**EIE4108 Distributed Systems and Cloud Computing**

**Assignment 2**

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To achieve the objectives of assignment 2, both the server side and client side program should be modified.

For server side:

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We would have a sending socket for sending out audio frame, as well as a receiving socket for receiving acknowledgement bit from the client. As a result, the initialization of the socket and packet can be done with the above code.

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The server would undergo a simple while loop, as long as the client doesn’t send out a “0” acknowledgement bit, the server would read and send out the audio frame by frame, then wait for the client’s response of acknowledgement bit.

If a “0” acknowledgement bit is received, the server will close both the sending and receiving socket and thus ends the connection.

For client side:

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Similarly, the client would also need to have a receiving socket for receiving the audio frame and a sending socket for sending the acknowledgement bit.

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The client is designed to receive and play the first 60 frames of the audio, then send out a “0” acknowledgement bit to the server and close its sockets to end the connection. Since receive function is used, the client will wait for the server’s response, i.e. sending the audio frame, then the client would play the frame.

Situations Discussion:

If the order of running WaveClientUDP and WaveServerUDP is reversed.

If the WaveServerUDP is ran first, the first frame will be sent out immediately without a receiver. Not just that frame is lost, both the programs will be stucked since the server cannot receiving an acknowledgement bit to initiate the next sending, thus the client cannot never receiving data frame from the server.

If the 1-byte acknowledgment is not used, i.e., WaveServerUDP does not wait for the acknowledgment signal from the WaveClientUDP.

Data lost on client side can occur since the receive buffer will be overwrite immediately. Also, the server would not know when to end the connection.

There is a considerable delay in the transmission of the acknowledgement byte. You may simulate this situation by forcing WaveClientUDP to sleep for a short period for each frame.

The audio becomes laggy and the content of the audio would become unrecognizable.