





How to run


Step 1, create three instances, where one we will use as server and the other two as clients

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INSTANCES

INSTANCE SCHEDULE

Filter

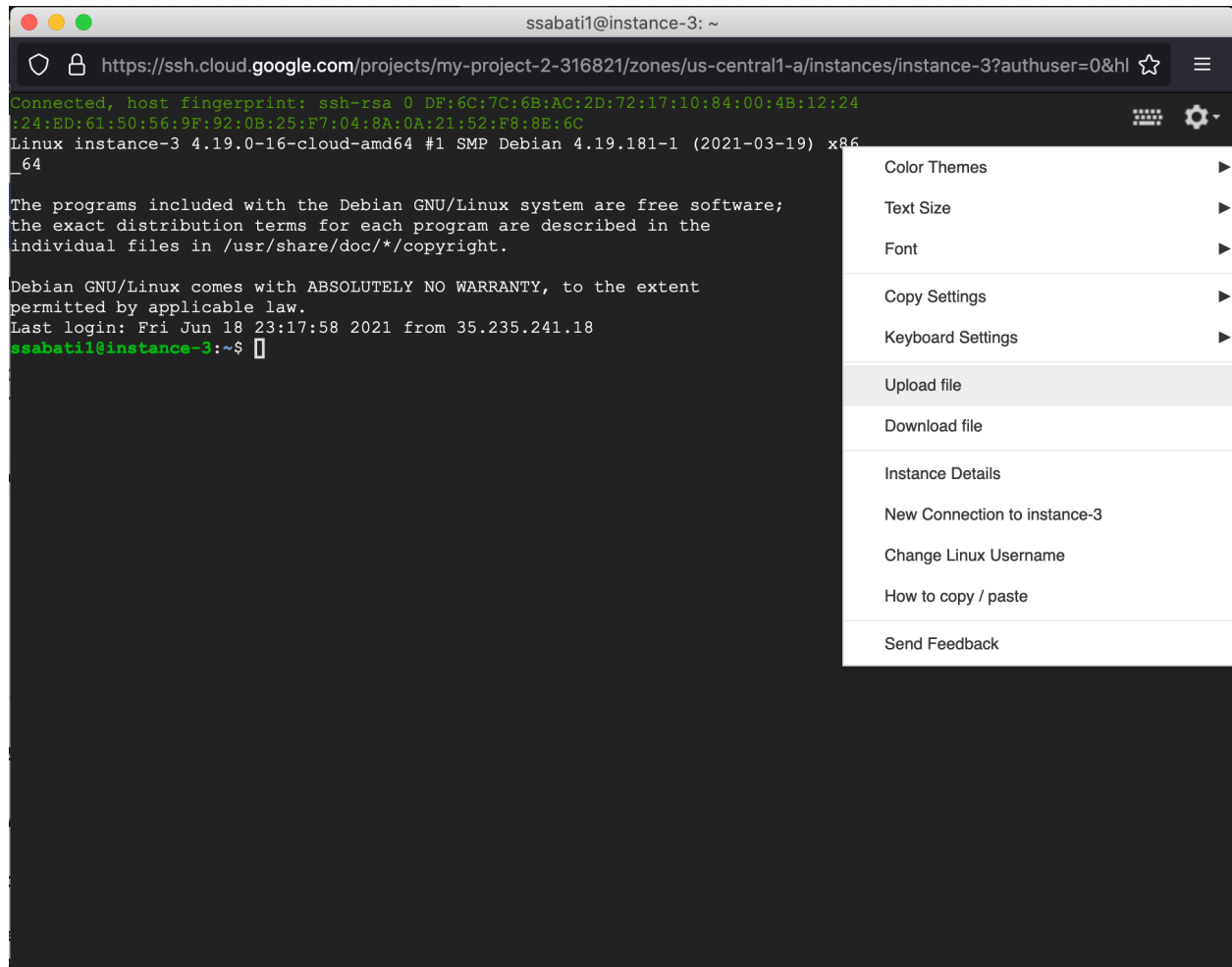
Enter property name or value

?

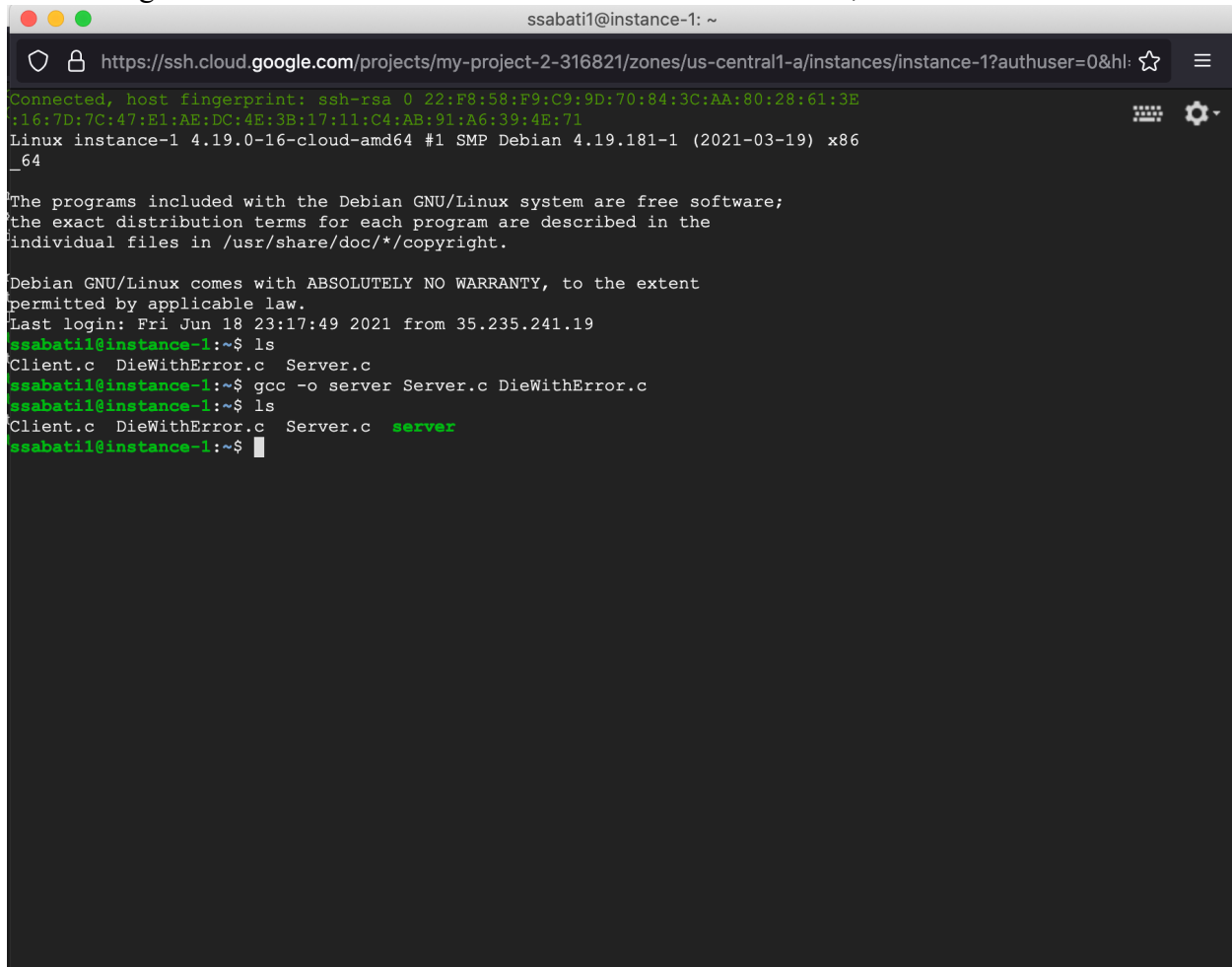
≡

Recommendations	In use by	Internal IP	External IP	Connect	
3		10.128.0.2 (nic0)	35.224.80.30	SSH	⌵ ⋮
3		10.128.0.3 (nic0)	35.188.174.46	SSH	⌵ ⋮
3		10.128.0.4 (nic0)	35.239.29.161	SSH	⌵ ⋮

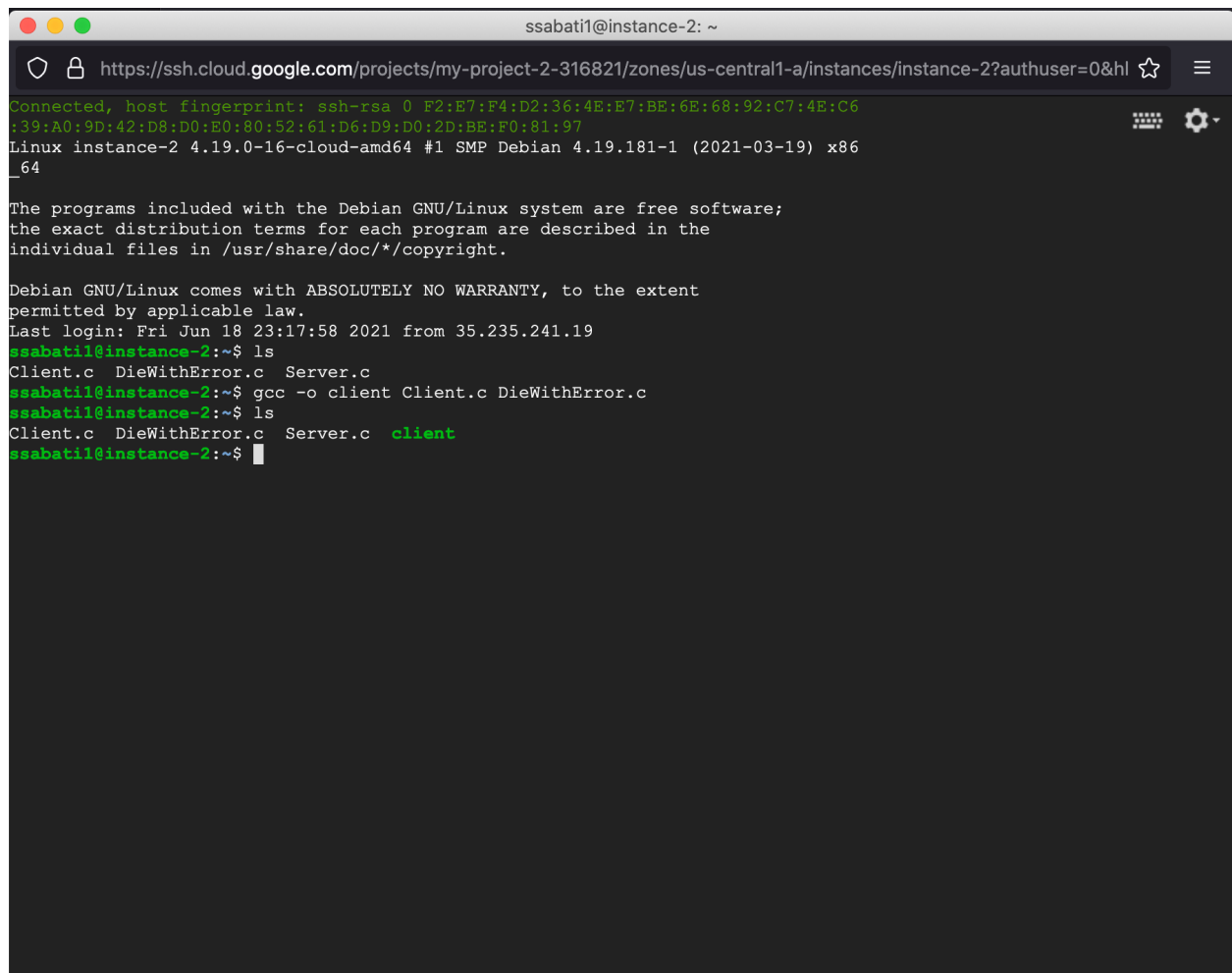
Step 2. Connect to each of them and upload the files Client.c, Server.c, & DieWithError.c



Step 3, once uploaded, Run in instance 1 command `gcc -o server Server.c DieWithError.c`, and command `gcc -o client Client.c DieWithError.c` in instance 2 and 3, as shown below



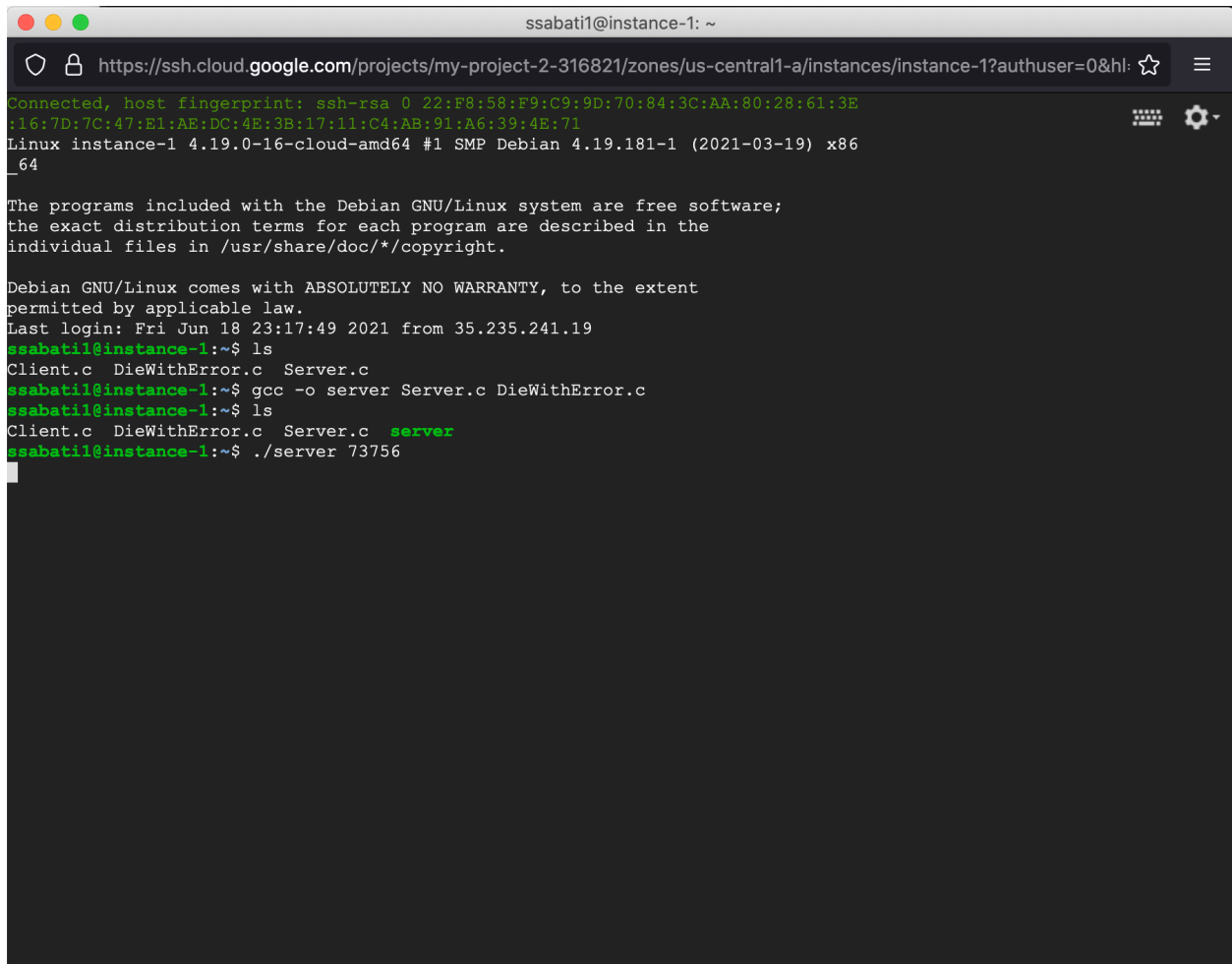
```
ssabati1@instance-1: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-1?authuser=0&hl= ☆ ≡  
Connected, host fingerprint: ssh-rsa 0 22:F8:58:F9:C9:9D:70:84:3C:AA:80:28:61:3E  
:16:7D:7C:47:E1:AE:DC:4E:3B:17:11:C4:AB:91:A6:39:4E:71  
Linux instance-1 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86_64  
  
The programs included with the Debian GNU/Linux system are free software;  
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individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Fri Jun 18 23:17:49 2021 from 35.235.241.19  
ssabati1@instance-1:~$ ls  
Client.c DieWithError.c Server.c  
ssabati1@instance-1:~$ gcc -o server Server.c DieWithError.c  
ssabati1@instance-1:~$ ls  
Client.c DieWithError.c Server.c server  
ssabati1@instance-1:~$
```



```
ssabati1@instance-2: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-2?authuser=0&hl ☆ ≡  
Connected, host fingerprint: ssh-rsa 0 F2:E7:F4:D2:36:4E:E7:BE:6E:68:92:C7:4E:C6  
:39:A0:9D:42:D8:D0:E0:80:52:61:D6:D9:D0:2D:BE:F0:81:97  
Linux instance-2 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86_64  
  
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Last login: Fri Jun 18 23:17:58 2021 from 35.235.241.19  
ssabati1@instance-2:~$ ls  
Client.c DieWithError.c Server.c  
ssabati1@instance-2:~$ gcc -o client Client.c DieWithError.c  
ssabati1@instance-2:~$ ls  
Client.c DieWithError.c Server.c client  
ssabati1@instance-2:~$
```

(instance 3 should look like last picture as well)

Step 4, connect to server in instance 1 by running command `./server [Port Number]`, example `./server 73756`, and in instance 2 and 3 connect as clients running the following command `./client [IP address from instance 1] [Port number]`, example `./client 10.128.0.2 73756`, as shown below



```
ssabati1@instance-1: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-1?authuser=0&hl: ☆ ≡  
Connected, host fingerprint: ssh-rsa 0 22:F8:58:F9:C9:9D:70:84:3C:AA:80:28:61:3E  
:16:7D:7C:47:E1:AE:DC:4E:3B:17:11:C4:AB:91:A6:39:4E:71  
Linux instance-1 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86_64  
  
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Last login: Fri Jun 18 23:17:49 2021 from 35.235.241.19  
ssabati1@instance-1:~$ ls  
Client.c DieWithError.c Server.c  
ssabati1@instance-1:~$ gcc -o server Server.c DieWithError.c  
ssabati1@instance-1:~$ ls  
Client.c DieWithError.c Server.c server  
ssabati1@instance-1:~$ ./server 73756
```

```
ssabati1@instance-2: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-2?authuser=0&hl ☆ ≡  
Connected, host fingerprint: ssh-rsa 0 F2:E7:F4:D2:36:4E:E7:BE:6E:68:92:C7:4E:C6  
:39:A0:9D:42:D8:D0:E0:80:52:61:D6:D9:D0:2D:BE:F0:81:97  
Linux instance-2 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86_64  
  
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Last login: Fri Jun 18 23:17:58 2021 from 35.235.241.19  
ssabati1@instance-2:~$ ls  
Client.c DieWithError.c Server.c  
ssabati1@instance-2:~$ gcc -o client Client.c DieWithError.c  
ssabati1@instance-2:~$ ls  
Client.c DieWithError.c Server.c client  
ssabati1@instance-2:~$ ./client 10.128.0.2 73756  
  
Enter the playerID :- █
```

(instance 3 should look like last screenshot)

Step 5, Enter player ID, TCP connection Port number in the clients' instances, as shown below

```
ssabatil@instance-2: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-2?authuser=0&hl ☆ ≡  
Connected, host fingerprint: ssh-rsa 0 F2:E7:F4:D2:36:4E:E7:BE:6E:68:92:C7:4E:C6  
:39:A0:9D:42:D8:D0:E0:80:52:61:D6:D9:D0:2D:BE:F0:81:97  
Linux instance-2 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86_64  
  
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permitted by applicable law.  
Last login: Fri Jun 18 23:17:58 2021 from 35.235.241.19  
ssabatil@instance-2:~$ ls  
Client.c DieWithError.c Server.c  
ssabatil@instance-2:~$ gcc -o client Client.c DieWithError.c  
ssabatil@instance-2:~$ ls  
Client.c DieWithError.c Server.c client  
ssabatil@instance-2:~$ ./client 10.128.0.2 73756  
  
Enter the playerID :- 1234  
  
Enter the TCP connection port number :- 21234  
  
1 for who, 2 for lookup, 3 for logout : █
```

```
ssabati1@instance-3: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-3?authuser=0&hl ☆ ≡  
Connected, host fingerprint: ssh-rsa 0 DF:6C:7C:6B:AC:2D:72:17:10:84:00:4B:12:24  
:24:ED:61:50:56:9F:92:0B:25:F7:04:8A:0A:21:52:F8:8E:6C  
Linux instance-3 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86  
_64  
  
The programs included with the Debian GNU/Linux system are free software;  
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individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Fri Jun 18 23:17:58 2021 from 35.235.241.18  
ssabati1@instance-3:~$ ls  
Client.c DieWithError.c Server.c  
ssabati1@instance-3:~$ gcc -o client Client.c DieWithError.c  
ssabati1@instance-3:~$ ls  
Client.c DieWithError.c Server.c client  
ssabati1@instance-3:~$ ./client 10.128.0.2 73756  
  
Enter the playerID :- 5678  
  
Enter the TCP connection port number :- 25678  
  
1 for who, 2 for lookup, 3 for logout : █
```


Step 6, shows options 1 (for identifying other players that are logged in), option 2 (for looking player by ID), option 3 to log out. Choosing option 2 is shown below to for looking up the player 5678 that client 1234 wants to play with

```
ssabati1@instance-2: ~
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-2?authuser=0&hl
Connected, host fingerprint: ssh-rsa 0 F2:E7:F4:D2:36:4E:E7:BE:6E:68:92:C7:4E:C6
:39:A0:9D:42:D8:D0:E0:80:52:61:D6:D9:D0:2D:BE:F0:81:97
Linux instance-2 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86
_64

The programs included with the Debian GNU/Linux system are free software;
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permitted by applicable law.
Last login: Fri Jun 18 23:17:58 2021 from 35.235.241.19
ssabati1@instance-2:~$ ls
Client.c DieWithError.c Server.c
ssabati1@instance-2:~$ gcc -o client Client.c DieWithError.c
ssabati1@instance-2:~$ ls
Client.c DieWithError.c Server.c client
ssabati1@instance-2:~$ ./client 10.128.0.2 73756

Enter the playerID :- 1234

Enter the TCP connection port number :- 21234

1 for who, 2 for lookup, 3 for logout : 1

logged in players are :-1234 5678

1 for who, 2 for lookup, 3 for logout : 2

Enter the id of the player : 5678

Player 5678 IP Adress is 10.128.0.4 and TCP port is 25678
Enter 1 to send request, 2 to not send request :-
```

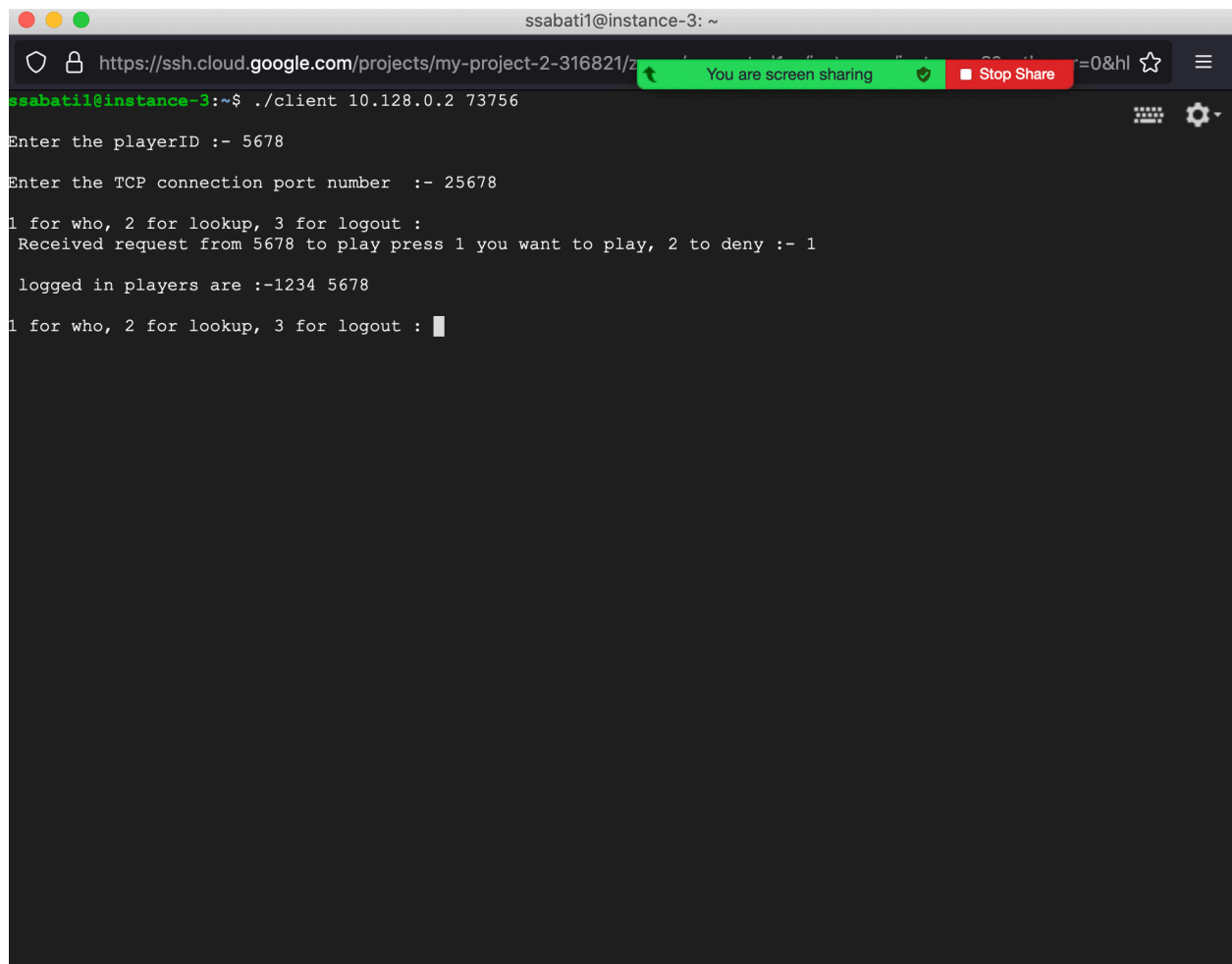
Step 7, Gives option to send request to play by entering 1, or 2 if they don't want to send request. While client 1234 in instance 2 send request, client 5678 in instance 3 receives the request.

```
ssabati1@instance-2: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-2?authuser=0&hl ☆ ≡  
Connected, host fingerprint: ssh-rsa 0 F2:E7:F4:D2:36:4E:E7:BE:6E:68:92:C7:4E:C6  
:39:A0:9D:42:D8:D0:E0:80:52:61:D6:D9:D0:2D:BE:F0:81:97  
Linux instance-2 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86_64  
  
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Last login: Fri Jun 18 23:17:58 2021 from 35.235.241.19  
ssabati1@instance-2:~$ ls  
Client.c DieWithError.c Server.c  
ssabati1@instance-2:~$ gcc -o client Client.c DieWithError.c  
ssabati1@instance-2:~$ ls  
Client.c DieWithError.c Server.c client  
ssabati1@instance-2:~$ ./client 10.128.0.2 73756  
  
Enter the playerId :- 1234  
  
Enter the TCP connection port number :- 21234  
  
1 for who, 2 for lookup, 3 for logout : 1  
  
logged in players are :-1234 5678  
  
1 for who, 2 for lookup, 3 for logout : 2  
  
Enter the id of the player : 5678  
  
Player 5678 IP Adress is 10.128.0.4 and TCP port is 25678  
Enter 1 to send request, 2 to not send request :- 1
```

Step 8, Client 1234 was able to send request and 5678 was able to receive request

```
ssabati1@instance-3: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-3?authuser=0&hl ☆ ≡  
Connected, host fingerprint: ssh-rsa 0 DF:6C:7C:6B:AC:2D:72:17:10:84:00:4B:12:24  
:24:ED:61:50:56:9F:92:0B:25:F7:04:8A:0A:21:52:F8:8E:6C  
Linux instance-3 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86_64  
  
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permitted by applicable law.  
Last login: Fri Jun 18 23:17:58 2021 from 35.235.241.18  
ssabati1@instance-3:~$ ls  
Client.c DieWithError.c Server.c  
ssabati1@instance-3:~$ gcc -o client Client.c DieWithError.c  
ssabati1@instance-3:~$ ls  
Client.c DieWithError.c Server.c client  
ssabati1@instance-3:~$ ./client 10.128.0.2 73756  
  
Enter the playerID :- 5678  
  
Enter the TCP connection port number :- 25678  
  
1 for who, 2 for lookup, 3 for logout :  
Received request from 5678 to play press 1 you want to play, 2 to deny :- █
```

Error we are getting is when client 5678 receives the approval/deny request, the scanf does not work properly, it considers the scanner for the parent process and prints the “who list”

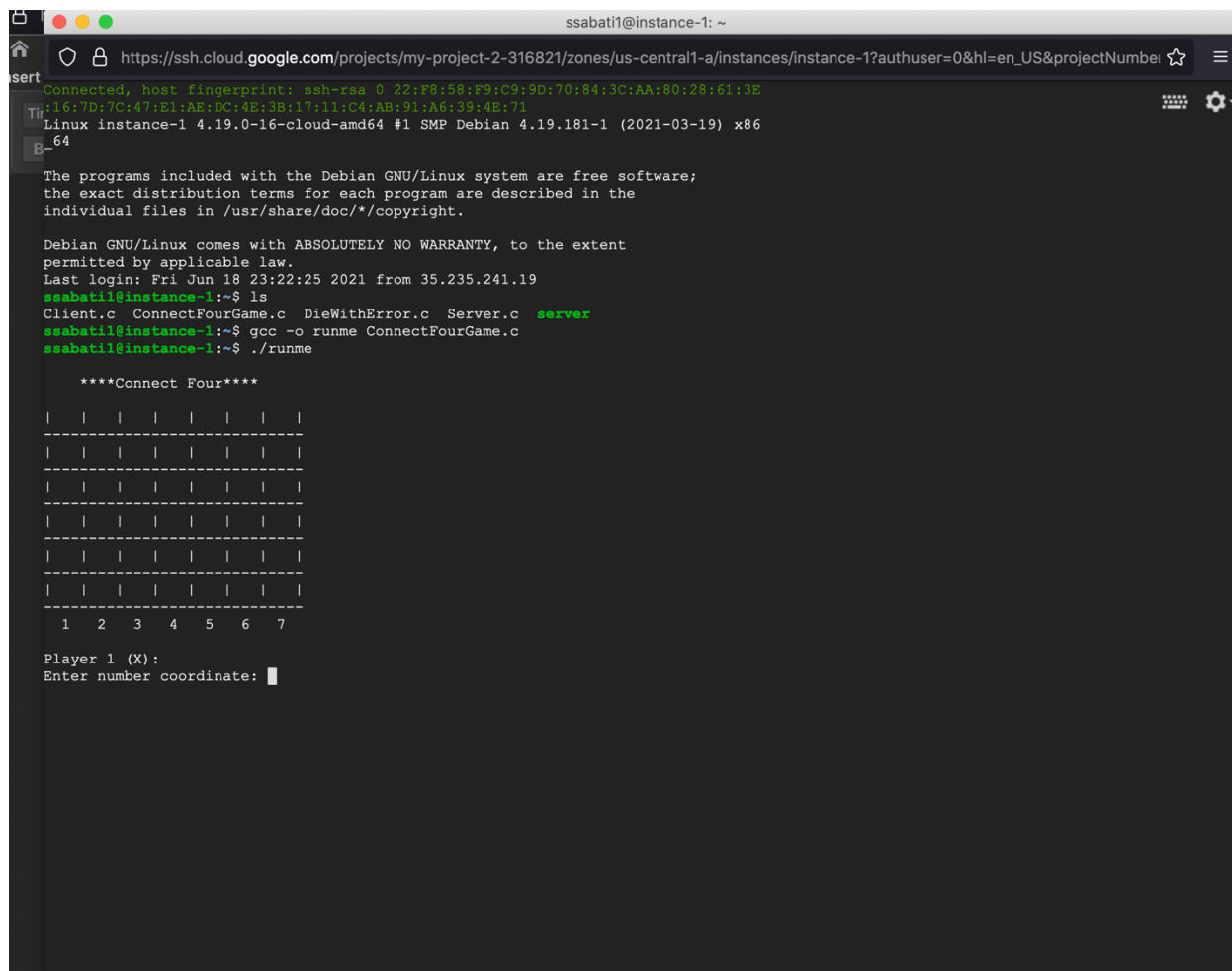


The screenshot shows a terminal window titled "ssabati1@instance-3: ~". The terminal output is as follows:

```
ssabati1@instance-3:~$ ./client 10.128.0.2 73756
Enter the playerID :- 5678
Enter the TCP connection port number :- 25678
1 for who, 2 for lookup, 3 for logout :
Received request from 5678 to play press 1 you want to play, 2 to deny :- 1
logged in players are :-1234 5678
1 for who, 2 for lookup, 3 for logout : █
```

The terminal window is displayed within a browser interface, with the address bar showing "https://ssh.cloud.google.com/projects/my-project-2-316821/z...". A green banner at the top of the terminal area says "You are screen sharing" with a "Stop Share" button.

However the game on its on works, please look attached photos



```
ssabati1@instance-1: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-1?authuser=0&hl=en_US&projectNumbe  
Connected, host fingerprint: ssh-rsa 0 22:F8:58:F9:C9:9D:70:84:3C:AA:80:28:61:3E  
:16:7D:7C:47:E1:AE:DC:4E:3B:17:11:C4:AB:91:A6:39:4E:71  
Linux instance-1 4.19.0-16-cloud-amd64 #1 SMP Debian 4.19.181-1 (2021-03-19) x86  
_64  
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permitted by applicable law.  
Last login: Fri Jun 18 23:22:25 2021 from 35.235.241.19  
ssabati1@instance-1:~$ ls  
Client.c  ConnectFourGame.c  DieWithError.c  Server.c  server  
ssabati1@instance-1:~$ gcc -o runme ConnectFourGame.c  
ssabati1@instance-1:~$ ./runme  
  
****Connect Four****  
  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
1 2 3 4 5 6 7  
  
Player 1 (X):  
Enter number coordinate: 
```

More...

```
ssabati1@instance-1: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-1?authuser=0&hl=en_US&projectNumber=  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
1 2 3 4 5 6 7  
Player 1 (X):  
Enter number coordinate: 1  
****Connect Four****  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| X | | | | | |  
| | | | | | | |  
1 2 3 4 5 6 7  
Player 2 (O):  
Enter number coordinate: 2  
****Connect Four****  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| X | O | | | | |  
| | | | | | | |  
1 2 3 4 5 6 7  
Player 1 (X):  
Enter number coordinate: ^[^|
```

And so on by the time x wins

```
ssabati1@instance-1: ~  
https://ssh.cloud.google.com/projects/my-project-2-316821/zones/us-central1-a/instances/instance-1?authuser=0&hl=en_US&projectNumber=  
| | | | | | | |  
| | | | | | | |  
| | | X | | | | |  
| X | X | O | X | | | |  
| X | O | O | O | | | |  
1 2 3 4 5 6 7  
Player 2 (O):  
Enter number coordinate: 4  
****Connect Four****  
| | | | | | | |  
| | | | | | | |  
| | | | | | | |  
| | | X | O | | | |  
| X | X | O | X | | | |  
| X | O | O | O | | | |  
1 2 3 4 5 6 7  
Player 1 (X):  
Enter number coordinate: 4  
****Connect Four****  
| | | | | | | |  
| | | | | | | |  
| | | | X | | | |  
| | | X | O | | | |  
| X | X | O | X | | | |  
| X | O | O | O | | | |  
1 2 3 4 5 6 7  
Player 1 (X) wins!  
Would you like to play again? (Y/N): Would you like to play again? (Y/N):
```