

## Homework-5

### Question 1

Write a program that generates a gray-level picture of 200 rows and 500 columns. Associate the value  $x = (255 * j / 499.0)$  with the pixel at row  $i$  and column  $j$ . Convert it to a gray level by rounding. How many distinct values are you able to detect in the image?

Note: to the best of my knowledge there is no “round to nearest integer” in C++ std library. You can achieve this by adding 0.5 and truncating. For example:

```
double x = 0.93;
int round_x = floor(x + 0.5)
```

I suggest that you write your program by changing the provided source for the program “WritingExample.cpp”.

(You need to submit only the number of distinct values that you are observing. Not the source code.)

### Question 2

Write a program that implements the optimal thresholding technique that was described in class. You may want to use the program Threshold.cpp as a template.

What optimal threshold do you get for the picture “lenna.pgm”?

(You don’t need to submit source code as part of your answer.)