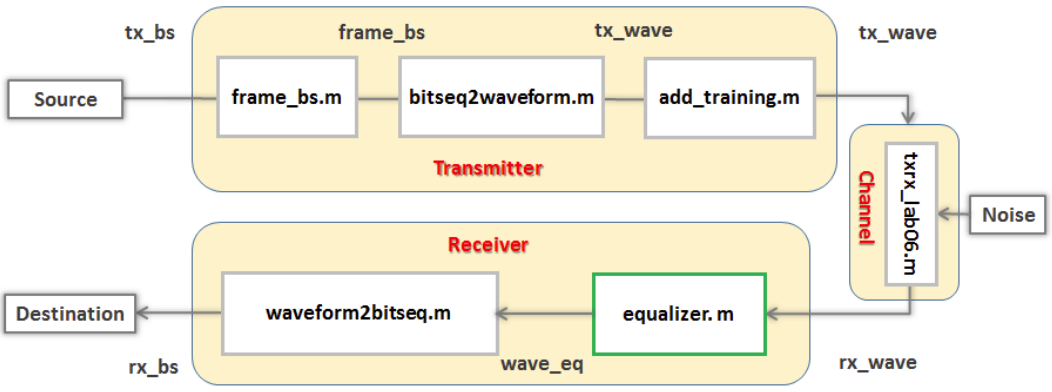
## LAB 6 TASK 4 - EVALUATION OF EQUALIZER (1/1 point)

In this task, you will evaluate the performance of the equalizer by computing the BER of the communication system with and without equalization for different bit times (SPB).



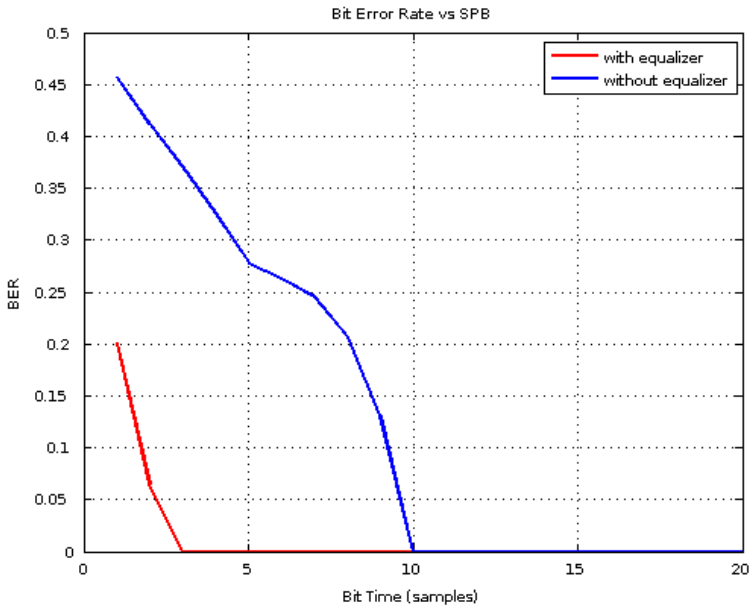

```
tx_bs=rand(1,1280)>0.5;     % generate a random bit sequence

SPBlist = 1:20;             % list of bit times to test
num_SPB = length(SPBlist);  % number of bit times to test
BER = zeros(1,num_SPB);     % initialize bit error rate array
BER_eq = zeros(1,num_SPB);     % initialize bit error rate array

for i = 1:num_SPB,
    SPB = SPBlist(i);
    tx_wave = format_bitseq(tx_bs,SPB);    % create waveform
    rx_wave = txrx_lab06(tx_wave);         % simulate channel
    start_ind = find_start_lab06(rx_wave); % find start bit

    % get bits from unequalized waveform
    threshold = get_threshold(rx_wave);
```

Correct

```
% get bits from equalized waveform
eq_wave = equalizer(rx_wave,0.92);      % equalize the received waveform
threshold = get_threshold(eq_wave);
rx_bs_eq = get_bits(eq_wave,SPB,threshold,start_ind,1280,2*SPB-1);
BER_eq(i) = compute_BER(tx_bs,rx_bs_eq);  % compute the BER
```

Help

Figure 1




Check Reset Save Hide Answer *You have used 1 of 10 submissions*

## INSTRUCTIONS

The code in the above window is similar to that of Lab 4, where we evaluated the performance of a communication system by computing the bit error rate (BER). If you run the MATLAB code as presented, you will see plot of the BER without equalization as a function of the bit time in samples, showing that the BER decreases as the bit time (SPB) increases. Your job is to compute the BER of the communication system with equalization and then plot it in the same figure.

Step 1: Modify the code to compute the bit error rate for the equalized waveform and plot results

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

```
% Replace the line below so that
```

Your code should compute the BER with equalization for each bit time in **SPBList** and store it in the corresponding element of the vector **BER_eq**.

Step 2: Submit your work

Once you have completed your work, click on the **Check** button to submit your answer. Based on the graphs, how does the BER change after applying the equalizer?

Help

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