BS
SS
IS
QS

N^2 (B, A, W)

(NlogN, NlogN, N^2)

① $\log_c a^b = b \log_c(a)$

② $a^{\log_a c} = c$

$T(N) = N + 2T(N/2)$

$2T(N/2) = 2(N/2) + 2^2 T(N/2^2)$

$2^2 T(N/2^2) = 2^2(N/2^2) + 2^3 T(N/2^3)$

$2^3 T(N/2^3) = 2^3(N/2^3) + 2^4 T(N/2^4)$

$2^k T(1) = 2^k(N/2^k) + 2^{KN} T(0)$

$T(N) = KN + 2^{KN}$

$T(N) = N\log(N) + 2.N$

$T(N) = O(N\log(N))$

$N/2^0, N/2, N/2^2, N/2^3, \ldots\ldots 8, 4, 2, 1$

$a_0 = N$

$\gamma = (1/2)$

$\text{term} = (KN)$

$a_k = a_0 \gamma^k$

$1 = N\left(\frac{1}{2}\right)^K$

$2^K = N$

$K = \log_2(N)$

$T(N) = N + T(N-1) + T(0)$

$T(N-1) = (N-1) + T(N-2) + T(0)$

$T(N-2) = (N-2) + T(N-3) + T(0)$

$T(1) = 1 + T(0) + T(0)$

$T(N) = [N + (N-1) + (N-2) \ldots\ldots 2 + 2^{N-1}] + NT(0)$

(decreasing)

$= \frac{(N)(N-1)}{2} + N$

$T(N) = O(N^2)$