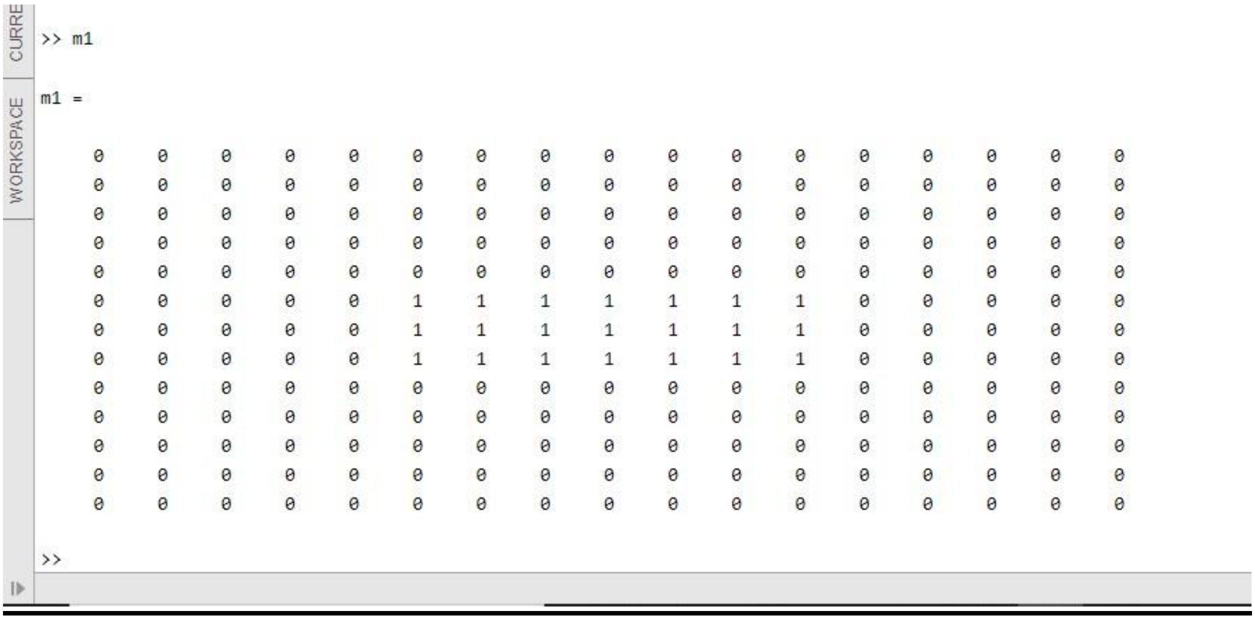
Q. Implement your own erosion function and show results

User defined Erosion Function: myerosion( )

```
function f12 = myerosion(A,B)


m=floor(size(B,1)/2);

n=floor(size(B,2)/2);

%Pad array on all the sides

C=padarray(A,[m n],1);

%Intialize a matrix with size of matrix A

f12=false(size(A));

for i=1:size(C,1)-(2*m)

    for j=1:size(C,2)-(2*n)


        Temp=C(i:i+(2*m),j:j+(2*n));


        f12(i,j)=min(min(Temp-B));


    end

end

 f12 = 1- f12;

end
```

I have used my defined erosion function in all below program

<u>(a):</u> input

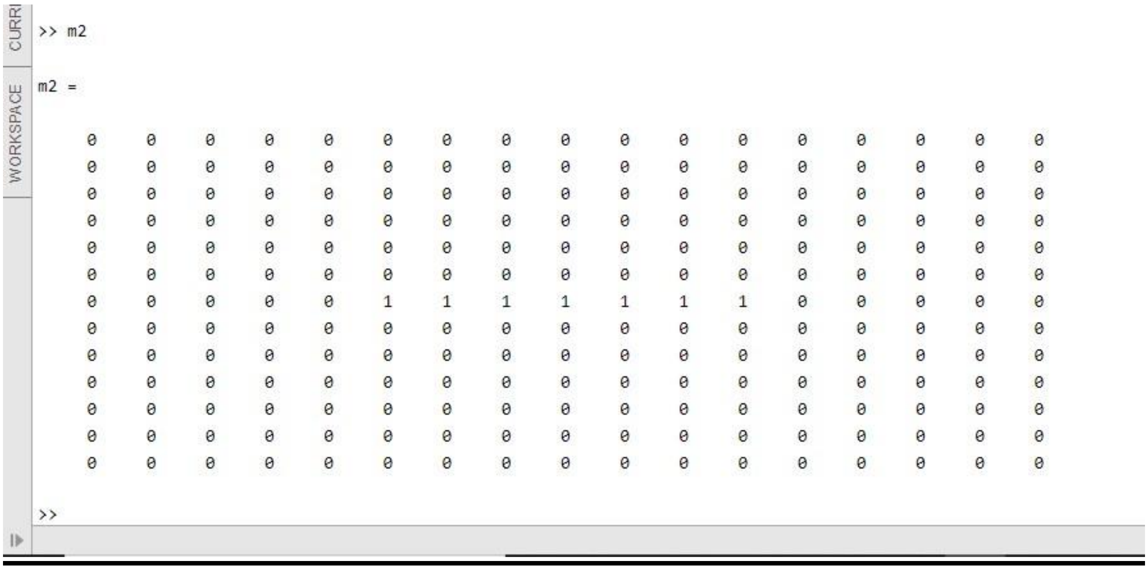


```
>> m1

m1 =

     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     1     1     1     1     1     1     1     0     0     0     0     0
     0     0     0     0     0     1     1     1     1     1     1     1     0     0     0     0     0
     0     0     0     0     0     1     1     1     1     1     1     1     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0

>>
```

<u>Code:</u>

```
m1 = [1 1 1 1 1 1 1; 1 1 1 1 1 1 1; 1 1 1 1 1 1 1];

m1 = padarray(m1,[5 5],0,'both');


b = [1;1;1]; %3 x 1 structure element


m2 = myerosion(m1,b) %user defined function used
```

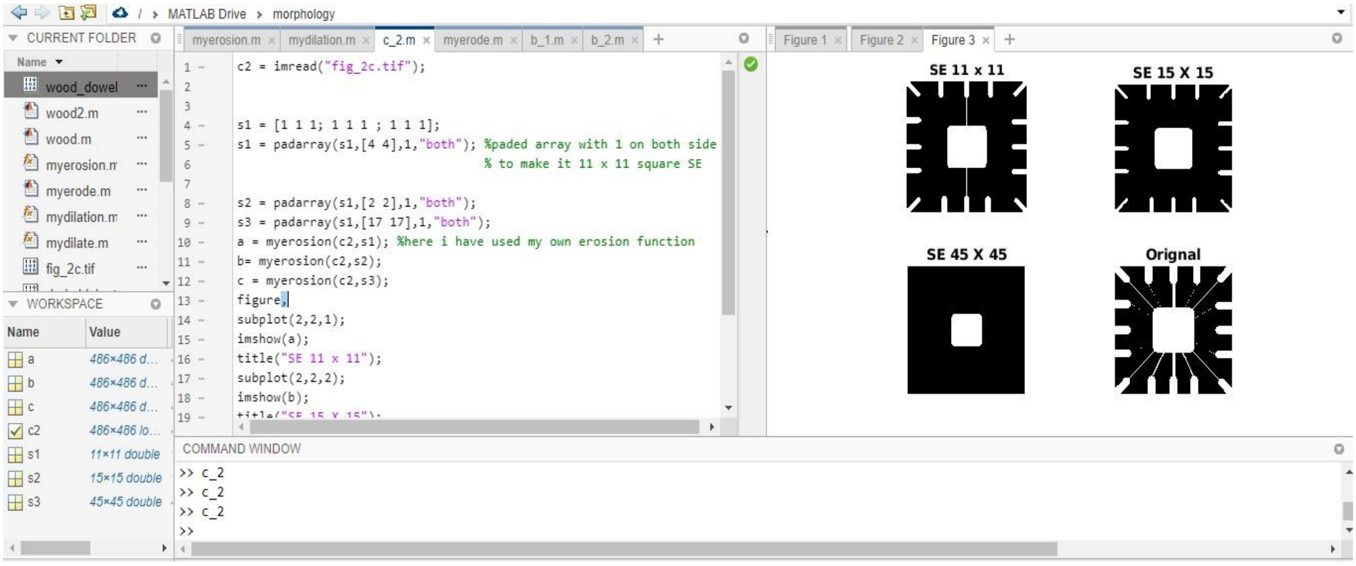
<u>output:</u>



```
>> m2

m2 =

     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     1     1     1     1     1     1     1     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0

>>
```

(b):

```
c2 = imread("fig_2c.tif");



s1 = [1 1 1; 1 1 1 ; 1 1 1];
s1 = padarray(s1,[4 4],1,"both"); %paded array with 1 on both side
                                  % to make it 11 x 11 square SE

s2 = padarray(s1,[2 2],1,"both");
s3 = padarray(s1,[17 17],1,"both");
a = myerosion(c2,s1); %here i have used my own erosion function
b= myerosion(c2,s2);
c = myerosion(c2,s3);
figure,
subplot(2,2,1);    % display image in 2 rows and 2 columns, 1 represent 1st pos is
                    of a
imshow(a);         % display image on window
title("SE 11 x 11");  % title of image
subplot(2,2,2);
imshow(b);
title("SE 15 X 15");
subplot(2,2,3);
imshow(c);
title("SE 45 X 45");
subplot(2,2,4);
imshow(c2);
title("Orignal");
```



```
c2 = imread("fig_2c.tif");


s1 = [1 1 1; 1 1 1 ; 1 1 1];
s1 = padarray(s1,[4 4],1,"both"); %paded array with 1 on both side
                                  % to make it 11 x 11 square SE

s2 = padarray(s1,[2 2],1,"both");
s3 = padarray(s1,[17 17],1,"both");
a = myerosion(c2,s1); %here i have used my own erosion function
b= myerosion(c2,s2);
c = myerosion(c2,s3);
figure,
subplot(2,2,1);
imshow(a);
title("SE 11 x 11");
subplot(2,2,2);
imshow(b);
title("SE 15 X 15");
```

Name	Value
a	486×486 d…
b	486×486 d…
c	486×486 d…
c2	486×486 lo…
s1	11×11 double
s2	15×15 double
s3	45×45 double

```
>> c_2
>> c_2
>> c_2
>>
```