

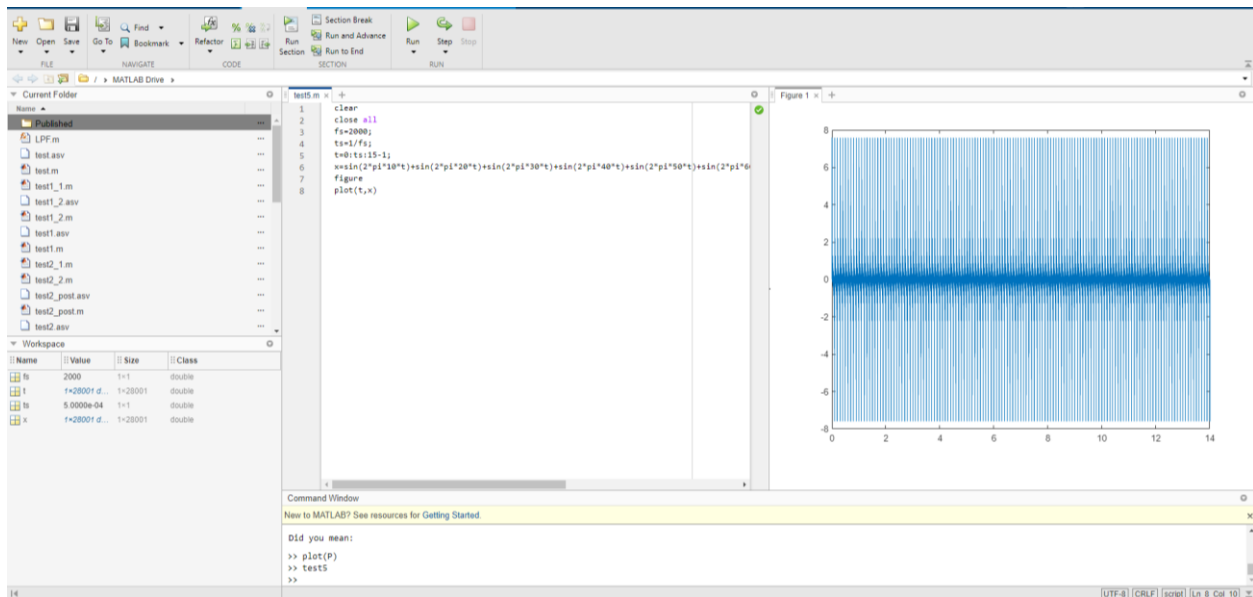
FIR Filter #5

IN-TUTORIAL:

- (a) Generate a sinusoidal signal $x[n]$, combination of frequencies 10Hz, 20Hz, 30Hz, 40 Hz, 50 Hz, 60 Hz, 70 Hz, 80 Hz, 90 Hz, 100 Hz, for 15 seconds at the sampling frequency of 2000Hz.. Plot the signal

Code:

```
clear
close all
fs=2000;
ts=1/fs;
t=0:ts:15-1;
x=sin(2*pi*10*t)+sin(2*pi*20*t)+sin(2*pi*30*t)+sin(2*pi*40*t)+sin(2*pi*50*t)+sin(2*pi*60*t)+sin(2*pi*70*t)+sin(2*pi*80*t)+sin(2*pi*90*t)+sin(2*pi*100*t);
figure
plot(t,x)
```

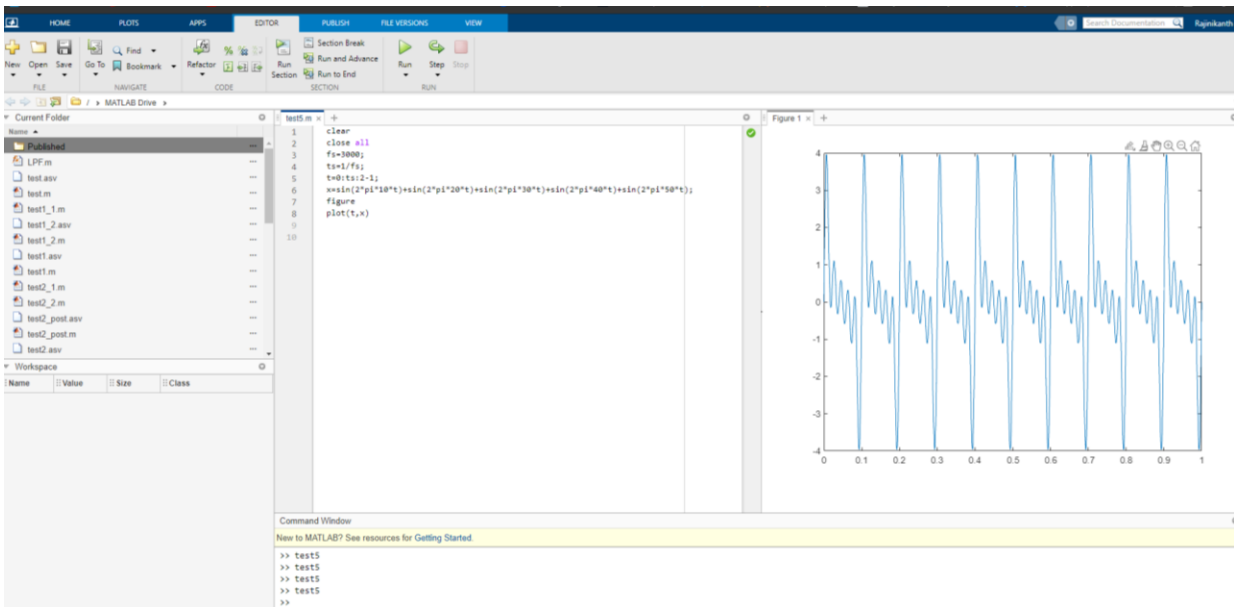


- (b) Design a 15-tap low pass FIR filter with cut off frequency of 45 Hz. i.e. calculate the filter coefficient $h(n)$

```

clear
close all
fs=3000;
ts=1/fs;
t=0:ts:2-1;
x=sin(2*pi*10*t)+sin(2*pi*20*t)+sin(2*pi*30*t)+sin(2*pi*40*t)+sin(2*pi*50*t);
figure
plot(t,x)

```



Post Tutorial

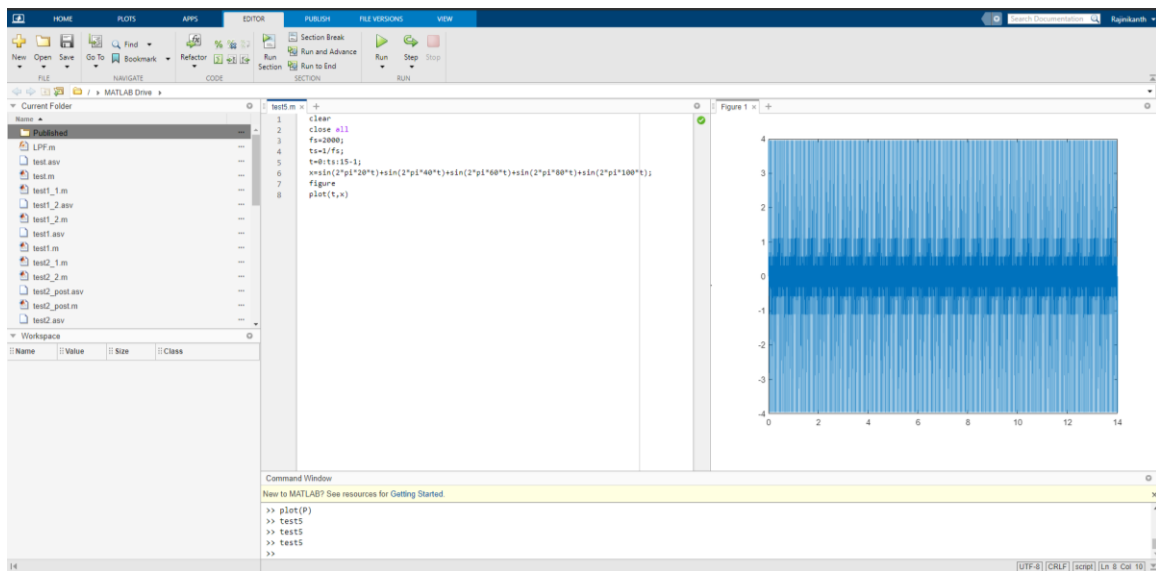
(a) Generate a sinusoidal signal $x[n]$, combination of frequencies of your choice. Plot the

signal

----- MATLAB Program -----

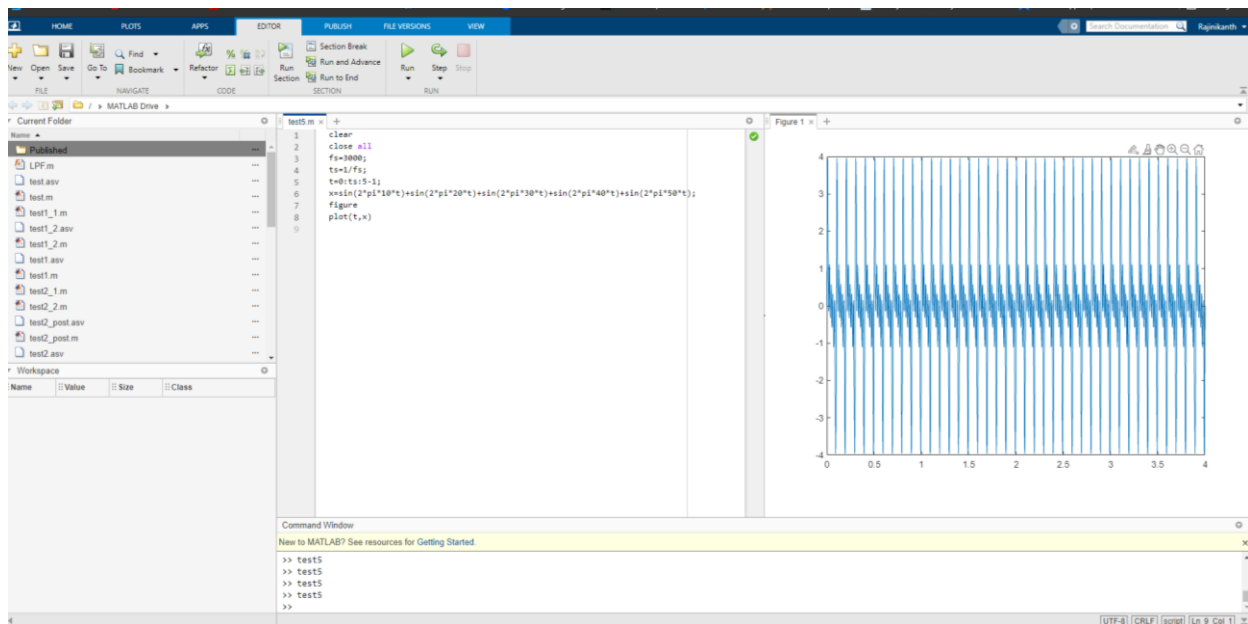
```
clear
close all
fs=2000;
ts=1/fs;
t=0:ts:15-1;
x=sin(2*pi*20*t)+sin(2*pi*40*t)+sin(2*pi*60*t)+sin(2*pi*80*t)+sin(2*pi*1000*t);
figure
plot(t,x)
```

-----Plot-----



- (b) Design a 3-tap high pass FIR filter with cut off frequency of 45 Hz i.e. calculate the filter coefficient $h(n)$ by hand and also in MATLAB.

Solution



(For Evaluator's use only)

<u>Comment of the Evaluator (if Any)</u>	<u>Evaluator's</u> <u>Observation</u> Marks Secured: ____ out of _____ FullNameoftheEvaluator: SignatureoftheEvaluator Dateof Evaluation:
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