# Lab 1. Preparation tasks Template for answers

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## Basic image operations and data types

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

max(Image(:)) = 253

1 B) What is the maximum value for Image2?

max(Image2(:)) = 16

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

A very dark version of the first image

1 D) Image3:



1 E) How many gray levels does Image3 have?

Using: amounteGreyLevels1 = numel(unique(Image3)) we get 17 different greylevels

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

After the operations, Image3 is a version of the original image where the intensity levels were altered, then approximated back with fewer unique gray levels than the original

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

More precision in the image when using double, though larger file-size.

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

double

## Contrast stretching and image histogram

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

Max = 0.6980, Min = 0.2902

2 B) Histogram:

En bild som visar skärmbild, text, Rektangel, linje

2 C) Resulting image after contrast stretching:



2 D) What will the max- and min- values be for the stretched image?   
min = 0, max = 1

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:

En bild som visar text, skärmbild, Rektangel, linje

## 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)?

Nope, no clear threshold

5 C) Recovered image:

En bild som visar mönster, kvadrat, Symmetri, Rektangel

5 D) Histogram of recovered image:



5 E) Segmented image:



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

logical

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

bits = (1024\*1024)/1048576 = 1

## RGB-images and indexing

6 A) Image of Swedish flag:



*Save the document as .pdf before submitting!*