

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

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(1)

$$= r \left(rT\left(\frac{n}{r^2}\right) + \frac{n}{r} \right) + n = r^2 T\left(\frac{n}{r^2}\right) + rn$$

$$= r^k T\left(\frac{n}{r^k}\right) + rn = r^k T\left(\frac{n}{r^k}\right) + kn$$

$$\underline{k = \log n} \quad nT(1) + n \log n \approx n + n \log n \Rightarrow O(n \log n)$$

QUICK SORT \Rightarrow QUICKSORT

(2)

\Rightarrow QUICK [R] S [TU] \Rightarrow ICK [Q] Q [RSTU]

\Rightarrow IC [K] [OQ RSTU] \Rightarrow CI K OQ RSTU