CSCI 338: Quiz 3

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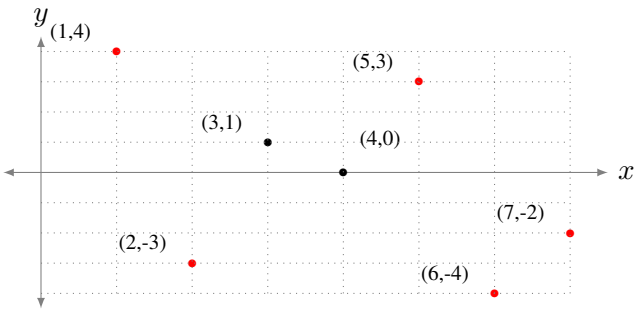
Friday, March 19

Problem 1

Based on the reduction from Sorting to 2D Convex Hull that was covered on March 15, suppose that the input for Sorting are given as $x_1 = 4$, $x_2 = -3$, $x_3 = 1$, $x_4 = 0$, $x_5 = 3$, $x_6 = -4$, $x_7 = -2$.

(1) List the points constructed for the 2D Convex Hull problem. (You must list the coordinates of the points.)

x_n	Value	Point Coordinate
x_1	4	$(1, 4)$
x_2	-3	$(2, -3)$
x_3	1	$(3, 1)$
x_4	0	$(4, 0)$
x_5	3	$(5, 3)$
x_6	-4	$(6, -4)$
x_7	-2	$(7, -2)$



Note: The red points represent the points used to create the perimeter of the 2D convex hull.

(2) Briefly show how the sorted points x_i's are obtained once the 2D convex hull is given.

Once the convex hull is given, the sorted points x_i's are obtained by; starting with the leftmost vertex, the hull then lists the vertices in counterclockwise order (i.e. sorted order).