FILE, IMAGE, AUDIO AND VIDEO TRANSFER USING SOCKET PROGRAMMING

In the Client code, we imported only socket library for the required methods and calls. We have assigned the IP address value by local host IP which we acquired from the command

```
IP = socket.gethostbyname(socket.gethostname())
```

and the PORT to 4456 which can be given any value between 0 to 65353 and then we assigned the IP and PORT as a Tuple to Address(ADDR) such that it would be convenient for calling connect() method. And now, to Recognize the format of file, we have created a Dictionary named types giving key as format and value as the extension abbreviation.

```
types = {
"vedio":".mp4","audio":".mp3","image":".jpg","text":".txt","Ccode":".c
","PythonCode":".py"}
```

And then we assigned path for each kind of file such that we can access the path to transfer the file from client to server or receive from server to client and a Dicitionary too for accessing paths of their respective format keeping key as format and value as path.

Now, we have created the client socket using the below command where AF_INET is an address family that is used to designate the type of addresses that your socket can communicate with which is IPv4 here and SOCK_STREAM is for using TCP packets for communication.

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

And we connect the client's socket we created to server's socket using the method connect() and then we are sending necessary input to know whether client wants to send data or receive. And sending the Data from client to server and vice versa using the method send() which intakes the encoded string in Unicode format utf –8 and sends it to the client which should be decoded again to read from server side.

```
client.send("Receive Data".encode("utf-8"))
```

Here, There are two cases

1. Client receives file from the server
2. Client sends file to the server

```
function=input("Enter input to send or receive : ")
client.send(function.encode("utf-8"))
```

For both of these cases, we have implemented 2 if statements for receiving and sending.

CASE 1: IF THE CLIENT WANTS TO RECEIVE FILE

if the input given to variable function is ‘receive’ then we are expecting server to send file to the client. so first we make sure that either it is video, audio or image and send the format to the server side. And the we send the type format to the server so that the server is aware of file type.

```
type=input("Enter what type of file required : ")
        if type=="vedio" or type=="image" or type=="audio":
            client.send(type.encode("utf-8"))
```

And then we receive the filename from server side using the method recv() which receives the sent data from the server and decodes it.

```
filename=client.recv(SIZE).decode("utf-8")
```

Filename is used to create new path for the new file and we open the file using open() method with ‘wb’ writing mode to write/transfer the Data.

```
pathnow=path+filename
file=open(pathnow,'wb')
```

We use the receive method again where the server is sending the file data to the client socket and we write it into the file and we loop this in whilke loop until the received data is empty and we Close the file and print “file received” for the user to know that the file has been transferred/received.

```
data_in=client.recv(1024)
                while data_in:
                    file.write(data_in)
                    data_in=client.recv(1024)
                    print("receving")
                file.close()
```

And now, if the file is text format, we send the file type to the server in encoded manner so that the server can send us the filename according to the file type. We receive the filename form server side using the method recv() which receives the sent data from the server and decodes it.

```
client.send(type.encode("utf-8"))

filename=client.recv(SIZE).decode("utf-8")
```

And in just like Audio Video and Image, Filename is used to create new path for the new file and we open the file to write/transfer the Data.

```
name=path+filename

file=open(name,"w")
```

We use the receive method again where the server is sending the file data which is encoded in Unicode utf-8 format and we write it into the file until the received data is empty and we Close the file and print file received for the user to know.

```
data=client.recv(SIZE).decode("utf-8")

            file.write(data)

            print("File Name ",filename," received")
```

CASE 2: IF THE CLIENT WANTS TO SEND FILE

If the input given is ‘send’, then we intake what type of file we want to give the server and if they are video, audio or image, then we send the filename to the server so that server can create a path to store the transferred file.

```
type=input("Enter what type of input file required : ")

        if type=="vedio" or type=="image":

            name="clt"+types[type]

            print("type is ",type)

            client.send(name.encode("utf-8"))
```

And then we open the required file in the reading format and we read the whole data in the file until the end of the file and store it in data_in.

```
file=open(pathnow,'rb')

data_in=file.read(1024)
```

And then we send the data which is read by the client to the server until the whole data is sent and we close the file and let the user know that we have sent the file using the print statement.

```
while data_in:
                client.send(data_in)
                data_in=file.read(1024)
                print("sending")
            file.close()
```

If the file you want to give is text document then we send the filename to the server so that the server can create a path to store the Transferred file

```
client.send(type.encode("utf-8"))
            msg2=client.recv(SIZE).decode("utf-8")
            print(f"[SERVER] {msg2}")
            pathnow=paths[type]
```

Then we can open the required file to send in the reading format and we read the whole Data in the file until the end of the file and store it in data_in.

```
file=open(pathnow,"r")
data=file.read();
client.send(data.encode("utf-8"))
```

And then we send the data which is read in encoded manner which is in Unicode format utf –8 which will be decoded by the server while receiving and we close the file and let the user know that we have sent the file using print statement.