Complexity classes

1) constant complexity → $O(1)$

2) Logarithmic complexity → $O(\log n)$ → **Binary Search**

3) Linear complexity → $O(n)$ → **Linear Search**

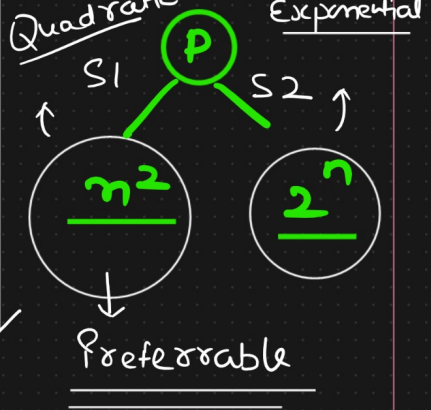
4) Quadratic complexity → $O(n^2)$

5) Cubic complexity → $O(n^3)$

6) Polynomial complexity → $O(n^c)$, $c>0$

7) Exponential complexity → $O(c^n)$ → $c>1$

$O(2^n)$



$f(n) = O(g(n))$

$f(n) <= c \cdot g(n)$

30 min → 1-20 (MCQ's)* (fundamentals)

1 hr ⇐ 2 (coding questions)

8) $n! < n^n$

$2^n < n^n$

$n! > 2^n$

$2^n \rightarrow O(n!)$

$2^n < n! < n^n$

* GATE (Maskers) → DSA

9) $\log n < n$ — True

$(\log n)^2 < n^2$

$(\log n)^3 < n^3$

$(\log n)^{\log n} > n^{\log n}$

$\log n (\log(\log n)) > \log n (\log n)$

10) $2^n < 3^n$

$2^n < (2 \times 1.5)^n$

$\rightarrow 2^n * (1.5)^n$

11) $\log_2 n > \log_3 n$

$\log_{33} n > \log_{40} n$