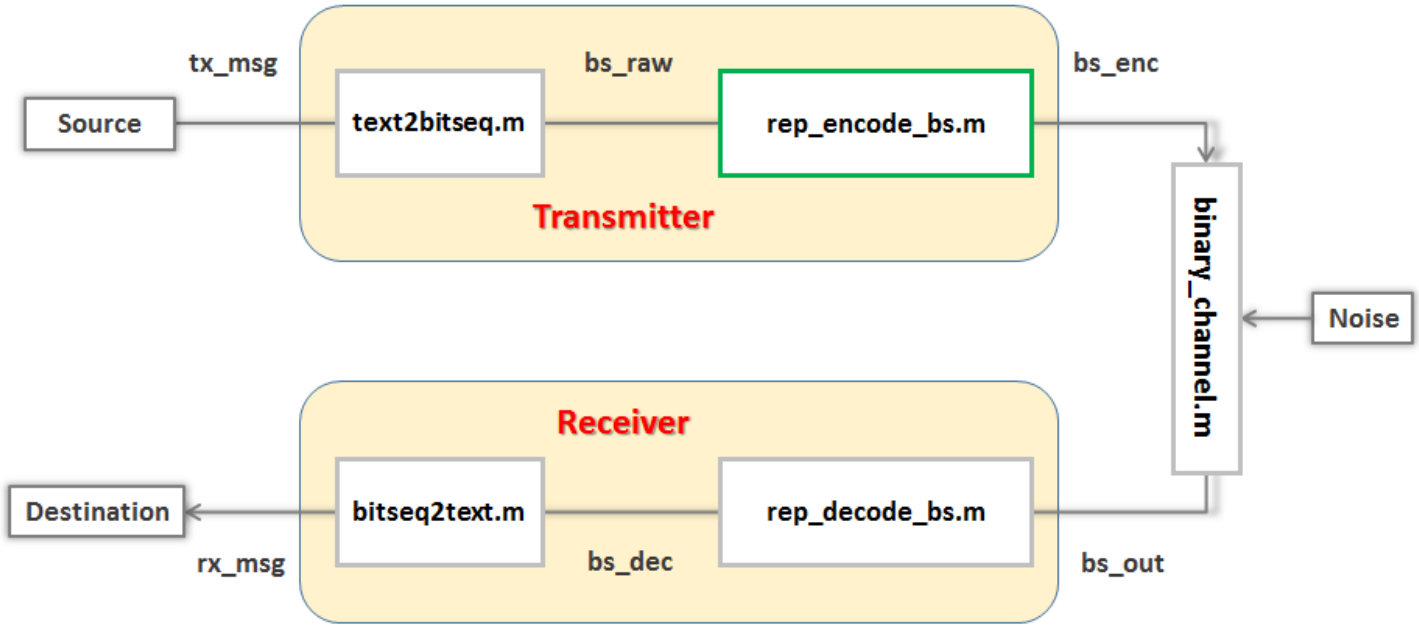
LAB 9 TASK 1 - (3,1,3) REPETITION ENCODER (1 point possible)

In this task, you will write code to build the repetition code encoder, rep_encode_bs.m, which is highlighted in green in the following system diagram.




```
tx_msg = tx_msg_gen();                          % pick a random text message
display(['The encoded message: ' tx_msg]);      % display the text message
bs_raw = text2bitseq(tx_msg);                   % change text message to bit sequence

% Modify the code below to repeat each bit three times
bs_enc = bs_raw;

% Do not modify the code below
bs_out = binary_channel1(bs_enc); % simulate transmission with noise
bs_dec = rep_decode_bs(bs_out);   % decode bitstream with error correction

rx_msg = bitseq2text(bs_dec);    % Recover the text message from bit sequence
display(['The decoded message: ' rx_msg]); % display the decoded message


```

Unanswered

Run Code

Check Save *You have used 0 of 10 submissions*

INSTRUCTIONS

Help

The code in the above window simulates the encoding and decoding processes using the (3,1,3) repetition code. Let's first see how the code works. The first two code lines generate a random text message with random length and display it. The corresponding bit sequence **bs_raw** is then generated. Your job is to write the encoder that will encode the bit sequence by using the (3,1,3) repetition code. Your encoded message will then be transmitted through a binary channel and decoded by the function **rep_decode_bs**, which returns the decoded bit stream **bs_dec**. The original text message will then be recovered from the decoded bit sequence. If everything works well, the recovered message should be the same as the original text message.

Step 1: Run the code as presented

After you click on the **Run Code** button to run the available MATLAB code, the original and decoded text messages will be displayed below the code window. However, the decoded message is not correct because the encoder is not correctly built.

Step 2: Modify the code to encode the bit sequence using the (3, 1 ,3) block code

To complete this task, you should modify the code under the comments starting with

```
% Modify the code below to
```

Your code should take the bit sequence **bs_raw** and encode it to the coded bit sequence **bs_enc** by using the (3,1,3) repetition code.

Step 3: Submit your work

Once you have completed your work, click on the **Check** button to submit your answer.

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