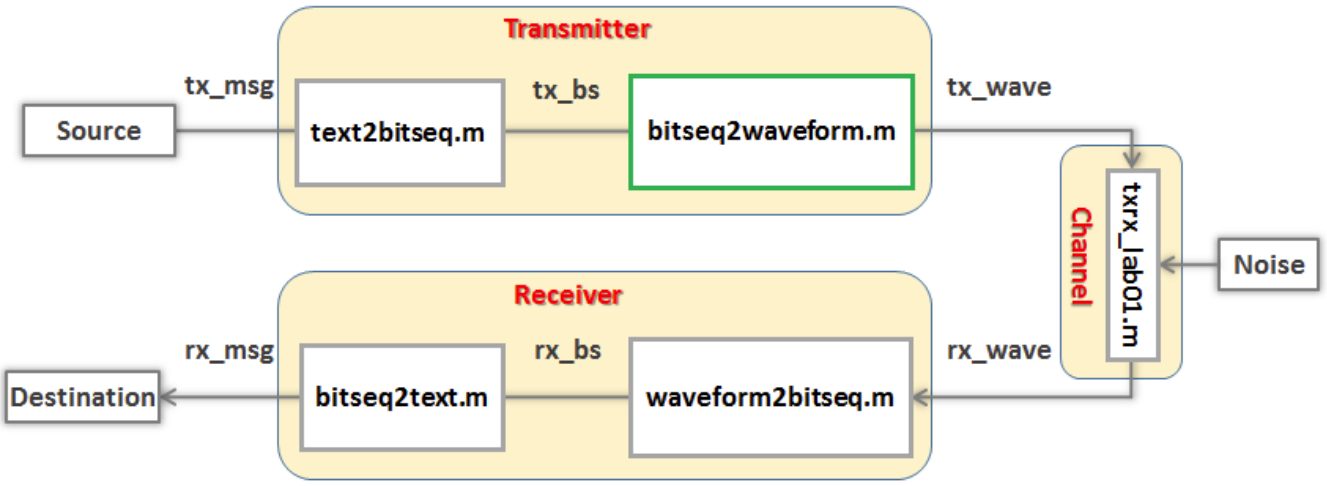
LAB 1 TASK 3 - FROM BIT SEQUENCE TO WAVEFORM (1 point possible)

In this task, you will implement the "Bits to Waveform" block highlighted in green, which converts a bit sequence to a waveform.



The code window below contains a MATLAB script similar to that of Task 1. The only difference is that the line `tx_wave=bitseq2waveform(tx_bs,SPB)` has been replaced by code that is supposed to implement its function. Your task here is to find and correct the mistake in the code.

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

% transmitter %
tx_bs = text2bitseq(tx_msg);  % change text message to bit sequence
%------tx_wave=bitseq2waveform(tx_bs,SPB)-------
tx_wave = [];  % initialize the waveform to be empty
for n = 1:length(tx_bs)
    if tx_bs(n)
        tx_wave = [tx_wave ones(1,SPB)];
    else
        tx_wave = [tx_wave zeros(1,SPB)];
```

```
13     end
14 end
```

Incorrect

Undefined function 'text2bitseq' for input arguments of type 'char'.

Help

Check Reset Save *You have used 3 of 10 submissions*

INSTRUCTIONS

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

You will see the correct output message of the MATLAB codes: `tx_msg` and `rx_msg`. However, the generated waveform will be different with what you have seen in the previous tasks, using the same input. This is because part of the code is incorrect.

Step 2: Write the code implementing **bitseq2waveform.m**

This function should create a waveform holding each bit for SPB samples.

There are many ways to write this code. One way is to cycle through the bit sequence using a **`for`** loop and extract each bit, then concatenate a vector of SPB ones or SPB zeros to `tx_bs` depending upon the value of that bit. For checking the value of `tx_bs`, you may find an **`if else`** statement useful. For more information check the units on If-Else Statements (/courses/HKUSTx/ELEC1200.1x/3T2014/jump_to_id/9cbd68df90a84b568fc22a1bb75a48cb) and Logical Operators (/courses/HKUSTx/ELEC1200.1x/3T2014/jump_to_id/8db5112b9c424c81b6e6c5b9487a5b08). For creating vectors with a given number of ones or zeros, you may use the standard MATLAB functions **`ones(m,n)`** and **`zeros(m,n)`**. The function **`ones(m,n)`** is a standard MATLAB built-in function to return an `m` by `n` matrix of ones. If you want to know how to create matrices and vectors with built-in MATLAB functions, please review the video Array Creation Functions (/courses/HKUSTx/ELEC1200.1x/3T2014/jump_to_id/6737ff9c7e8241d5b34e9dd42105dbab). To learn more about how to perform arithmetic calculation with vectors, please review the video Vector Arithmetic (/courses/HKUSTx/ELEC1200.1x/3T2014/jump_to_id/ef77019fd25b471fb0a3009dd82075cd).

Step 3: Submit your work

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