# Lab 1. Preparation tasks Template for answers

*Student names and LiU-IDs: (Max 2 students per group):*

*1. Magnus Kling LiU-ID: magkl572*

*2. Max Wiklundh LiU-id: maxwi824*

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## Basic image operations and data types

1 A) What is the highest pixel value in the image?

The highest pixel value is 253

1 B) What is the maximum value for Image2?

The maximum value for Image2 is 16

1 C) What do you see if you display Image2?

We can see a really dark version of image 1 since every pixel value has been divided by 16

1 D) Image3:

A book cover with text and images

Description automatically generated

1 E) How many gray levels does Image3 have?

Image3 has 17 different gray levels. Every pixel value is rounded to the nearest multiple of 16, which gives us 16 + 1 different values between 0 and 255.

1 F) Explain what has happened to the image after these operations!

Every pixel value is rounded to the nearest multiple of 16

1 G) Explain the difference between using uint8 images and double images in this task.

1 H) Which class (data type) should you make sure to use when applying such operations to images?

## Contrast stretching and image histogram

2 A) What is the max- and min- values for the image?

2 B) Histogram:

2 C) Resulting image after contrast stretching:

2 D) What will the max- and min- values be for the stretched image?

2 E) Histogram for the stretched image:

## Image subtraction

3 A) Enhanced difference image:

## Histogram equalization

4 A) Equalized image:

4 B) Histogram for the equalized image:

## Image division and shading correction

5 A) Histogram image:

5 B) Is it possible to find a global threshold to segment this image (look at the histogram)?

5 C) Recovered image:

5 D) Histogram of recovered image:

5 E) Segmented image:

5 F) What is the data type (class) for the segmented image?

5 G) How many bits (per pixel) is required to store this type of image?

## RGB-images and indexing

6 A) Image of Swedish flag:

*Save the document as .pdf before submitting!*