

Program 2 : Using UDP Socket

Program (Server):

```
import socket

def start_udp_server():
    server = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
    server.bind(('0.0.0.0', 9998))
    print("UDP Server listening on port 9998")

while True:
    try:
        # Receive data from client
        data, addr = server.recvfrom(1024)
        data = data.decode('utf-8')
        print(f"Received from {addr}: {data}")

        # Extract operation and numbers
        operation, num1, num2 = data.split(',')
        num1 = float(num1)
        num2 = float(num2)

        # Perform the operation
        if operation == '+':
            result = num1 + num2
        elif operation == '-':
            result = num1 - num2
        elif operation == '*':
            result = num1 * num2
        elif operation == '/':
            if num2 != 0:
                result = num1 / num2
            else:
                result = "Error: Division by zero"
        else:
            result = "Error: Invalid operation"

        # Send result back to client
        server.sendto(str(result).encode('utf-8'), addr)

    except Exception as e:
        print(f"Error: {e}")

if __name__ == "__main__":
    start_udp_server()
```

Program (Client):

```
import socket
```

```
def start_udp_client():
```

```
    client = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
```

```
    server_address = ('127.0.0.1', 9998) # Change IP to server's IP address
```

```
    while True:
```

```
        try:
```

```
            # Input operation and numbers
```

```
            operation = input("Enter operation (+, -, *, /): ")
```

```
            num1 = input("Enter first number: ")
```

```
            num2 = input("Enter second number: ")
```

```
            # Send operation and numbers to the server
```

```
            client.sendto(f"{operation},{num1},{num2}".encode('utf-8'), server_address)
```

```
            # Receive the result from the server
```

```
            data, addr = client.recvfrom(1024)
```

```
            print(f"Result: {data.decode('utf-8')}")
```

```
        except KeyboardInterrupt:
```

```
            print("Client disconnected")
```

```
            break
```

```
    client.close()
```

```
if __name__ == "__main__":
```

```
    start_udp_client()
```

Output :

```
gcoe@gcoe-ThinkCentre-M70z:~/Downloads$ cd Downloads/
gcoe@gcoe-ThinkCentre-M70z:~/Downloads$ python UDP_Server.py
UDP Server listening on port 9998
Received from ('127.0.0.1', 46922): +,5,5
Received from ('127.0.0.1', 46945): -,10,5
Received from ('127.0.0.1', 44511): *,3,3
Received from ('127.0.0.1', 47324): /,10,5
Received from ('127.0.0.1', 46249): %,10,2

gcoe@gcoe-ThinkCentre-M70z:~/Downloads$ python UDP_Client.py
Enter operation (+, -, *, /, %): +
Enter first number: 5
Enter second number: 5
Result: 10.0
Enter operation (+, -, *, /, %): 

gcoe@gcoe-ThinkCentre-M70z:~/Downloads$ python UDP_Client3.py
Enter operation (+, -, *, /, %): *
Enter first number: 3
Enter second number: 3
Result: 9.0
Enter operation (+, -, *, /, %): 

gcoe@gcoe-ThinkCentre-M70z:~/Downloads$ python UDP_Client2.py
Enter operation (+, -, *, /, %): -
Enter first number: 10
Enter second number: 5
Result: 5.0
Enter operation (+, -, *, /, %): 

gcoe@gcoe-ThinkCentre-M70z:~/Downloads$ python UDP_Client4.py
Enter operation (+, -, *, /, %): /
Enter first number: 10
Enter second number: 5
Result: 2.0
Enter operation (+, -, *, /, %): 

gcoe@gcoe-ThinkCentre-M70z:~/Downloads$ python UDP_Client5.py
Enter operation (+, -, *, /, %): %
Enter first number: 10
Enter second number: 2
Result: 0.0
Enter operation (+, -, *, /, %):
```