Task - 2

The function dvd_nd_cnqr is a recursive function that takes a list of integers d and an optional arguement max_val. It returns a tuple containing two values: a list of integers and the maximum value in that list. If the length of the input list is 1, return the list and its only element as the maximum value. If the length of the input list is 2, return the list and the maximum value between it's two elements. Otherwise, divide the input list into two halves and recursively call dvd_nd_cnqr on each half. Compare the maximum values returned by each recursive call, and return the concatenation of the two lists with the larger maximum value. The time complexity of this algorithm can be expressed as $T(n) = 2T(n/2) + O(1)$, where n is the length of this input list. This recurrance relation can be solved using master theorem, which gives a times complexity of $O(n \log n)$ for this algorithm.