DSP Assignment 2

Moving Average Filter

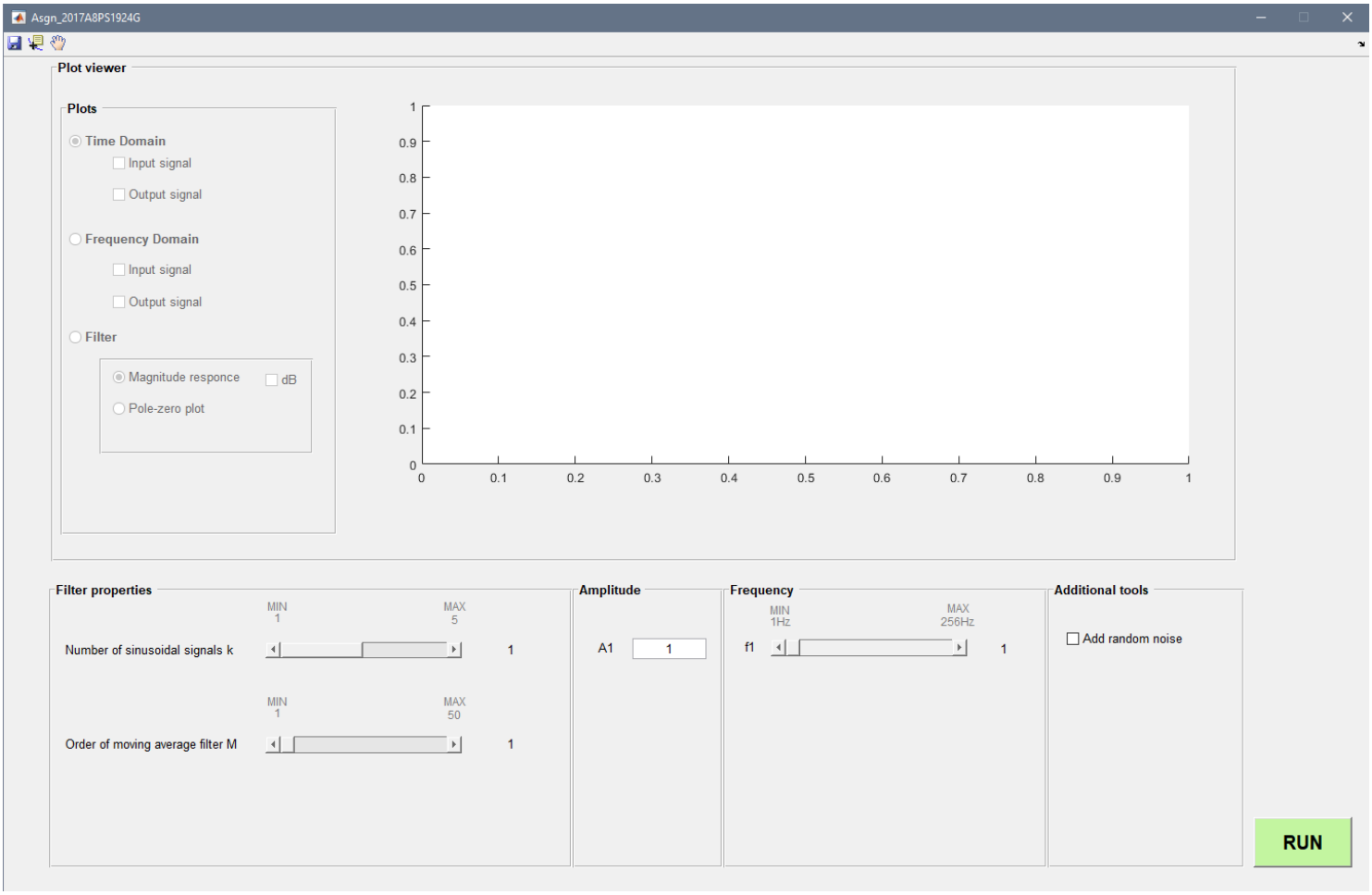
Santosh Srivatsan

2017A8PS1924G

Table of Contents

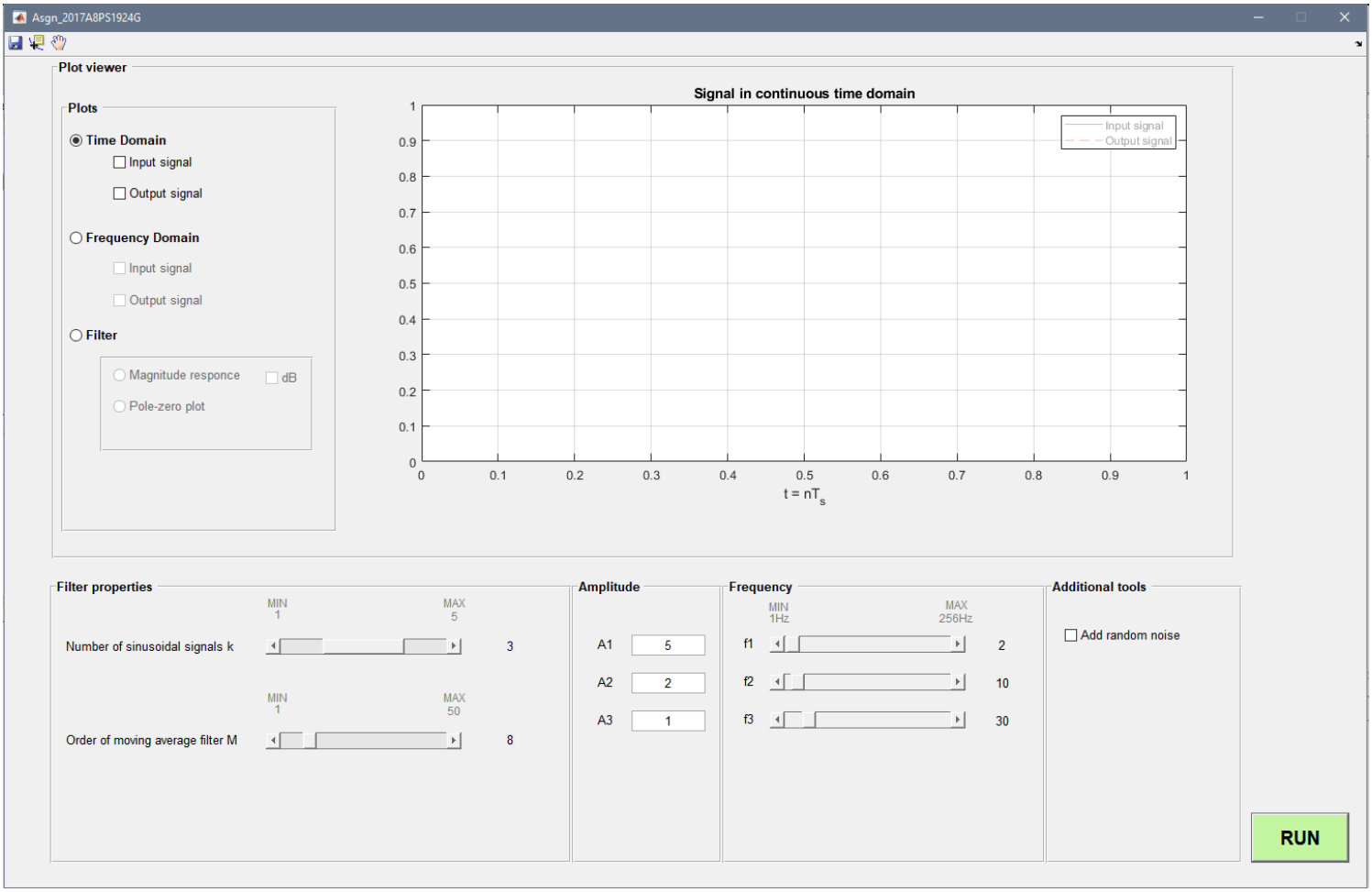
DSP Assignment 2 1
Moving Average Filter 1
Santosh Srivatsan 1
2017A8PS1924G 1
GUI Overview 1
Choosing Input Parameters 2
Selecting Output Plots 2
Screenshots of Working 3

GUI Overview



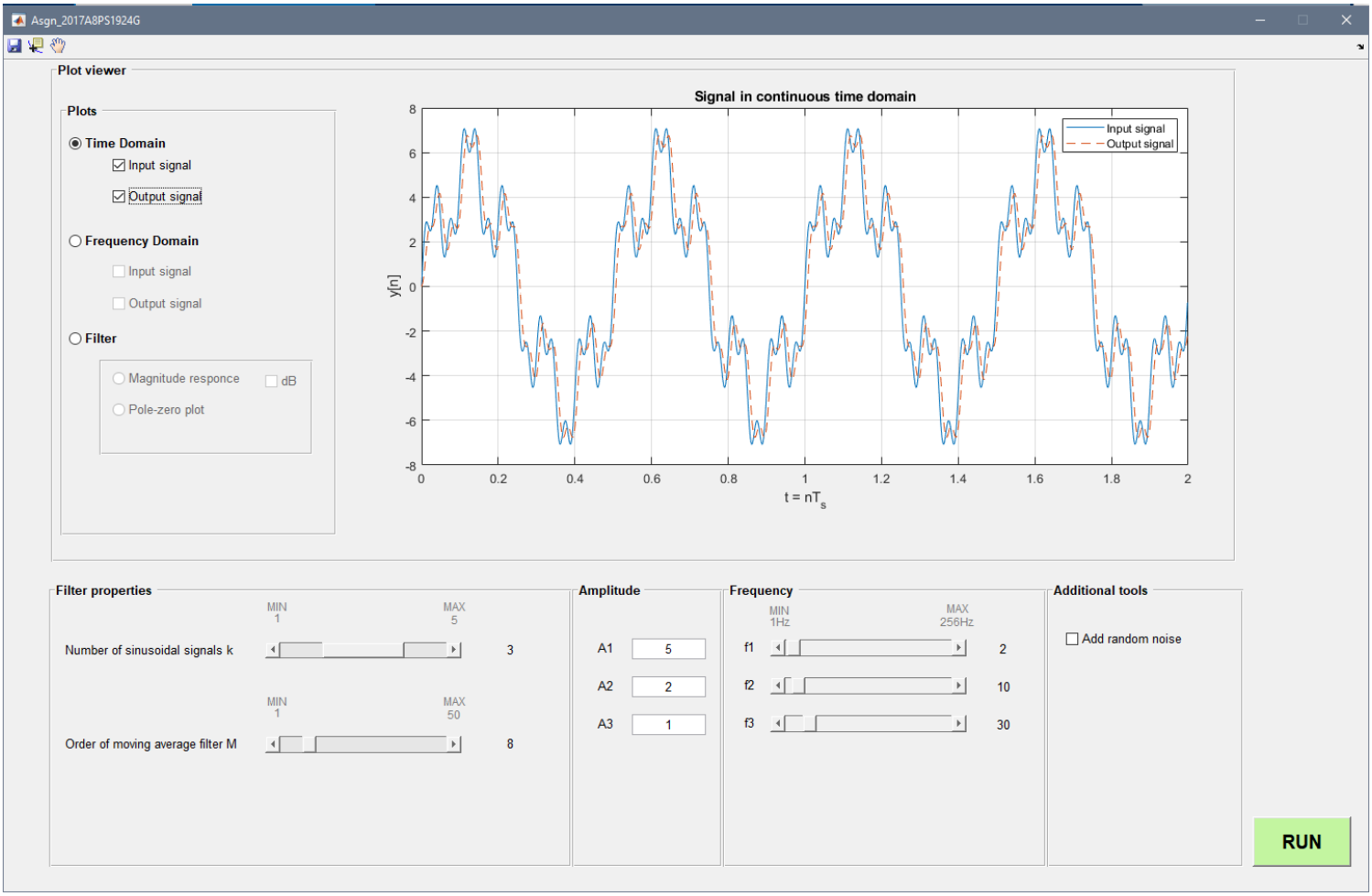
Choosing Input Parameters

1. Max value of k = 5
2. Max value of M = 50
3. Default value of k = 1
4. Default value of M = 1
5. Default value of Amplitude = 1
6. Default value of Frequency = 1
7. The GUI will not throw an error if the user clicks on RUN without entering any values since every user input parameter has a default.
8. The number of fields for entering values of Amplitude and frequency varies based on the value of k.
9. User also has the option to add random noise to the input signal.

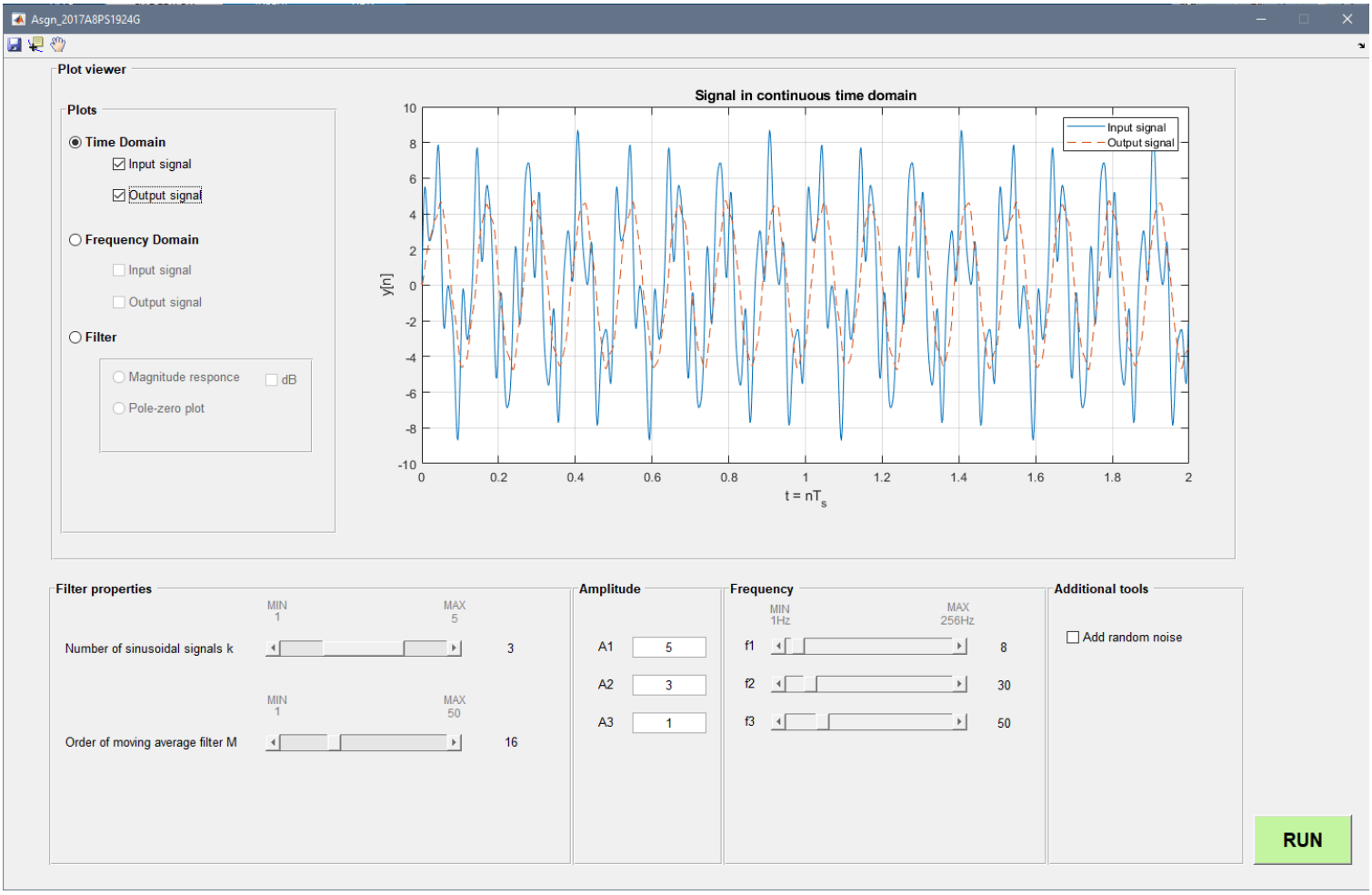


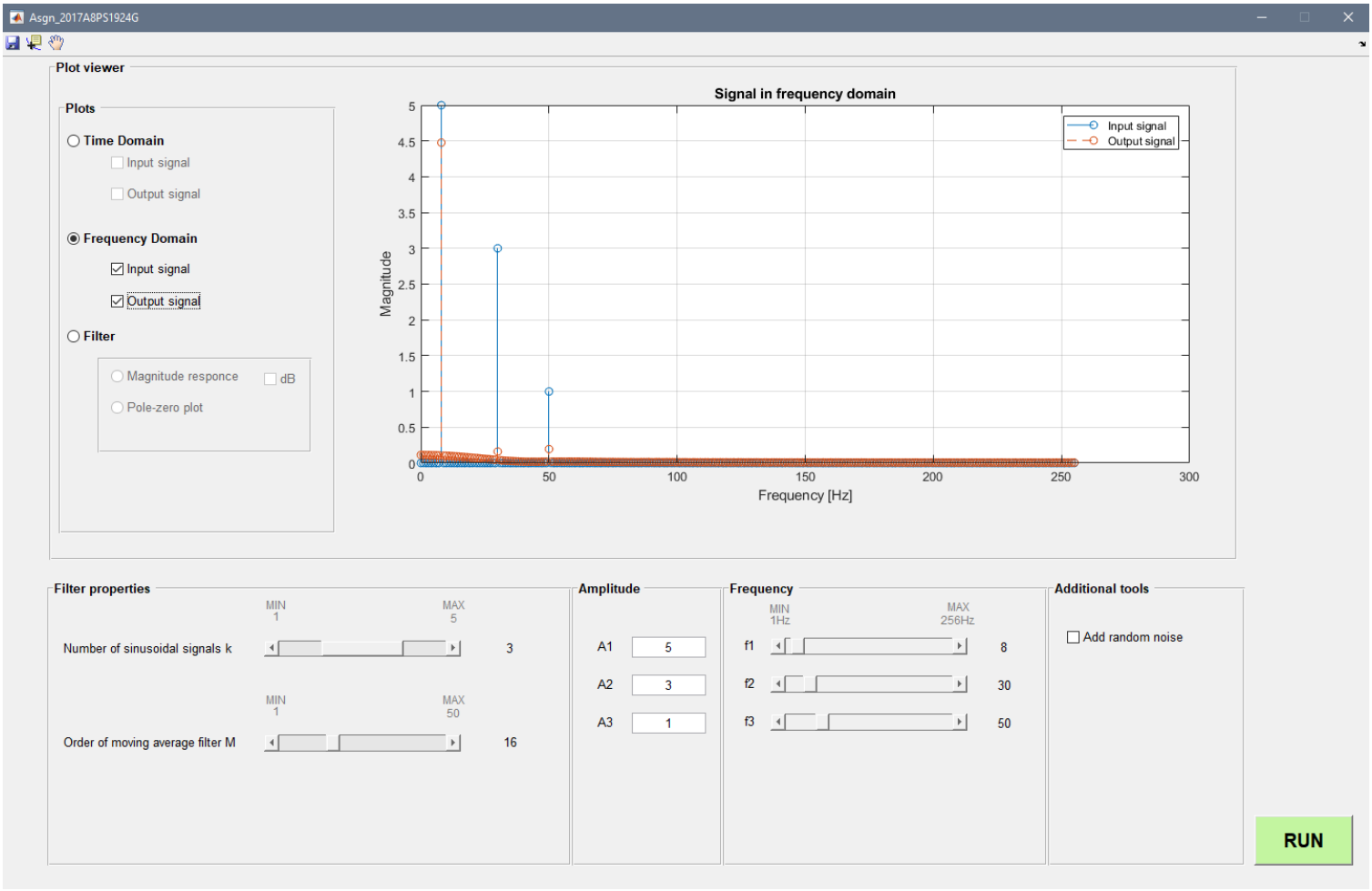
Selecting Output Plots

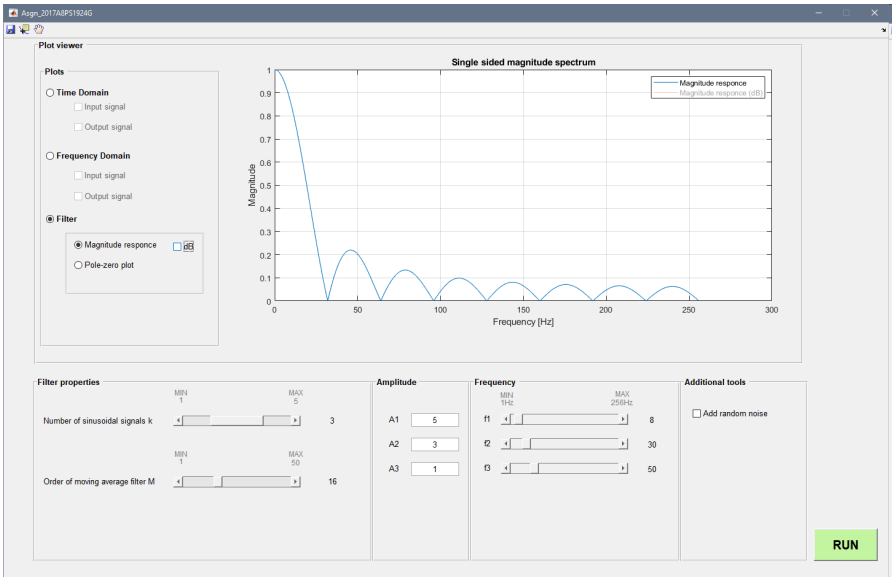
1. Plots can be selected only after clicking the RUN button
2. Input and output signals can be plotted on the same window for comparison.
3. Plot can be saved as a jpeg image using the save functionality.

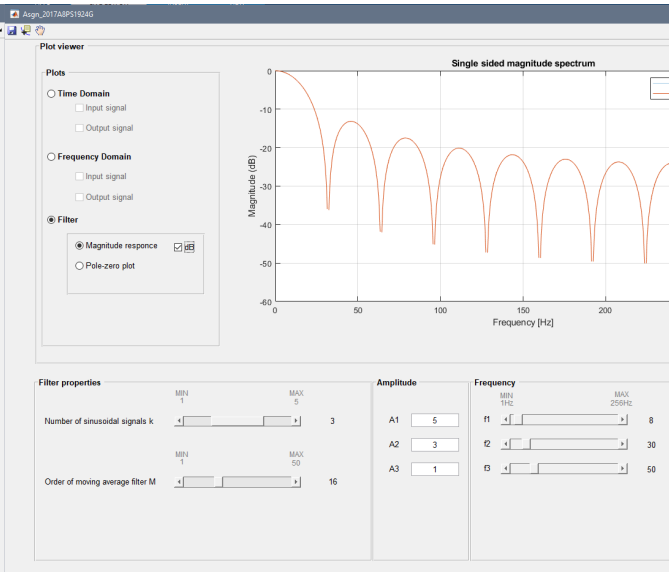


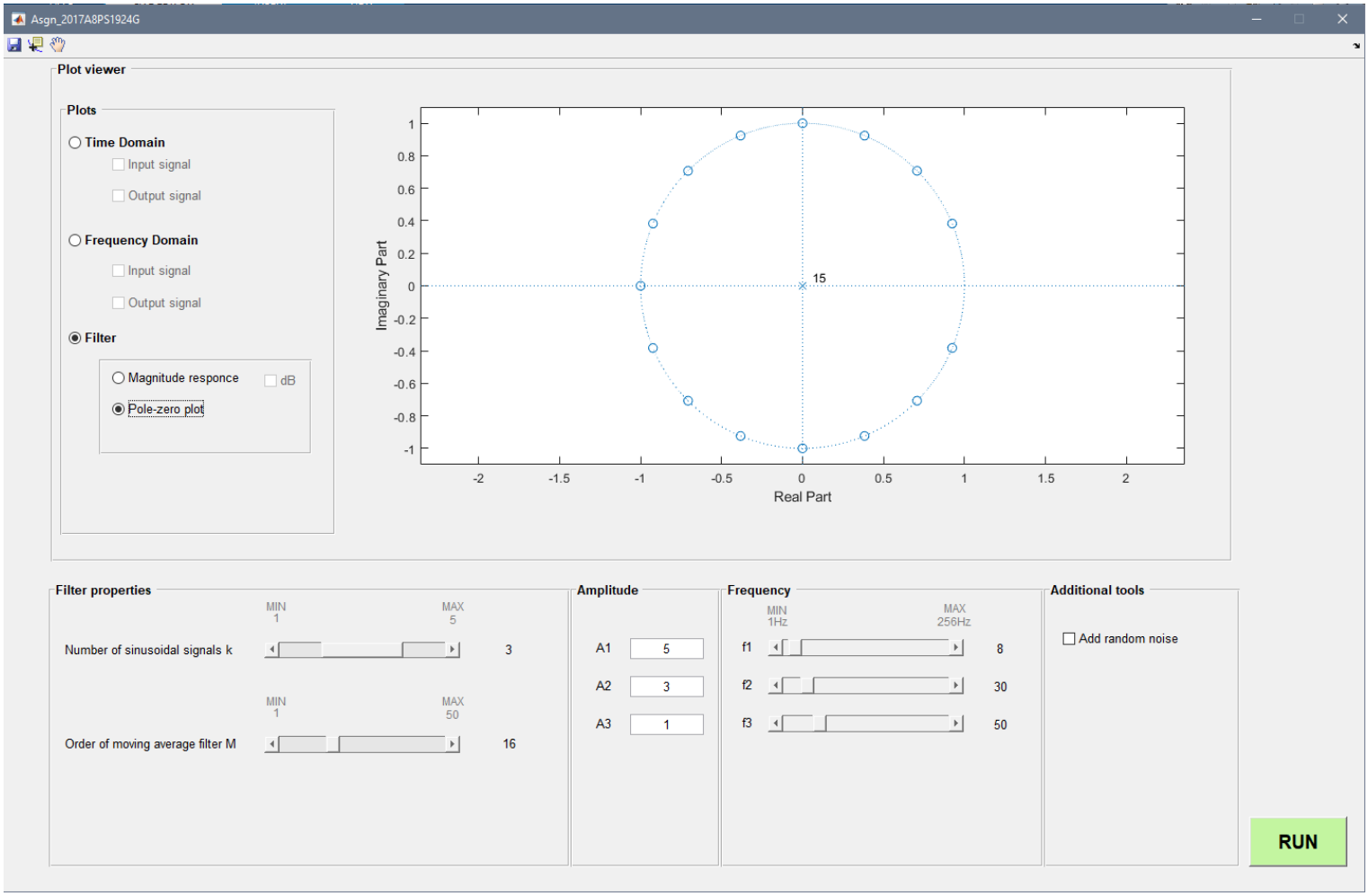
Screenshots of Working


Asgn_2017A8PS1924G
Plot viewer
Plots
Time Domain
Input signal
Output signal
Frequency Domain
Input signal
Output signal
Filter
Magnitude responce
dB
Pole-zero plot
Signal in continuous time domain
Input signal
Output signal
y[n]
t = nT_s
Filter properties
MIN 1
MAX 5
Number of sinusoidal signals k
3
MIN 1
MAX 50
Order of moving average filter M
16
Amplitude
A1 5
A2 3
A3 1
Frequency
MIN 1Hz
MAX 256Hz
f1 8
f2 30
f3 50
Additional tools
Add random noise
RUN


Asgn_2017A8PS1924G
Plot viewer
Plots
Time Domain
Input signal
Output signal
Frequency Domain
Input signal
Output signal
Filter
Magnitude responce
dB
Pole-zero plot
Signal in frequency domain
Input signal
Output signal
Magnitude
Frequency [Hz]
Filter properties
MIN 1
MAX 5
Number of sinusoidal signals k
3
MIN 1
MAX 50
Order of moving average filter M
16
Amplitude
A1 5
A2 3
A3 1
Frequency
MIN 1Hz
MAX 256Hz
f1 8
f2 30
f3 50
Additional tools
Add random noise
RUN


Asgn_2017A8PS1924G
Plot viewer
Plots
Time Domain
Frequency Domain
Filter
Magnitude responce
Pole-zero plot
Single sided magnitude spectrum
Magnitude responce
Magnitude responce (dB)
Magnitude
Frequency [Hz]
Filter properties
Amplitude
Frequency
Additional tools
Add random noise
RUN


Asgn_2017A8PS1924G
Plot viewer
Plots
Time Domain
Frequency Domain
Filter
Magnitude responce
Pole-zero plot
Single sided magnitude spectrum
Magnitude (dB)
Frequency [Hz]
Filter properties
Amplitude
Frequency


Asgn_2017A8PS1924G
Plot viewer
Plots
Time Domain
Input signal
Output signal
Frequency Domain
Input signal
Output signal
Filter
Magnitude responce
dB
Pole-zero plot
Imaginary Part
Real Part
15
Filter properties
MIN
1
MAX
5
Number of sinusoidal signals k
3
MIN
1
MAX
50
Order of moving average filter M
16
Amplitude
A1
5
A2
3
A3
1
Frequency
MIN
1Hz
MAX
256Hz
f1
8
f2
30
f3
50
Additional tools
Add random noise
RUN