ASSIGNMENT 2

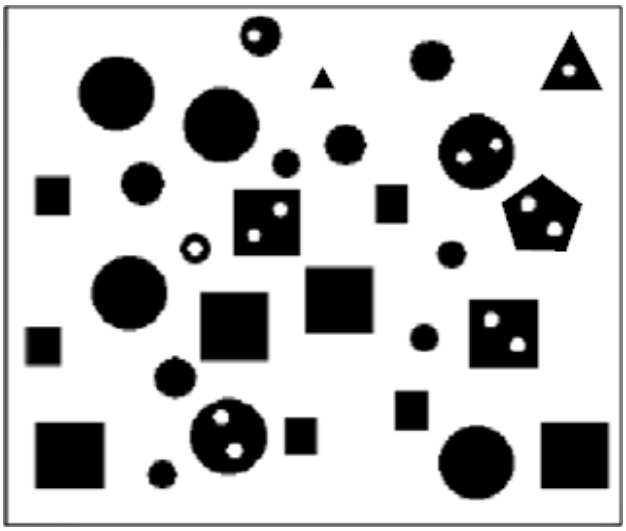
1- Define and comment on the output of following kernels. Implement these filters to two different grayscale images you prefer with Python. Provide the outputs (check also Additional Instructions for Report Preparation and Submission given below) (30 points) (must be done without a python library!)

1	0	-1
1	0	-1
1	0	-1

0	-0.1	0
-0.2	0.6	-0.2
0	-0.1	0

1	0	0
0	0	0
0	0	0

2- Assume that you are developer for photogrammetry and image processing in a company. You are given a task to develop a method that deals with the objects in a scene. Assume that a camera captured binary images, as shown below. The objects do not overlap or not in contact, but may be close to each other. They can be in any size or shape.



Binary image

Write the pseudo-code algorithm that automatically counts only the number of objects with hole(s) and the shape of the object is a triangle. Also present a block diagram of your algorithm to make easy to understand your answer. If there any, please also define any assumptions you perform in your algorithm (about the size/shape/tone/hole etc. of the object). (50 points) (No need to implement a python code!)

3- Please investigate and provide information for “augmented reality” applications with your cell phones. Please also discuss at least three “augmented reality” applications that can be utilized in the context of Geomatics Engineering (provide the details for your answer.) (20 points)

ADDITIONAL INSTRUCTIONS FOR REPORT PREPARATION AND SUBMISSION

1. The homework report must be in pdf format.
2. All submitted files should include student’s name and number in the file name.
3. Explanations for the code should be given in the code as comments and also in the report.
4. Attach your python codes as .py files and images as well (as a single zip file).
5. Although collaborations are encouraged, plagiarism will not be tolerated!