# Department of Computing

**EE433: Digital Image Processing**

**Class: BSCS 5AB**

# Lab 4: Connected components labeling

**CLO2: Identify and exploit analogies between the mathematical tools used for 1D and 2D image analysis and processing**

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# Lab 4: Connected components labeling

**Introduction**

This lab is to introduce connected components labeling.

**Objectives**

This lab will provide the concepts of connected components and its significance in image processing.

**Tools/Software Requirement**

Python 2.7

**Description**

Connected components labeling scans an image and groups its [pixels](http://homepages.inf.ed.ac.uk/rbf/HIPR2/pixel.htm) into components based on [pixel connectivity](http://homepages.inf.ed.ac.uk/rbf/HIPR2/connect.htm), i.e. all pixels in a connected component share similar [pixel intensity values](http://homepages.inf.ed.ac.uk/rbf/HIPR2/value.htm) and are in some way connected with each other. Once all groups have been determined, each pixel is labeled with a Gray-level or a color (color labeling) according to the component it was assigned to.

Extracting and labeling of various disjoint and connected components in an image is central to many automated image analysis applications.

**Lab Tasks**

Implement the connected component labeling algorithm discussed in class on the image given in the lab.

**Deliverable**

Hand in the source code from this lab at the appropriate location suggested by The Lab incharge.