↳ DSA
  ↳ Asymptotic Analysis
  ↳ How to calculate Space & Time complexity

Onam-Tech

Time for
operation
min

Big (O) Worst → Trip cancel P₄ solo trip
Theta (θ) Avery → P₁, P₂ are going on a trip
omega (Ω) Best → All will go on a trip

$Space \& Time$
  $O(1)$
  $O(n)$ # n → the length of array
  $O(n^2)$
    $O(log n)$
    $O(2^n)$
    $O(2 log n)$
  $O(n)$, $O(1)$

[A-Z] Dictionary
  ↳ Mana Best (Ω)
  ↳ Mid Avg (θ)
  ↳ Zoom Worst (O)

Asymptotic Analysis
search in an array
$[1, 2, 4, 5]$ = input
  ↑
Time

Worst → elemt is in the end (input = 5)
Average → elemt is found in (input = 2)
Best → first elemt is output o/w (input = 3)

$[1, 2, 4, 5]$ **nested Loop**

for (
  for (
  }
}

Time
  ↳ Input size (n)
  ↳ Identify the operations
    ↳ for loops
      ↳ nested loops
        ↳ recursion
  ↳ count the operations
  ↳ find the Time complexity

$Time \propto input\ size$
complexity

Array
  ↳ push, pop, shift, unshift, split,
    includes, concat, slice, map,
    reduce, some, every, indexOf, lastIndexOf, sort

String
  ↳ search, indexOf, lastIndexOf, includes, slice,
    toUpperCase, toLowerCase, trim, charAt)

Why DSA
  ↳ Problem Solving & Logic Building
  ↳ Code optimization
  ↳ Interview Preparation
  ↳ Algorithm Design
  ↳ Career
  ↳ API Libraries

Two Sum $[1, 3, 4, 5], target = 7$
                                    length = 4
for (let i ≥ 0; i < arr.length; i += 1) {   i = 1
  for (let j = i+1; j < arr.length; j += 1) {   j = 2
    if (arr[i] + arr[j] == target) {
      return arr[i] arr[j]
    }
  }
}

$arr[1] + arr[2] == 7$