Assignment 3
2020spring

1. Use master theorem to solve (if master theorem can not be applied, write the reason):

a. $T(n) = 9T(n/3) + n$

b. $T(n) = 9T(n/3) + 1000n^2$

c. $T(n) = 9T(n/3) + 1000n^3$

d. $T(n) = 9T(n/3) + n^2 \log n$

e. $T(n) = 0.5T(n/2) + n$

f. $T(n) = 2T(n/2) - n$

g. $T(n) = nT(n/2) + n\log n$

h. $T(n) = T(n-2) + n^2$

i. $T(n) = T(7n/10) + n$

j.

$T(n) = 2T(n/4) + \sqrt{n}.$

2. Can master theorem be applied to

$T(n) = 4T(n/2) + n2\log n$?

Why or why not?

3. Use COUNTING_SORT to draw the process of sorting

A = { 4, 8, 4, 2, 9, 3, 6, 6, 9, 0, 9}

using C as intermediate array and Result to be the result array

in the step of assigning A into Result array after constructing C, what is the difference between traversing A from left to right (from 1 to A.length) and from right to left (from A.length down to 1)?

4. Illustrate the process of using Radix sort to sort:

DOG
RUG
ROW
BIG
FOX
NOW
BAR
EAR
COW

write each result of each pass

5. Are insertion sort and merge sort stable sort? explain why.