# BÀI 06 TCP Socket

## DatagramExample

```java
import java.net.DatagramPacket;
import java.net.InetAddress;
import java.net.UnknownHostException;

public class DatagramExample {

    public static void main(String[] args) {
        String s = "Hello Hutech";
        byte[] data = s.getBytes();
        try {
            InetAddress ia = InetAddress.getByName("www.hutech.edu.vn");
            int port = 7;
            DatagramPacket dp;
            dp = new DatagramPacket(data, data.length, ia, port);
            System.out.println("Address: " + dp.getAddress());
            System.out.println("Port: " + dp.getPort());
            System.out.println("Length: " + dp.getLength());
            System.out.println("Data: ");
            s = new String(dp.getData(), dp.getOffset(), dp.getLength());
            System.out.println(s);
        } catch (UnknownHostException e) {
            System.out.println(e);
        }
    }
}
```

## UDPClient

```java
import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;

public class UDPClient {

    public static void main(String args[]) throws Exception {

        DatagramSocket clientSocket = new DatagramSocket();

        InetAddress IPAddress = InetAddress.getByName("localhost");

        BufferedReader inFromUser
                = new BufferedReader(new InputStreamReader(System.in));

        byte[] sendData = new byte[1024];
        byte[] receiveData = new byte[1024];

        String sentence = inFromUser.readLine();
        sendData = sentence.getBytes();
        DatagramPacket sendPacket
                = new DatagramPacket(sendData, sendData.length, IPAddress, 9876);

        clientSocket.send(sendPacket);

        DatagramPacket receivePacket
                = new DatagramPacket(receiveData, receiveData.length);

```

```
            clientSocket.receive(receivePacket);

            String modifiedSentence
                    = new String(receivePacket.getData());

            System.out.println("FROM SERVER: " + modifiedSentence);
            clientSocket.close();
        }
    }

```

## UDPServer

```
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;

public class UDPServer {

    public static void main(String args[]) throws Exception {

        DatagramSocket serverSocket = new DatagramSocket(9876);

        byte[] receiveData = new byte[1024];
        byte[] sendData = new byte[1024];

        while (true) {

            DatagramPacket receivePacket
                    = new DatagramPacket(receiveData, receiveData.length);
            serverSocket.receive(receivePacket);
            String sentence = new String(receivePacket.getData());

            InetAddress IPAddress = receivePacket.getAddress();

            int port = receivePacket.getPort();

            String capitalizedSentence = sentence.toUpperCase();

            sendData = capitalizedSentence.getBytes();

            DatagramPacket sendPacket
                    = new DatagramPacket(sendData, sendData.length, IPAddress,
                            port);

            serverSocket.send(sendPacket);
        }
    }

}

```

## UDPClientChatEx1

```java
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;
import java.net.SocketException;
import java.net.UnknownHostException;

public class UDPClientChatEx1 {

    public static void main(String[] args) throws UnknownHostException, IOException {
        BufferedReader in = new BufferedReader(new InputStreamReader(System.in));
        InetAddress ip_server = InetAddress.getByName("localhost");
        byte[] buffer = new byte[1024];
        int port_server = 8888;
        try {
            DatagramSocket socket = new DatagramSocket();
            DatagramPacket packet = new DatagramPacket(buffer, buffer.length);
            boolean client_end = false;
            String st_send = "", st_receive = "";

            //Send data
            do {
                byte[] send_data;
                System.out.print("\nClient: ");
                st_send = in.readLine();
                send_data = st_send.getBytes();
                DatagramPacket send_packet = new DatagramPacket(send_data, send_data.length, ip_server, port_server);
                socket.send(send_packet);

                if (!st_send.equalsIgnoreCase("bye")) {
                    socket.receive(packet);

                    st_receive = new String(packet.getData(), 0, packet.getLength());
                    System.out.print("Server: " + st_receive);
                }

                if (st_send.equalsIgnoreCase("bye") || st_receive.equalsIgnoreCase("bye")) {
                    client_end = true;
                }
            } while (!client_end);
            socket.close();
        } catch (SocketException e) {
        }
    }

}
```

# UDPServerChatEx1

```java
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;
import java.net.SocketException;

public class UDPServerChatEx1 {

    public static void main(String[] args) throws IOException {
        BufferedReader in = new BufferedReader(new InputStreamReader(System.in));
        byte[] buffer = new byte[1024];
        int port = 8888;
        try {
            DatagramSocket socket = new DatagramSocket(port);
            System.out.println("Server connect port 8888 ...");
            DatagramPacket packet = new DatagramPacket(buffer, buffer.length);
            boolean server_end = false;
            String st_send = "", st_receive = "";

            //Receive data
            do {
                socket.receive(packet);
                st_receive = new String(packet.getData(), 0, packet.getLength());
                System.out.print("Client: " + st_receive);

                if (!st_receive.equalsIgnoreCase("bye")) {
                    InetAddress ip_client = packet.getAddress();
                    int port_client = packet.getPort();
                    byte[] send_data;
                    System.out.print("\nServer: ");
                    st_send = in.readLine();
                    send_data = st_send.getBytes();
                    DatagramPacket send_packet;
                    send_packet = new DatagramPacket(send_data, send_data.length, ip_client,port_client);
                    socket.send(send_packet);
                }

                if (st_receive.equalsIgnoreCase("bye")||st_send.equalsIgnoreCase("bye")){
                    server_end = true;
                }

            } while (!server_end);
        } catch (SocketException e) {
        }

    }
}
```

## UDPPortScanner

```java
import java.net.DatagramSocket;
import java.net.SocketException;

public class UDPPortScanner {

    public static void main(String[] args) {
        for (int port = 0; port <= 65535; port++) {
            try {
                DatagramSocket server = new DatagramSocket(port);
                server.close();
            } catch (SocketException e) {
                System.out.println("Port: " + port + " in use");
            }
        }
    }
}

```