

EXPT: 2 TCP CLIENT-SERVER COMMUNICATION USING SOCKET PROGRAMMING IN PYTHON

Aim :

To study and implement socket programming in Python for establishing communication between a client and a server using the TCP/IP protocol.

Algorithm :

Server :

1. Import the socket module.
2. Create a socket object using `socket.socket()`.
3. Bind the socket to a host address and port using `bind()`.
4. Listen for incoming connections using `listen()`.
5. Accept a connection using `accept()`.
6. Receive data from the client using `recv()`.
7. Send a response to the client using `send()`.
8. Close the connection using `close()`.

Client :

1. Import the socket module.
2. Create a socket object using `socket.socket()`.
3. Connect to the server using `connect((host, port))`.
4. Send data to the server using `send()`.
5. Receive a response from the server using `recv()`.
6. Close the connection using `close()`.

Code :

SERVER :

```
import socket
sockfd=socket.socket(socket.AF_INET, socket.SOCK_STREAM)
print('Socket Created')
sockfd.bind(('localhost',55555))
```

```
sockfd.listen(3)
print('Waiting for connections')
while True:
    clientfd,addr=sockfd.accept()
    receivedMsg=clientfd.recv(1024).decode()
    print("Connected with ",addr)
    print("Message Received from Client: ",receivedMsg)
    clientfd.send(bytes(receivedMsg,'utf-8'))
    print("Message reply sent to Client!")
    print("Do you want to continue(type y or n):")
    choice=input()
    if choice=='n':
        break
```

CLIENT :

```
import socket
clientfd=socket.socket(socket.AF_INET, socket.SOCK_STREAM)
clientfd.connect(('localhost',55555))
name=input("Enter your message:")
clientfd.send(bytes(name,'utf-8'))
print("Message Received from Server: ",clientfd.recv(1024).decode())
```

Output :

Server :

```
~  
› python server.py  
Socket Created  
Waiting for connections  
Connected with ('127.0.0.1', 46368)  
Message Received from Client: Hello  
Message reply sent to Client!  
Do you want to continue(type y or n):  
|
```

Client :

```
~  
› python client.py  
Enter your message:Hello  
Message Received from Server: Hello
```

Result :

The implementation of socket programming in Python was successfully executed. A TCP connection was established between the client and the server, enabling successful message exchange.