CS571: Artificial Intelligence
Assignment 1: Python
Due: Friday, February 4

For this problem, you are only allowed to use standard python libraries. You may not use third party libraries or call any shell/bash functions.

You are given a list of tuples of the form (<float> x, <float> y, <float> r) (Let's call these c-tuples). Each c-tuple represents a circle on a rectangular coordinate space, with x and y being the coordinates of the center, and r being the radius. Assume that each c-tuple has a unique radius.

Let a cluster of circles be a group of circles where each circle in the group overlaps with at least one other circle in that group. A path is formed between two circles when they overlap. Define a cluster as a group of n circles, where each circle is reachable from every other circle through the formed paths.

Write a python script that does the following: Return True if the given circles form a cluster and return false if they don't form a cluster.
Some examples are shown.

Input: [(1, 3, 0.7), (2, 3, 0.4), (3, 3, 0.9)]

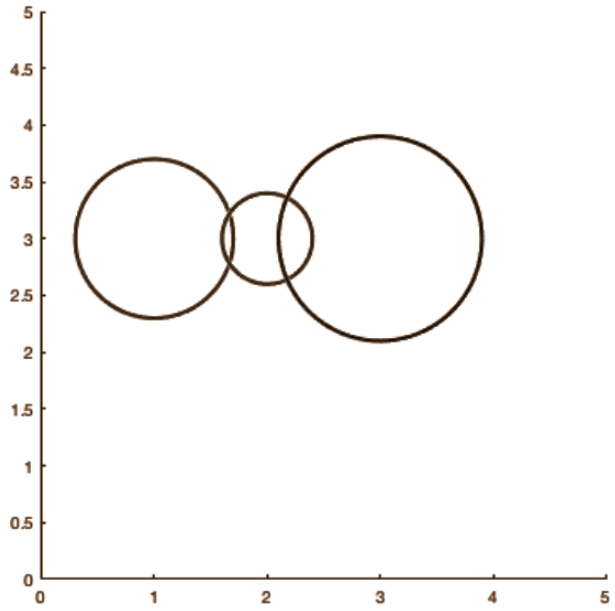

Figure 1: The three circles form the cluster. Output = True

Input: [(1.5, 1.5, 1.3), (4, 4, 0.7)]

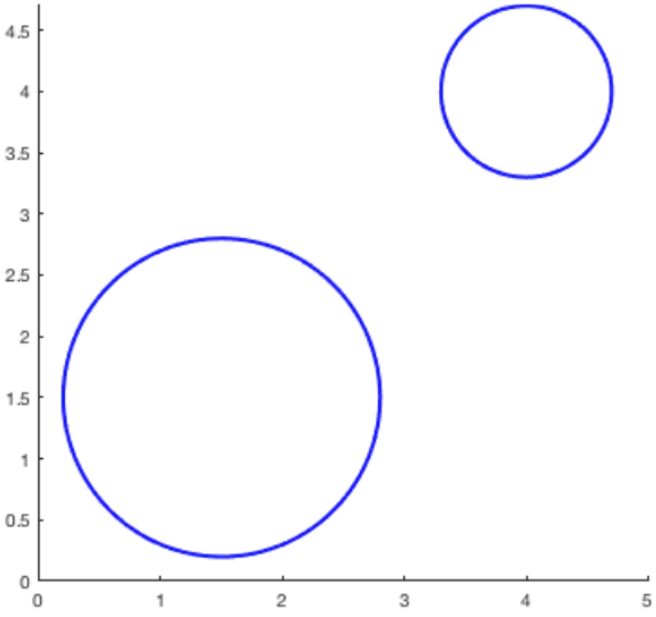

Figure 2: No clusters are found. Output = False

Input: [(0.5, 0.5, 0.5), (1.5, 1.5, 1.1), (0.7, 0.7, 0.4), (4, 4, 0.7)]

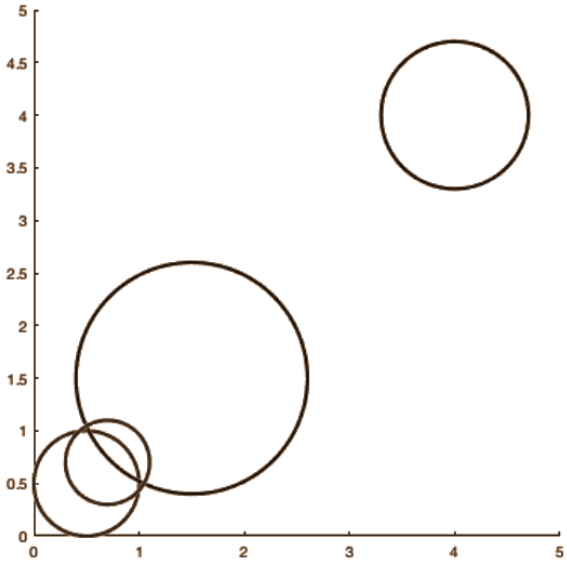

Figure 3: Given circles do not form a cluster. Output = False