Assignment 2 - P1

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Course: Network Programming IS F462
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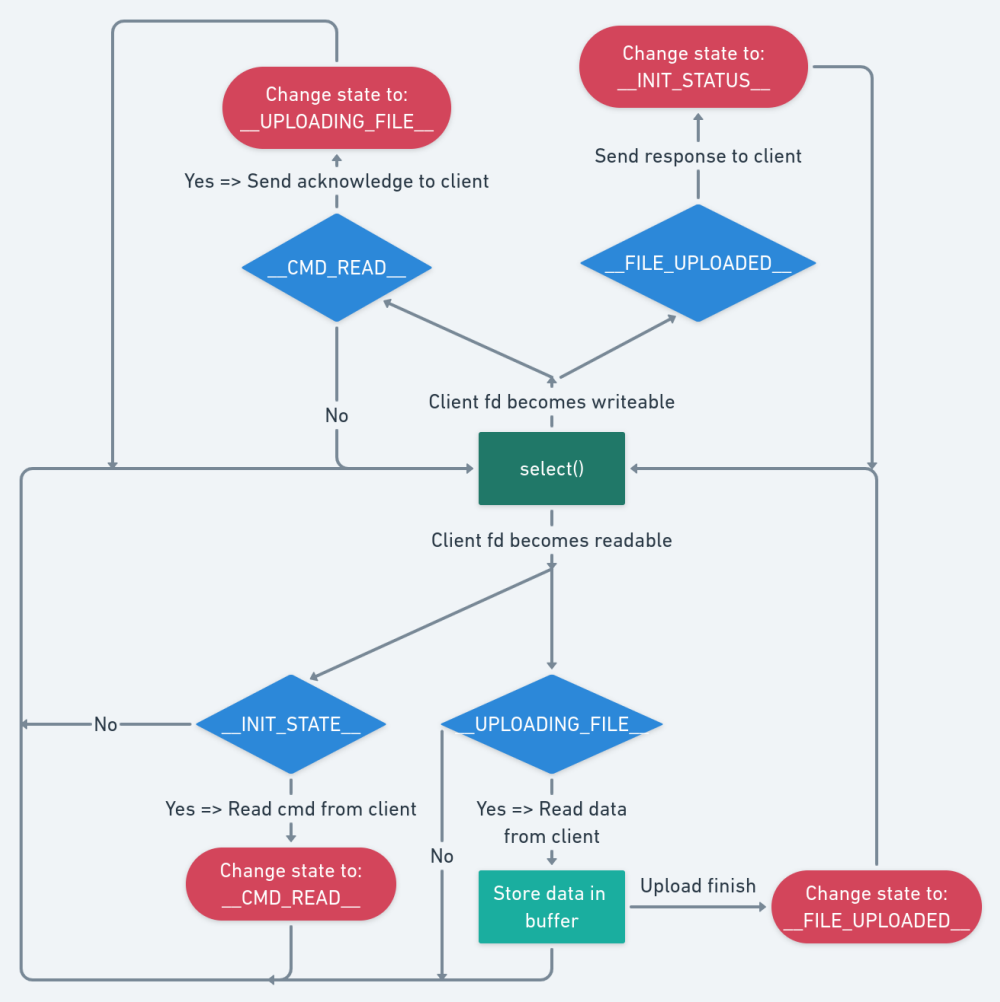
Design

As the problem statement says that all servers have to follow I/O Multiplexing model with non-blocking read/write, it required to maintain a state for each client to remember what and how much task has been done.

To illustrate this approach, refer the figure below. It shows the states and transitions required when a file is being uploaded from client to the Name server.

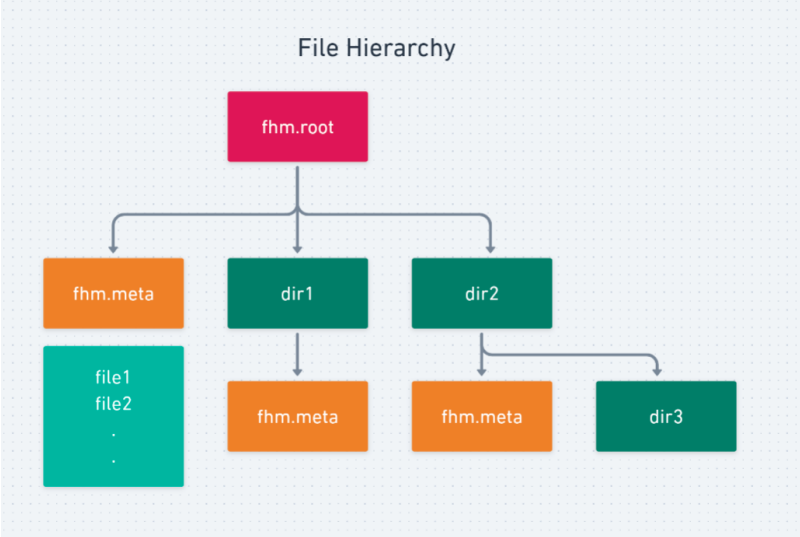


All other commands have a state diagram on similar lines.

The data is stored only in the Data Server, and the file hierarchy is maintained by the Name Server.

File Hierarchy

File hierarchy is stored and maintained by the Name server. The following figure depicts our approach of maintaining the hierarchy.



All hierarchy-related information lies inside the `fhm.root` directory. To depict a directory in the hierarchy, an actual directory is created. List of all files in a directory is stored in a `fhm.meta` file inside that directory. Therefore, every directory should have a `fhm.meta` file and may have more directories, which in turn will all have `fhm.meta` file, and so on.

Usage

Running Name server

```
make ns
./ns.out
```

Running Data server

```
make ds
./ds.out <port>
```

Running client

```
make client
./c.out
```

Client supports the following commands:-

```
upload <filename>
ls
cp <src file/dir (relative)> <dest file/dir (relative)>
cd <dir>
mv <src file/dir (relative)> <dest file/dir (relative)>
mkdir <dir name>
```

```
rm <file/dir>
cat <file>
```

Assumptions/Limitations

- cd
  - No absolute paths
  - No ../asdf/asdf
  - `cd asdf` means cd into folder `asdf` in cwd
  - `cd ..` allowed