CO324 Mid Quiz 04.01.2024

Instructions

- You have two hours to complete the questions. At the end of the allotted time you will have five minutes to upload your answers.
- You may use your notes and code you have written for previous labs. You may also use the Internet EXCEPT for AI code generators like ChatGPT.
- You may NOT share the questions or your answers with anyone.

Preparation

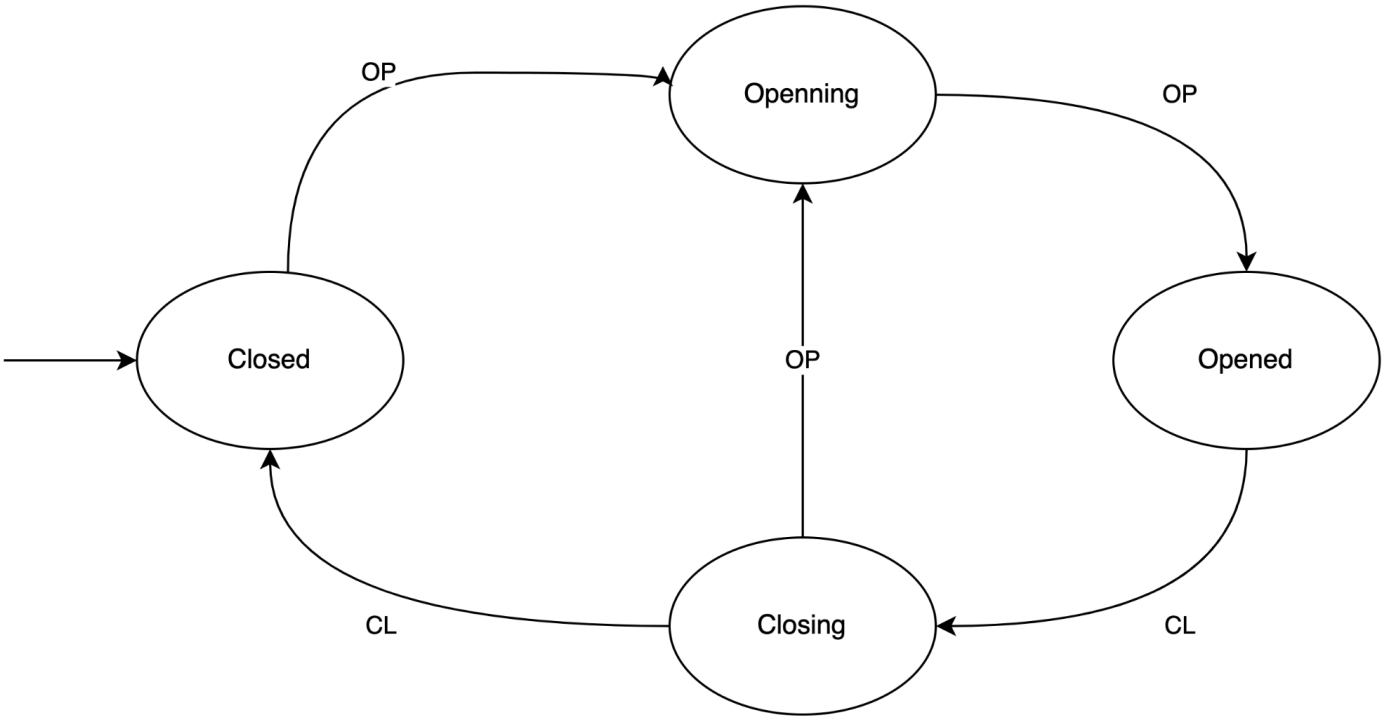
- Do the following to initialise your environment in the `2024-mid-skeleton` directory with the appropriate Python modules.

```
python3 -m venv venv
source venv/bin/activate
pip install -r requirements.txt
```

- When you have finished Zip the entire directory with your code and upload the zip file.

Questions

Consider the following finite state machine implementing an automated door controller.



1. Write code to implement this finite state machine (FSM) in Python using the skeleton code in door-server.py [30 marks]

2. Consider exposing this door controller remotely using gRPC. The door.proto file defines two RPCs, ProcessEvent to handle state transitions and GetCurrentState to return the current state.
   Write code to implement these two RPCs, using the FSM that you wrote in (1). You may use door_server.py as a starting point. [40 marks]

3. Write a gRPC client that takes a list of transitions and sends them to the server, then gets and prints the final state. You may use door_client.py as a starting point. [30 marks]