

## TASK

- a) Develop a server that consists of music files.
- b) Generate a request from client for a "ICC T20 World Cup 2021 anthem Live The Game.mp4" (file placed in the attachment).
- c) The web server should be able to accept and parse the request, get the requested file from the server's file system and send it to the client. If the requested file is not present in the server, the server should send an HTTP "404 Not Found" message back to the client.

## METHOD 1

## CODE OF Client.java

```
//Import librariws
import java.io.*; import
java.net.Socket; import
java.util.Scanner;

//Client Class
public class Client
{

    //main function
    public static void main(String[] args){

        try {

            //socket connection
            Socket sckt = new Socket("localhost", 2590);
            //Create Objects of Different Streams
            InputStream Input_Stream = sckt.getInputStream();
            OutputStream Output_Stream = sckt.getOutputStream();
            PrintWriter PW = new PrintWriter(Output_Stream);

            //Take File Location from Client
            Scanner = new Scanner(System.in);
            System.out.println("Enter Location For File ");
            String direct = scanner.nextLine();
            Scanner sc = new Scanner(Input_Stream);
            //send file location to server
            PW.println(direct);
            PW.flush();
```

```

        //determine the size of file
sizeStr = sc.nextLine();
Integer.parseInt(sizeStr);

        String
        int size =

        //if file size is less than zero then it means no file is present
if (size < 0) {
    System.out.println("Server: File is Not Found");
}

    //otherwise send to client

else {

    //accumulator
int accum = 0;

    String FileSaveLocation = null;
    FileOutputStream = null;
DataInputStream = null;
    //Maximum numbers of bytes
byte fileSize[] = new byte[888888];

    System.out.println("Enter Location For save the requested File:
");

    //Take location from client for save the file
FileSaveLocation = scanner.nextLine();
    //send file location to server
fileOutputStream = new
FileOutputStream(FileSaveLocation);

    //Initialize Data Input Stream Object
dataInputStream = new DataInputStream(Input_Stream);

    while (true) {
        int Nbytes = dataInputStream.read(fileSize, 0,
888888);
        fileOutputStream.write(fileSize, 0, Nbytes);
        accum+= Nbytes;

        //if all data is send then break
if (accum == size) {

```

```

        break;}

    }

    //if file is send sucessfully then display a message
    System.out.println("File Sharing is Sucessfully Done");

    //Close Streams
    fileOutputStream.close();
    dataInputStream.close();
}

//If file is not present then show Exception
} catch (FileNotFoundException e){
    System.out.println("404 Not Found: "+e);
} catch (IOException e){
    System.out.println("Exception: "+e);
}

}
}

```

## CODE OF Server.java

```
//Import Libraries  
import java.io.*;  
import java.net.ServerSocket;  
import java.net.Socket; import  
java.net.SocketException; import  
java.util.Scanner;
```

```
//Server Class  
public class Server  
{
```

```

    //Main Method
    public static void main(String[] args) {
try {

        ServerSocket SS = new ServerSocket(2590);

        // The accept() method of ServerSocket class is used to
accept the incoming request to the socket.        Socket =
        SS.accept();

        while (true) {

            //Create Objects of Different libraries
            InputStream Input_Stream = socket.getInputStream();
            OutputStream Output_Stream = socket.getOutputStream();
            PrintWriter PW = new PrintWriter(Output_Stream);
Scanner sc = new Scanner(Input_Stream);

            String filename = sc.nextLine();

            //Read File in file variable
            File = new File(filename);

            //check if a file exists then send to client
            if (file.exists() && file.isFile()) {

                //determine the size of file
                int size = (int) file.length();
                PW.println(size);
                PW.flush();

                //if file contain some data then send it to client
                if (size > 0) {

                    //Bytes contain by Files
                    byte Number_of_bytes[] = new byte[size];

                    //objects of File InputStream
                    FileInputStream F_InputStream = new
FileInputStream(file);
                    DataInputStream D_InputStream = new
DataInputStream(F_InputStream);

```

```
//read all bytes contain by File
```

```

        D_InputStream.readFully(Number_of_bytes);
        F_InputStream.close();

        //write All bytes contain by file
        DataOutputStream D_OutputStream = new
DataOutputStream(Output_Stream);
        D_OutputStream.write(Number_of_bytes);

        //when file shairing is sucessfully done
        System.out.println("File Has been Successfully Sent to the
Client");
    }

    } else {
        PW.flush();
    }
}

//Exceptions
}catch (SocketException e){
    System.out.println("Socket Exception: "+e);
}catch (FileNotFoundException e){
    System.out.println("404 Not Found: "+e);
}catch (IOException e){
    System.out.println("IO Exception: "+e);
}
}
}

```

## OUTPUT OF CLIENT TERMINAL:

```

PS E:\3rd semester> cd src
PS E:\3rd semester\src> javac Client.java
PS E:\3rd semester\src> java Client
Enter Location For File
E:\5th semester\Niaz_Fahad_Assignment02_OS\ICC T20 World Cup 2021 anthem Live The G-(You2Audio.Com).mp4
Enter Location For save the requested File:
E:\5th semester\operating system\ICC T20 World Cup 2021 anthem Live The G-(You2Audio.Com).mp4
File Sharinq is Sucessfully Done

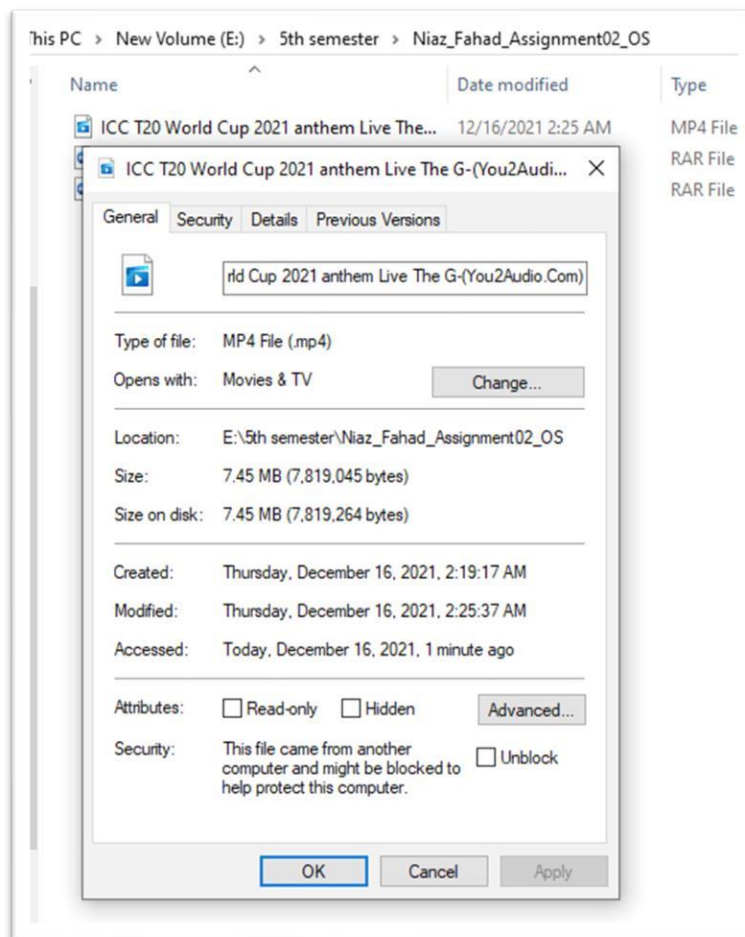
```

## OUTPUT OF SERVER TERMINAL:

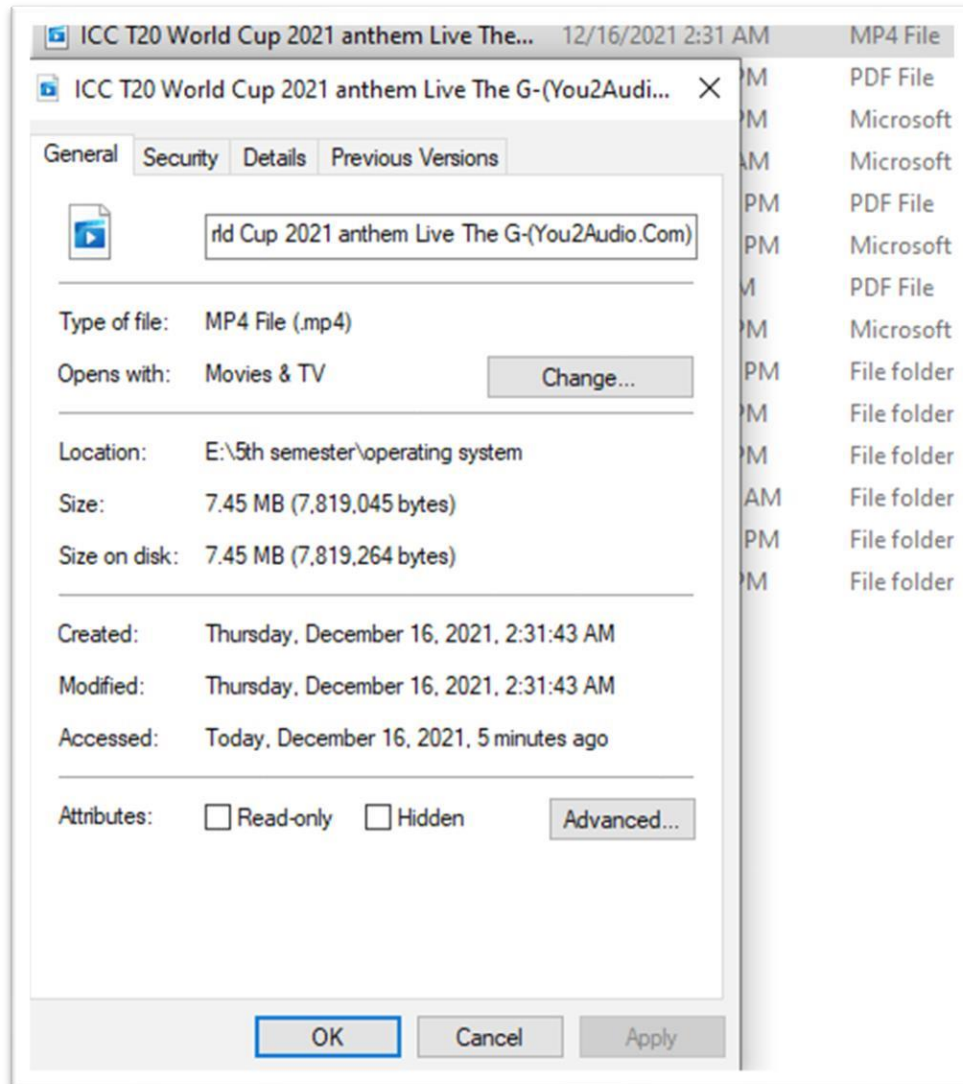


```
PS E:\3rd semester> cd src
PS E:\3rd semester\src> javac Server.java
PS E:\3rd semester\src> java Server
File Has been Successfully Sent to the Client
```

### FILE THAT SERVER SEND TO CLIENT :



### FILE THAT CLIENT RECIEVE :



As you can see in above pictures the file that server send to client and file that receive by client both have same size, So it means there is no loss data and file sharing between server and client is successfully done.

## METHOD 2

## CODE OF Client.java

```
// -----  
  
// import libraries  
import java.net.*;  
import java.io.*;  
import java.util.Scanner;  
  
//Create client class  
public class Client {  
  
    //main Function  
    public static void main(String[] args) throws IOException {  
        //Establish Socket with host: Localhost and Port number 8988  
        Socket s = new Socket("localhost", 8988);  
  
        PrintWriter prnt = new PrintWriter(s.getOutputStream());  
        //Take Requested file from user in input  
        Scanner sc = new Scanner(System.in);  
        System.out.print("Enter File Name : ");  
        String str = sc.nextLine();  
  
        prnt.println(str);  
  
        //flushes the remaining data  
        prnt.flush();  
  
        // public static void receive_file_from_server(String requested_file)  
        throws IOException {  
  
            String requested_file =str;  
  
            //Location at which client save the file
```

```

String path="E:\\5th semester\\operating system\\Ass2_Task2\\ccc";
File save_Location = new File(path +"\\"+ requested_file );

    //Total Number of Bytes that read
int BR;

    //Current Bytes
int current = 0;

    //set FileOutputStream
FileOutputStream F_OutputStream = null;

    //set BufferedOutputStream
BufferedOutputStream B_OutputStream = null;

    //determine the size of file
long FILE_SIZE = save_Location.length();

    //convert file size into bytes
byte[] mybytearray = new byte[(int) FILE_SIZE];

    //returns the InputStream attached with this socket.
InputStream is = s.getInputStream();

F_OutputStream = new FileOutputStream(save_Location);

    //Buffer Output Stream
B_OutputStream = new BufferedOutputStream(F_OutputStream);
BR = is.read(mybytearray, 0, mybytearray.length);
//Set current bytes
current = BR;
    do
    {
BR
        = is.read(mybytearray, current, (mybytearray.length -
current));
        if (BR >= 0) {
current += BR;
        }
    } while (BR > -1);

    //Write file
B_OutputStream.write(mybytearray, 0, current);

```

```
        //flushing the stream
        B_OutputStream.flush();

        //Display Message when File is sucessfully download
        System.out.println("File downloaded ");

    } }//end
```

## CODE OF Server.java

```
// -----
-

//import Libraries
import java.io.*; import
java.net.*; import java.io.File;
import java.io.IOException;
import java.util.logging.Level;
import java.util.logging.Logger;

//Server Class
public class Server
{

    //main Function
    public static void main(String[] args) throws IOException {
        //Create object of ServerSocket with port Number 8988
        ServerSocket ser_sockt= new ServerSocket(8988);
        //Establish Connection between server and client
        Socket s = ser_sockt.accept();
```

```

        //returns the InputStream attached with this socket.
        InputStreamReader input_data = new
        InputStreamReader(s.getInputStream());

        //BfReader -> BufferedReader object
        BufferedReader BfReader = new BufferedReader(input_data);
        //Data read from client ("File Name")
        String DATA_ = BfReader.readLine();

        // Print message for searching File
        System.out.println("Searching For    : " + DATA_ + ".....");

        //PrintWriter prnt = new PrintWriter(s.getOutputStream());
        String File_Name = DATA_;

        //path for server
        String path = "E:\\5th semester\\operating system\\Ass2_Task2\\song";

        //Set path for file
        File directoryPath = new File(path);

        File f = new File(path + "\\ " + File_Name);

        //List of all files and directories
        String contents[] = directoryPath.list();

        for (int i = 0; i < contents.length; i++) {

            //Print All file present in the directory
            //System.out.println(contents[i]);

            //Condition If file is exists
            if (f.exists() && f.isFile()) {
                System.out.println(File_Name + " -> found");
                //send_file_to_client(File_Name);

                //set Input Stream
                FileInputStream F_InputStream = null;
                BufferedInputStream B_InputStream = null;
                //file that server send to client
                File FILE_TO_SEND = new File(path + "\\ " + File_Name);

```

```

        //convert file into bytes
        byte[] mybytearray = new byte[(int) FILE_TO_SEND.length()];
        //set File and Buffer InputStream
        F_InputStream = new FileInputStream(FILE_TO_SEND);
        B_InputStream = new BufferedInputStream(F_InputStream);
        //Output Stream
        OutputStream os = null;

        //Read Data In Buffer InputStream
        B_InputStream.read(mybytearray, 0, mybytearray.length);
        //Get OutputStream in OS
        os = s.getOutputStream();

        //Display Message for sending
        System.out.println("Sending (" + File_Name+ " ) To client");
        //write file
        os.write(mybytearray, 0, mybytearray.length);
        //flush remaining data present in outputstream
        os.flush();

        break;

    } //end if Condition

    //if file is not present then show Error (404 Not Found)
else {

    //display error when file is not present in server
    System.out.println("404 Not Found");
    break;
}

    // prnt.flush();
    //close connection
    //prnt.close();

    } //end main method

} //end class

```

## OUTPUT OF CLIENT TERMINAL:

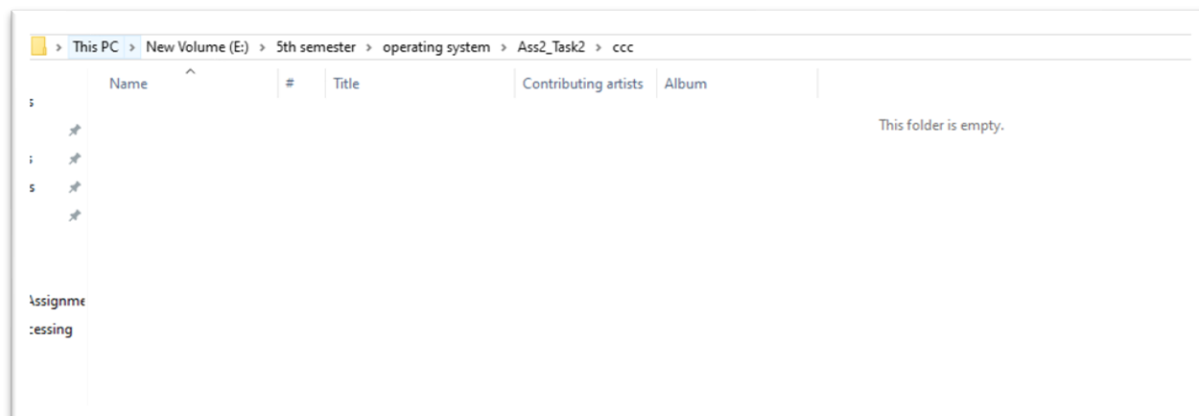
```
PS E:\5th semester\operating system\Ass2_Task2> cd src
PS E:\5th semester\operating system\Ass2_Task2\src> javac Client.java
PS E:\5th semester\operating system\Ass2_Task2\src> java Client
Enter File Name : ICC T20 World Cup 2021 anthem Live The Game.mp3
```

## OUTPUT OF Server TERMINAL:

```
PS E:\5th semester\operating system\Ass2_Task2> cd src
PS E:\5th semester\operating system\Ass2_Task2\src> javac Server.java
PS E:\5th semester\operating system\Ass2_Task2\src> java Server
Searching For   : ICC T20 World Cup 2021 anthem Live The Game.mp3.....
ICC T20 World Cup 2021 anthem Live The Game.mp3 -> found
Sending (ICC T20 World Cup 2021 anthem Live The Game.mp3 ) To client
```

## BEFORE SENDING FILE TO CLIENT :

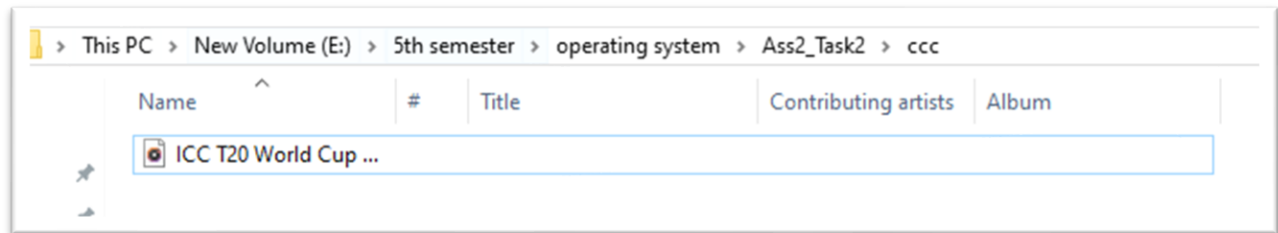
### Client directory





**AFTER SENDING FILE TO CLIENT :**

## **Client directory**



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**THANK YOU**