Divide And Conquer – Recurrence Inequalities

The simplified master theorem can also be extended for recurrence inequalities .Sometimes the recurrence equation is of the following form:

$$T(n) \leq 2T\left(\frac{n}{2}\right) + cn$$

This kind of recurrence is called recurrence inequality.The master theorem can be used to solve this inequality.

Thus if the recurrence can be written in the following form:

$$T(n) \leq aT\left(\frac{n}{b}\right) + cn^k$$

then one can use the big – oh (O)notation.

Similarly, if the recurrence is of the following form:

$$T(n) \geq aT\left(\frac{n}{b}\right) + cn^k$$

Then Θ can be replaced by Ω .

The same logic can be extended to other notations as well.

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