

CPSC 320: TUTORIAL 3

1. Find the lower and upper bounds on the solution to the following recurrence relation: $T(n) = T(\frac{4n}{5}) + 2T(\frac{2n}{5}) + T(\frac{n}{5}) + n^2$ if $n = 5$, with $T(1) = T(2) = T(3) = T(4) = 1$.

2. Design a divide-and-conquer algorithm to compute a^n , where a and n are both non-negative integers. Analyze the running time of your algorithm as a function of n .