College of Engineering and Physics

Electrical Engineering Department

EE562 - Digital Signal Processing I

Second Semester (212)

Computer Assignment 2

Solved By: Mahmoud Yassin

ID: 202113650

Supervised by: Dr. Wail A. Mousa

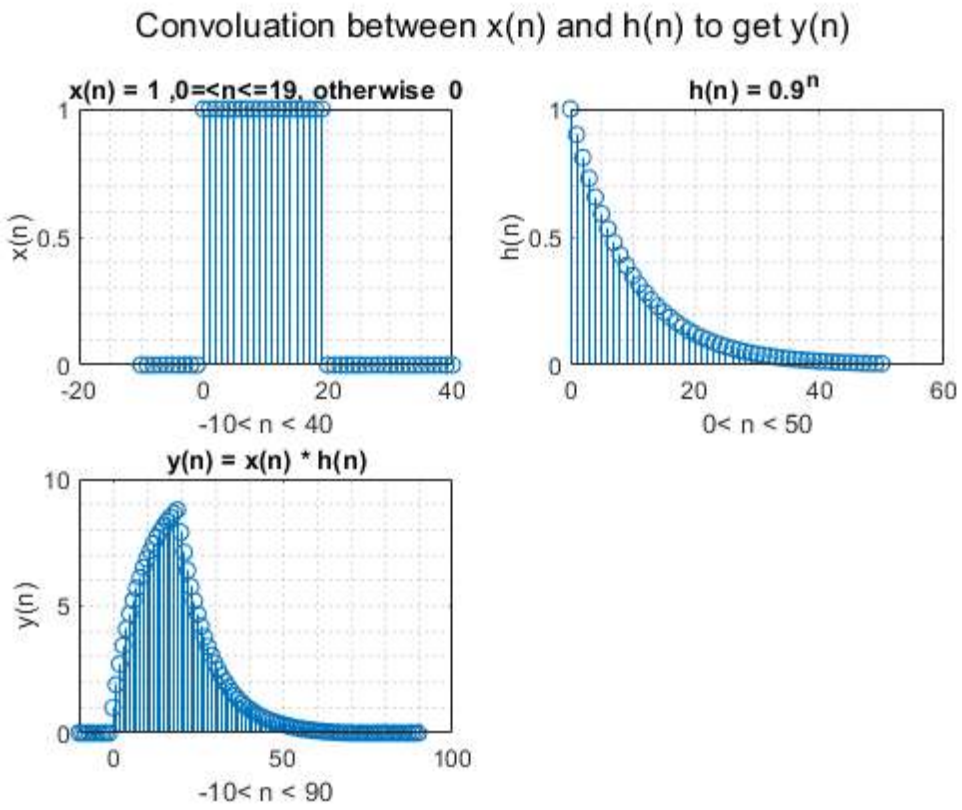
```
%Assignment 1
% Done by Mahmoud Yassin Mahmoud
% ID: 202113650
% Submitted To Dr. Wail A. Mousa
% Bism Allah and I will start with
%(Q1a):
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
clc;
clear;
%.....................  ............................
%defining time axis
n1a = -10:-1;
n1b = 0:19;
n1c = 20:40;
n1 = [n1a n1b n1c];
n2 = 0:50;
n = -10:90;
%.....................................
% convoluation calculation
x1 = zeros(size(n1a));
x2 = ones(size(n1b));
x3 = zeros(size(n1c));
x  = [ x1 x2 x3];
h = 0.9.^n2;
y = conv(x,h);
%.......................................
%ploting
subplot(221)
stem(n1,x)
   grid minor
   title(['x(n) = 1 ,0=<n<=19, otherwise  0'])
   xlabel('-10< n < 40')
   ylabel('x(n)')

subplot(222)
stem(n2,h)

   title('h(n) = 0.9^n ');
   grid minor
   xlabel('0< n < 50')
   ylabel('h(n)')

subplot(223)
stem(n,y)
   grid minor
   title('y(n) = x(n) * h(n)');
   xlabel('-10< n < 90')
   ylabel('y(n)')

 sgtitle('Convoluation between x(n) and h(n) to get y(n)') % title for the hole figure
```



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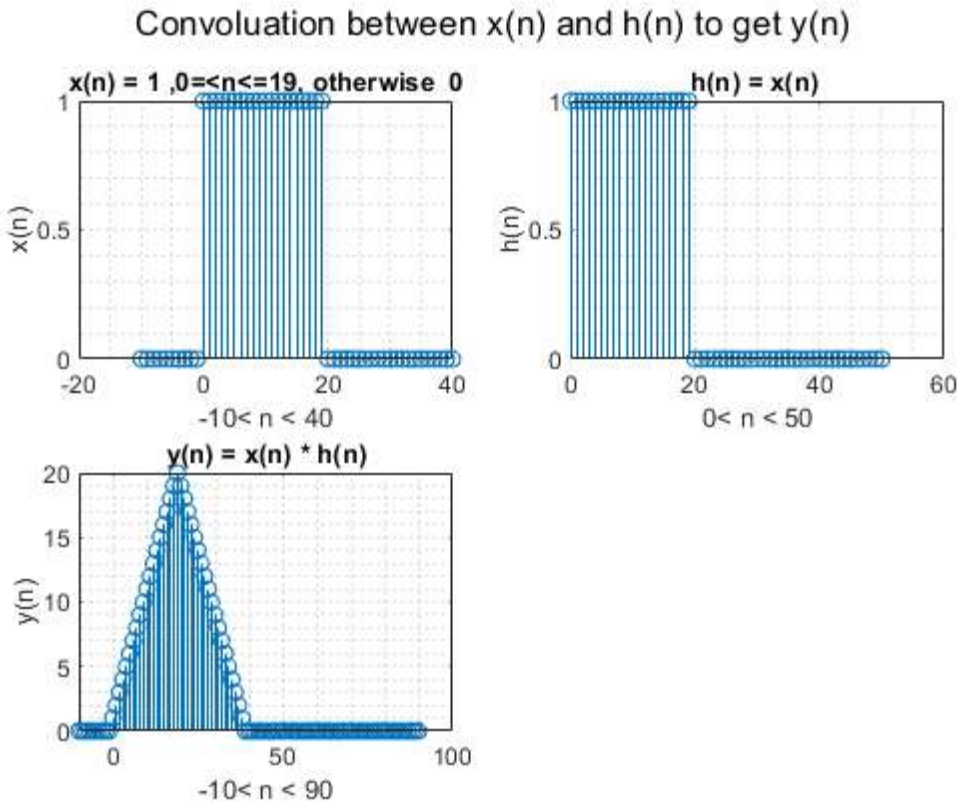
```
%Assignment 1
% Done by Mahmoud Yassin Mahmoud
% ID: 202113650
% Submitted To Dr. Wail A. Mousa
% Bism Allah and I will start with
%(Q1b):
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
clc;
clear;
%.....................  ............................
%defining time axis
n1a = -10:-1;
n1b = 0:19;
n1c = 20:40;
n1 = [n1a n1b n1c];
n2a = 20:50;
n2  = [ n1b n2a];
n = -10:90;
%.....................................
% convoluation calculation
x1 = zeros(size(n1a));
x2 = ones(size(n1b));
x3 = zeros(size(n1c));
h2 = zeros(size(n2a));
x  = [ x1 x2 x3];
h = [ x2 h2];
y = conv(x,h);
%.......................................
%ploting
subplot(221)
stem(n1,x)
   grid minor
   title(['x(n) = 1 ,0=<n<=19, otherwise  0'])
   xlabel('-10< n < 40')
   ylabel('x(n)')

subplot(222)
stem(n2,h)

   title('h(n) = x(n) ');
   grid minor
   xlabel('0< n < 50')
   ylabel('h(n)')

subplot(223)
stem(n,y)
   grid minor
   title('y(n) = x(n) * h(n)');
   xlabel('-10< n < 90')
   ylabel('y(n)')

 sgtitle('Convoluation between x(n) and h(n) to get y(n)') % title for the hole figure
```



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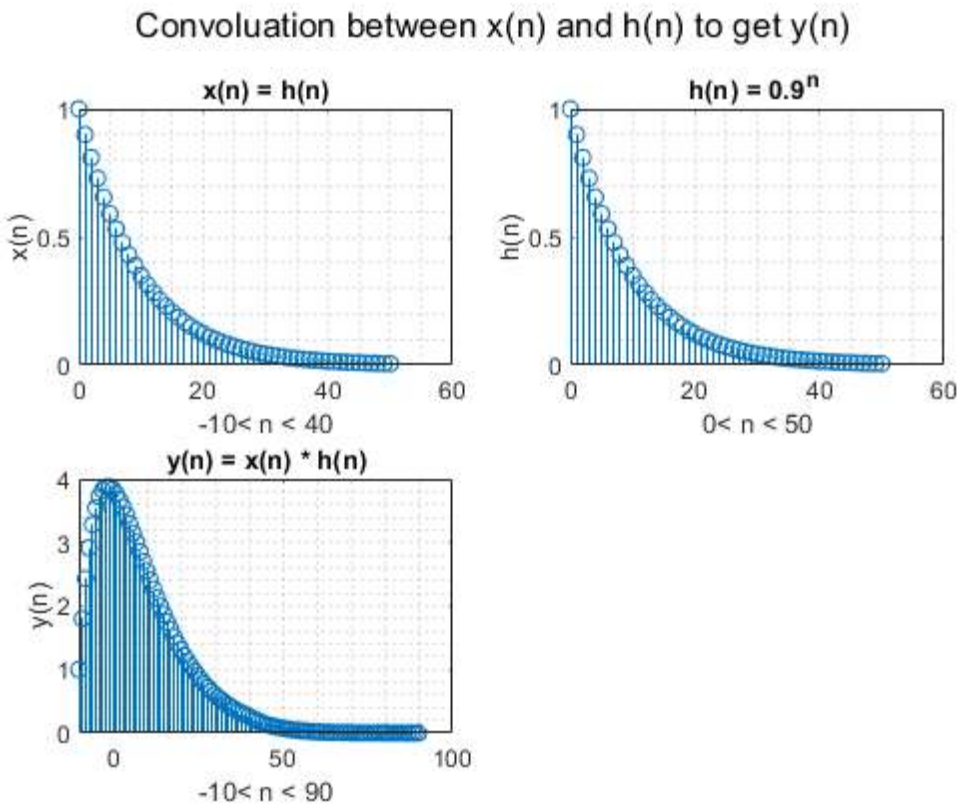
```
%Assignment 1
% Done by Mahmoud Yassin Mahmoud
% ID: 202113650
% Submitted To Dr. Wail A. Mousa
% Bism Allah and I will start with
%(Q1c):
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
clc;
clear;
%.....................  ............................
%defining time axis
n1a = -10:-1;
n1b = 0:19;
n1c = 20:40;
n1 = [n1a n1b n1c];
n2 = 0:50;
n = -10:90;
%.....................................
% convoluation calculation
h = 0.9.^n2;

x  = h;
y = conv(x,h);
%.......................................
%ploting
subplot(221)
stem(n2,x)
   grid minor
   title(['x(n) = h(n)'])
   xlabel('-10< n < 40')
   ylabel('x(n)')

subplot(222)
stem(n2,h)

   title('h(n) = 0.9^n ');
   grid minor
   xlabel('0< n < 50')
   ylabel('h(n)')

subplot(223)
stem(n,y)
   grid minor
   title('y(n) = x(n) * h(n)');
   xlabel('-10< n < 90')
   ylabel('y(n)')

 sgtitle('Convoluation between x(n) and h(n) to get y(n)') % title for the hole figure
```



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