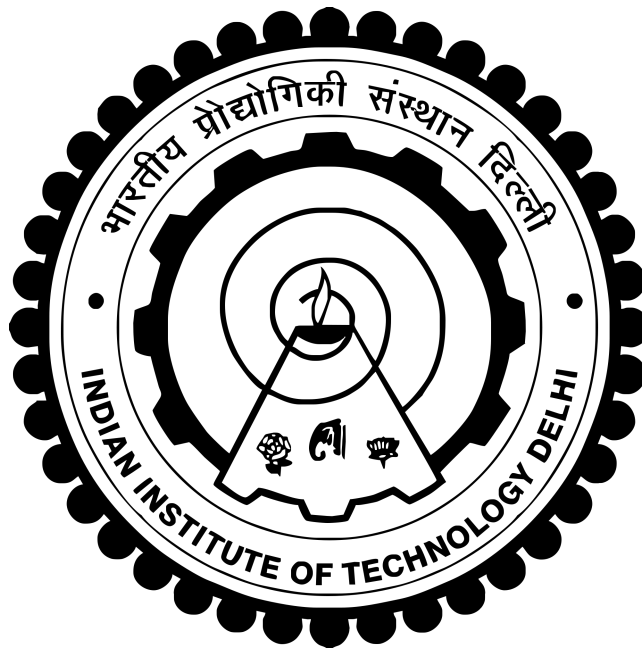


ELP718 Telecom Software Laboratory
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Abhishek Mishra
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Assignment-13



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0.1 Problem Statement 1

Implement a command-line based URL defragmenter Server using sockets API in C. Develop a client-server based system , where the client sends a URL to the server and the server breaks down the URL into its components and returns them to the client, which displays the result.

0.1.1 Assumptions

Url contains all components.

0.1.2 Structure Chart and Implementation

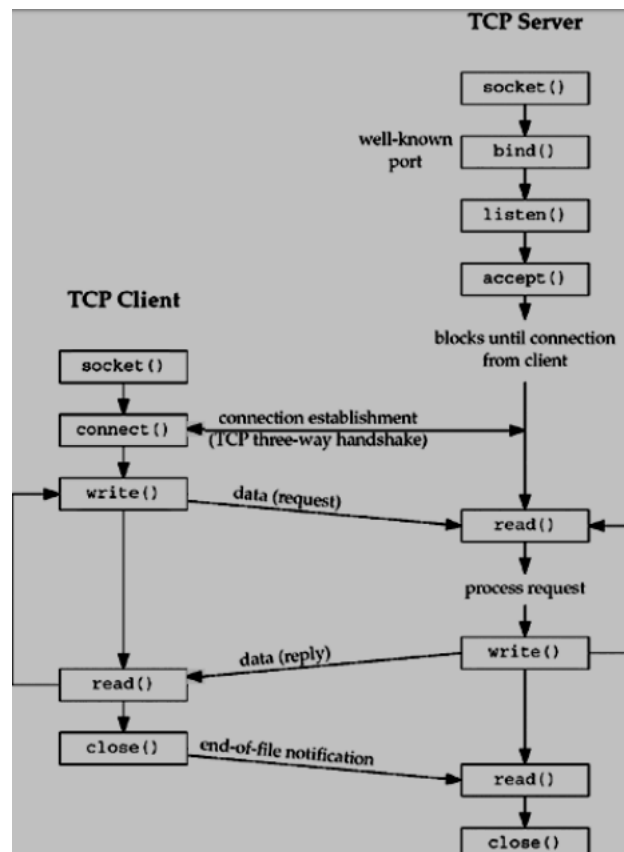


Figure 1: Structure chart for problem 1

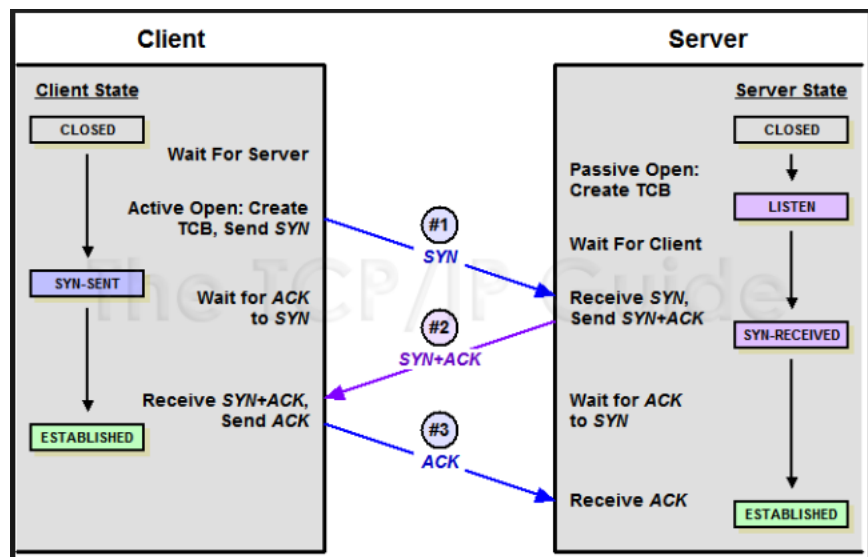
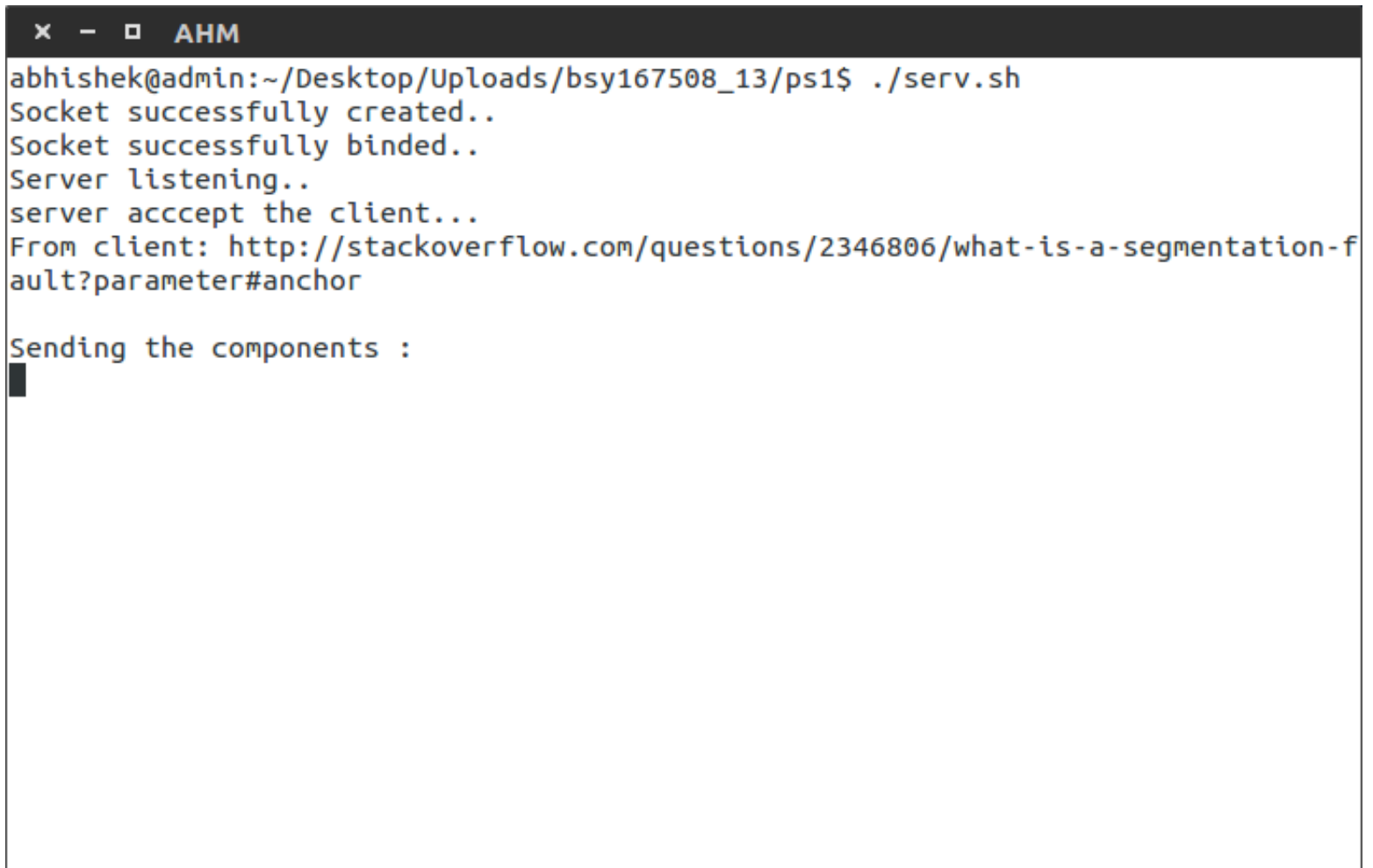


Figure 2: Structure chart for problem 1

0.1.3 Screenshots

A terminal window titled 'AHM' with standard window controls (close, maximize, minimize). The terminal shows a user 'abhishek@admin' at a prompt in the directory '~/Desktop/Uploads/bsy167508_13/ps1'. The user has executed './serv.sh'. The script outputs several status messages: 'Socket successfully created..', 'Socket successfully binded..', 'Server listening..', and 'server accept the client...'. It then displays the received HTTP request: 'From client: http://stackoverflow.com/questions/2346806/what-is-a-segmentation-fault?parameter#anchor'. Finally, it outputs 'Sending the components :'.

```
x - □ AHM
abhishek@admin:~/Desktop/Uploads/bsy167508_13/ps1$ ./serv.sh
Socket successfully created..
Socket successfully binded..
Server listening..
server accept the client...
From client: http://stackoverflow.com/questions/2346806/what-is-a-segmentation-fault?parameter#anchor

Sending the components :
█
```

Figure 3: Screenshot for problem statement 1

```
× - □ AHM
abhishek@admin:~/Desktop/Uploads/bsy167508_13/ps1$ ./cli.sh
Socket successfully created..
connected to the server..
Enter the url : http://stackoverflow.com/questions/2346806/what-is-a-segmentatio
n-fault?parameter#anchor
From Server :
Protocol: http
Domain name: stackoverflow.com
Filepath: questions/2346806/what-is-a-segmentation-fault
Parameter: parameter
Anchor: anchor
Enter the url : █
```

Figure 4: Screenshot for problem statement 1

0.2 Problem Statement 2

Implement a client - server model based DHCP server functionality simulator using sockets API in C. The Server application has to support at least five clients simultaneously.

0.2.1 Assumptions

Each client has unique mac address. There are maximum 5 clients.

0.2.2 Structure Chart

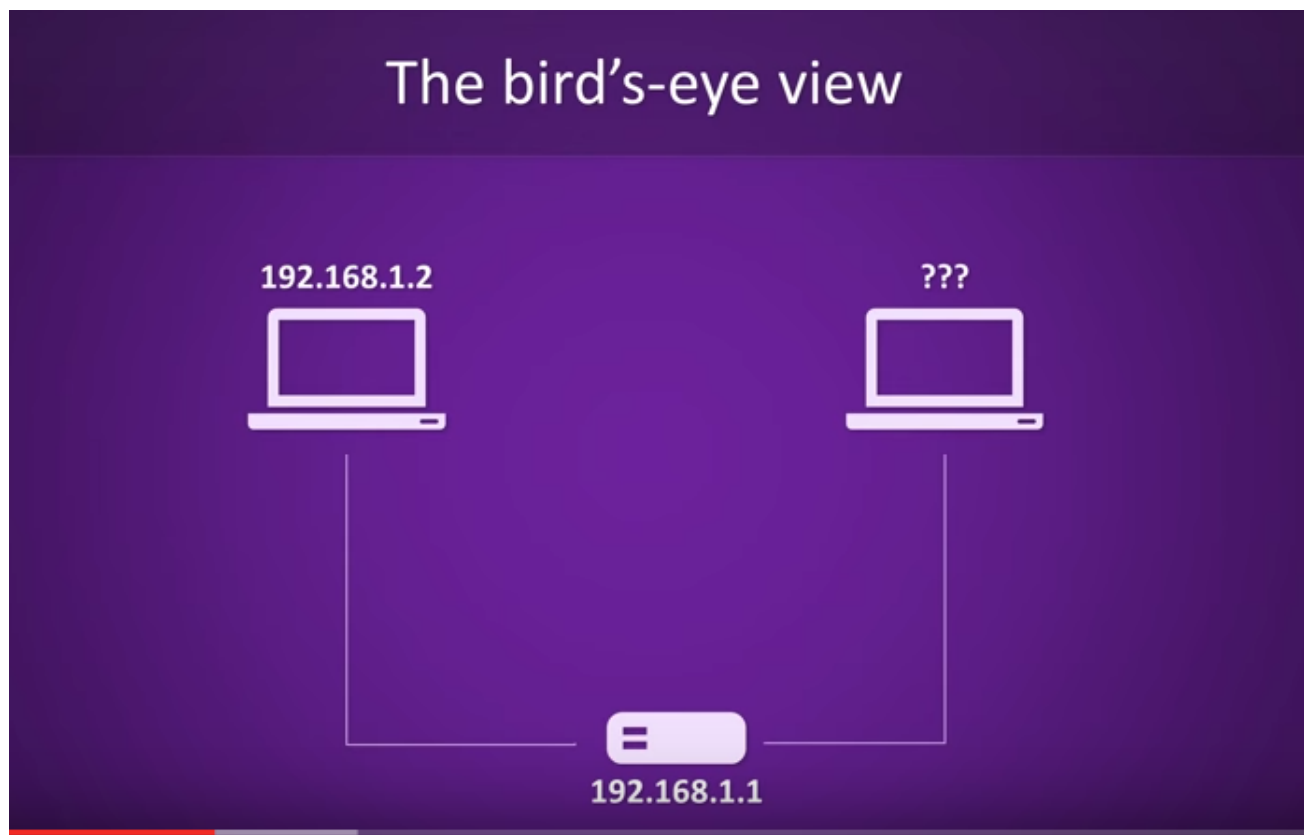


Figure 5: Structure chart for problem 2

The host searches for a DHCP server

Meaning

"Can somebody give me an address?"

IP sender

0.0.0.0, UDP port 68

IP receiver

255.255.255.255, UDP port 67

Broadcast: sent to everyone in the network

Figure 6: Structure chart for problem 2

Multiple DHCP servers

- Multiple servers can respond with an address offer
- New host chooses one offer



Figure 7: Structure chart for problem 2

Address expiration

- Addresses are valid for a limited time

Address	Remaining time
192.168.1.3	1261 seconds

Figure 8: Structure chart for problem 2

0.2.3 Screenshots

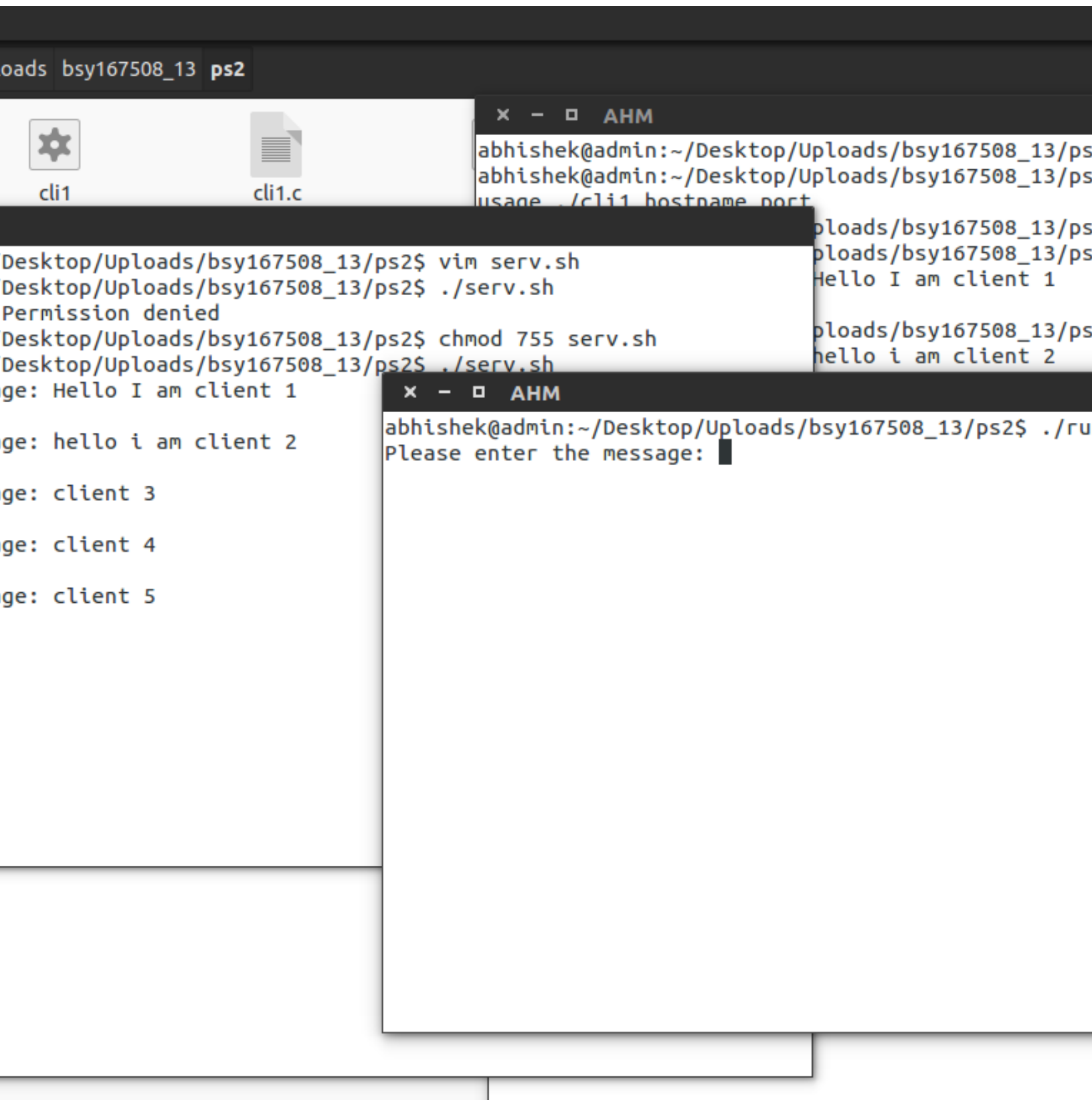


Figure 9: Screenshot for problem statement 2

0.3 Epilogue

The first problem statement involved use of tcp server and client systems which can communicate with each other and exchange url and its components. The second problem involved simulation of dhcp server client relationship. In this we had to show how each gets assigned its ip address.

Bibliography

- [1] “Sockets tutorial.” <http://www.cs.rpi.edu/~moorthy/Courses/os98/Pgms/socket.html>.