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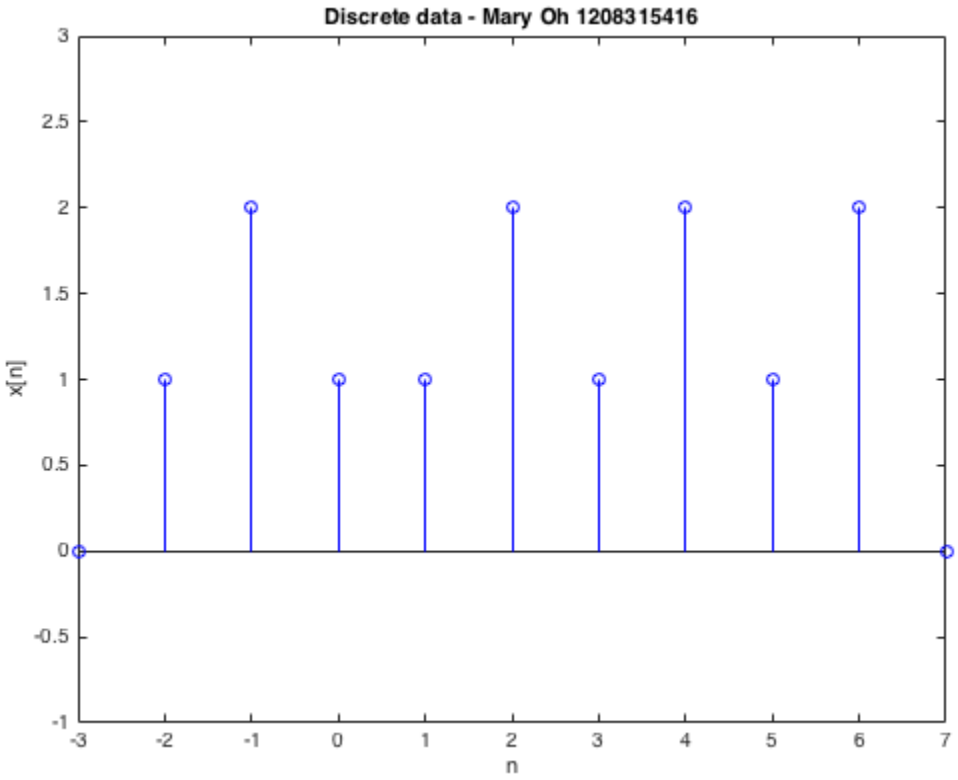
Discrete Impulse function

```
clear;
clc;

% x[n]
n = -3:7;
x = [0 1 2 1 1 2 1 2 1 2 0];
figure;
stem(n,x,'b'); %plot of discrete data
xlabel('n')
ylabel('x[n]')
ylim([-1 3])
title('Discrete data - Mary Oh 1208315416')
```



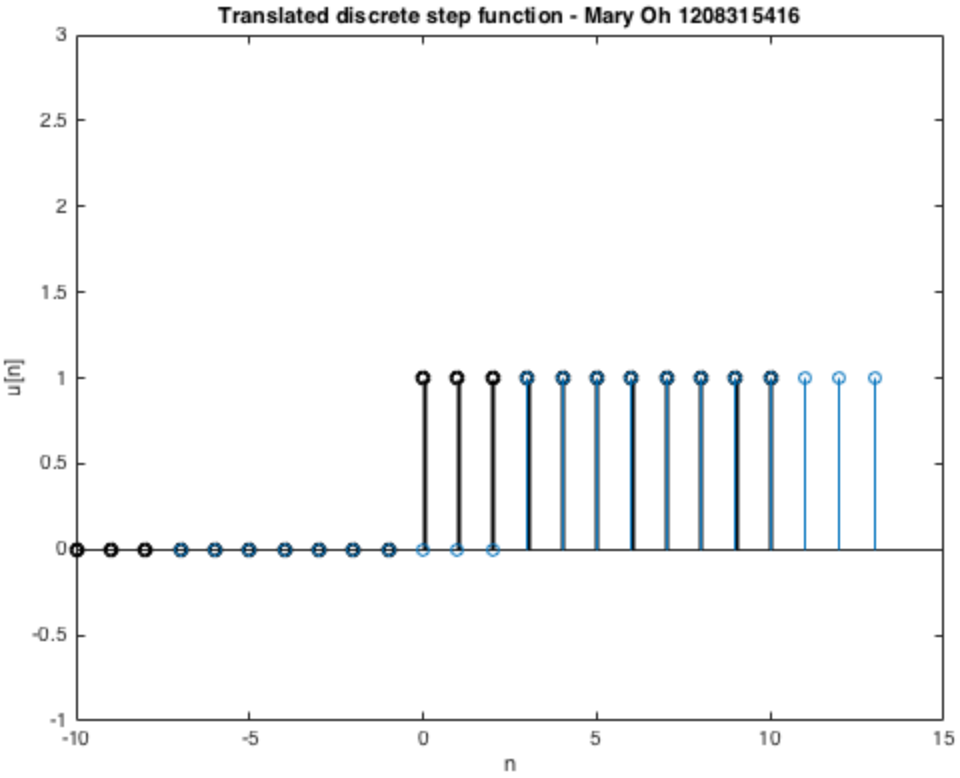
Create discrete step function

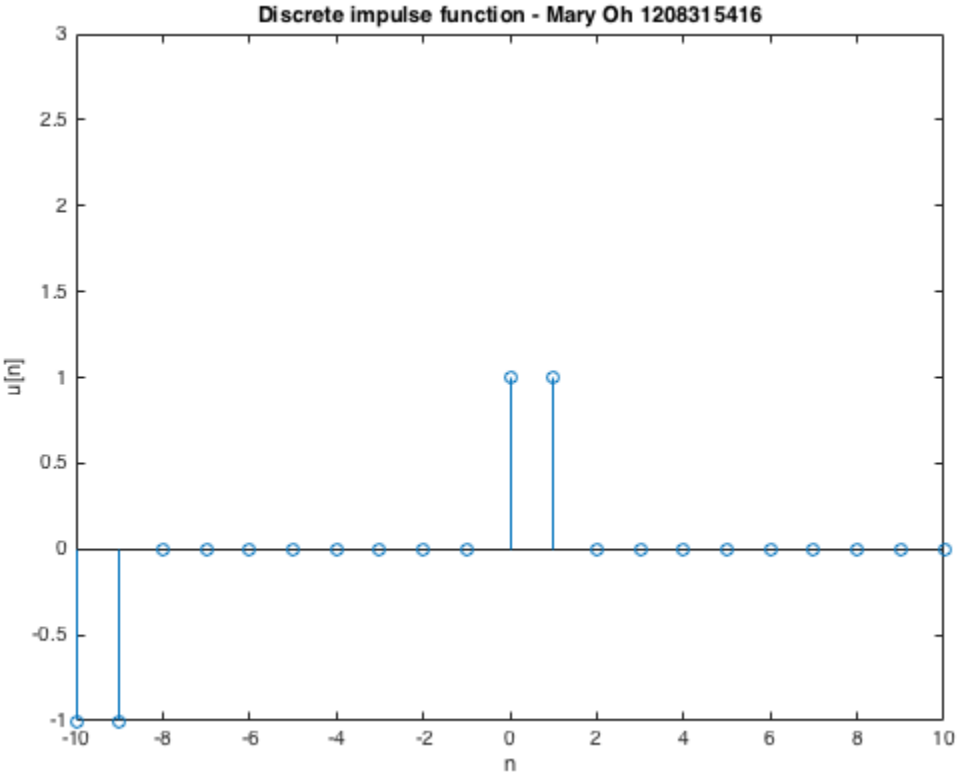
```
n = -10:10;
u = zeros(1,length(n));
u(find(n==0):end) = 1;

figure;
stem(n,u,'k','LineWidth',2);
hold on;

% create translated discrete step function
n0 = -3;
stem(n - n0,u);
xlabel('n')
ylabel('u[n]')
ylim([-1 3])
title('Translated discrete step function - Mary Oh 1208315416')

% substract step functions to create impulse function
n0 = 2;
d = u - circshift(u,[0 n0]);
figure;
stem(n,d);
xlabel('n')
ylabel('u[n]')
ylim([-1 3])
title('Discrete impulse function - Mary Oh 1208315416')
```


Translated discrete step function - Mary Oh 1208315416
u[n]
n
3
2.5
2
1.5
1
0.5
0
-0.5
-1
-10
-5
0
5
10
15


Discrete impulse function - Mary Oh 1208315416
u[n]
n
3
2.5
2
1.5
1
0.5
0
-0.5
-1
-10
-8
-6
-4
-2
0
2
4
6
8
10

Create discrete time signal

```
clc
clear all

n = -10:10;
x = zeros(1,length(n));
x(n==0) = 1;

figure;
stem(n,x);
xlabel('n')
ylabel('h[n]')
ylim([-1 3])
title('Discrete time signal - Mary Oh 1208315416')

sum(x(find(n==-10):find(n==-1)))
sum(x(find(n==1):find(n==10)))
sum(x)

% moving impulse in time
n0 = 6;
n_trans = n - n0;

figure;
stem(n,x,':b','LineWidth',2);
hold on;

stem(n_trans,x,':r','LineWidth',2);
xlabel('n')
ylabel('h[n]')
ylim([-1 3])
title('Discrete time signal - Mary Oh 1208315416')
```

```
ans =

     0


ans =

     0


ans =

     1
```

Conv function

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