The goal of this project is to make you work with image operations. Please use any of the available OpenCV functions unless otherwise asked. If you like, you may modify their source code or write your own functions as well. Pls use images Sun database or from Pascal database as discussed in class. Consider two different type of images. The first one should be an image that contains a single dominant object. The second one should be an image of a scene.

Q1. Consider the intensity channel of an image. Consider the following two operations:
   1. Averaging
   2. Gaussian

Comment on the difference.

Q2. Now choose a filter that will find the edges in the given image. Design your own processing in order to find boundaries of objects as good as possible.

Q3. Alternatively, use morphological operators for finding the boundary of objects directly via some intensity transformations and morphological processing. You may use OpenCV methods. Compare the results from Q2.

Q4. Write a function that when given an image, generates a list of either Harris and SIFT features – as asked by the user. It should give a count of how many features and a list of them based on their image coordinates and their values. Pls compare the two features – how similar are these features in regards to pixel location and values via applying it on your images. Also apply them on different instances of images containing either similar object or similar scene. Pls compare the resulting features and comment on their similarity via visual inspection.

Q5. Design and implement an algorithm that represents images using BOW. Consider object (containing a single entity) and scene images separately as follows:
   1. Very similar images
   2. Similar, yet slightly different images (From a slightly different viewpoint)
   3. Similar, yet with substantial changes
   4. Very different images

Pls compare the resulting BOW representations on each type of image.
Write a very short report that explains your methodology and then discusses your results for each part.