1. (a) Assume you have an alphabet of letters from "l" to "u". Illustrate the operation of radix sort on the following list of ten English words:

    slump, torso, roust, torus, plums, routs, lumps, tours, ousts, roots

   (b) Use "roust" and "torus" in one English sentence that shows that you understand the meaning of both words. (Do NOT write two sentences. Do NOT define the words. Do NOT pass GO. Do NOT collect $200.)

2. Consider the area enclosed by the x-axis, the line $x = 1$, and the curve $y = x^2$. Assume that n points are uniformly distributed randomly inside it. (The n points can be represented by n pairs of real numbers $(x_1, y_1), (x_2, y_2), \ldots, (x_n, y_n)$.)

   (a) Show that you can sort the points by their distance to the y-axis in average-case linear time. You can assume that bucket sort works in average-case linear time.

   (b) Give the pseudo-code for your algorithm.