

Name: Tanmay Vig

Roll No.: 19BCS061

Class: B. Tech CSE 3rd year

Q1: Write a socket program both for client and server. The server will be able to send the pattern of 0's and 1's only. The client will count the number of 0's and 1's sends by the server.

Source Code:

Server:

```
import socket
```

```
HOST:str = '127.0.0.1'
```

```
PORt:int = 3300
```

```
with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
```

```
    s.bind((HOST,PORt)) # binding socket
```

```
    s.listen(); # listning for new connection requests
```

```
    conn,addr = s.accept() # accepting connection request from client
```

```
    with conn:
```

```
        print("connected to: "+str(addr[1]))
```

```
        send:str = input("Enter string containing 0s and 1s: ")
```

```
        conn.sendall(send.encode())# sending string containing 0s and 1s
```

```
        data:bytes = conn.recv(1024) # recieving data from client
```

```
        print("Client: \n"+data.decode('utf8'))
```

Client:

```
import socket

HOST:str = '127.0.0.1'
PORT:int = 3300

def count(s:list[str]) -> list[int]:
    c:list[int] = [0,0]
    for i in range(len(s)):
        if s[i]==="0":
            c[0]+=1
        elif s[i]==="1":
            c[1]+=1
    return c

with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
    s.connect((HOST, PORT)) # sending connection request
    text:str = s.recv(1024).decode('utf-8') #recieving data from Server
    print("Server: "+text)
    t:list[int] = count(text) #getting count of 0s and 1s
    sen = "No. of 0s: "+ str(t[0]) +"\nNo. of 1s: "+ str(t[1]) +"\n"
    s.sendall(sen.encode()) #sending data to Server
    print("Client: \n"+ sen)
```

Output:

```
PS D:\sem-5\CN lab\lab exam> python server.py
connected to: 62657
Enter string containing 0s and 1s: 1101101
Client:
No. of 0s: 2
No. of 1s: 5

PS D:\sem-5\CN lab\lab exam> █
```

```
PS D:\sem-5\CN lab\lab exam> python client.py
Server: 1101101
Client:
No. of 0s: 2
No. of 1s: 5

PS D:\sem-5\CN lab\lab exam> █
```