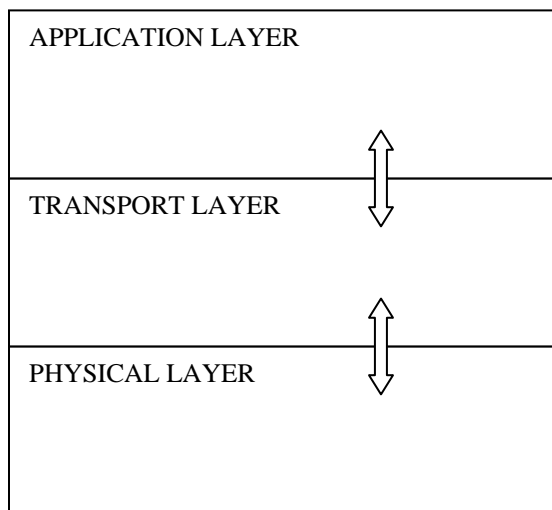


FILE TRANSFER over INFRARED SENSOR PROTOCOL

I propose a File Transfer over Infrared Sensor Protocol, where by a small z8 board acts as client, and a larger board acts as server. A short list of files will be transferred by the server to the client after a connection is secured; the client, through hyper terminal on a pc, will pick one of the files; after which the server will send the file and terminate the connection. The client, as it receives packets will display the contents of each packet, after the connection is terminated the client displays through hyper terminal, a list of all packets received with their sequence # as an error detection mechanism, A limited protocol stack is implemented including an application layer, transport layer, data link layer, and physical layer. The files sent by the server are not actual files, that is, there is no persistency. The files are actually paragraphs of text sent in response to specific messages received from the client.



APPLICATION LAYER

On the Client side the Application layer provides a user interface through a serial connection to a PC running Hyper terminal. The application layer will display the list of files available on the server, the file received, and the list of packets received allowing the user to see if a transmission error occurred. Also the button SW2 on the client (small z8), interfaces with the application layer, signaling a request to connect to a server.

On the Server, the Application layer simply provides the list of files to be transmitted to the client, and the file the client has chosen to the transport layer, and passes the chosen file to the transport layer once the file is chosen.

TRANSPORT LAYER

On the Client, The transport layer identifies messages as arriving from either server or user, and handles the messages correspondingly. In the state of actual file transfer, the transport layer removes the header from the packet payload, passes to the application layer the header to be displayed at the end of transmission, and passes the packet payload to the user for display.

On the Server, the transport layer divides the file into 200byte packets and attaches a header including a sequence number and the total number of packets to be transmitted. At the end of transmission a termination message is sent.

PHYSICAL LAYER

The client will communicate over IR sensor and Serial Port, although this is hidden behind the uart and will not affect protocol.

The server only communicates over IR.

A TYPICAL CYCLE OF FTIR

Server SW1 button is pressed prompting the server to poll its UART for connection requests. Client board SW2 button is pressed, a message is sent through the IR sensor requesting a connection every 5 seconds until a correct response is received from the server.

The Server, once receiving a connection response sends a list of its files back to the client, and polls its UART for the file selection. The client receives the list of files and sends that list through the serial port to hyper terminal running on a PC, and begins polling its UART for a response from the user.

The user presses the number on the keyboard corresponding to the file requested, the message is received by the client and passed along to the Server.

Upon receipt of the file selection the server divides the file into 200byte packets, and begins send 200 bytes of the file at a time with a header containing a sequence number and total packets to be sent allowing the client to detect error. At the end of transmission the server sends a termination message and restarts.

The client sends to hyper terminal the payload of the packets as they arrive and at the end sends a list of the packet sequence numbers, when a termination message is received it restarts.

