Assignment 3

COEN279/AMTH377
Winter2022
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1. Use the recursion tree method to solve the recurrence:

$$T(n) = 2T(n/2) + n^2$$

2. 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. $T(n) = 4T(n/2) + n^2 \log n$.

3. Solve the leetcode question no 53 (Max Subarray)

   Implement a solution that submission can be accepted.
   Provide screen shot of your submission.
   (Check discussion for solution if you cannot figure it out yourself,
   a linear solution can be found in the file bentley-max-subarray.pdf in camino)

4. Solve the leetcode question no. 240 (Search a 2D Matrix II)

   Implement a solution that can be accepted.
   Provide screen shot of your submission.
   (You can check "discussion" if you cannot figure out an efficient solution).