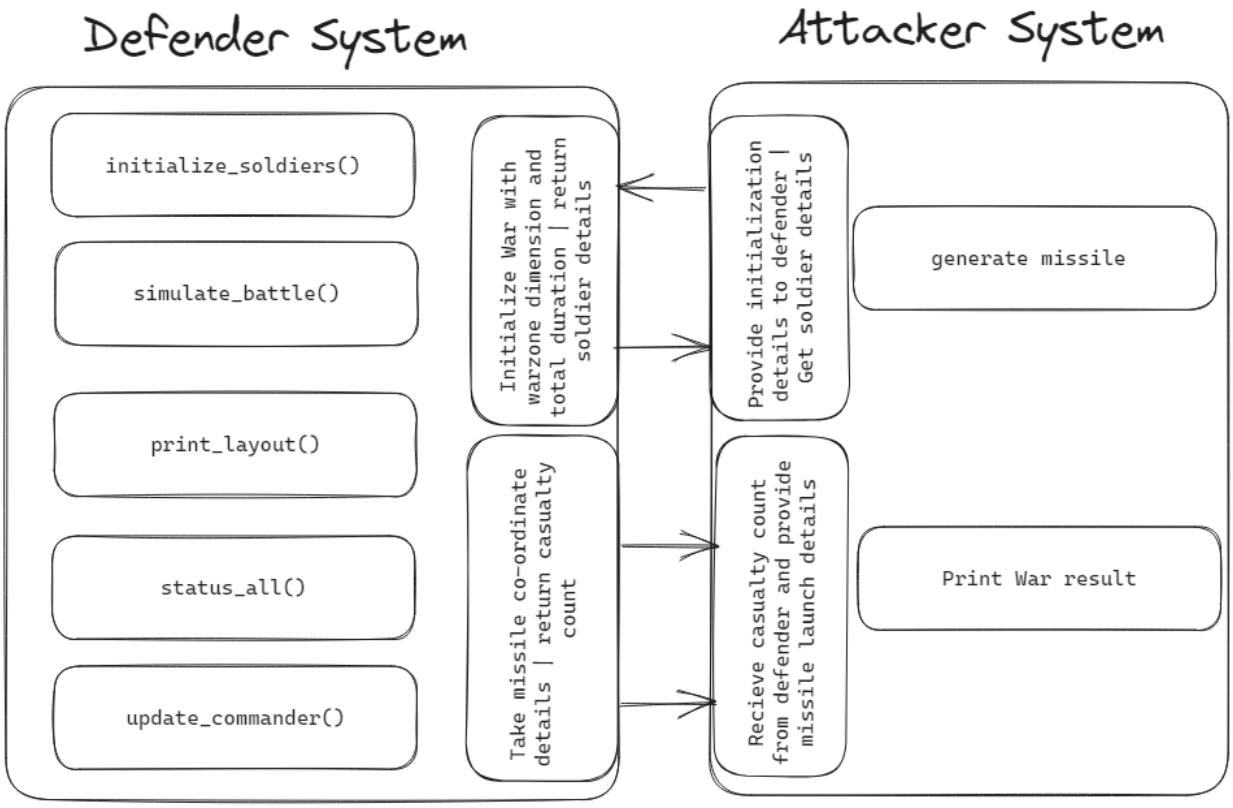
AOS ASSIGNMENT

Game Design



Working:

We have created an attacker and defender system. The attacker will generate the missile positions and send it to the defender. As soon as the defender has initialized the warzone details with warzone dimension and total war duration, the attacker will receive the total soldier count and starts to execute generating missiles and gives missile details to the defender system. As soon as the defender.py runs it asks for the grid size, and the duration of the battle.

We run the defender.py, which is a server in the project. It will initialize the warzone with initialization details received from the attacker.

We run the attacker.py, there it confirms the grid size, and the duration and asks for the delay after which the missiles will be initiated.

We again go back to the defender.py terminal and provide the details of the number of soldiers in the battlefield.

Now the battle simulation runs and will print the status of the soldiers on the screen. It will also print the grid as it looks for a particular iteration(it will contain the battle grid, alive soldiers and the missile impact area).

Once the war ends the result of the war is printed on both defender and attacker side.

Design Tradeoffs:

Another approach of solving this problem can be done by using multithreading where the soldier and commander threads are continuously communicating and making sure they are taking shelter and keeping themselves safe from the incoming missile.

To Run the program:

i. Installation Instructions

Step 1: Navigate to WarRPC directory

Step 2: Create a virtual environment for running the program using below commands in given order

```
sudo apt install python3

python -m venv myvenv

pip install grpcio grpcio-tools
```

Step 3: Activate the virtual environment using below command

```
myvenv\Scripts\activate
```

ii. To run the code

Step 1: In command line navigate to the folder (WarRPC) and then run below commands

```
python defender.py

python attacker.py
```

Step 2: Give user inputs as required

if you are using server and client in different devices then use the remote system's IP address in the place of LOCALHOST.

Test Cases:

Input 1:

number of soldiers on the defender side (<= 100): 30

battle field size (Enter value N for battlefield of size N X N): 10

duration of battle simulation (in seconds): 30

regular intervals at which missiles will be launched (in seconds): 3

Output 1:

Total 30

Casualty count: 13

Time left: 0

We lost the war :(

The output shows that test was a success because

As per the conditions mentioned in the assignment, the casualty count is less than 50%, so the attacker lost the battle as printed in output.

Input 2:

number of soldiers on the defender side (<= 100): 25

battle field size (Enter value N for battlefield of size N X N): 15

duration of battle simulation (in seconds): 30

regular intervals at which missiles will be launched (in seconds): 5

Output 2:

Total 25

Casualty count: 13

Time left: 0

We won the war :(

The output shows that test was a success because

As per the conditions mentioned in the assignment, the casualty count is more than 50%, so the attacker won the battle as printed in output.

Git Repository Link:

https://github.com/AbhilashTripathi/WarRPC