the specified group(s).

- Syntax:

sudo usermod -aG groupname username

4- Verifying Group Memberships

To check which groups a user belongs to, you can use the groups command.

- Syntax:

sudo usermod -aG groupname username

Part 3: Let's Try

Let's try together:

- Now, I will solve one of the questions. Focus with me, and then it will be your turn.

- Question 1: Add a New User and Manage Account Access

  A new user named yazan has joined your company. Your tasks are:

  - Create the user yazan.
  - Display all the details related to this user from the /etc/passwd and /etc/shadow files.
  - The user yazan has gone on vacation, so disable their access to the system completely.
  - Now, the user has canceled their vacation. Re-enable the account for yazan to allow access to the system.

Now it's your turn:

- *Solve the following Question and then go to the eLearning website to submit your solution.*

- Question 2: Create a user with your name and another user with any name of your choice. Then, perform the following tasks:

  - Create a group named after your course and section.
  - Add both users to the newly created group.
  - Display the group information from the /etc/group file.
  - Display the details of your user account.
  - Display all users who are members of the group.
  - Delete the group.

Best Wishes