Task 6. *Mean filter*

Implement a mean filter with a neighborhood size of 3×3 pixels.

a) Give the formula for calculating the new value $g(x, y)$ of a pixel at $f(x, y)$!

b) What is the function of the filter?

c) In which positions can you not use the formula?

d) Which method of boundary treatment makes sense to you for the mean filter?

e) Implement and test an algorithm for calculating the mean filter!

f) How many arithmetic operations (additions / subtractions, multiplications / divisions) does the algorithm require for an image with height *height* and width *width*?

Tip:

You can use the functions from the last exercise to calculate the minimum and maximum values, or the following DIPLib:

`float max (GrayImage& image)`
>   Calculates the maximum gray value of an image `<image>` and returns it as a return value.

`float min (GrayImage& image)`
>   Calculates the minimum gray value of an image `<image>` and returns it as a return value.