User Data

User data is stored in the /etc/passwd file. Each line represents a different user on the system.

Each line in /etc/passwd is in the format:

```
username:password:uid:gid:comment:home:shell
```

The password field should be "x", indicating that the user's encrypted password data is stored in the more secure /etc/shadow file.

The uid and gid fields are the user ID and main group ID for the user. These are unique numbers that correspond to the user name and group name, respectively.

The comment field is a text field the system won't process. It's usually used to store a user's name or the name of the application that account is associated with.

The home field lists the home directory of the user, like /home/username.

The shell is the command run when the user starts a login session. An account created for a human would use an interactive shell like `/bin/bash`. A non-interactive user (like an account created to run a service) should use a shell that does nothing, like `/bin/false` or `/sbin/nologin`, to prevent anyone from logging in as that user.

Managing Users

These commands create, delete, or modify user accounts.

Command	Description
useradd	Add a user to the system.
userdel	Delete a user from the system, optionally deleting their home directory as well.
usermod	Change a user's information, add it to secondary groups, or perform tasks like moving its home directory or locking the account.
passwd	Change or expire a user's password.
chsh	Change the shell for a user (also possible via `usermod`).

Command Examples

Create a new user and its home directory

The -m option to `useradd` will tell the system to create a home directory in the default system location. The -c option sets the user's comment field - if there's going to be a space in the comment, put quotes around it.

```
useradd -m -c 'Full Name' username
```

Add a user to a group

Using the -G option to add a user to a group via `usermod` will replace its current secondary groups. The -a option tells the system to append the group to the user's secondary group list instead.

```
usermod -a -G groupname username
```

Disable interactive logins for a user

If a user was automatically created by an application installer, you can use this command to ensure that no one can use the account to log in.

```
chsh -s /bin/false username
```

Expire a user's password

Expiring a user's password will force them to change it the next time they log in.

```
passwd -e username
```

User Switching

These commands switch the active shell to another user or identify the current user.

Command	Description
su	Switch to another user account. With no argument, switches to root.
sudo	Execute a command with superuser privileges.
visudo	Edit the configuration file for `sudo`. This command checks the changes made to make sure they are valid before saving.
whoami	Display the username of the current account.
id	Display the numeric ID or group information for a user.

Command Examples

Switch to another user in a login shell

Using a dash as an option to `su` will switch to a shell with environment variables set as if the user had logged in. Useful if the account is configured to work with a specific application.

```
su - username
```

Switch to a user account with an invalid shell

To switch to an application account that has a non-login shell, root (and only root) can use the -s option with `su` to specify a login shell.

```
su -s /bin/bash username
```

Use sudo with a pipe

To use a pipe with `sudo`, run `su` with the -c option, then put the command sequence you want to run in quotes.

```
sudo su -c 'ls | sort > /root/files.txt'
```

Managing Groups

These commands create or delete groups or modify their data.

Command	Description
groupadd	Add a new group to the system.
groupdel	Remove a group from the system.
groupmod	Change information about a group (usually its name or numeric ID).
groups	Display the groups a user belongs to.

Command Example

Change a group name

Change a group name with the -n option of the groupmod command.

```
groupmod -n newname oldname
```