

EXPERIMENT 3 - UDP CLIENT-SERVER COMMUNICATION USING SOCKET PROGRAMMING IN PYTHON

Introduction:

UDP (User Datagram Protocol) is a connectionless protocol that allows sending messages (datagrams) between client and server without establishing a connection. This experiment demonstrates a simple UDP client-server communication in Python.

Aim:

Develop a simple UDP server and client using Python's socket module to exchange messages.

Algorithm:

1. **Server:**
 - Create a UDP socket and bind it to an IP and port.
 - Wait for incoming messages.
 - Receive data, print it, and optionally send a reply.
2. **Client:**
 - Create a UDP socket.
 - Send message to server IP and port.
 - Receive a reply from the server and display it.

Code:

Server:

```
import socket

sockfd = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)

print('UDP Socket Created')

sockfd.bind(('localhost', 55555))

print('Waiting for messages')

while True:

    data, addr = sockfd.recvfrom(1024)

    receivedMsg = data.decode()
```

```
print("Received message from", addr)
print("Message:", receivedMsg)
# Send the same message back to client
sockfd.sendto(data, addr)
print("Message reply sent to Client!")
choice = input("Do you want to continue (type y or n): ")
if choice == 'n':
    break
sockfd.close()
```

Client:

```
import socket
clientfd = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
server_address = ('localhost', 55555)
name = input("Enter your message: ")
clientfd.sendto(name.encode(), server_address)
data, _ = clientfd.recvfrom(1024)
print("Message Received from Server:", data.decode())
clientfd.close()
```

Output:

Server:

```
Command Prompt - python s  + ▾
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.

C:\Users\angel>cd C:\Users\ nandh\OneDrive\Documents

C:\Users\ nandh\OneDrive\Documents>python server.py
Socket Created
Waiting for connections
Connected with ('127.0.0.1', 52581)
Message Received from Client: Hello
Message reply sent to Client!
Do you want to continue(type y or n):
n

C:\Users\ nandh\OneDrive\Documents>python server.py
UDP Socket Created
Waiting for messages
Received message from ('127.0.0.1', 57082)
Message: Hello
Message reply sent to Client!
Do you want to continue (type y or n):
```

Client:

```
Command Prompt  + ▾
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.

C:\Users\angel>cd C:\Users\ nandh\OneDrive\Documents

C:\Users\ nandh\OneDrive\Documents>python client.py
Enter your message:Hello
Message Received from Server: Hello

C:\Users\ nandh\OneDrive\Documents>python client.py
Enter your message: Hello
Message Received from Server: Hello

C:\Users\ nandh\OneDrive\Documents>
```

Result:

The UDP client successfully sent messages to the server, and the server received and replied to each message.