# *Divide And Conquer – Simplified Master Theorem –Example 2*

***Solve the following recurrence using the generalized master theorem***:

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

***Solution***

***This recurrence is of the following form***: $aT\left(\frac{n}{b}\right) + cn^k$

***Here*** $a = 2$ , $b = 2$ ***and*** $k = 1$.

***Since*** $a = b^k (i.e., 2 = 2^1)$,

$T(n) = \Theta(n^k \log n) = \Theta(n^1 \log n) = \Theta(n \log n)$.

***Therefore, the complexity of this function is*** $\Theta(n \log n)$.

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