

Computer Communications and Networks

Java Lab-1

This lab will give you a brief introduction of java.net library. You will be given two very simple programmes to understand and run. These programmes will create two applications: one for a client and the other for a server and will establish a very simple communication between them.

One of the key packages in the Java system is the java.net library. This provides support for accessing the Internet both as a client accessing remote services and as a server providing services to remote clients.

Port:

A computer connected to the Internet via the Internet protocol TCP/IP has a set of port numbers attached to it that identify the application that is to be run. The port numbers 0 – 1024 are used for frequently used processes and applications.

Socket:

All communication by computer in the Internet is carried out by means of sockets. A socket is made up of two entities: a port and an IP address.

The combination of socket and port is unique and hence can be used by Internet software to determine the communication circuit along with an application such as email. In this way computers on the Internet can be easily connected together.

Socket and ServerSocket classes:

These two classes establish stream-based input and output between server and client computers. A Socket object represents the Java version of a TCP connection. When a socket is created, a connection is made to a specified computer; when a ServerSocket connection is made the server on which it is made listens for an incoming connection from a client and establishes it when it hears the connection.

When a ServerSocket is created, it listens for connection requests. When a connection request is accepted the method `accept` returns a socket for future data transfer between the client and the server.

Download `TCPServer.java` and `TCPClient.java` using blackboard under Labs Folder in Learning Resources

a)

Compile both files. Run `TCPServer.class` first followed by `TCPClient.class`

Client enters a text and server converts it into uppercase letters and returns it back.

b) Modify the above programs so that the client and server programs terminate when client enters CLOSE string.