

**Lab 11 · Distance Computation***Lecturer: Philippos Mordohai, Shudong Hao**Date: November 16*

## 1 Objective

Continue working with floating point numbers and loops.

## 2 Distances between Points

Given a set of 2D points, with  $(x, y)$  coordinates, the goal is to find (i) the pair of points that are closer to each other, and (ii) the pair of points that are further from each other.

The length of the segment connecting two points can be computed using the Pythagorean theorem. It is also known as the Euclidean distance between two points.

In this lab, you are given two arrays of doubles representing the  $x$  and  $y$  coordinates of  $N$  2D points. You should compute the largest and smallest distance between any **two** of these points, and importantly record which pairs of points correspond to these distances. (**Hint:** you do not need a square root function to do this.)

Print out the indexes of the appropriate points with human-readable prompts (*e.g.*, “Largest distance between points: i and j”).

We provide a sample dataset, but your code will be tested on a different dataset with a different number of points.

## 3 What to Submit

Your source code in a .s file. (No partial credit if the code does not run.)