Embedded System

Assignment-7

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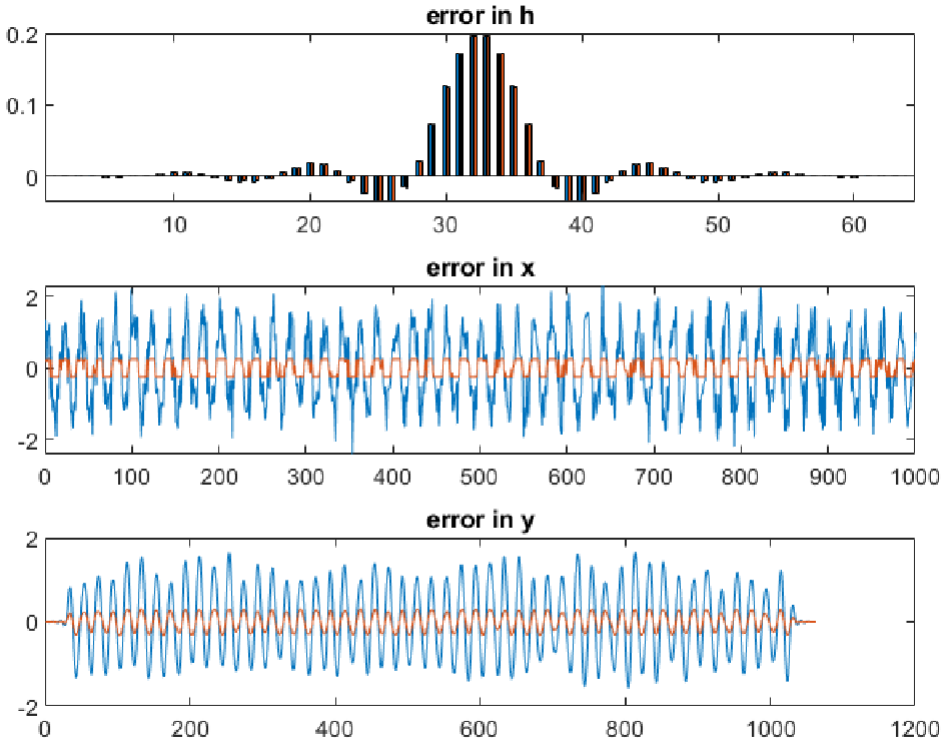
Code->

```
clear all

close all

clc

% Generate a Signal and add noise

Fs=10e3; Ts=1/Fs;

N=1000;

A=1.2;  f=500;  phi=-pi/7;

x=A*cos(2*pi*f*Ts*[0:N-1]'+phi)+0.5*randn(N,1);

% Design filter with cutoff frequency 1000

Fc=1000; fc=Fc/(Fs/2);

%  order

O=31;

h=fir1(O,fc)';
```

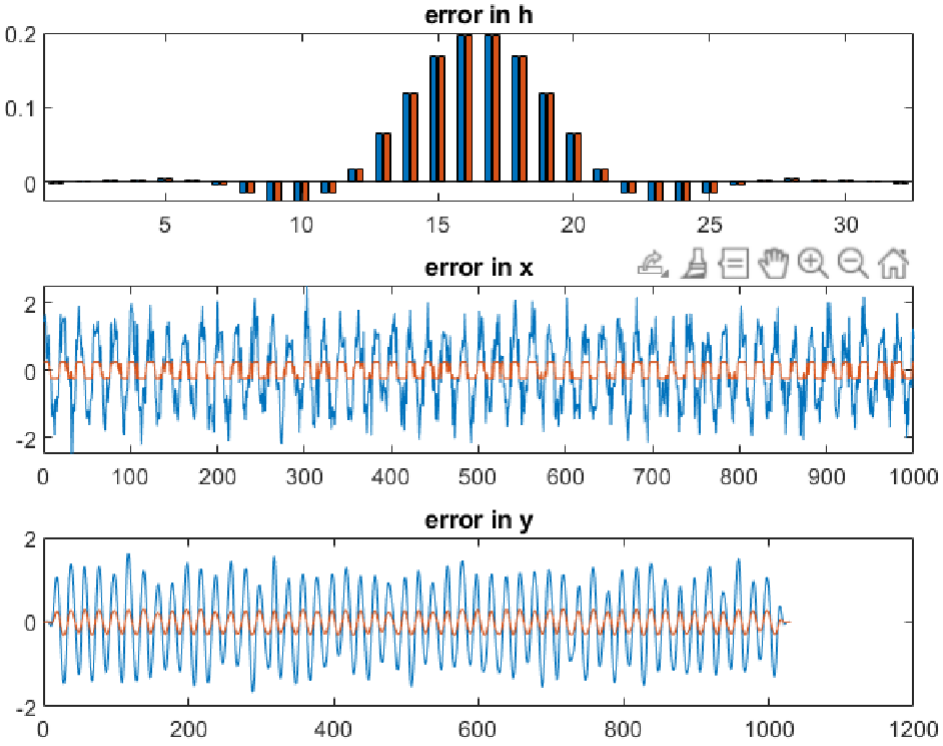
```
w=32; f=33; % you have to determine fraction




hf=sfi(h,w,f); %signed representation

xf=sfi(x,w,f);



yf=conv(xf,hf);

y=conv(x,h);



% errors



eh=100*(h-double(hf))./max(h);

ex=100*(x-double(xf))./max(x);

ey=100*(y-double(yf))./max(y);



subplot(311)

bar([h double(hf)])

title('error in h')
```

```
subplot(312)

plot([x double(xf)])

title("error in x")




subplot(313)

plot([y double(yf)])

title("error in y")

shg
```

w=8,b=9



W=16,b=17



W=32,b=33