DESIGN DOCUMENT OF LAB-2(CS378)

Sender Side:

1) Add preamble = ‘10101010’

2)Let Encoded_bits be Encoded message-bits given using Reed Solomon encoding , where k = len(message in symbols), 1 symbol = 8bits, i padded the message bits to multiple of 8 bits by adding 0s at start of message bits

3)I added 4 parity symbols so that i can detect atmost 2 bit errors(it is done in encoding part) (so n = k +4)

4)I am saying Temp = preamble + Encoded_bits

5)Now i added errors to Temp according to given logic

6)Now I am using Transmit_msg = preamble + error_added_temp + message_bit_length(is atmost 20bits so in 5 bits)

7)Now i am converting above Transmit_msg to audio signal using PyAudio and i used freq_0 = 440Hz, freq_1 = 880Hz

8)I am adding High_freq of 1500Hz at end to above audio signal

Receiver Side:

1)I am starting recording when i first recognize frequency in rnage of (340, 540) as 0 is 1st bit of preamble and ending recording when it recognize freq_range of (1400,1600)

2)Now i am converting above audio data to bits like bit is 0 when frequency range is (340,540)Hz and bit is 1 when frequency range is (780,980)Hz and all other unexpected frequencies(other than end range) i am saying bit as ‘?’ [say this bits as transmit_msg)

3)I am cleaning above bits by removing ‘?’ bits if any and say this as ‘transmitted_msg’

4)Now preamble = transmitted_msg[:8]

5)Now message_bit_length = transmitted_msg[-5:]

6)Encoded_bits = transmitted_msg[8 : -5]

7)Now i am decoding using Reed Solomon decoding to get errorless input_bit_string given