

Name of the Server :- file_server

Name of the Client nodes :- client0, client1, client2

Server:-

=====

*Created and ran the file_server container using python docker image and mounted the source files(server.py, client.py and other files from Assignment1) on local machine's directory

docker run --name file_server --mount type=bind,source=E:/DSD_assignment3,target=/COMP6231_A3 -it python /bin/bash

*Checked for latest package version

apt-get update

*Installed nano editor, net-tools for enabling networking capabilities of my container and iputils-ping for testing if my network connection works

apt-get install nano net-tools iputils-ping

*Detached from the file_server container

Ctrl-P and Ctrl -Q to keep container running in background

*Created a new image(file_server_img) out of file_server container to prevent reinstalling these packages on my client nodes (by taking python base image)

docker commit file_server file_server_img

*Attached to file_server container again

docker attach file_server

*Changed the directory to reach server.py file

cd COMP6231_A3/server

*Noted down the ip of the server on my container

ifconfig

172.17.0.2

*Changed and saved the server host address in server.py file

nano server.py

Before :- 127.0.0.1

After :- 172.17.0.2

*Ran the server.py file

python server.py

*Since the output from server is needed to be logged opened new terminal window to configure the three client nodes.

*Server output after all the three clients finished creating their respective directories(client0_files, client1_files, client2_files) in the server folder.

Connection from : ('172.17.0.3', 42584)

Connection closed from: ('172.17.0.3', 42584)

Connection from : ('172.17.0.4', 50798)

Connection closed from: ('172.17.0.4', 50798)

Connection from : ('172.17.0.5', 42602)
Connection closed from: ('172.17.0.5', 42602)

Client0:-

=====

- *Created client0 node taking file_server as an image and mounted the source files(server.py, client.py and other files from Assignment1) on local machine's directory

```
docker run --name client0 --mount type=bind,source=E:/DSD_assignment3,target=/COMP6231_A3 -it file_server_img /bin/bash
```

- *Changed directory to where client.py is present

```
cd /COMP6231_A3/client
```

- *Checked the IP of client0

```
ifconfig  
172.0.0.3
```

- *Changed and saved the server host address in client.py

```
nano client.py  
Before :- 127.0.0.1  
After :- 172.17.0.2
```

- *Ran the client.py for client0

```
root@f28e4e1cbb43:/COMP6231_A3/client# python client.py  
Connected to server at IP: 172.17.0.2 and Port: 65432  
Handshake Done. EOF is: b'<\xeeD\xe5~\x08V]>'  
/COMP6231_A3/server  
Enter the command you want to execute mkdir client0_files  
/COMP6231_A3/server  
Enter the command you want to execute cd client0_files  
/COMP6231_A3/server/client0_files  
Enter the command you want to execute ul about.txt  
/COMP6231_A3/server/client0_files  
Enter the command you want to execute mkdir animals  
/COMP6231_A3/server/client0_files  
Enter the command you want to execute cd animals  
/COMP6231_A3/server/client0_files/animals  
Enter the command you want to execute mkdir birds  
/COMP6231_A3/server/client0_files/animals  
Enter the command you want to execute mkdir fish  
/COMP6231_A3/server/client0_files/animals  
Enter the command you want to execute cd birds  
/COMP6231_A3/server/client0_files/animals/birds  
Enter the command you want to execute ul mandarin_duck.jpg  
/COMP6231_A3/server/client0_files/animals/birds  
Enter the command you want to execute cd ..  
/COMP6231_A3/server/client0_files/animals  
Enter the command you want to execute cd fish  
/COMP6231_A3/server/client0_files/animals/fish  
Enter the command you want to execute ul jellyfish.jpg  
/COMP6231_A3/server/client0_files/animals/fish  
Enter the command you want to execute ul orca.jpg  
/COMP6231_A3/server/client0_files/animals/fish
```

```

Enter the command you want to executedd ..
/COMP6231_A3/server/client0_files/animals
Enter the command you want to executedd ..
/COMP6231_A3/server/client0_files
Enter the command you want to executemkdir Products
/COMP6231_A3/server/client0_files
Enter the command you want to executedd Products
/COMP6231_A3/server/client0_files/Products
Enter the command you want to executemkdir electronics
/COMP6231_A3/server/client0_files/Products
Enter the command you want to executemkdir home
/COMP6231_A3/server/client0_files/Products
Enter the command you want to executedd electronics
/COMP6231_A3/server/client0_files/Products/electronics
Enter the command you want to executeul taco_bell.mp3
/COMP6231_A3/server/client0_files/Products/electronics
Enter the command you want to executemkdir cell_phones
/COMP6231_A3/server/client0_files/Products/electronics
Enter the command you want to executemkdir headphones
/COMP6231_A3/server/client0_files/Products/electronics
Enter the command you want to executemkdir smart_home
/COMP6231_A3/server/client0_files/Products/electronics
Enter the command you want to executedd cell_phones
/COMP6231_A3/server/client0_files/Products/electronics/cell_phones
Enter the command you want to executeul user-guide-nokia-1-4-user-guide.pdf
/COMP6231_A3/server/client0_files/Products/electronics/cell_phones
Enter the command you want to executedd ..
/COMP6231_A3/server/client0_files/Products/electronics
Enter the command you want to executedd smart_home
/COMP6231_A3/server/client0_files/Products/electronics/smart_home
Enter the command you want to executemkdir Sample_Web_Page_files
/COMP6231_A3/server/client0_files/Products/electronics/smart_home
Enter the command you want to executedd Sample_Web_Page_files
/COMP6231_A3/server/client0_files/Products/electronics/smart_home/Sample_Web_Page_files
Enter the command you want to executeul picture-of-something.jpg
/COMP6231_A3/server/client0_files/Products/electronics/smart_home/Sample_Web_Page_files
Enter the command you want to executeexit

```

*Installed tree package of ubuntu to visualise contents of each client directory that is created.
 sudo apt install tree

*Validated the tree structure in server folder
 cd ../server/client0_files
 root@3237d11cd937:/COMP6231_A3/server/client0_files# tree -a

```

.
├── Products
│   ├── electronics
│   │   ├── cell_phones
│   │   │   └── user-guide-nokia-1-4-user-guide.pdf
│   │   ├── headphones
│   │   ├── smart_home
│   │   │   ├── Sample_Web_Page_files
│   │   │   │   └── picture-of-something.jpg
│   │   └── taco_bell.mp3
│   └── home

```

```

├── about.txt
├── animals
│   ├── birds
│   │   └── mandarin_duck.jpg
│   └── fish
│       ├── jellyfish.jpg
│       └── orca.jpg

```

10 directories, 7 files

*After successfully creating the tree structure at server end(client0_files), detached from client0 container.
Ctrl-P + Ctrl-Q

Client1:-

=====

*Created client1 node taking file_server as an image and mounted the source files(server.py, client.py and other files from Assignment1) on local machine's directory

`docker run --name client1 --mount type=bind,source=E:/DSD_assignment3,target=/COMP6231_A3 -it file_server_image /bin/bash`

*Changed directory to where client.py is present

`cd /COMP6231_A3/client`

*Checked the IP of client1

`ifconfig`

172.0.0.4

*Ran the client.py for client1

`root@737e6dcb6bfd:/COMP6231_A3/client# python client.py`

Connected to server at IP: 172.17.0.2 and Port: 65432

Handshake Done. EOF is: b'<C\xd8h\xc4si\xfbr>'

`/COMP6231_A3/server/client0_files/Products/electronics/smart_home/Sample_Web_Page_files`

Enter the command you want to execute `cd ../../../../..`

`/COMP6231_A3/server`

Enter the command you want to execute `cd client1_files`

`/COMP6231_A3/server/client1_files`

Enter the command you want to execute `ul about.txt`

`/COMP6231_A3/server/client1_files`

Enter the command you want to execute `mkdir animals`

`/COMP6231_A3/server/client1_files`

Enter the command you want to execute `cd animals`

`/COMP6231_A3/server/client1_files/animals`

Enter the command you want to execute `mkdir birds`

`/COMP6231_A3/server/client1_files/animals`

Enter the command you want to execute `mkdir fish`

`/COMP6231_A3/server/client1_files/animals`

Enter the command you want to execute `cd birds`

`/COMP6231_A3/server/client1_files/animals/birds`

Enter the command you want to execute `ul mandarin_duck.jpg`

`/COMP6231_A3/server/client1_files/animals/birds`

Enter the command you want to execute `cd ..`

`/COMP6231_A3/server/client1_files/animals`

Enter the command you want to executed fish
 /COMP6231_A3/server/client1_files/animals/fish
 Enter the command you want to executeul jellyfish.jpg
 /COMP6231_A3/server/client1_files/animals/fish
 Enter the command you want to executeul orca.jpg
 /COMP6231_A3/server/client1_files/animals/fish
 Enter the command you want to executedcd ..
 /COMP6231_A3/server/client1_files/animals
 Enter the command you want to executedcd ..
 /COMP6231_A3/server/client1_files
 Enter the command you want to executemkdir Products
 /COMP6231_A3/server/client1_files
 Enter the command you want to executedcd Products
 /COMP6231_A3/server/client1_files/Products
 Enter the command you want to executemkdir electronics
 /COMP6231_A3/server/client1_files/Products
 Enter the command you want to executemkdir home
 /COMP6231_A3/server/client1_files/Products
 Enter the command you want to executedcd electronics
 /COMP6231_A3/server/client1_files/Products/electronics
 Enter the command you want to executeul taco_bell.mp3
 /COMP6231_A3/server/client1_files/Products/electronics
 Enter the command you want to executemkdir cell_phones
 /COMP6231_A3/server/client1_files/Products/electronics
 Enter the command you want to executemkdir headphones
 /COMP6231_A3/server/client1_files/Products/electronics
 Enter the command you want to executemkdir smart_home
 /COMP6231_A3/server/client1_files/Products/electronics
 Enter the command you want to executedcd cell_phones
 /COMP6231_A3/server/client1_files/Products/electronics/cell_phones
 Enter the command you want to executeul user-guide-nokia-1-4-user-guide.pdf
 /COMP6231_A3/server/client1_files/Products/electronics/cell_phones
 Enter the command you want to executedcd ..
 /COMP6231_A3/server/client1_files/Products/electronics
 Enter the command you want to executedcd smart_home
 /COMP6231_A3/server/client1_files/Products/electronics/smart_home
 Enter the command you want to executemkdir Sample_Web_Page_files
 /COMP6231_A3/server/client1_files/Products/electronics/smart_home
 Enter the command you want to executedcd Sample_Web_Page_files
 /COMP6231_A3/server/client1_files/Products/electronics/smart_home/Sample_Web_Page_files
 Enter the command you want to executeul picture-of-something.jpg
 /COMP6231_A3/server/client1_files/Products/electronics/smart_home/Sample_Web_Page_files
 Enter the command you want to executeexit

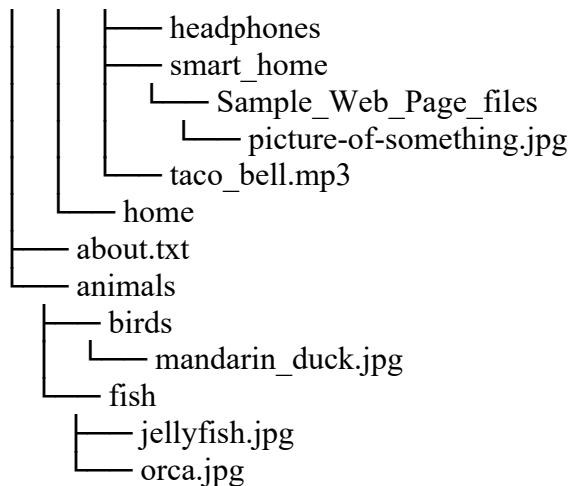
*Installed tree package of ubuntu to visualise contents of each client directory that is created.
 sudo apt install tree

*Validated the tree structure in server folder for client1
 cd ../server/client1_files
 root@3237d11cd937:/COMP6231_A3/server/client1_files# tree -a

```

.
├── Products
│   ├── electronics
│   │   ├── cell_phones
│   │   │   └── user-guide-nokia-1-4-user-guide.pdf

```



10 directories, 7 files

Client2:-

=====

*Created client2 node taking file_server as an image and mounted the source files(server.py, client.py and other files from Assignment1) on local machine's directory

```
docker run --name client2 --mount type=bind,source=E:/DSD_assignment3,target=/COMP6231_A3 -it file_server_image /bin/bash
```

*Changed directory to where client.py is present

```
cd /COMP6231_A3/client
```

*Checked the IP of client2

```
ifconfig
172.0.0.5
```

*Ran the client.py for client2

```
root@cb4f0aa51ea7:/COMP6231_A3/client# python client.py
Connected to server at IP: 172.17.0.2 and Port: 65432
Handshake Done. EOF is: b'<\xaf+E\xfb\x97_\x15>'
/COMP6231_A3/server/client1_files/Products/electronics/smart_home/Sample_Web_Page_files
Enter the command you want to execute cd ../../../../..
/COMP6231_A3/server
Enter the command you want to execute mkdir client2_files
/COMP6231_A3/server
Enter the command you want to execute cd client2_files
/COMP6231_A3/server/client2_files
Enter the command you want to execute ul about.txt
/COMP6231_A3/server/client2_files
Enter the command you want to execute mkdir animals
/COMP6231_A3/server/client2_files
Enter the command you want to execute cd animals
/COMP6231_A3/server/client2_files/animals
Enter the command you want to execute mkdir birds
/COMP6231_A3/server/client2_files/animals
Enter the command you want to execute mkdir fish
/COMP6231_A3/server/client2_files/animals
Enter the command you want to execute cd birds
/COMP6231_A3/server/client2_files/animals/birds
Enter the command you want to execute ul mandarin_duck.jpg
```

```

/COMP6231_A3/server/client2_files/animals/birds
Enter the command you want to executed ..
/COMP6231_A3/server/client2_files/animals
Enter the command you want to executed fish
/COMP6231_A3/server/client2_files/animals/fish
Enter the command you want to executeul jellyfish.jpg
/COMP6231_A3/server/client2_files/animals/fish
Enter the command you want to executeul orca.jpg
/COMP6231_A3/server/client2_files/animals/fish
Enter the command you want to executedcd ..
/COMP6231_A3/server/client2_files/animals
Enter the command you want to executedcd ..
/COMP6231_A3/server/client2_files
Enter the command you want to executemkdir Products
/COMP6231_A3/server/client2_files
Enter the command you want to executedcd Products
/COMP6231_A3/server/client2_files/Products
Enter the command you want to executemkdir electronics
/COMP6231_A3/server/client2_files/Products
Enter the command you want to executemkdir home
/COMP6231_A3/server/client2_files/Products
Enter the command you want to executedcd electronics
/COMP6231_A3/server/client2_files/Products/electronics
Enter the command you want to executeul taco_bell.mp3
/COMP6231_A3/server/client2_files/Products/electronics
Enter the command you want to executemkdir cell_phones
/COMP6231_A3/server/client2_files/Products/electronics
Enter the command you want to executemkdir headphones
/COMP6231_A3/server/client2_files/Products/electronics
Enter the command you want to executemkdir smart_home
/COMP6231_A3/server/client2_files/Products/electronics
Enter the command you want to executedcd cell_phones
/COMP6231_A3/server/client2_files/Products/electronics/cell_phones
Enter the command you want to executeul user-guide-nokia-1-4-user-guide.pdf
/COMP6231_A3/server/client2_files/Products/electronics/cell_phones
Enter the command you want to executedcd ..
/COMP6231_A3/server/client2_files/Products/electronics
Enter the command you want to executedcd smart_home
/COMP6231_A3/server/client2_files/Products/electronics/smart_home
Enter the command you want to executemkdir Sample_Web_Page_files
/COMP6231_A3/server/client2_files/Products/electronics/smart_home
Enter the command you want to executedcd Sample_Web_Page_files
/COMP6231_A3/server/client2_files/Products/electronics/smart_home/Sample_Web_Page_files
Enter the command you want to executeul picture-of-something.jpg
/COMP6231_A3/server/client1_files/Products/electronics/smart_home/Sample_Web_Page_files
Enter the command you want to executeexit

```

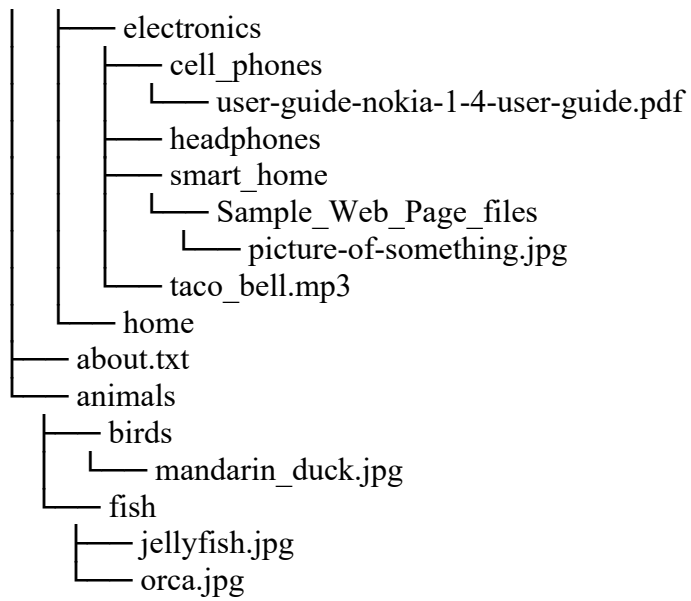
*Installed tree package of ubuntu to visualise contents of each client directory that is created.
 sudo apt install tree

*Validated the tree structure in server folder for client2
 cd ../server/client2_files
 root@3237d11cd937:/COMP6231_A3/server/client2_files# tree -a

```

├── Products

```



10 directories, 7 files