Frame Design

Coded Messaging System

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In our system, we will implement a 32 byte header that will precede all audio and text messages sent from the sending terminal to the receiving terminal via the RS232 system. The 32 bytes of data will be read serially, 1 bit at a time. Our header is set up as follows;

struct Header {

long lSignature;

BYTE bReceiverAddr;

BYTE bVersion;

long lDataLength;

BYTE bSenderAddr;

char bTBD[8];

long lPattern;

long long llEncryptionInfo;

BYTE bEVersion;

};

**long lSignature:** lSignature is a unique bit pattern that begins the header. It is comprised of 4 bytes. We have designed the software to read 32 bytes in when the RS232 port detects data incoming. The 32 bytes are then stored and the first 4 bytes of the header is lSignature. The signature is then verified before any other operations are done. The string we have chosen as our signature is the one provided, 0xDEADBEEF.

**BYTE bReceiverAddr:** bReceiverAddr is the address of the station that the sender designated as the recipient for the message. If the address is 0xff, it means the message is a broadcast message, which means all stations receive the message. Only one byte is used since the expected number of addresses is below 255.

**BYTE bVersion:** bVersion specifies which type of compression algorithm was used to compress the incoming data. 0x00 implies that no compression was used. Only one byte is utilised as the number of different algorithms is not expected to exceed 255.

**long lDataLength:** lDataLength is the size of the incoming data, in bytes. A long value, 4 bytes, is used, because of the possible size of audio files. A 4 byte unsigned value can reach a value of nearly 4.3 million. This allows for the potential transmission of 4MB data or audio files. This value could be expanded later on, if required. (E.g. audio files could become very large if the sample rate is increased.)

**BYTE bSenderAddr:** bSenderAddr is the address of the station that sent the message. This will be utilised later on when the phonebook of sending stations is created. Only one byte is used since the expected number of addresses is below 255.

**long lPattern:** lPattern is a unique bit pattern that specifies the end of the header. The bit pattern chosen is 0xAA55AA55.

**Char bTBD[8]:** bTBD is a set of bytes that as of now does not have a designated purpose.

**long long llEncyrptionInfo:** This is an 8 byte string that will represent our encryption key or the 8 bytes that are needed for encryption to function

**BYTE bEVersion:** bEVersion will contain information as to how the data sent was encrypted.