

This program mainly talked about the linear filtering of the picture

The code is saved in the **fourth_demo.cpp**. The object of the program is **lena.jpg**. What's more, the results **res5_1.tif**, **res5_2.tif**, **res5_3.tif**, **res5_4.tif**, **res5_5.tif**, **res_6.tif** correspond to the **convolution kernel 1...5** listed as follows.

$$\begin{bmatrix} 0 & 0.2 & 0 \\ 0.2 & 0.2 & 0.2 \\ 0 & 0.2 & 0 \end{bmatrix} \quad (1)$$

$$\begin{bmatrix} 0.2 & 0 & 0 & 0 & 0 \\ 0 & 0.2 & 0 & 0 & 0 \\ 0 & 0 & 0.2 & 0 & 0 \\ 0 & 0 & 0 & 0.2 & 0 \\ 0 & 0 & 0 & 0 & 0.2 \end{bmatrix} \quad (2)$$

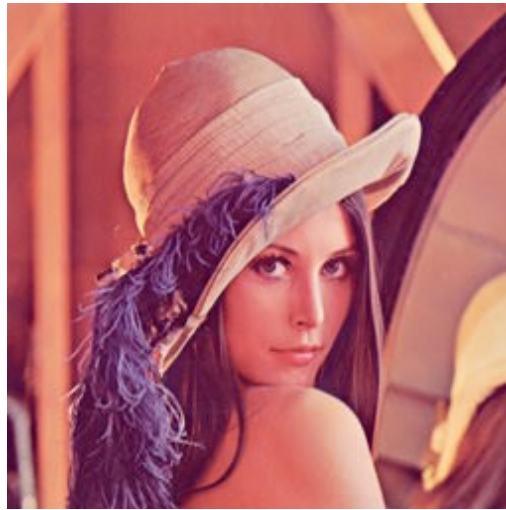
$$\begin{bmatrix} -1 & -1 & -1 \\ -1 & 8 & -1 \\ -1 & -1 & -1 \end{bmatrix} \quad (3)$$

$$\begin{bmatrix} -1 & -1 & -1 \\ -1 & 9 & -1 \\ -1 & -1 & -1 \end{bmatrix} \quad (4)$$

$$\begin{bmatrix} -1 & -1 & 0 \\ -1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} \quad (5)$$

$$\begin{bmatrix} 0.0120 & 0.1253 & 0.2736 & 0.1253 & 0.0120 \\ 0.1253 & 1.3054 & 2.8514 & 1.3054 & 0.1253 \\ 0.2736 & 2.8514 & 6.2279 & 2.8514 & 0.2736 \\ 0.1253 & 1.3054 & 2.8514 & 1.3054 & 0.1253 \\ 0.0120 & 0.1253 & 0.2736 & 0.1253 & 0.0120 \end{bmatrix} \quad (6)$$

you can use these files to run the program on the **visual studio 2017**.



and the results listed as follows:





Good Luck !