

CS 311 Data Structures and Algorithms, Fall 2024
In-Class Worksheet 2: The Master Theorem

1. Algorithm B is given a list as input. It uses a Decrease and Conquer strategy. It splits its input in half (or nearly so), and makes a recursive call on one of the parts. It also does other work requiring linear time.

Use the Master Theorem to determine the order of Algorithm B . As a guide through this process, answer each of the following.

$b =$ _____; $a =$ _____.

$f(n)$ is $\Theta(n^d)$. $d =$ _____.

Compare a and b^d . Circle one comparison operator: a $<$ $=$ $>$ b^d .

Which case of the Master Theorem? Circle one: 1 2 3

Conclusion. The order of Algorithm B is (simplify!): _____.