Assignment 2
EE605: Digital Image Processing

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1 Introduction

The assignment gives a program for question 3. The program is to make a filter that performs correlation or convolution on an image using an input mask.
The input image may be a binary image or a greyscale image (or colour) and the the output will be corresponding to that (for colour, the output will be greyscale).

g = imfilter_16110007(f, w, filtering_mode = 'corr', boundary_options = 0, size_options = 'same')

f - Input Image (Binary, or greyscale or colour)
w - mask
filtering_mode - 'corr' for correlation and 'conv' for convolution (correlation by default)
boundary_options - P (a number for padding), 'replicate' to replicate the border for the padding, 'symmetric' to have a symmetry along the border, 'circular' to have a circular padding (0 by default)
size_options - 'same' to have the same size as the input image, 'full' to include the padding also

2 Input and Outputs

Google1.jpg

Google_small.jpg

```
I1 = imread('Google1.jpg');
wa = ones(3);
Ia = round( I1(:,:,1)/3 + I1(:,:,2)/3 + I1(:,:,3)/3 );
imwrite(Ia,'G0.jpg');
```

Input 1:

```
Iouta = try2(Ia, wa);
imwrite(Iouta,'G1.jpg')
```

Input 2:

```
wb = zeros(100,100);
wb(100,100) = 1;
Ioutb = try2(Ia, wb);
imwrite(Ioutb,'G2.jpg')
```

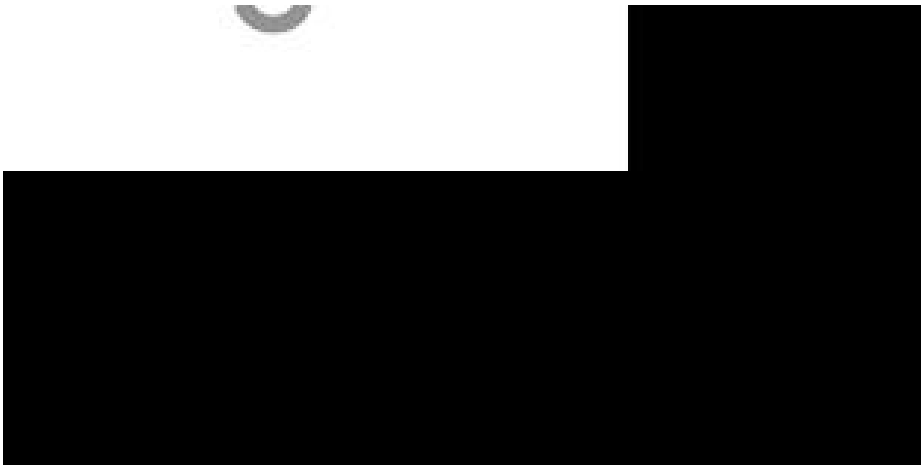
Output:

Input 3:
wc = wb*0.25;
Ioutc = try2(Ia, wc);
imwrite(Ioutc,'G3out.jpg')

Output:

Input 4:
I2 = imread('Google$_s$*mall.jpg*′)
$Ib = round(I2(:,:,1)/3 + I2(:,:,2)/3 + I2(:,:,3)/3);$
$imwrite(Ib,'G00.jpg')$
$Ioutd = try2(Ib, wb);$
$imwrite(Ioutd,'G4out.jpg')$

Output :

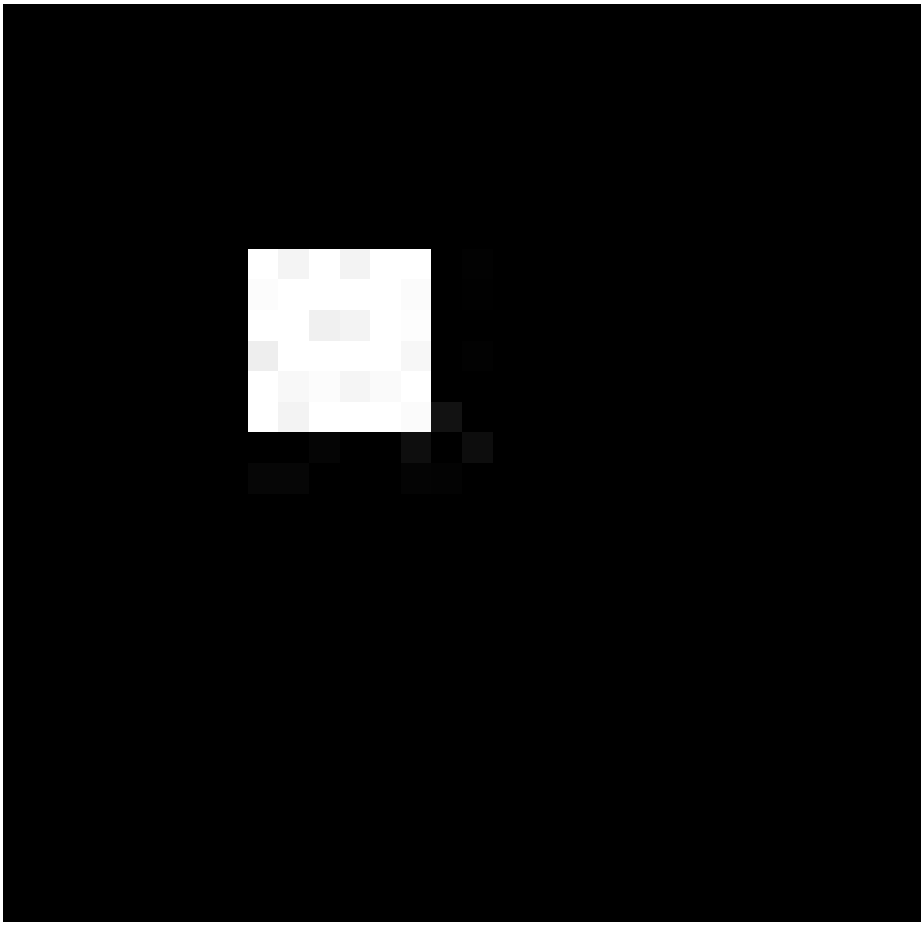


Input 5:
we = zeros(20,20);
we(20,20) = 1
Ioute = try2(Ib, we);
Output:

Input 6:
Ic = zeros(30,30)
Ic (13:18, 13:18) = ones(6,6);
wf = zeros(5,5);
wf(5,5) = 1;

```
Ioutf = try2(Ic, wf);
Ioutf = try2(Ic, wf);
imshow(Ioutf)
imwrite(Ioutf,'G6.jpg')
```

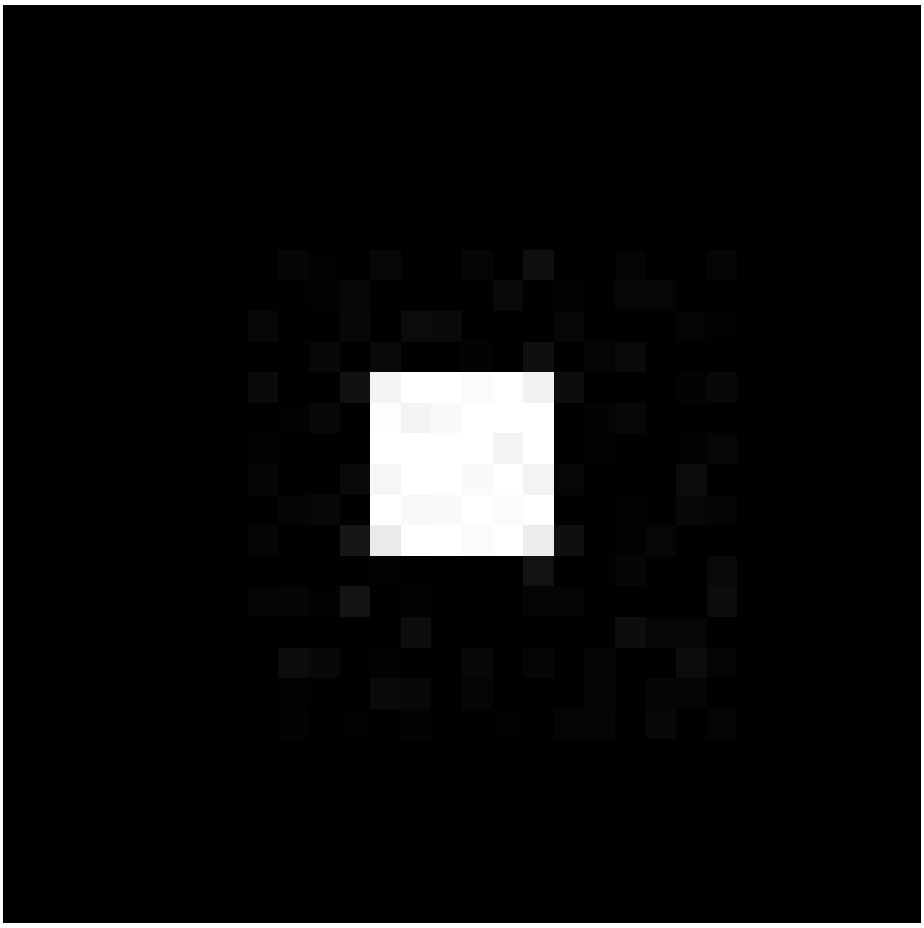
Output:



Input 7:

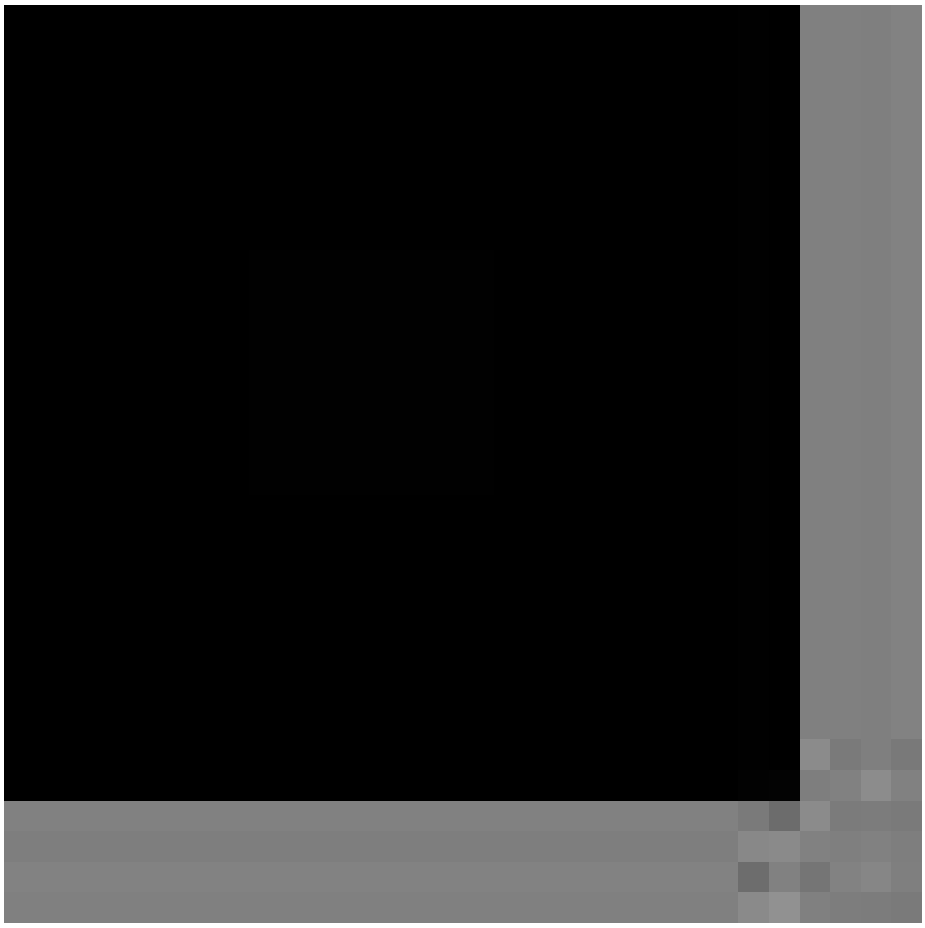
```
Ioutg = try2(Ic, wf,'conv');
imwrite(Ioutg,'G7.jpg')
```

Output:



Input 8:
Iouth = try2(Ic, wf,'corr',128);
imwrite(Iouth,'G8.jpg')

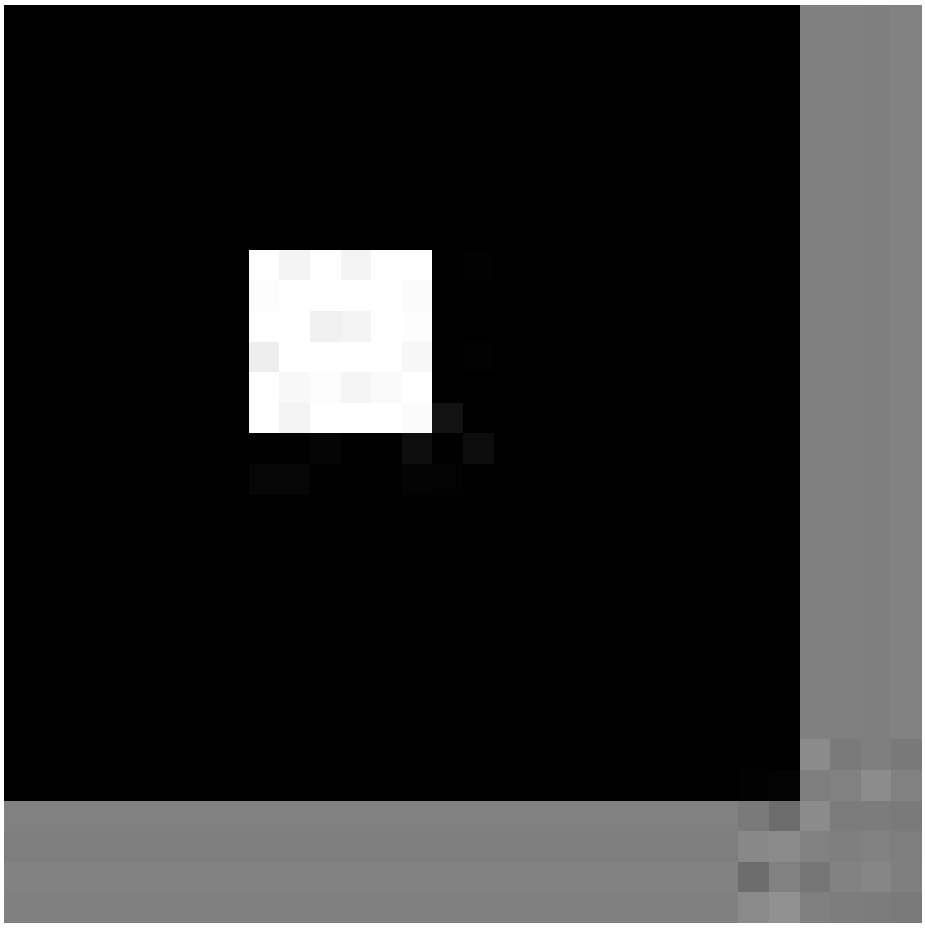
Output:



Input 9:

```
Id = Ic*255;
Iouti = try2(Id, wf,'corr',128);
imwrite(Iouti,'G9.jpg')
```

output:



Input 10:

```
Ioutj = try2(Id, wf,'corr',128,'full');
imshow(Ioutj)
imwrite(Ioutj,'G10.jpg')
```

Output: