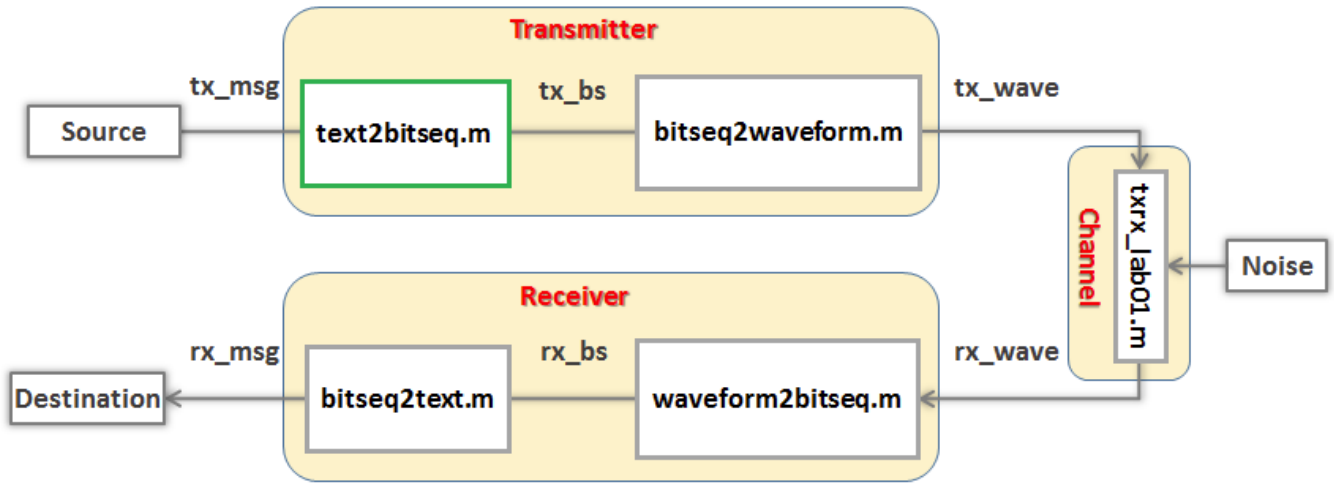
LAB 1 TASK 2 - FROM TEXT TO BIT SEQUENCE (1 point possible)

In this task, you will study the implementation of the block highlighted in green, which encodes a text message as a bit sequence.



The code window below contains a MATLAB script similar to that of Task 1. The main difference is that the line (function) `tx_bs = text2bitseq(tx_msg)` has been replaced by code that is intended to replicate this function. However, there is a mistake in this code. Your task is to find and correct this mistake.

```
tx_msg = 'Hello';  % message to transmit
SPB = 10;        % bit time in samples per bit

% transmitter %
%------tx_bs=text2bitseq(tx_msg)-------
tx_bs = [];
for c = 1:length(tx_msg)
    character = tx_msg(c);        % get the next character from the msg
    byte = char2byte(character);  % find the 8-bit ASCII
    tx_bs = [byte];
end
%------tx_bs=text2bitseq(tx_msg)-------
```

```
13 tx_wave = bitseq2waveform(tx_bs,SPB);  % change bit sequence to a waveform
14
```

Unanswered

Figure 1

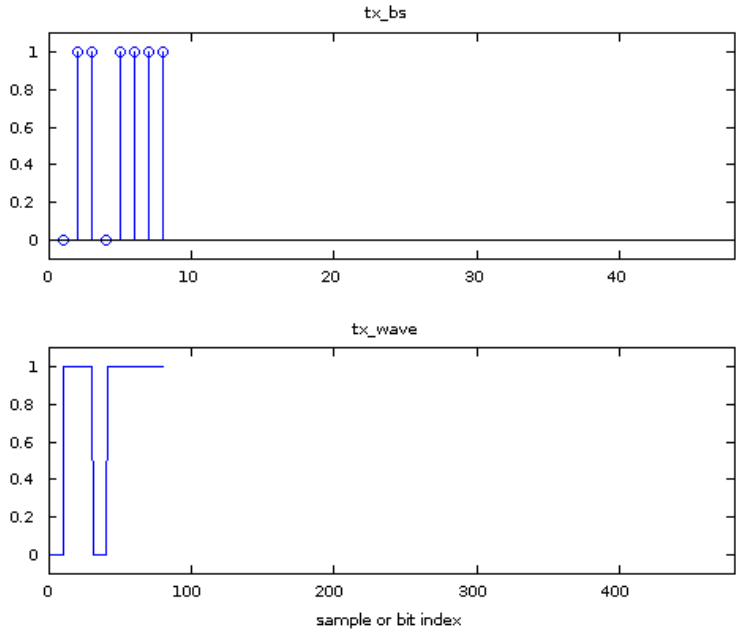
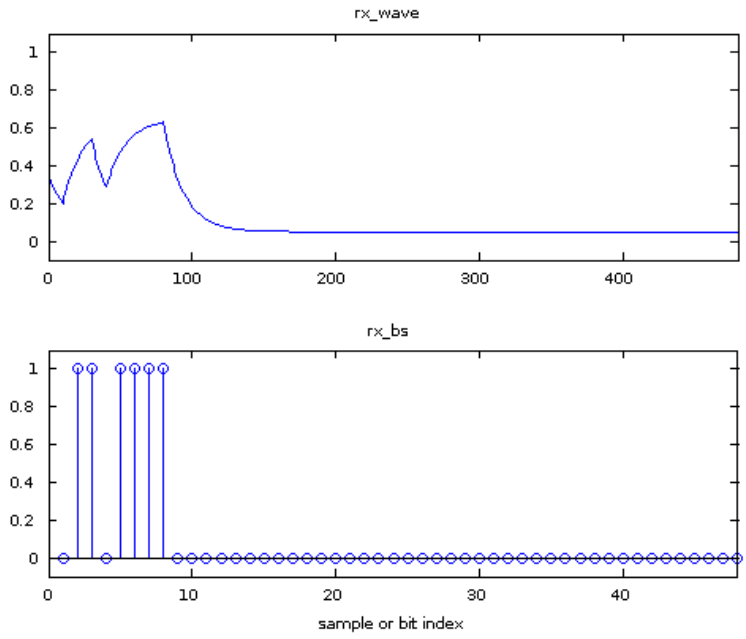


Figure 2



The sent message was: Hello

The received message is: o

Run Code

Check Save *You have used 0 of 10 submissions*

INSTRUCTIONS

Help

Step 1: Run the code by clicking on the **Run Code** button.

Similar to Task 1, you will see the output of the MATLAB code: plots of four signals at different points of the system, the transmitted text message, and the received message. Unfortunately, the received message is not the same as the transmitted message, due to an error in the code.

Step 2: Correct the code implementing **text2bitseq.m**

In this step, you will correct the code implementing **text2bitseq.m**. Now, let's look at the code to see how it converts a text string to a bit sequence.

The first line of code defines an empty vector, which will eventually hold the bit sequence. The remaining code uses a "For Loop" to convert each character to its corresponding bit sequence and put them together to form the bit sequence. To learn more about how to build a For Loop in MATLAB, please review the unit For Loops in MATLAB (/courses/HKUSTx/ELEC1200.1x/3T2014/jump_to_id/88d27c5ab3c14525b68fd5b0294b8995). If you want to know how to use colon to create vectors, please review the Colon Operator (/courses/HKUSTx/ELEC1200.1x/3T2014/jump_to_id/2b70b7c042304172b2080c4e54415599).

The function `length(tx_msg)` is a standard MATLAB built-in function which returns the length of the vector `tx_msg`.

The next line extracts one character from the text message. To learn more about how to access specific elements of a vector, please review the video Accessing Elements of a Vector (/courses/HKUSTx/ELEC1200.1x/3T2014/jump_to_id/8c28e5fa7be547b7b6ebafbf540d50d0).

The function **`char2byte(character)`** is written for this section. It converts a character into an 8-bit (1-byte) ASCII representation, which is represented by a 1 by 8 binary vector in MATLAB.

The final bit sequence should concatenate the 1 by 8 vectors for each character into one long vector. To learn more about how to create row and column vectors, please review the unit Creating Vectors via Concatenation (/courses/HKUSTx/ELEC1200.1x/3T2014/jump_to_id/3e7206adf1954b29894545c02eab01c8).

Now, it’s your turn to identify and modify the incorrect part.

Step 3: Submit your work

After you have completed the correction, click on the **Check** button to submit your answer.

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