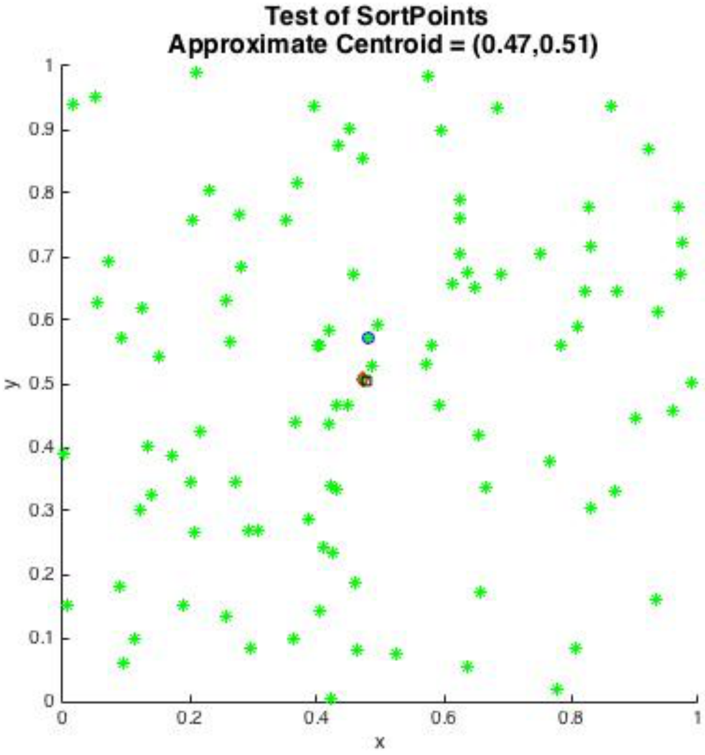
Chem/Stat3240: Homework 10b
Matlab

November 4, 2015

1. Write a function `[Q1,Q2,Q3]= SortPoints(P)` that first sorts a structure array of points P in order of increasing distance from the origin to create a structure array `Q` which is a permutation of `P.` (Hint: Apply the `sort` command to a numerical array whose components contain the distances of the corresponding points and use the output of sorted indices.). If there are n points in the structure array, then `Q1` is the median point in the sorted array `Q`, i.e. `Q1=Q(round(n/2))`.

   Compute the centroid of the structure array P with the `CentroidPoints` function from homework 10a and then determine the point in the structure array closest to the computed centroid. This is the output `Q2`. The output `Q3` is the computed centroid.

   Your function should use a circle marker to plot `Q1`, a diamond marker to plot `Q2`, and a square marker to plot `Q3`, on that same plot with the point set. Include the coordinates of the approximate centroid in the plot title as shown below. Submit the function `SortPoints` to Cody and to the collab site and a pdf of the plot to the collab site



2. Write a function `[string_out] = deleteDups(string_in)` that takes an input string of some length and returns an output string without any duplicate characters, and in the order in which the characters appeared in the string. This can be done with a single for loop to index through the string and keeping only those characters not yet encountered.

   Now write a function `B = SortLength(C)` that takes an input cell array `C` containing strings of varying lengths, then applies the `delelteDups` function to each string, and outputs a cell array `B` containing the duplicate deleted strings sorted in order of string length from largest to smallest. (Hint: Look at options on the `sort` function)

   Submit the code for both functions to the Cody site as well as the Collab site.