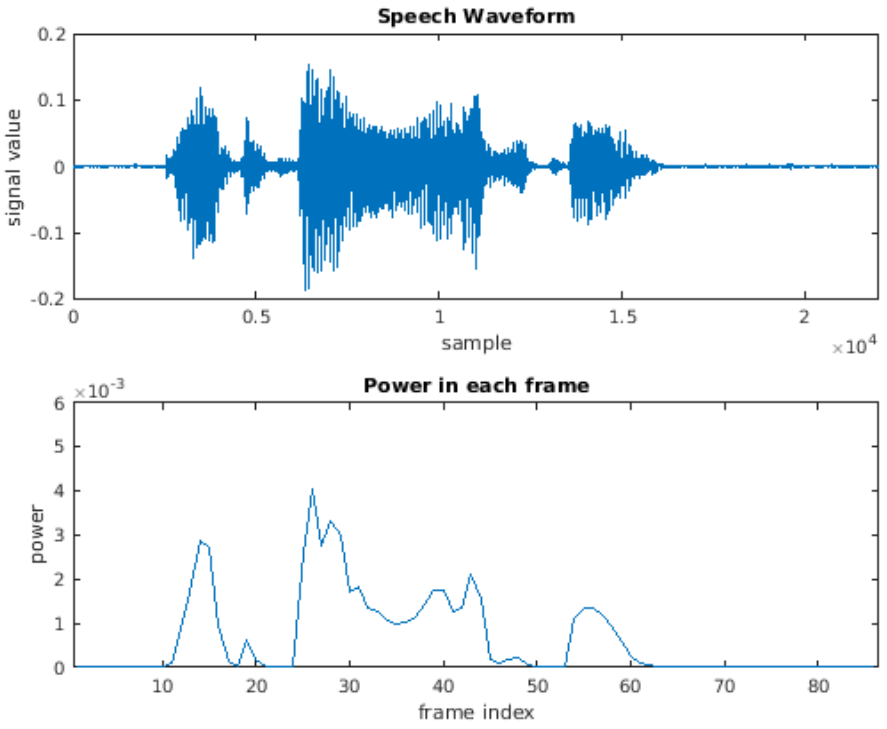
LAB 2 - TASK 2 (1/1 point)

In this lab, you will learn how to split a waveform into non-overlapping frames, compute the power in each frame. We will extract the frame with the highest power and plot it.

```
37 % generate plots
38 figure(1);
39 plot_speech_power(x,frame_power,frame_length);
40
41 % plot the frame fnum
42 figure(2);
43 plot(0:(frame_length-1),frame);
44 ax = axis;
45 axis([0 frame_length-1 ax(3:4)]);
46 grid
47 title(['Frame ' num2str(fnum) ' waveform']);
48
49 % put Figure 1 on top on edX
50 figure(1);
51
```

Correct

Figure 1



tutorials

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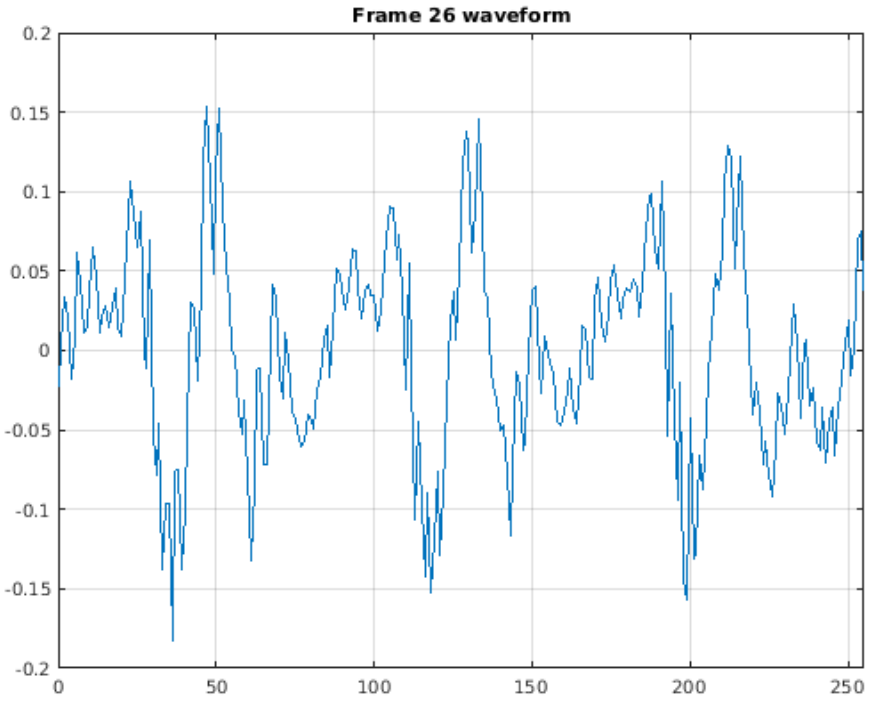
Figure 2



You have used 5 of 10 submissions

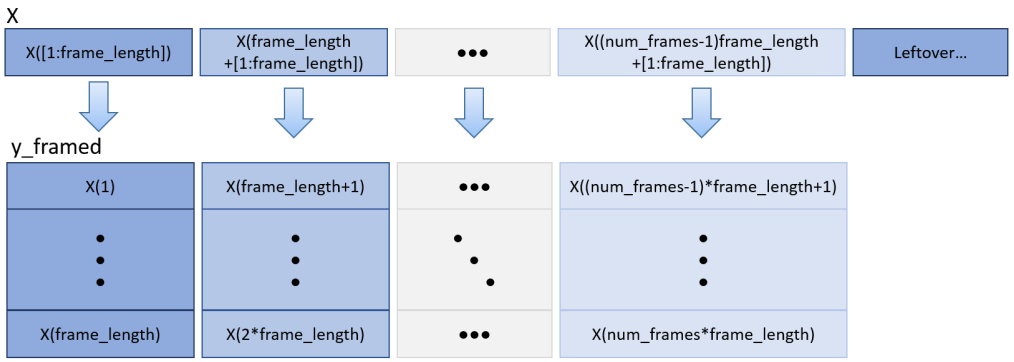
INSTRUCTIONS

The initial MATLAB code in the above window contains a faulty implementation of the function **get_frame_power** that you used in Task 1. In this task, you will need to correct this function.

If you click the **Run Code** button, the initial code will generate 2 figures. The first one plots the entire speech waveform **x** (subplot 1) and the signal power in each frame (subplot 2). The second figure is supposed to show the waveform of the frame with the highest power. Due to some mistakes in the code, the power is not computed correctly (see Fig. 1, subplot 2). This also causes the frame with the highest power to be selected erroneously. Your job is to correct the code. For that purpose, let's first look at how initial code works.

The first part of the initial code is the same as that in Task 1, where a speech signal is loaded and copied into the variable **x** and the frame length was set to 256 samples (variable **frame_length**). Then, the code calculates how many frames are contained in the given signal (variable **num_frames**). At this point, the code should split the input signal into

num_frames segments, each composed of **frame_length** samples and store them inside the variable **y_framed,** which is a matrix where each column contains one frame. Thus, each column has length **frame_length** and there are **num_frames** columns. See the figure below.



Then, the code should compute the power of each frame. Please be reminded that the power of a signal is the sum of squares of its samples divided by the signal length. Your task is to revise the code between the lines

% % % % Revise the following code % % % %

and

% % % % Do not change the code below % % % %

to fill correctly the varibles **y_framed** and **frame_power**. Please revise the code without using the function **get_frame_power** and without changing the varibles **x**, **Fs**and **frame_length**. The remainder of the code determines the index of the frame with the highest power using the function **max,** extracts the selected frame from **y_framed** and generates the plots.