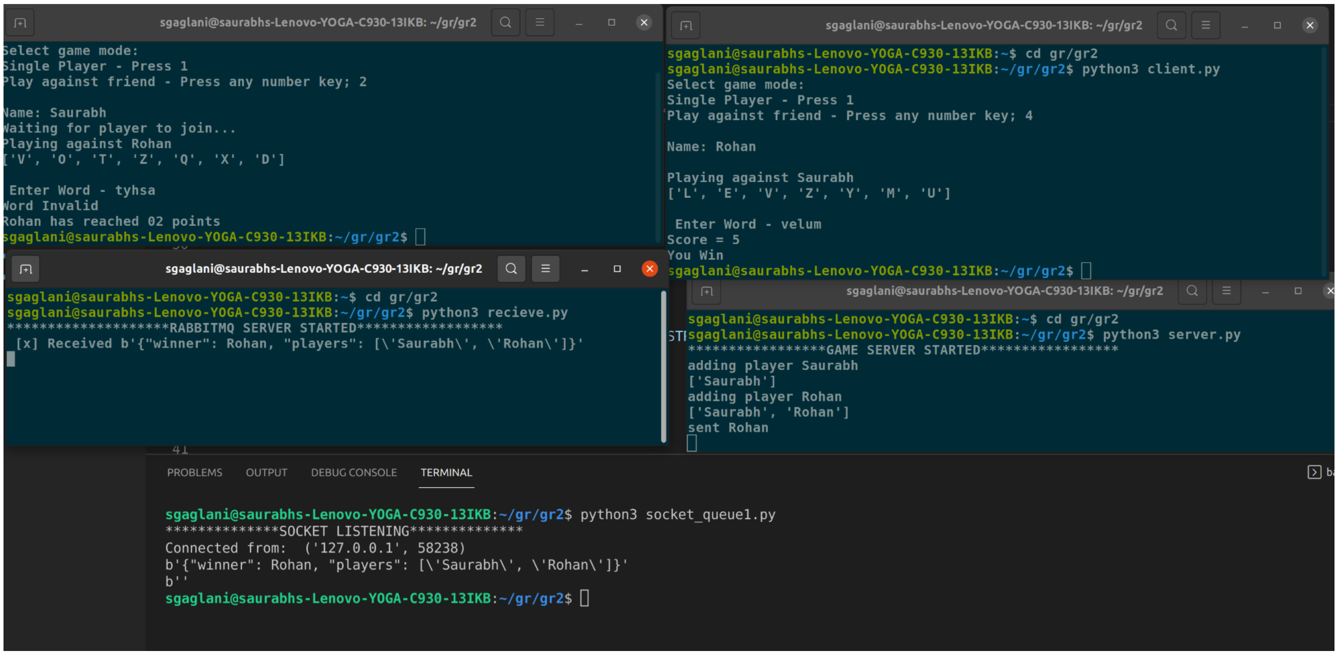
SOFT8023 – Distributed Systems Programming
Assignment 2 Option A Form

Instructions
Please complete the following form and include in the zip file you submit. Include screenshots / images of your programs running in the appendix at the bottom.

Additional Functionality	
Which additional functionality option do you go for (1 to 4)?	3
Describe briefly the additional functionality you added	Two clients connect to a server. First client to connect waits for second player, once both players connect, they get a list of letters. First player to score two points wins.
Where did you add the additional code and what modifications to your existing code did you make?	Added functions to the proto file, server and client. Added a constructor to the server class in a way that only one instance of the server handles multiple clients.
Does the server send stats messages to a queue?	Yes
If so, what stats are you sending / what is the message format?	Every time two players have a match, the server appends the name of both players to an array and sends that array to a queue. It also sends the winner of the two players in JSON format.
Does your **Socket** server programme accept requests from a client?	Yes
Did you write a Dockerfile that you can use to run a server component in a container?	Partial
If so, which component?	Socket server
Can you connect to your server container from a client?	No

Appendix – screenshots of programs running



```
Select game mode:
Single Player - Press 1
Play against friend - Press any number key; 2

Name: Saurabh
Waiting for player to join...
Playing against Rohan
['V', 'O', 'T', 'Z', 'Q', 'X', 'D']

 Enter Word - tyhsa
Word Invalid
Rohan has reached 02 points
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ 
```

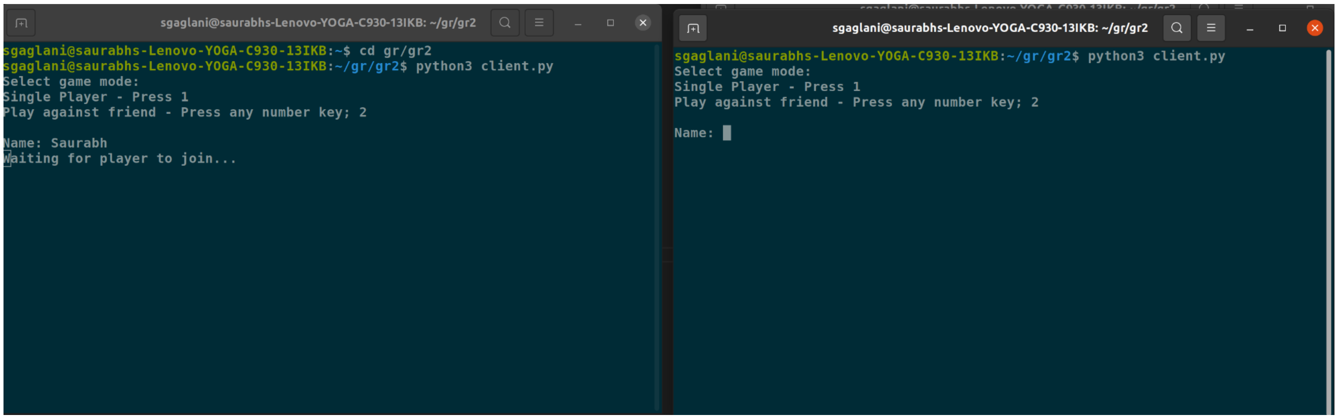
```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~$ cd gr/gr2
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 client.py
Select game mode:
Single Player - Press 1
Play against friend - Press any number key; 4

Name: Rohan

Playing against Saurabh
['L', 'E', 'V', 'Z', 'Y', 'M', 'U']

 Enter Word - velum
Score = 5
You Win
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ 
```

```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~$ cd gr/gr2
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 recieve.py
********************RABBITMQ SERVER STARTED*****************
 [x] Received b'{"winner": Rohan, "players": [\'Saurabh\', \'Rohan\']}'
```

```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~$ cd gr/gr2
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 server.py
*****************GAME SERVER STARTED*****************
adding player Saurabh
['Saurabh']
adding player Rohan
['Saurabh', 'Rohan']
sent Rohan
```

```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 socket_queue1.py
**************SOCKET LISTENING**************
Connected from:  ('127.0.0.1', 58238)
b'{"winner": Rohan, "players": [\'Saurabh\', \'Rohan\']}'
b''
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ 
```

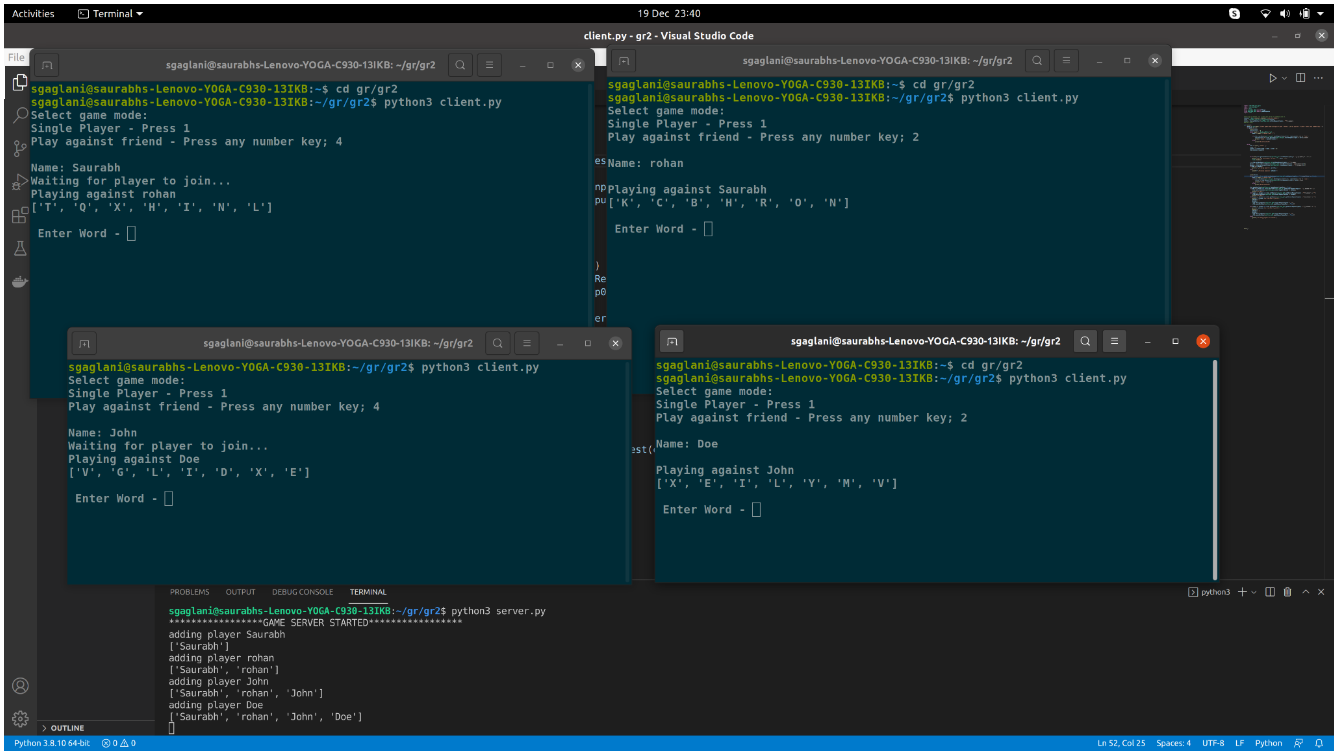
(Above) Two clients play game. Game server sends data to RabbitMQ server which sends the data to socket server.



```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~$ cd gr/gr2
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 client.py
Select game mode:
Single Player - Press 1
Play against friend - Press any number key; 2

Name: Saurabh
Waiting for player to join...
```

```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 client.py
Select game mode:
Single Player - Press 1
Play against friend - Press any number key; 2

Name: 
```

(Above) First person to join the server waits for the next person.



```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~$ cd gr/gr2
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 client.py
Select game mode:
Single Player - Press 1
Play against friend - Press any number key; 4

Name: Saurabh
Waiting for player to join...
Playing against rohan
['T', 'Q', 'X', 'H', 'I', 'N', 'L']

 Enter Word - 
```

```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~$ cd gr/gr2
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 client.py
Select game mode:
Single Player - Press 1
Play against friend - Press any number key; 2

Name: rohan

Playing against Saurabh
['K', 'C', 'B', 'H', 'R', 'O', 'N']

 Enter Word - 
```

```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 client.py
Select game mode:
Single Player - Press 1
Play against friend - Press any number key; 4

Name: John
Waiting for player to join...
Playing against Doe
['V', 'G', 'L', 'I', 'D', 'X', 'E']

 Enter Word - 
```

```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~$ cd gr/gr2
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 client.py
Select game mode:
Single Player - Press 1
Play against friend - Press any number key; 2

Name: Doe

Playing against John
['X', 'E', 'I', 'L', 'Y', 'M', 'V']

 Enter Word - 
```

```
sgaglani@saurabhs-Lenovo-YOGA-C930-13IKB:~/gr/gr2$ python3 server.py
****************GAME SERVER STARTED****************
adding player Saurabh
['Saurabh']
adding player rohan
['Saurabh', 'rohan']
adding player John
['Saurabh', 'rohan', 'John']
adding player Doe
['Saurabh', 'rohan', 'John', 'Doe']
```

(Above) Can handle multiple clients at the same time, first player to join(Saurabh) plays against second player(Rohan) and third player(John) to join plays against fourth player(Doe). RabbitMQ sends data in that order. Can also play single player if client presses 1.