

[Courseware \(/courses/HKUSTx/ELEC1200.1x/3T2014/courseware\)](/courses/HKUSTx/ELEC1200.1x/3T2014/courseware)

[Course Info \(/courses/HKUSTx/ELEC1200.1x/3T2014/info\)](/courses/HKUSTx/ELEC1200.1x/3T2014/info)

[Course Outline \(/courses/HKUSTx/ELEC1200.1x/3T2014/05fb01b36df14eb99ab54545dabc47f6/\)](/courses/HKUSTx/ELEC1200.1x/3T2014/05fb01b36df14eb99ab54545dabc47f6/)

[Grading Scheme \(/courses/HKUSTx/ELEC1200.1x/3T2014/6e2be4dac3e44b4d9f812e7b5a5d5a29/\)](/courses/HKUSTx/ELEC1200.1x/3T2014/6e2be4dac3e44b4d9f812e7b5a5d5a29/)

[Instructors \(/courses/HKUSTx/ELEC1200.1x/3T2014/674fdd6887fe4f4bb73b984df4a5675b/\)](/courses/HKUSTx/ELEC1200.1x/3T2014/674fdd6887fe4f4bb73b984df4a5675b/)

[Resources \(/courses/HKUSTx/ELEC1200.1x/3T2014/a6a8267fef364cccbccd0128d091f11c/\)](/courses/HKUSTx/ELEC1200.1x/3T2014/a6a8267fef364cccbccd0128d091f11c/)

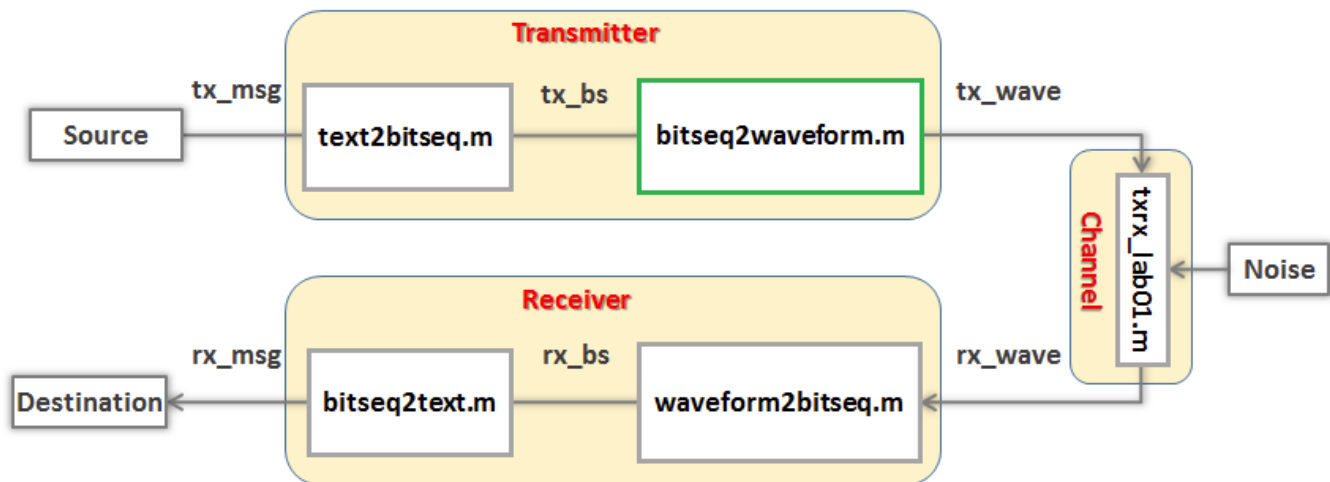
[Discussion \(/courses/HKUSTx/ELEC1200.1x/3T2014/discussion/forum\)](/courses/HKUSTx/ELEC1200.1x/3T2014/discussion/forum)

[Progress \(/courses/HKUSTx/ELEC1200.1x/3T2014/progress\)](/courses/HKUSTx/ELEC1200.1x/3T2014/progress)

Help

## 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 The only difference is that the line `tx_wave=bitseq2waveform(tx_bs,SPB)` has been replaced by code that is supposed to implement its function.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.

```

1 tx_msg = 'Hello'; % message to transmit
2 SPB = 10; % bit time in samples per bit
3
4 % transmitter %
5 tx_bs = text2bitseq(tx_msg); % change text message to bit sequence
6 %-----tx_wave=bitseq2waveform(tx_bs,SPB)-----
7 tx_wave = []; % initialize the waveform to be empty
8 for n = 1:length(tx_bs)
9     if tx_bs(n)
10         tx_wave = [tx_wave ones(1,SPB)];
11     else
12         tx_wave = [tx_wave zeros(1,SPB)];
  
```

1 of 3

09/29/2014 01:46 PM

```
13     end
14 end
```

Incorrect

Help

```
%-----tx_wave=bitseq2waveform(tx_bs,SPB)-----
tx_wave = [];
for n = 1:length(tx_bs)
    bit = tx_bs(n);
    if bit == 1,
        tx_wave = [tx_wave ones(1,SPB)];
    else
        tx_wave = [tx_wave zeros(1,SPB)];
    end
end
%-----tx_wave=bitseq2waveform(tx_bs,SPB)-----
```

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

[Hide Answer](#)

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



---

**Help**

About (<https://www.edx.org/about-us>) Jobs (<https://www.edx.org/jobs>)  
Press (<https://www.edx.org/press>) FAQ (<https://www.edx.org/student-faq>)  
Contact (<https://www.edx.org/contact>)



EdX is a non-profit created by founding partners Harvard and MIT whose mission is to bring the best of higher education to students of all ages anywhere in the world, wherever there is Internet access. EdX's free online MOOCs are interactive and subjects include computer science, public health, and artificial intelligence.



(<http://www.meetup.com/YourMeetup>)



(<http://www.facebook.com/EdxOnline>)



(<https://twitter.com/YourPlatformTwitterAccount>)



(<https://plus.google.com/YourGooglePlusAccount/>)



(<http://youtube.com/user/edxonline>)

© 2014 edX, some rights reserved.

Terms of Service and Honor Code -  
Privacy Policy (<https://www.edx.org/edx-privacy-policy>)