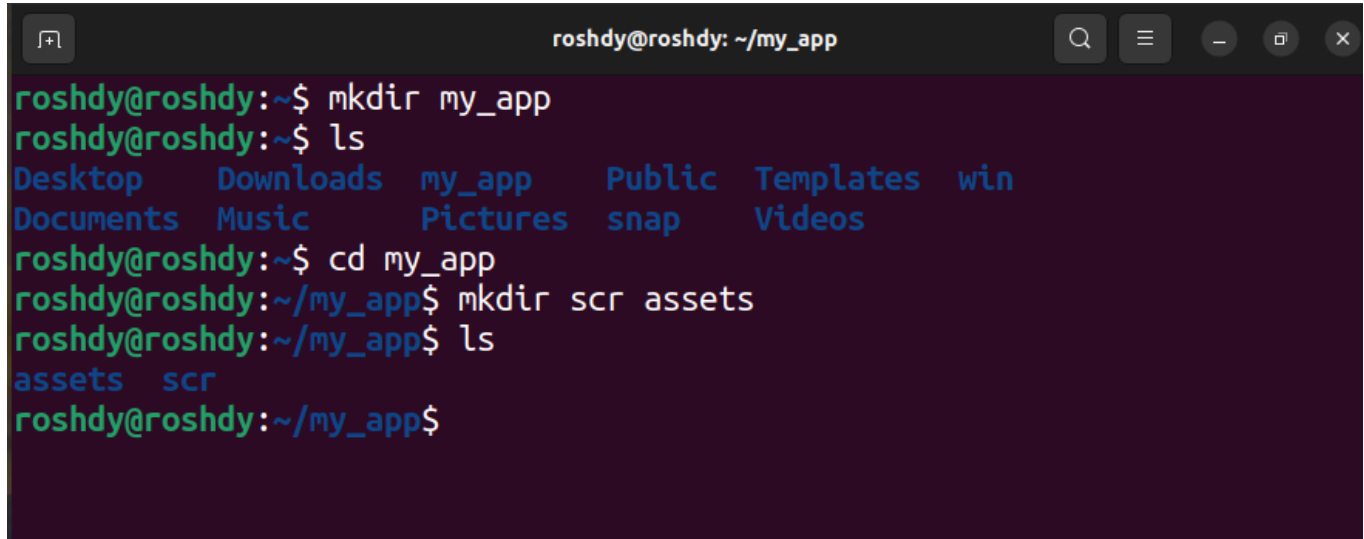


Part 1: Create the Project Structure

1. Create Directories:

1. In your home directory (~), create a main project directory called my_app.
2. Navigate inside the my_app directory.
3. Create two subdirectories: src (for source code) and assets (for other files).

A terminal window with a dark purple background. The title bar shows 'roshdy@roshdy: ~/my_app'. The terminal text is as follows:

```
roshdy@roshdy:~$ mkdir my_app
roshdy@roshdy:~$ ls
Desktop  Downloads  my_app    Public    Templates  win
Documents Music      Pictures  snap      Videos
roshdy@roshdy:~$ cd my_app
roshdy@roshdy:~/my_app$ mkdir src assets
roshdy@roshdy:~/my_app$ ls
assets  src
roshdy@roshdy:~/my_app$
```

2. Create and Populate Files:

1. Inside the src directory, create an empty file named main.py.
2. Inside the assets directory, create an empty file named config.txt.
3. Use the echo command to add the following line to assets/config.txt: echo "Default Port: 8080" > assets/config.txt

```
roshdy@roshdy: ~/my_app/assets
roshdy@roshdy:~/my_app$ cd scr
roshdy@roshdy:~/my_app/scr$ touch main.py
roshdy@roshdy:~/my_app/scr$ ls
main.py
roshdy@roshdy:~/my_app/scr$ cd ..
roshdy@roshdy:~/my_app$ cd assets
roshdy@roshdy:~/my_app/assets$ touch config.txt
roshdy@roshdy:~/my_app/assets$ ls
roshdy@roshdy:~/my_app/assets$ echo "Default Port: 8080" > config.txt
roshdy@roshdy:~/my_app/assets$ cat config.txt
Default Port: 8080
roshdy@roshdy:~/my_app/assets$
```

Part 2: Linking and Searching

1. Create a Symbolic Link:

1. While you are still inside the my_app directory, create a symbolic link (soft link) to the assets/config.txt file. Name the link active_config.
2. Use the ls -l command to verify that the link was created and points to the correct original file.

```
roshdy@roshdy: ~/my_app
roshdy@roshdy:~$ cd my_app
roshdy@roshdy:~/my_app$ ln -s assets/config.txt active_config
roshdy@roshdy:~/my_app$ ls -l
total 8
lrwxrwxrwx 1 roshdy roshdy 17 18:43 27 active_config -> assets/config.txt
drwxrwxr-x 2 roshdy roshdy 4096 18:27 27 assets
drwxrwxr-x 2 roshdy roshdy 4096 18:24 27 scr
roshdy@roshdy:~/my_app$
```

2. Find System Files:

1. Use the find command to search for a file named services within the /etc/ directory.
2. Once found, use the cp command to copy the /etc/services file into your my_app/assets directory.

```
roshdy@roshdy: ~/my_app/assets
roshdy@roshdy:~/my_app$ sudo find /etc/ -name services
/etc/services
/etc/avahi/services
roshdy@roshdy:~/my_app$ cp /etc/services assets
roshdy@roshdy:~/my_app$ cd assets
roshdy@roshdy:~/my_app/assets$ ls
config.txt  services
roshdy@roshdy:~/my_app/assets$
```

3. Search File Content:

1. Use the grep command to search for the term "http" inside the assets/services file you just copied.
2. Run the grep command again, but this time, display the line numbers for each match.

```
roshdy@roshdy: ~/my_app
roshdy@roshdy:~/my_app$ grep "http" assets/services
# Updated from https://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml .
http      80/tcp      www         # WorldWideWeb HTTP
https     443/tcp     # http protocol over TLS/SSL
https     443/udp     # HTTP/3
http-alt  8080/tcp    webcache    # WWW caching service
roshdy@roshdy:~/my_app$ grep -n "http" assets/services
3:# Updated from https://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml .
39:http    80/tcp      www         # WorldWideWeb HTTP
83:https   443/tcp     # http protocol over TLS/SSL
84:https   443/udp     # HTTP/3
263:http-alt 8080/tcp    webcache    # WWW caching service
roshdy@roshdy:~/my_app$
```

Part 3: Verification and Cleanup

1. Verify Directory Structure:

1. Use the tree command to display the final structure of your my_app directory. (If tree is not installed, you can use ls -R).

2. Clean Up:

1. Remove the symbolic link active_config.
2. Remove the entire my_app directory and all of its contents with a single command.

```
roshdy@roshdy: ~/my_app$ tree
.
├── active_config -> assets/config.txt
├── assets
│   ├── config.txt
│   └── services
└── scr
    └── main.py

2 directories, 4 files
roshdy@roshdy:~/my_app$ rm active_config
roshdy@roshdy:~/my_app$ rm -r my_app
rm: cannot remove 'my_app': No such file or directory
roshdy@roshdy:~/my_app$ cd ..
roshdy@roshdy:~$ rm -r my_app
roshdy@roshdy:~$ ls
Desktop    Downloads  Pictures  snap      Videos
Documents  Music      Public    Templates win
roshdy@roshdy:~$
```