Demo 4 Exercises
Matlab GUI (Graphical User Interface)

DSP Lab (ECE 4163 / ECE 6183)

2019

This lab assignment corresponds to the demo programs:

```
filter_cat.m
filter_gui_example_ver1.m
filter_gui_example_ver2.m
```

Exercises

1. Modify the Matlab demo program `filter_cat.m` to use different filters.

   (a) A higher-order Butterworth band-pass filter.

   (b) A Chebyshev Type II band-pass filter (use `cheby2` instead of `butter` in Matlab to design the filter coefficients).

   (c) An elliptic band-pass filter (use `ellip` in Matlab to design the filter coefficients).

   (d) A Butterworth band-stop filter (instead of a band-pass filter).

   Produce plots showing the filters and the input and output signals, as in the demo file. Comment on your observations.

2. Matlab Graphical User Interface (GUI). Write a Matlab GUI that allows the user to control the cut-off frequency of a low-pass filter. The GUI should have a slider for the cut-off frequency. The GUI should display the SUBMIT

   - impulse response
   - frequency response (magnitude)

   These plots should update as the user adjusts the slider.