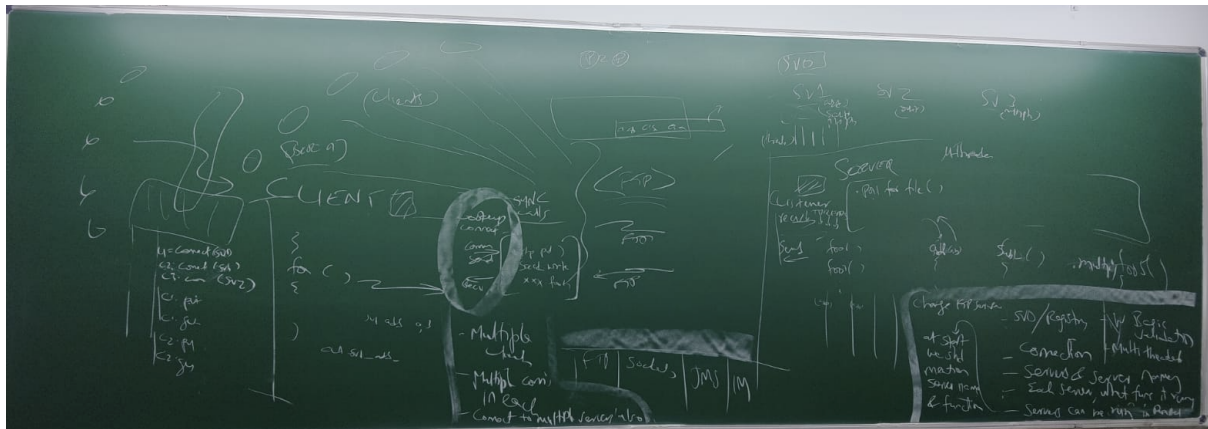
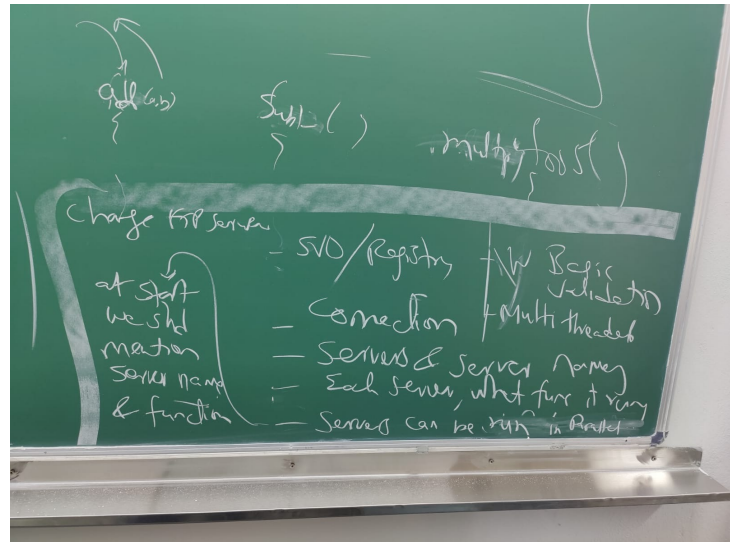
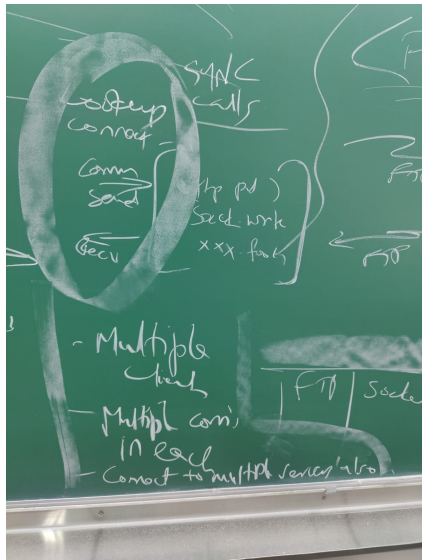


Internals of Application Servers

19th Jan 2023

Lecture Notes:



- The topics discussed are as follows:
 - Notion of Connection
 - The server and client share or exchange informations after establishing a relationship between themselves what is known as connection. This connection is unique for each pair of client and server. Alternatively,

connection can be think of as a medium or channel for data transmission.

- Session
 - Session can be considered as a state which is being maintained for each connection between server and client. It is an entity that only exist as long as the connection remains.
- Listener
 - Every server listens for the client which wants to connect to it for the exchanging of informations
- Multi-Threaded environment
 - Servers must execute the multiple clients' request in parallel, therefore minimising the waiting time for the request.
- Bootstrapping
 - It is a process which initialises the systems, instantiate multiple servers and loads the desired services needed to run on those servers. A bootstrap program can be considered as the first code that is executed when the system is started.
- Servers Registry
 - This serves as the directory for all the servers related to the system.

Assignment:

Create a client-server architecture where the communication protocol is FTP based.

Implement the functions as follows:

- Addition
- Subtraction
- Multiplication
- Increment (Optional)

The services are distributed across the multiple servers.

Your architecture must support **multiple clients**, and individual client's **multiple requests** must be handled by the respective servers to which they make the request.

The interface must be **CLI based**.

The commands to execute different functions is an open interpretation. Client runs the command which goes to server for the execution and it displays the response from the server on the terminal itself.

Note - **LOOKUP** command is necessary and must be available only at main server.

Please Note - Error handling or checks must be done.

Format for executing the code:

- Arguments for executing server:

- Main Server name
- FTP path

```
python server.py SV0 /Users/servername/xyz/ftp-folder/
```

- Arguments for executing client.py:

- Client name
- FTP path

```
python server.py CL1 /Users/servername/xyz/ftp-folder/
```

Submission format:

- <rollNumber>.zip
 - Folder - **<rollNumber>**
 - Create a `server.py` file to manage all the instances of the different servers needed.
 - Create a `client.py` file to manage all the instances of the clients.

- Optionally, you may create a separate python file to maintain FTP server or you may use the existing *server.py*.