Exercise 5: UDP

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BTech IT 3rd Year, 5th Sem

1)

Problem: Write a program for reversing given string without inbuilt functions using client, server in UDP.

Aim: To write a program for reversing given string without inbuilt functions using client, server in UDP in C and Java.

Program:

C

Server

```
#include<stdio.h>
#include<netdb.h>
#include<arpa/inet.h>
#include<netinet/in.h>
#include<stdlib.h>
#include<string.h>
#include<sys/socket.h>
#include<sys/types.h>
#include<unistd.h>

int main(){
    int sd,b,len;
    char msg[100];
    struct sockaddr_in server,client;
```

```
server.sin_family=AF_INET;
printf("Enter the port no : ");
int portno;
scanf("%d",&portno);
server.sin_port=htons(portno);
server.sin_addr.s_addr=htonl(INADDR_ANY);

//socket creation

sd=socket(AF_INET,SOCK_DGRAM,0);
if(sd==-1){
	printf("Socker=t creation failed\n");
	exit(0);
}
else{
	printf("Socket Created\n");
}

//binding

b=bind(sd,(struct sockaddr *)&server,sizeof(server));

if(b==-1){
	printf("Binding failed\n");
	exit(0);
}
else{
	printf("Binded\n");
}
```

```
    len=sizeof(client);
    do{
        recvfrom(sd,msg,100,0,(struct sockaddr*)&client,&len);
        printf("Client message : %s\n",msg);
        int length=0,i,j=0;
        char temp[100];
        for (i=0;msg[i]!='\0';i++){
            length++;
        }
        printf("Length : %d\n",length);
        for(i=length-1;i>=0;i--){
            temp[j++]=msg[i];
        }
        temp[j]='\0';
        printf("Reversed Word : %s\n",temp);
        sendto(sd,temp,100,0,(struct sockaddr*)&client,sizeof(client));
    }while(strcmp(msg,"bye")!=0);
    close(sd);
}
```

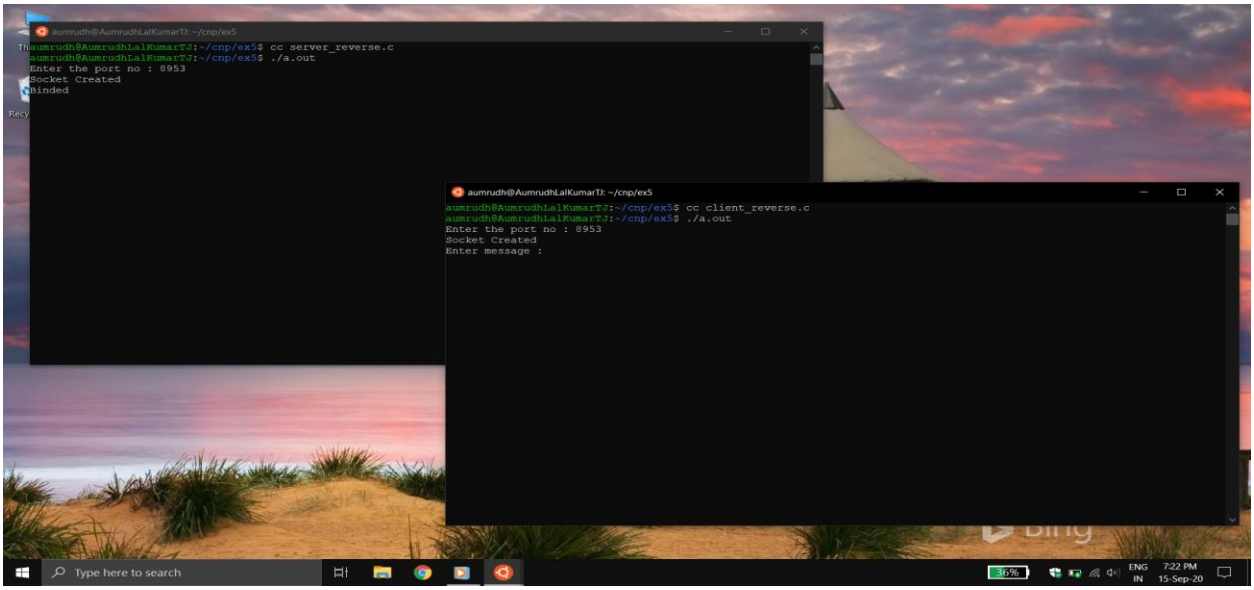
Client

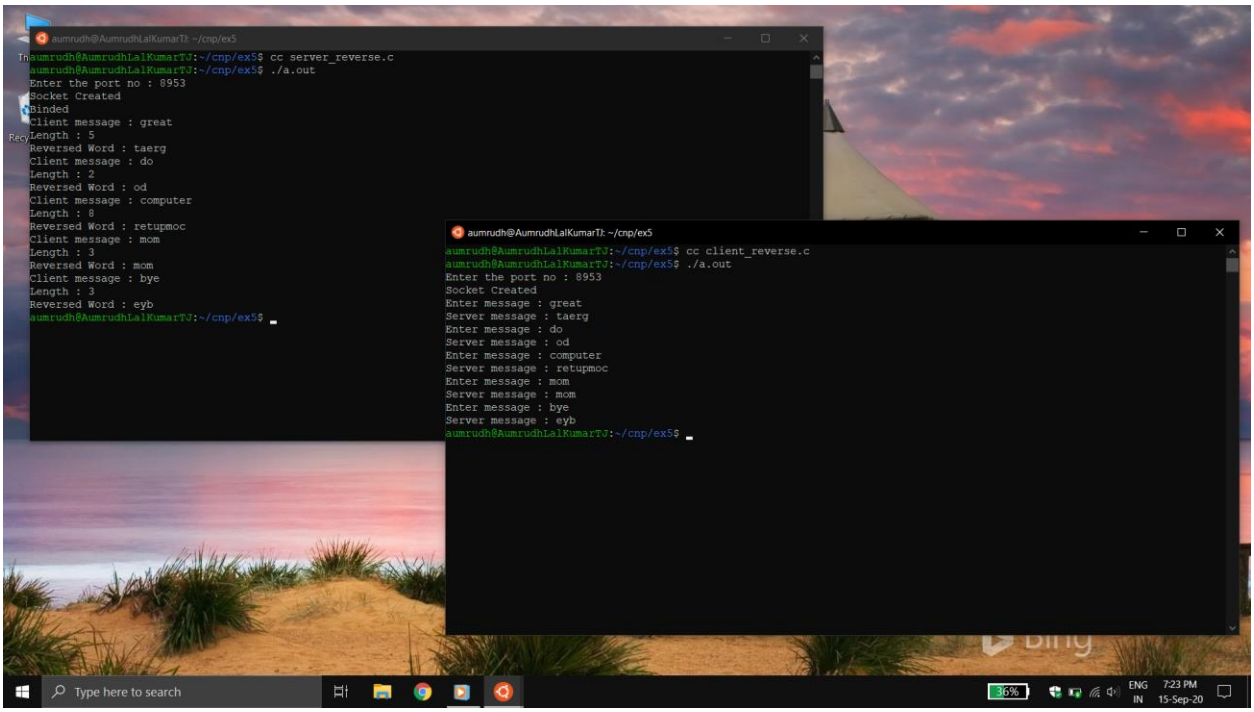
```
#include<stdio.h>
#include<netdb.h>
#include<arpa/inet.h>
#include<netinet/in.h>
#include<stdlib.h>
#include<string.h>
#include<sys/socket.h>
#include<sys/types.h>
```

```
#include<unistd.h>

int main(){
	int sd,b,len;
	char msg[100];
	struct sockaddr_in server,client;
	server.sin_family=AF_INET;
	printf("Enter the port no : ");
	int portno;
	scanf("%d",&portno);
	server.sin_port=htons(portno);
	server.sin_addr.s_addr=htonl(INADDR_ANY);

	//socket creation

	sd=socket(AF_INET,SOCK_DGRAM,0);
	if(sd==-1){
		printf("Socker=t creation failed\n");
		exit(0);
	}
	else{
		printf("Socket Created\n");
	}
	len=sizeof(server);
	do{
		printf("Enter message : ");
		scanf("%s",msg);
		sendto(sd,msg,100,0,(struct sockaddr*)&server,sizeof(server));
		recvfrom(sd,msg,100,0,(struct sockaddr*)&server,&len);
```

```
        printf("Server message : %s\n",msg);
    }while(strcmp(msg,"bye")!=0);
    close(sd);
}
```

Output





Java

Server

```
import java.io.*;
import java.net.*;
import java.util.*;
import java.lang.*;

public class Server{
 // Server UDP socket runs at this port

 public static void main(String[] args) throws IOException{
  System.out.print("Enter port no : ");
  Scanner in=new Scanner(System.in);
  int  port=in.nextInt();
  try{
     // Instantiate a new DatagramSocket to receive responses from the client
     DatagramSocket sd = new DatagramSocket(port);
     System.out.println("Waiting for a client to connect...");
     /* Create buffers to hold sending and receiving data.
     It temporarily stores data in case of communication delays */
     String receivedData;
     while(true){
     byte[] receivingDataBuffer = new byte[1000];
     //byte[] sendingDataBuffer = new byte[1000];

     /* Instantiate a UDP packet to store the
     client data using the buffer for receiving data*/
```

```
DatagramPacket inputPacket = new DatagramPacket(receivingDataBuffer,
receivingDataBuffer.length);



// Receive data from the client and store in inputPacket
sd.receive(inputPacket);

// Printing out the client sent data
receivedData = new String(inputPacket.getData());
receivedData=receivedData.trim();
System.out.println("Client Message : "+receivedData);
if(receivedData.equals("bye")){
   System.out.println("Closing Connection");
   sd.close();
   System.exit(0);
}
int length=0;
String temp="";
for(char c: receivedData.toCharArray()) {
 length++;
}
//System.out.println("Length : "+length);
for(int i=length-1;i>=0;i--){
   temp= temp+ receivedData.charAt(i);
}
 //System.out.println(temp);

byte[] sendingDataBuffer = new byte[length];
/*Convert client sent data string reverse,Convert it to bytes
```

```
      and store it in the corresponding buffer. */
      sendingDataBuffer = temp.getBytes();

      // Obtain client's IP address and the port
      InetAddress senderAddress = inputPacket.getAddress();
      int senderPort = inputPacket.getPort();

      // Create new UDP packet with data to send to the client
      DatagramPacket outputPacket = new DatagramPacket(
      sendingDataBuffer, sendingDataBuffer.length,
      senderAddress,senderPort
      );
      // Send the created packet to client
      sd.send(outputPacket);
    }
  }
  catch (Exception e){
    System.out.println(e);
  }
 }
}
```

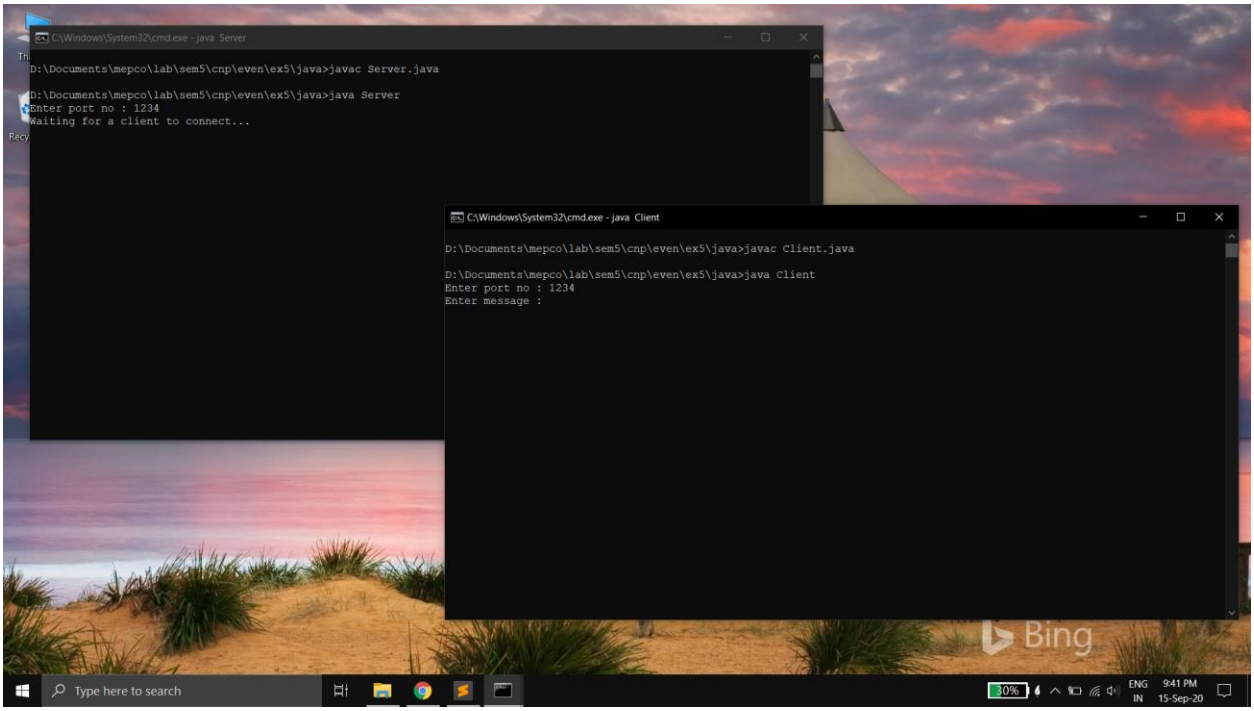
Client

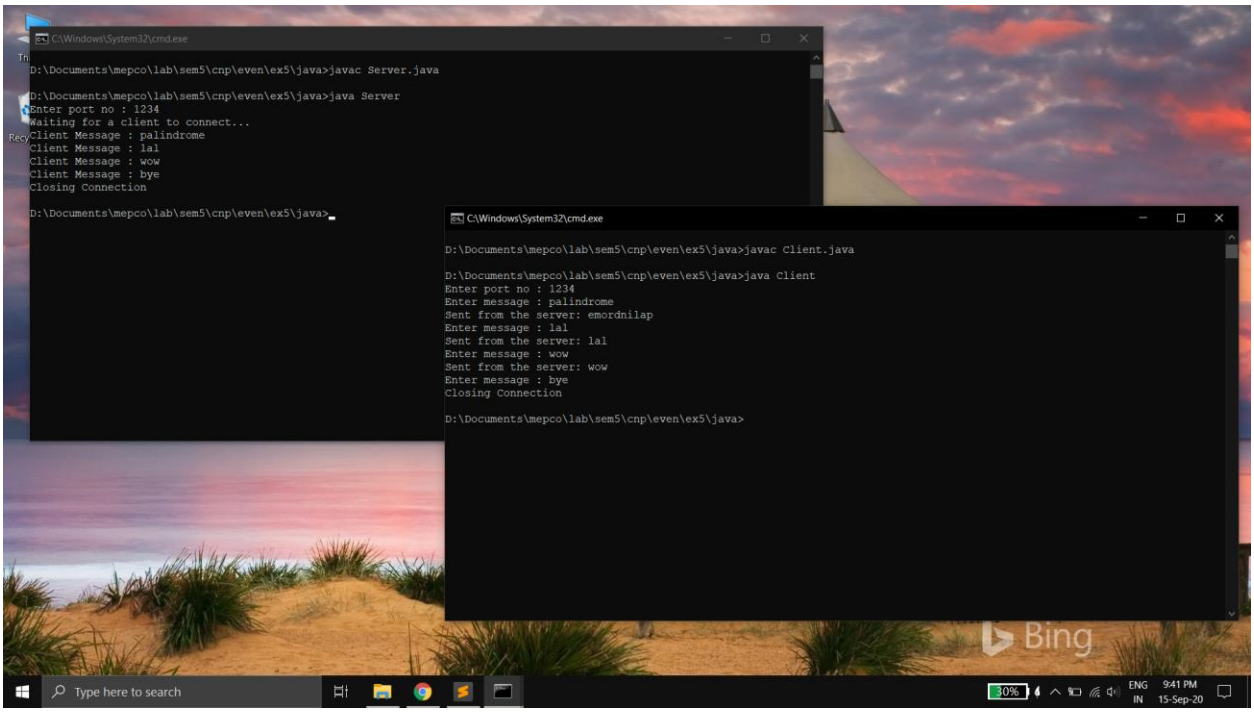
```
import java.io.*;
import java.net.*;
import java.util.*;
import java.lang.*;
```

```
public class Client{
  public static void main(String[] args) throws IOException{
    try{
      System.out.print("Enter port no : ");
      Scanner in=new Scanner(System.in);
      int  port=in.nextInt();
      DatagramSocket sd = new DatagramSocket();

      // Get the IP address of the server
      InetAddress IPAddress = InetAddress.getByName("localhost");

      // Creating corresponding buffers
      String sentence;
      while(true){
      //byte[] sendingDataBuffer = new byte[1000];
      //byte[] receivingDataBuffer = new byte[1000];

      /* Converting data to bytes and
      storing them in the sending buffer */
      System.out.print("Enter message : ");
      sentence = in.next();

      int length=0;
      for(char c: sentence.toCharArray()) {
        length++;
      }
      byte[] sendingDataBuffer = new byte[length];
      byte[] receivingDataBuffer = new byte[length];
      sendingDataBuffer = sentence.getBytes();
```

```
    // Creating a UDP packet
    DatagramPacket sendingPacket = new
DatagramPacket(sendingDataBuffer,sendingDataBuffer.length,IPAddress, port);


    // sending UDP packet to the server
    sd.send(sendingPacket);
    if(sentence.equals("bye")){
        System.out.println("Closing Connection");
        sd.close();
        System.exit(0);
    }
    // Get the server response .i.e. capitalized sentence
    DatagramPacket receivingPacket = new
DatagramPacket(receivingDataBuffer,receivingDataBuffer.length);
    sd.receive(receivingPacket);


    // Printing the received data
    String receivedData = new String(receivingPacket.getData());
    receivedData.trim();
    System.out.println("Sent from the server: "+receivedData);


    }
   }
   catch(Exception e) {
        System.out.println(e);
   }
  }
}
```

Output


C:\Windows\System32\cmd.exe - java Server
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>javac Server.java
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>java Server
Enter port no : 1234
Waiting for a client to connect...
C:\Windows\System32\cmd.exe - java Client
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>javac Client.java
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>java Client
Enter port no : 1234
Enter message :
Type here to search


C:\Windows\System32\cmd.exe
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>javac Server.java
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>java Server
Enter port no : 1234
Waiting for a client to connect...
Client Message : palindrome
Client Message : lal
Client Message : wow
Client Message : bye
Closing Connection
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>
C:\Windows\System32\cmd.exe
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>javac Client.java
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>java Client
Enter port no : 1234
Enter message : palindrome
Sent from the server: emordnilap
Enter message : lal
Sent from the server: lal
Enter message : wow
Sent from the server: wow
Enter message : bye
Closing Connection
D:\Documents\mepco\lab\sem5\cnp\even\ex5\java>
Type here to search