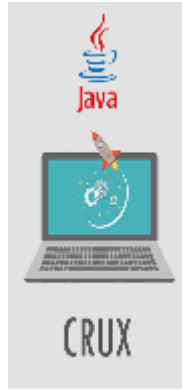
CODING BLOCKS

Complexity

- Time Complexity
- Space Complexity
- Optimizations

Sumeet Malik



Merge Sort

Quick Sort

Order Complexity Analysis

Amount of time/space taken by the algorithm to run as a function of the input size

Experimental Analysis

Bubble vs Merge Sort

Theoretical Analysis

- Linear Search
- Binary Search
- Factorial
- Bubble Sort, Selection Sort, Insertion Sort
- Merge Sort and Quick Sort
- Fibonacci

CODING BLOCKS

Complexity Analysis


```
for(int I = 0; I <= N; I++){
    for(int j = I; j <= k; j++){
    // some operation taking time c.
    }
    // some operation taking time c'
}
```

Time Complexity for some K < N

Complexity Analysis


```
for(int I = 1; I <= N;){
    for(int j = 1; j <= k; j++){
    // some operation taking time c.
    }
    I += k;
}
```

Time Complexity for some K < N

Think

- MaximumInArray
- CheckDuplicate
- Intersection of arrays (two, three)

CODING BLOCKS

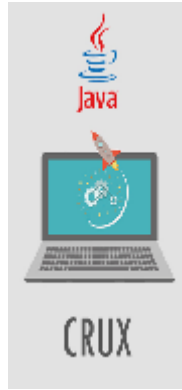
Lets write some code

- Polynomial
  $1.X^{n} + 2.X^{n-1} + 3.X^{n-2} + .. + n.X^{1}$
- Sieve of Eratosthenes
- Number of substrings which are palindromes
- Power

CODING BLOCKS

ArrayList
&
StringBuilder

CODING
BLOCKS



Space complexity?

What in case of recursion?

CODING BLOCKS

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Thank you

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