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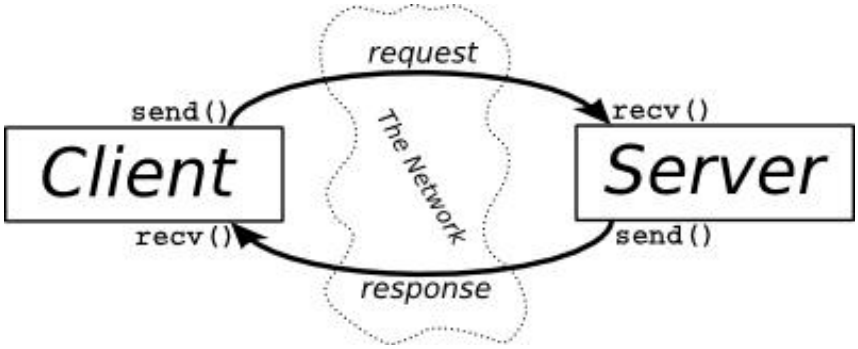
Experiment 8

Aim:

To establish connection between server client using sockets.

Theory:

Socket programming is a way of connecting two nodes on a network to communicate with each other. One socket (node) listens on a particular port at an IP, while other socket reaches out to the other to form a connection. Server forms the listener socket while client reaches out to the server. They form the backbones of web browsing.[1]



The exchange of information between client and server is summarized in the above diagram.
A server has a bind() method which binds it to a specific ip and port so that it can listen to incoming requests on that ip and port. A server has a listen() method which puts the server into listen mode. This allows the server to listen to incoming connections. And last a server has an accept() and close() method. The accept method initiates a connection with the client and the close method closes the connection with the client.

Code:

Server

```
import socket

s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
s.bind((socket.gethostname(), 1234))
s.listen(5)
```

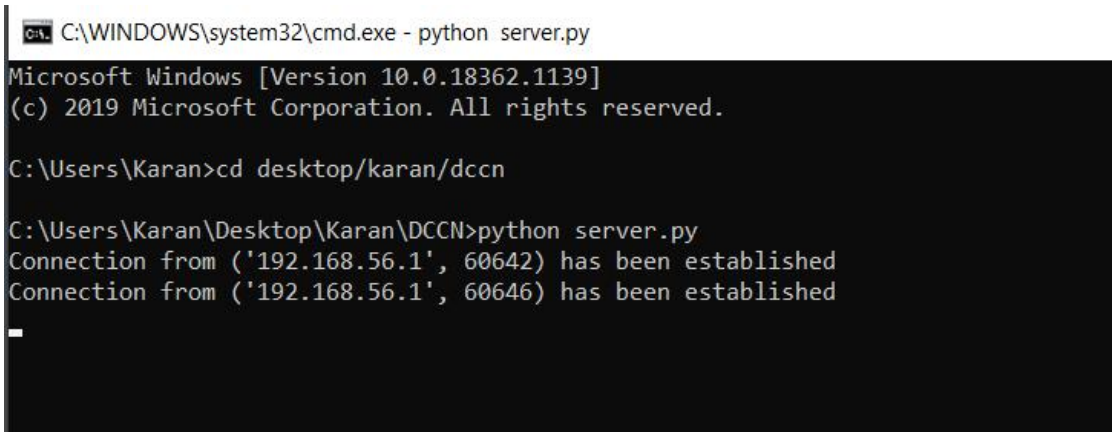
```
while True:
    clientsocket, address = s.accept()
    print(f'Connection from {address} has been established')
    clientsocket.send(bytes("Welcome to the server", "utf-8"))
    clientsocket.close()
```

Client

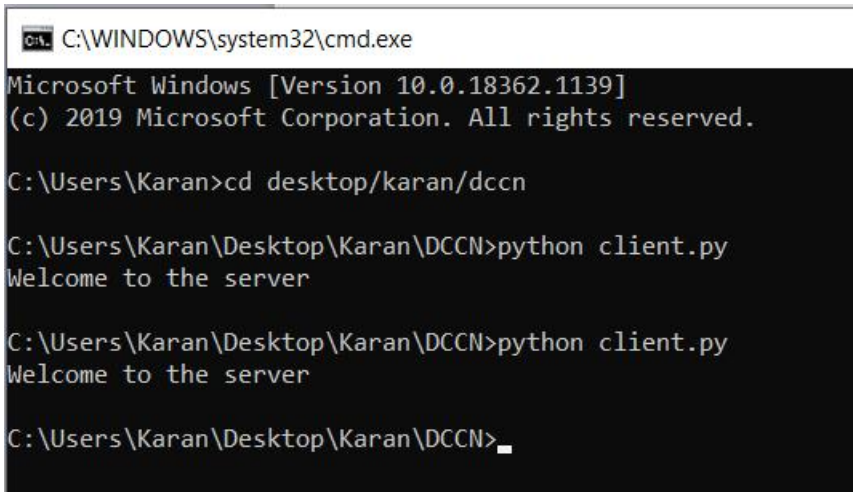
```
import socket

s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
s.connect((socket.gethostname(), 1234))

msg = s.recv(1024)
print(msg.decode("utf-8"))
```

Output:

Server



Client



Conclusion:

I understood the basics of socket programming and established a simple connection between client and server using the same.

References:

[1] https://www.geeksforgeeks.org/socket-programming-python/