

## Lab 04 Summary

### Exercise one:

- auxiliary function will be employed, to check if a pixel at a given position has the needed label
- the sum may be easily computed going through the function and counting the labeled pixels
- the center of mass is computed using the given formula – returned as an array of two value (here, there were some problems, due to memory allocation in C, but they were solved by using classical methods, namely calloc that allocates the needed size + 1)
- the axis of elongation is computed using the given formula (due to the problem with center of sum, it had a nondeterministic behavior, but it went well after repairing the previous step)
- the perimeter employs an auxiliary function, which tells if a pixel is located on the edge, then it counts the pixels that satisfy the conditions
- thinness and aspect ratio are easily compute using the given function
- all the results are displayed in the console
- the contour of the image is displayed in another matrix, using the function which checks if a pixel is on the edge
- the center is displayed as a circle centered in the center
- the axis of elongation is displayed using two auxiliary points, besides the center, computed using the formula of a line given by an angle and a point (the computed angle and the center) and a random length
- the projection is computed by going through each line or column (correspondingly) and counting how many labeled pixels are present; then in another image, the pixels are displayed from 0 to SUM