Editor - G:\My Drive\1 MSU - IIT\8 Fourth Year Second Sem\Digital Signal Processing\Matlab\Baliguat

Baliguat_Exercise _1.m | Baliguat_Exercise _1_1.m | test.m | Baliguat_Exercise _2.m

```
%Baliguat, Dennis Ivan C.
x = [1 3 0 2 -1];
h = [  1 3 -2  ];
len = length(x) + length(h) - 1;
start_x = -2;
start_h = -1;
starting_point = start_x + start_h
range = [starting_point:3];


% Graphical and Direct Convolution
m=length(x);
n=length(h);
X=[x,zeros(1,n)];
H=[h,zeros(1,m)];
for i=1:n+m-1
    Y(i)=0;
    for j=1:m
        if(i-j+1>0)
            Y(i)=Y(i)+X(j)*H(i-j+1);
        else
        end
    end
end
% plot results
figure;
subplot(3,1,1); stem(x, '-b^'); xlabel('n');
ylabel('x[n]'); grid on;
subplot(3,1,2); stem(h, '-ms');
xlabel('n'); ylabel('h[n]'); grid on;
subplot(3,1,3); stem(Y, '-ro');
ylabel('Y[n]'); xlabel('n'); grid on;
title('Convolution of Two Signals without conv function');
```

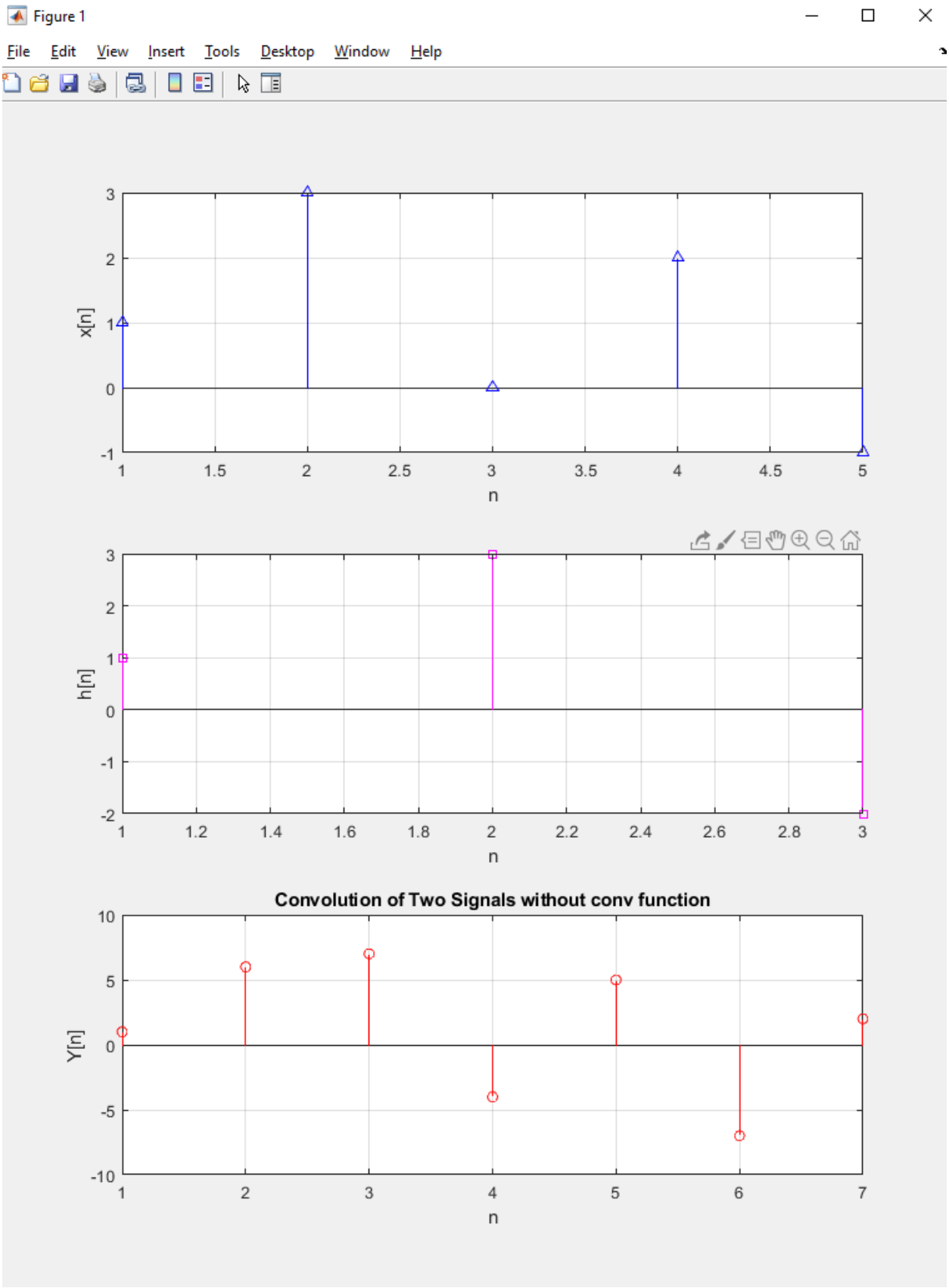
Figure 1
File Edit View Insert Tools Desktop Window Help
x[n]
n
h[n]
n
Convolution of Two Signals without conv function
Y[n]
n

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Baliguat_Exercise _1.m | Baliguat_Exercise _1_1.m | test.m | Baliguat_Exercise _2.m | Baliguat_Exerci

```
36      %Convolution Sum and Convolution Array
37
38      %Multiplying
39 -    z = [];
40 -    y_stored = zeros(length(range),1);
41 -    for i=1:length(x)
42 -        g = h.*x(i);
43 -        z = [z;g];
44 -    end
45
46      %Adding
47 -    [r c] = size(z)
48 -    k = r + c;
49 -    t = 2;
50 -    y = [];
51 -    cd = 0;
52 -    while (t <= k)
53 -        for i = 1:r
54 -            for j = 1:c
55 -                if ((i + j) == t)
56 -                    cd = cd + z(i,j);
57 -                end
58 -            end
59 -        end
60 -        t = t + 1;
61 -        y = [y cd];
62 -        cd = 0;
63 -    end
64
65 -    y
66
```

Command Window

```
     5


c =

     3


y =

     1     6     7    -4     5    -7     2

fx >>
```

```
67
68      %Balguat, Dennis Ivan
69      %Matrix By Vector
70 -    x_matrix = [1 0 0;
71                  3 1 0;
72                  0 3 1;
73                  2 0 3;
74                  -1 2 0;
75                  0 -1 2;
76                  0 0 -1];
77 -     x_h = x_matrix .* h;
78 -     y_stored2 = [];
79 -    for i = 1:length(x_h)
80 -            y_stored2(i) = sum(x_h(i,:));
81 -    end
82
83 -    y_stored2
84
85
86
```

Command Window

```
ans

     3


ans =

     4


y_stored2 =

     1     6     7    -4     5    -7     2

fx >>
```

```
83
84      %Baliguat, Dennis Ivan
85      %Shortcut Method
86 -    conv(x,h)
87
88
89
90
```

Command Window

```
ans =

     1     6     7    -4     5    -7     2

fx >>
```