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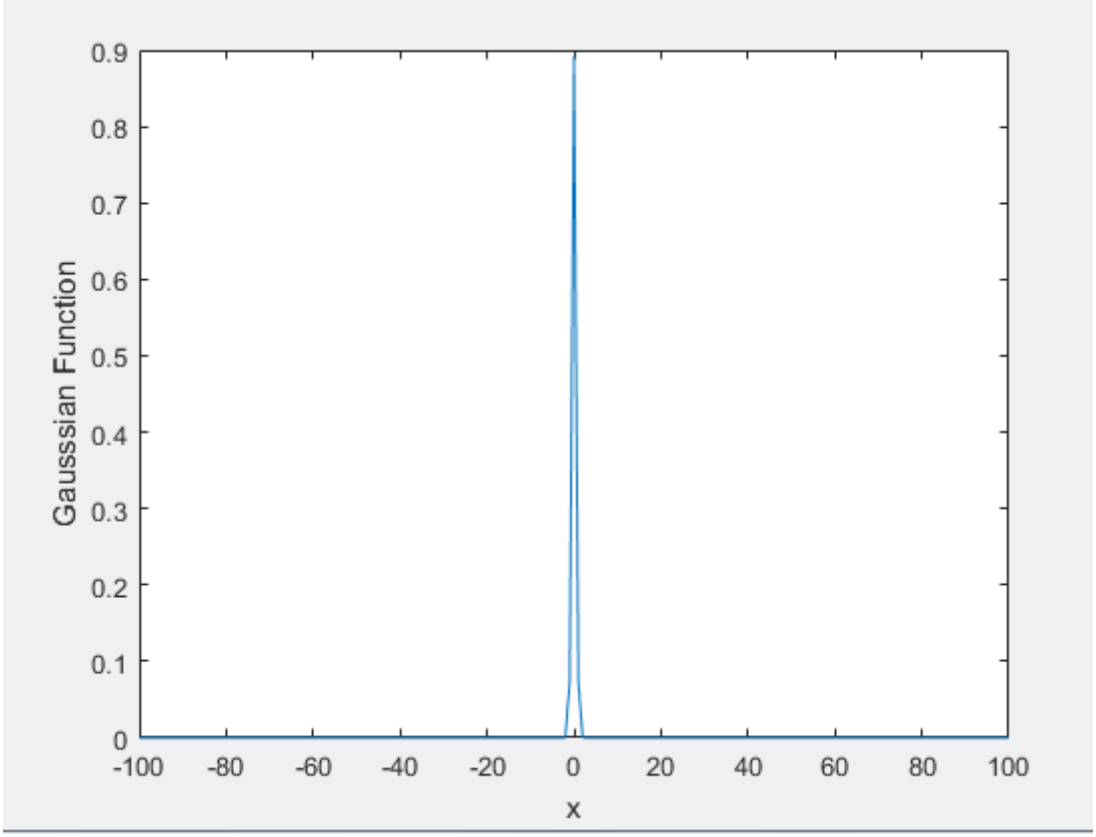
Report

I used different .m files for each question. For testing different images, you can just change imread function's input. I didn't add all sample images to the code because it would just make the code longer but I tested all images and added screenshots to the report. I also added additional comments to the code for reader to understand.

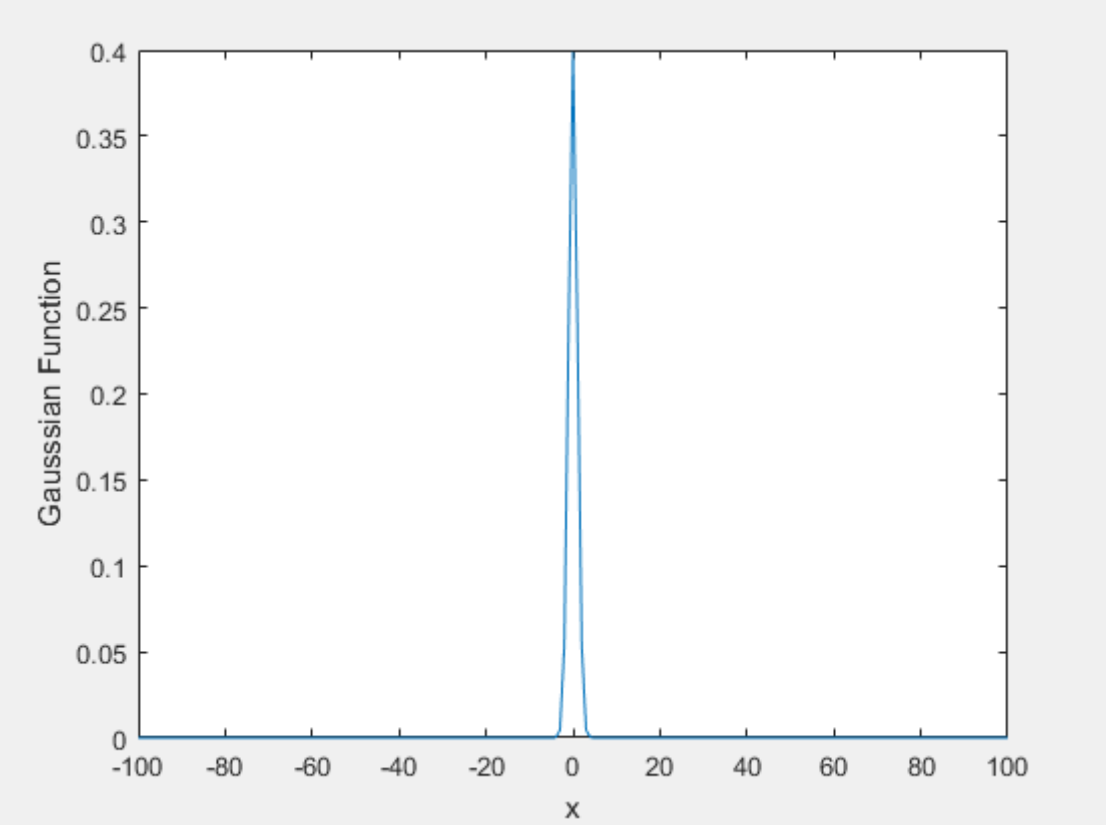
1. I used the formula which was on the homework file. I used that formula for x values from -100 to 100 and plotted to the screen. I used different variance values as requested in the homework.

$$p(x) = \frac{1}{\sqrt{2\pi}\sigma} \exp\left[-\frac{(x-\mu)^2}{2\sigma^2}\right]$$

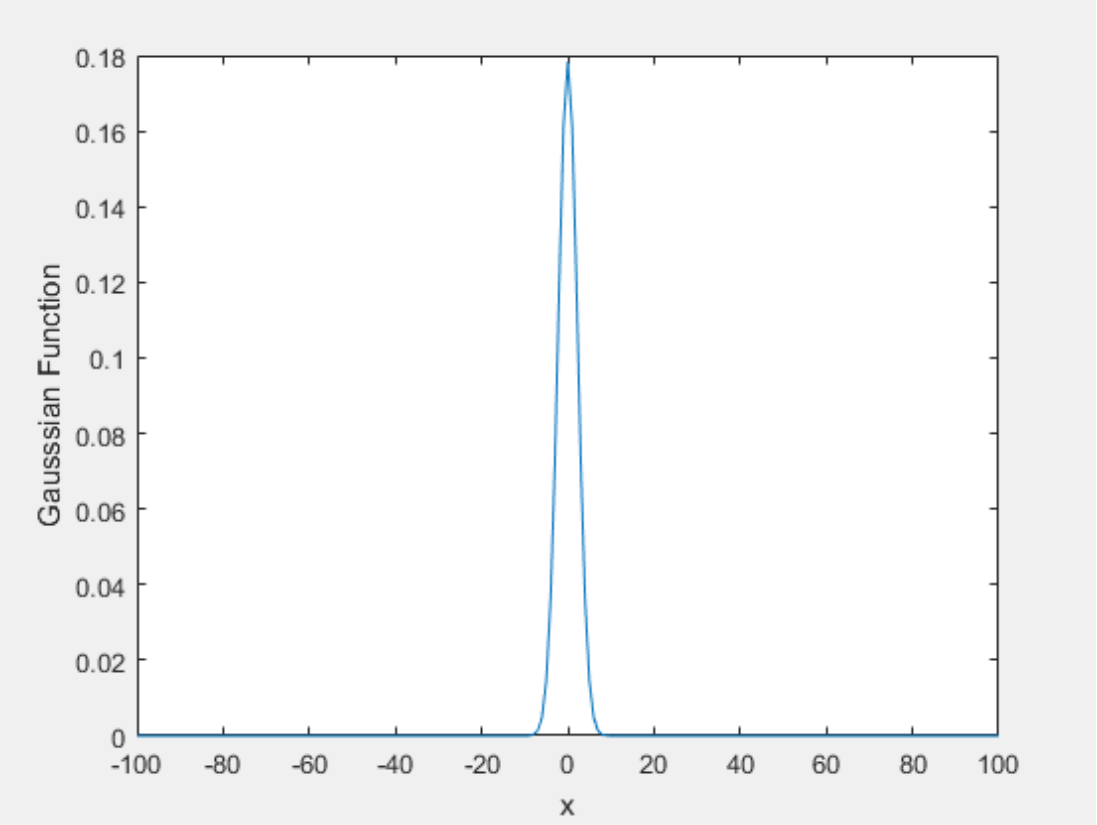
Şekil 1- The formula I used in the code



Şekil 2-Plot when variance is 0.2



Şekil 3- Plot while variance is 1



Şekil 4- Plot while variance is 5

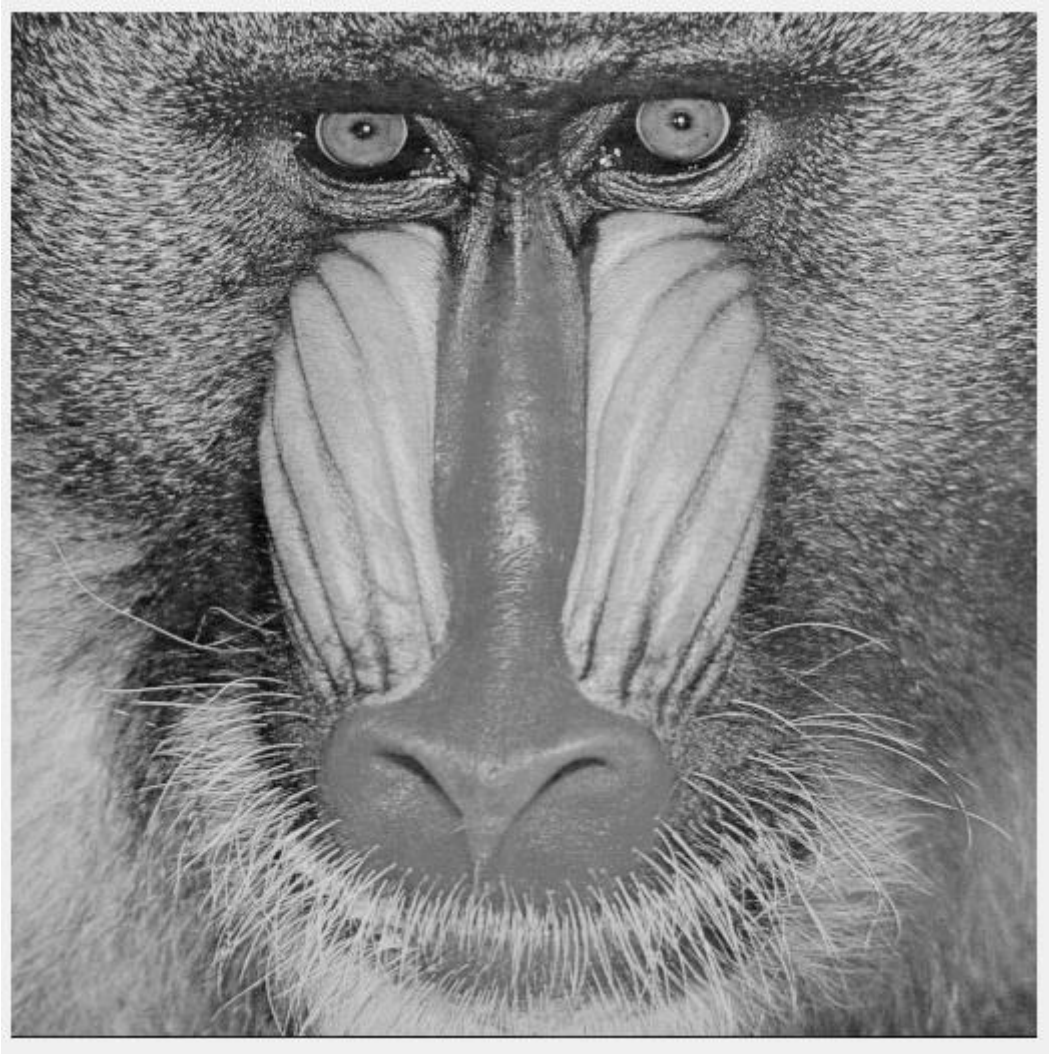
2. I used the kernels to filter my images. I did a normalization on gaussian filter dividing by the som of the coefficient.

Şekil 5-Original Image

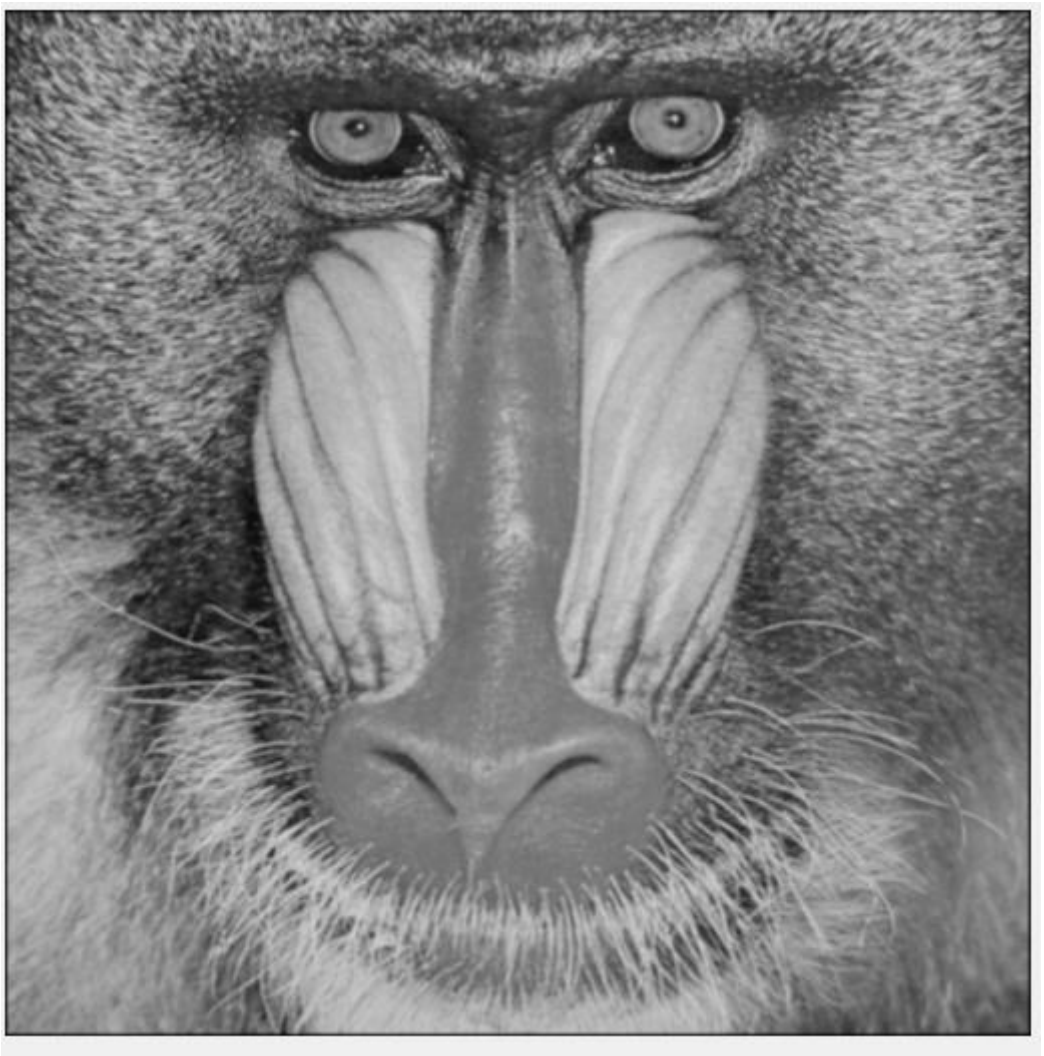
Şekil 6-3x3 Gaussian fitered Image

Şekil 7-5x5 Gaussian Filtered Image

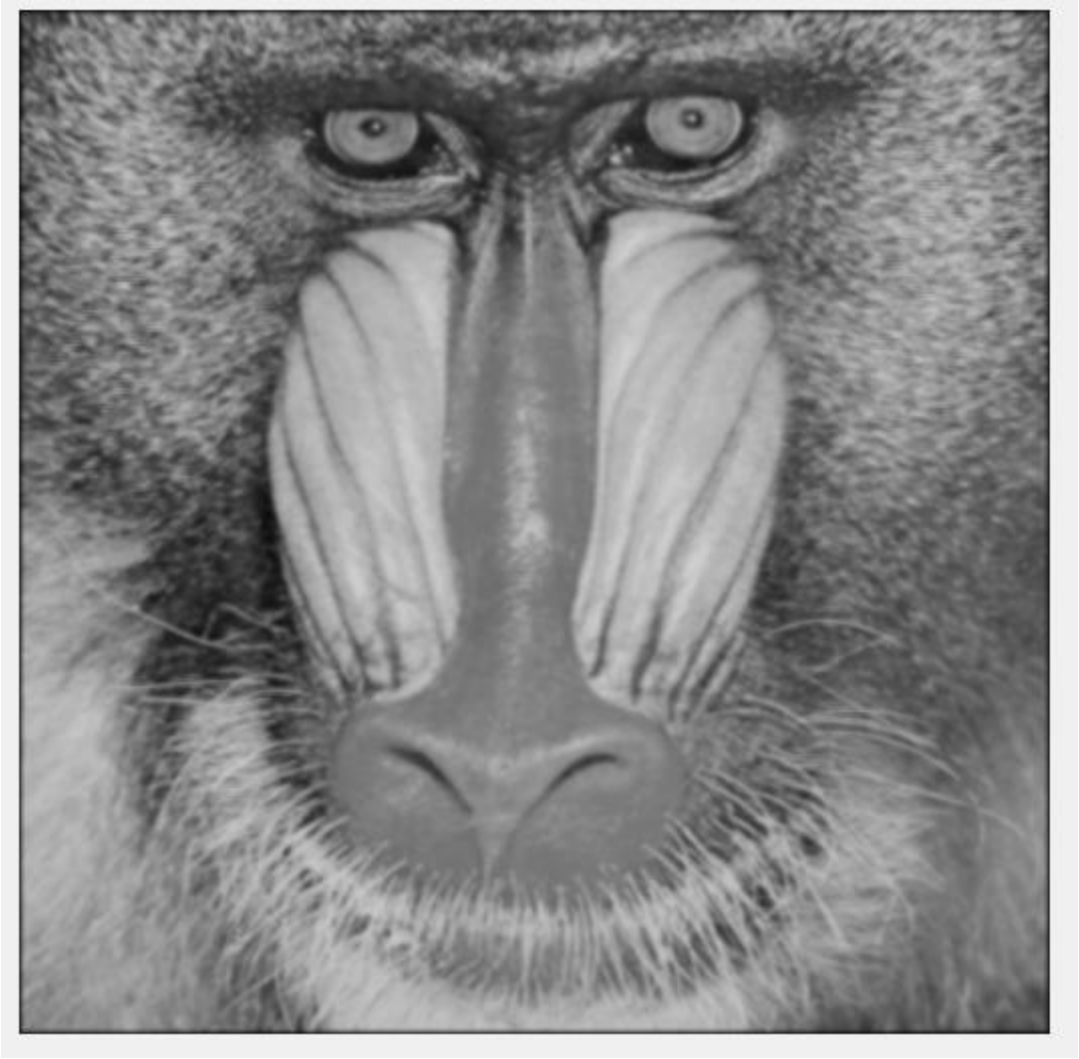
Şekil 8-7x7 Gaussian Filtered Image



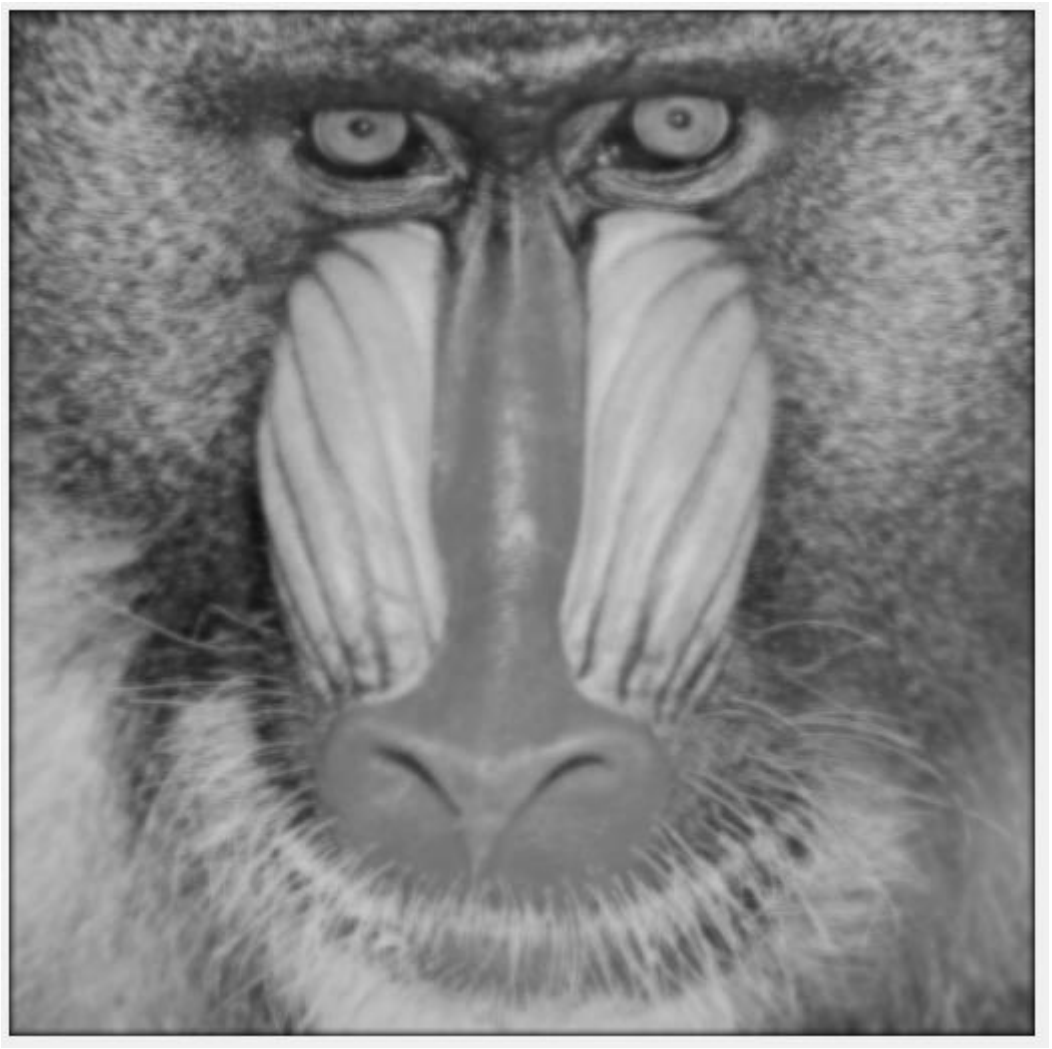
Şekil 9-Original Image



Şekil 10-3x3 gaussian Filtered Image



Şekil 11-5x5 Gaussian Filtered Image



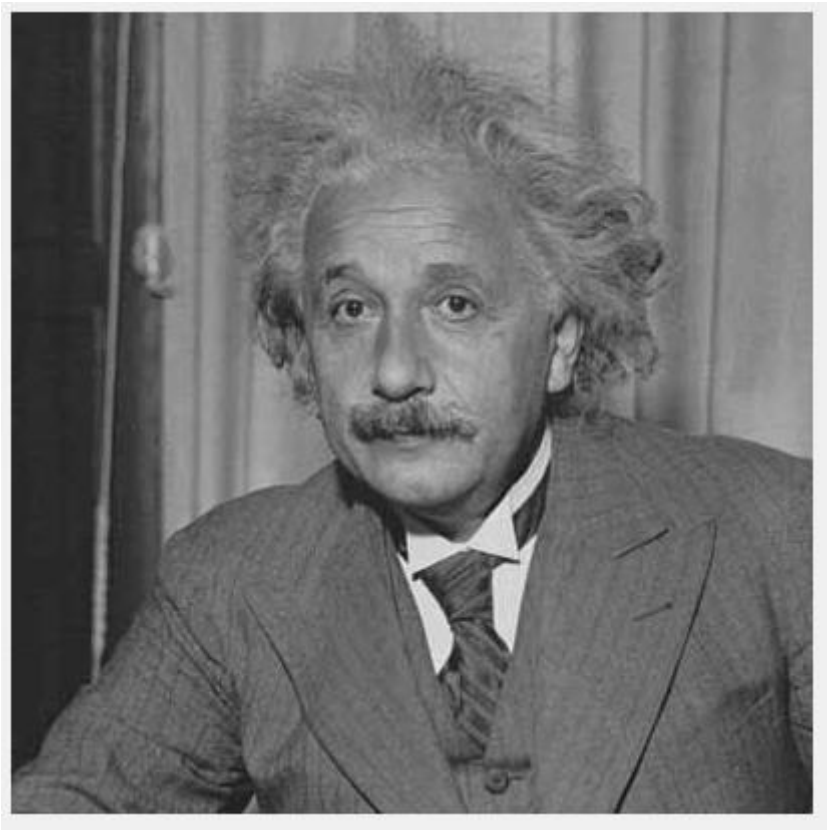
Şekil 12-7x7 Gaussian Filtered Image

Şekil 13-Original Image

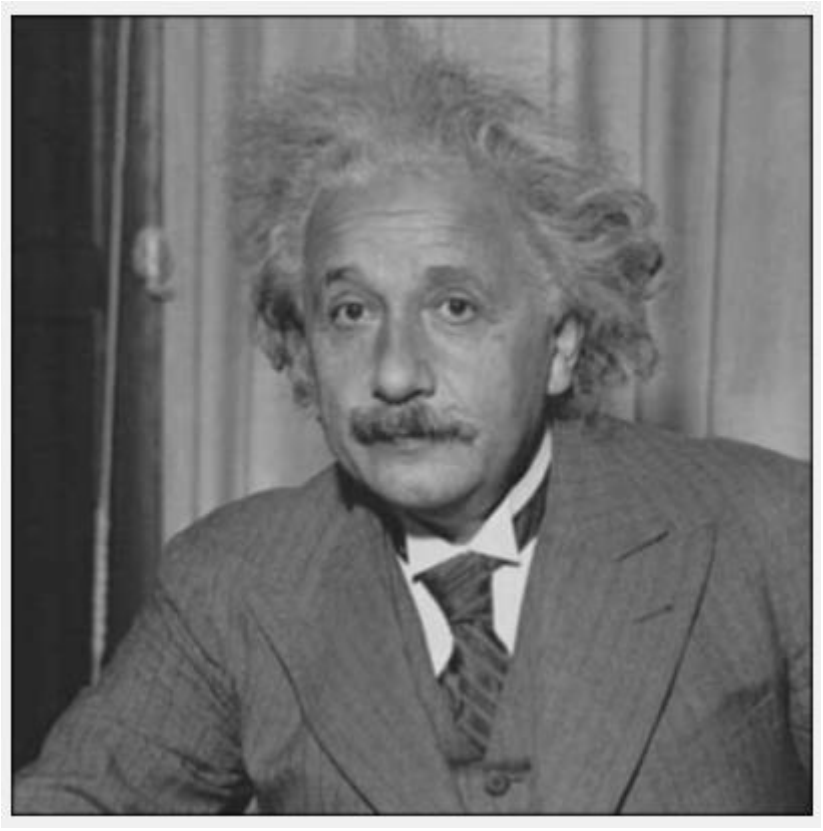
Şekil 14-3x3 Gaussian Filtered Image

Şekil 15-5x5 Gaussian Filtered Image

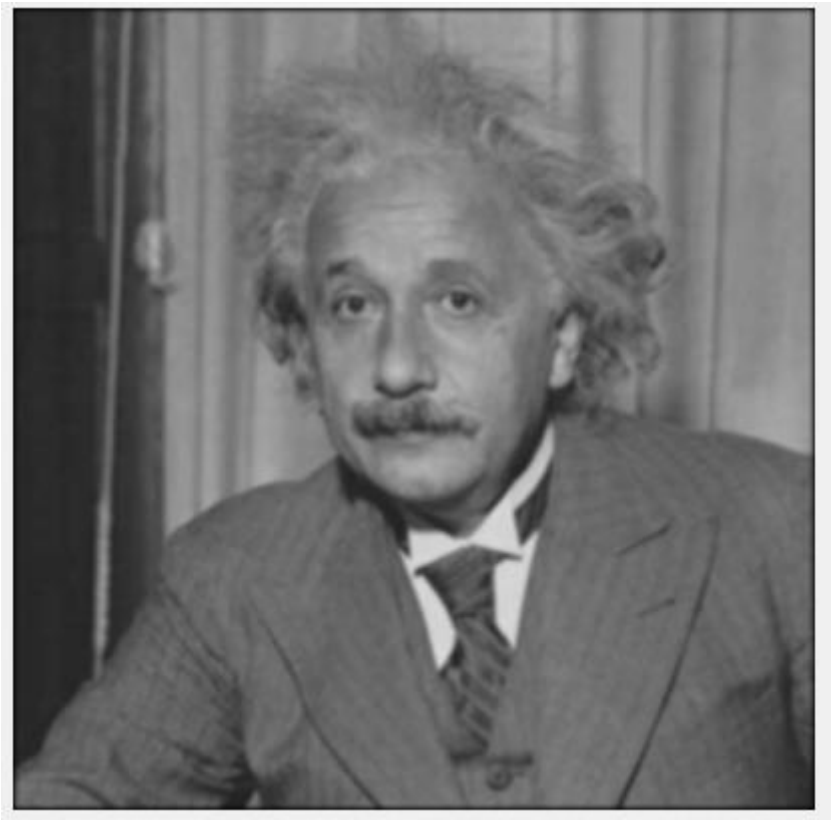
Şekil 16-7x7 Gaussian Filtered Image



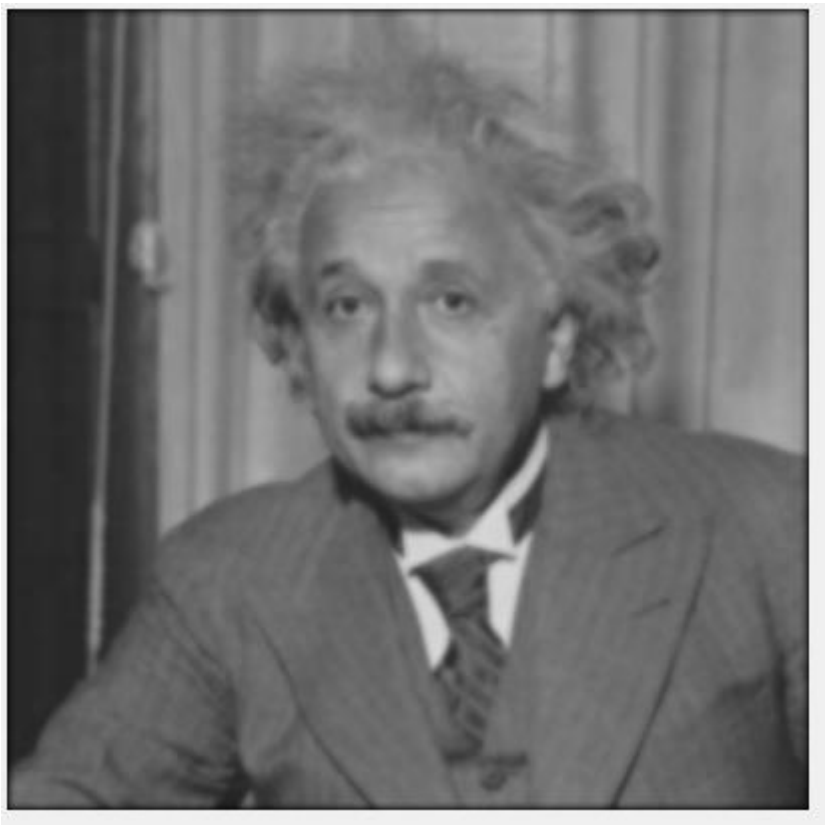
Şekil 17-Original Image



Şekil 18-3x3 Gaussian Filtered Image



Şekil 19-5x5 Gaussian Filtered Image



Şekil 20-7x7 Gaussian Filtered Image

3. I took one of my photos and made it black and white using matlab and saved the file. Then when I was using that jpg file on matlab it gave me a warning that it was too big so I cropped the image and made it smaller. I put the original rgb photo and gray photo to the zip file together in any case. After that I used the given formula in the homework file. I used 3 different alpha values which were 1, 5 and 10. I used 3x3, 5x5, 7x7 gaussian filters and the results are screenshotted.

$$F + \alpha\,(F - \underbrace{F * H}_{\text{blurred image}})$$

(F: image)

Şekil 21-The formula I used in Matlab

Şekil 22-Original Image

Şekil 23-3x3 and a=1 filtered Image

Şekil 24-3x3 and α=5 filtered Image

Şekil 25-3x3 and a = 10 filtered Image

Şekil 26-5x5 and a = 1 filtered Image

Şekil 27-5x5 and a=1 filtered Image

Şekil 28-5x5 and a = 10 filtered Image

Şekil 29-7x7 and a = 1 filtered Image

Şekil 30-7x7 and a = 5 filtered Image

Şekil 31-7x7 and a = 10 filtered Image