Login Process

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After the system boots, at serial terminals or virtual terminals, the user will see a login prompt similar to:

machinename login:

This prompt is being generated by a program, usually getty or mingetty, which is regenerated by the init process every time a user ends a session on the console.

The getty program will call login, and login, if successful will call the users shell.

The steps of the login process are:

1.The init process spawns the getty process.
2.The getty process invokes the login process when the user enters their name and passes the user name to login.
3.The login process prompts the user for a password, checks it, then if there is success, the user's shell is started.
4.On failure the program displays an error message, ends and then init will respawn getty.
5.The user will run their session and eventually logout. On logout, the shell program exits and we return to step 1.

Login :

- The login program will prompt for the user name .
- The user’s password will be requested and then it will be checked .
- Once the password is entered and verified against the /etc/passwd file the login program performs the following administrative task :

Setting the UID and GID of the tty

- The HOME, PATH, SHELL, TERM, MAIL, and LOGNAME environment variables are set.
- The default path is set to "/usr/local/bin:/bin:/usr/bin:." for normal users and "/sbin:/bin:/usr/sbin" for root.
- The users shell is started. The shell is specified in the file "/etc/passwd". If it is not specified, login will use "/bin/sh" as a default shell. This shell will be run with the user's privileges rather than root privileges as login was run.

- If there is no directory specified for the user in "/etc/passwd", login will use "/" by default for the user's home directory.

How login uses the /etc/passwd file:

- Once the user has successfully logged in, the login program will invoke the user's shell.
- The login program will look in the /etc/passwd file to determine which shell program to run.
- The /etc/passwd file contains entries containing the complete path of the shell.

- The syntax is:
  - account : password : UID : GID : GECOS : directory : shell

- A sample contents of /etc/passwd file :

```
root:x:0:0:root:/root:/bin/bash
mark:x:500:500::/home/mark:/bin/bash
george:x:501:501::/home/george:/bin/bash
```

Fields of /etc/passwd file:

- account - The user's name.
- password - The users encrypted passwrod or a place holding character if the system is using shadow passwords
- UID - The users numerical identification.
- GID - The number of the primary group for the user.
- GECOS - Usually has the full username. This field is only for information purposes and is optional. This information is sometimes called the user's finger information.

- Directory - The full path of the user's home directory.
- shell - The full path and filename of the user's shell. If no value is here /bin/sh is assumed. This value can be changed with the chsh command.
- Note : GECOS means General Electric Comprehensive Operating System

/etc/group : user group file

- /etc/group is an ASCII file which defines the groups to which users belong. There is one entry per line, and each line has the format:
  - group_name : passwd : GID : userlist
- The field descriptions are:

group_name : the name of the group.

Password : the (encrypted) group password. If this field is empty, no password is needed.

GID : the numerical group ID.

user_list: all the group member's user names, separated by commas.

Creating & Changing Passwords

- From time to time, you should change your password, making it more difficult for others to break into your system.
- As system administrator, you may sometimes need to change the password associated with a user's account.
- To change your own password, enter a command :
  - passwd

- You don't have to be logged in as root to change a password. Users can change their own passwords without the help of the system administrator. The root user, however, can change the password associated with any user account. (only root can do so)

- The passwd command initiates a simple dialog that resembles the following:

```
$ passwd
Changing password for newbie
Old password:
Enter the new password (minimum of 5, maximum of 8 characters)
Please use a combination of upper and lower case letters and numbers.
New password:
Re-enter new password:
Password changed.
```

- The root user can change the password associated with any user account.
- The system doesn't ask you for the current password, it immediately prompts for the new password