

A Network Chatting and Sending Data

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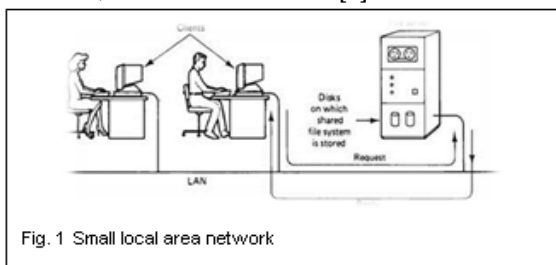
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Abstract— *Teleconferencing or Chatting, is a method of using technology to bring people and ideas “together” despite of the geographical barriers. The technology has been available for years but the acceptance it was quit recent. The main propose of our approach is to design a chat between two PCs or many depend on the application of this chat system. It is made up of two applications the client application, which runs on the user’s Pc and server application, which runs on any Pc on the network. To start chatting client should get connected to server where they can practice two kinds of chatting, public one (message is broadcasted to all connected users) and private one (between any two users only) and during the last one security measures were taken.*

Index Terms—: Chatting, Networks, Communication protocols, TCP/IP, peer to peer, Winsock, and Server/ Client.

1 INTRODUCTION

A computer network consists of a collection of computers, printers and other equipment that is connected together so that they can communicate with each other. Fig. 1 gives an example of a network in a small office comprising of a local area network (LAN) connecting computers with each other, the internet, and various servers [1].



Networks are classified into many characteristics: transport the data, communications protocol used, topology, benefit, and regulatory. The connections in the Networks contain a set of features to create a link between one computer and another computers or network are used. Outgoing connections contact a remote access server to establish a connection with a remote network. Conversely, an incoming connection enables a computer running Microsoft® Windows® XP to be contacted by other computers. Whether locally LAN, remotely (dial-up, VPN, and so on), or both are connected, so that it can perform any needed network function (print to network printers, access network drives, files, browse other networks, access the Internet, etc.)[2]. Now a day the developments are huge in the field of technology of communication media according to the hardware and associated software technology that is used to

interconnect the individual devices in the network, such as electrical cable (Home PNA, power line communication, G.hn), optical fiber, and radio waves (wireless LAN). In the OSI model, these are located at levels 1 and 2. A well-known family of communication media is collectively known as Ethernet. Wireless LAN technology is designed to connect devices without wiring. These devices use radio waves or infrared signals as a transmission medium [3]. The family of communication media types is: Technology of wired, Technology of wireless, and Technology of exotic.

2 COMMUNICATIONS PROTOCOLS AND NETWORK PROGRAMMING

A protocol is a set of rules that govern data communications. It represents an agreement between the communicating devices. Without a protocol, two devices may be connected but not communicating, just as a person speaking French cannot be understood by a person who speaks only Japanese [4]. Communication protocols have various characteristics. They may be connection-oriented or connectionless, they may use circuit mode or packet switching, and they may use hierarchical addressing or flat addressing such as (ethernet, internet protocol suite, sonet/sdh, asynchronous transfer mode, and network programming[5].

3 NETWORK TOPOLOGIES

Therefore network is a computer system that uses communications equipment to connect computers. They can be connected in different ways. The physical layout of a network called

physical topology [6].

The logical topologies have five common network topologies named, mesh, ring, tree, star and bus as shown in fig.2 [7].

The shape of the cabling layout used to link devices is called the physical topology of the network. This refers to the layout of **cabling**, the locations of nodes, and the interconnections between the nodes and the cabling. The physical topology of a network is determined by the capabilities of the network access devices and media, the level of control or fault tolerance desired, and the cost associated with cabling or telecommunications circuits [7].

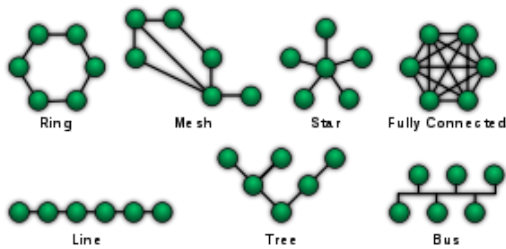


Fig. 2 Logical topologies

They are divided for three topologies LAN, Wide Area Network (WAN), Metropolitan Area Network (MAN). In this paper we will focus on LAN Topologies [8].

4 LOCAL AREA NETWORK COMPONENTS (LAN)

LANs allow independent devices such as personal computers (PCs) and printers to communicate directly with each other over a common physical medium. The basic LAN concept includes; the real-time interconnection of end-user devices in a local environment for the purpose of sharing information, files, software, and hardware peripheral devices [9].

In principle, the LAN concept ranges from PCs linked together to share software, common databases, and printers at one end of the spectrum, to the interconnection of telephones within an office building through a PBX at the other. LANs can span a single building or scale across a university campus, the majority of which are usually within 500 meters of each other, depending on the type of cable used for the medium [10].

5 ORGANIZING COMPUTERS ON NETWORK

Two ways to organize the resources of network are client/server or socket and peer-to-peer (P2P) many networks are hybrids, containing elements of both client/server and peer-to-peer arrangements as shown in fig.3 [11].

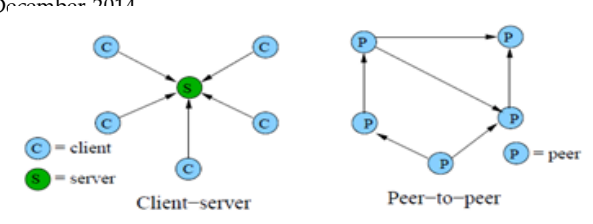


Fig. (3) Client-server vs. peer-to-peer distributed systems

5.1 Socket

The simplest and easiest method for communicating between two nodes in the Internet is socket. Socket enables two computers (usually client and server) to send and receive a stream of characters (String) to and from each other after specifying the IP addresses of the remote host. Advantage of using sockets is that there is no need of an "Interface", but the problem with this method is that the designer must take care of everything including synchronization of inner applications and also decoding the transferred data [12].

Windows Sockets or Winsock is an open interface for network programming under Microsoft Windows. Winsock provides a set of functions, data structures...etc. that required to access the network services of any protocol stacks. Winsock acts as a link between network applications and underlying protocol stacks [13][14].

5.2 P2P

Internet-based peer to peer (P2P) networks were appearing in the 1990s due to the development of (P2P) file sharing networks. It is an approach to computer networking where all computers share equivalent responsibility for processing to send and receive data and share the data between them. P2P is an alternative network model to that provided by traditional client-server architecture. P2P networks use a decentralized model in which each machine, referred to as a peer, functions as a client with its own layer of server functionality [15][16].

6 THE PROPOSED OUR APPROACH

In our proposed approach, TCP/IP is our network protocol; therefore we will explain the creation of server/client application and finally is our programming interface to have access to network functionality.

6.1 CREATE SERVER/ CLIENT APPLICATION

We create a server application of our approach from the following steps:

1. Create a new Standard EXE project.
2. Change the name of the default form to frmServer.
3. Change the caption of the form to "TCP Server."
4. Draw a Winsock control on the form and change its name to tcpServer.
5. Add two TextBox controls to the form. Name the first txtSendData, and the second txtOutput.

However, to complete the connection in our approach we must create a client application. Also the client application we will follow these steps:

1. Add a new form to the project, and name it frmClient.
2. Change the caption of the form to TCP Client.
3. Add a Winsock control to the form and name it tcpClient.
4. Add two TextBox controls to frmClient. Name the first txtSend, and the second txtOutput.
5. Draw a CommandButton control on the form and name it cmdConnect.
6. Change the caption of the CommandButton control to Connect.

A WinSocket control must be allowed to connect to a remote machine and exchange data using either the User Datagram Protocol (UDP) or the Transmission Control Protocol (TCP). Both protocols can be used to create client and server applications. Like the Timer control, the WinSocket control doesn't have a visible interface at run time. From Fig.3 we a simple client/server application can be creating from above steps for server/client. If we try the server/client together, we must run the specific form of our program, and click Connect. Then type text into the txtSendData TextBox on either form, and the same text will appear in the txtOutput TextBox on the other form.

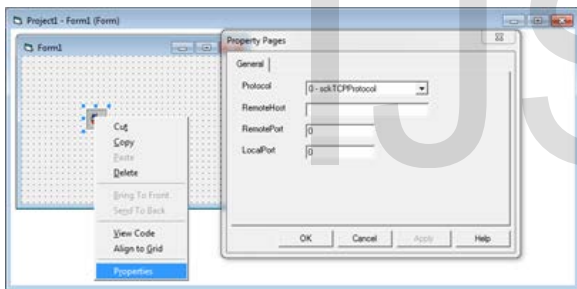


Fig. (4) The WinSocket form of a simple client/server application.

6.2 Chat Application

The main propose of our approach is to design a chat between two PCs or many depend on the application of this chat system. Whenever a client wants to initiate a private session, in the list of connected users, a person (he/she) double clicks the username he/she wants to chat with. First, we must open a local-private session window. Second, the server tells that he /she want to chat privately in order to open a remote private window. When these conditions are satisfied, private chatting can be practiced by just writing in the send text box and then hitting the enter button in your keyboard.

The main interface of our approach can be seen in fig.4, this form contains three optional selections such as chat, images, and database. If the Bose and his/her secretary need to make a chat, he must click on the chat in fig.4. If secretary need to insert an image in his/her file make click on image in main interface menu shown in

fig.4 and he/she get the result shown in fig.5, also if secretary need to make any updating or reviewing in their files, he/she can be used database which is shown in main menu in fig.4 and the results shown in figs.6, 7 and fig.8.

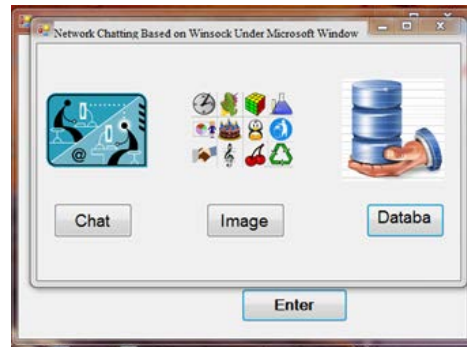


Fig. (5) The main menu of our proposed program interface

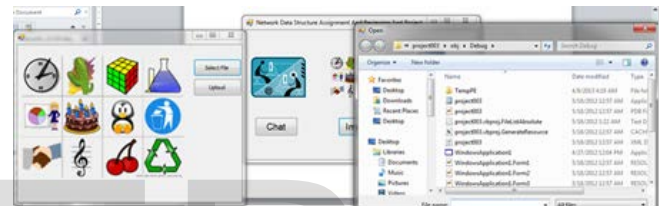


Fig. (6) The image and database forms



Fig.(7) The update databases file by adding new agent.



Fig.(8) Add new name in database file.

7 DISCUSSION AND CONCLUSIONS

When using the WinSock control, the first consideration is whether to use the TCP or the UDP protocol. The major difference between the two lies in their connection state:

1. The TCP protocol control is a connection-based protocol, and is analogous to a telephone – the user must establish a connection before proceeding.
2. The UDP protocol is a connectionless protocol, and the transaction between two computers is like passing a note: a message is sent from one computer to another, but there is no explicit connection between the two. Additionally, the maximum data size of individual sends is determined by the network.

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