Class 20

Thursday, June 9, 2022 11:03 PM

Sorting → 4 1 5 2 10 3

1 | 2 5 4 10 3

$\binom{n}{2} = \frac{n!}{(n-2)!\,2!} = \frac{n(n-1)}{2}$

Bubble Sort → $O(N^2)$ → Comparison based

$\approx n^2$

```
void bubble-sort(vector<int>& vc) {
    for(int i=0; i<n; i++)
        for(int j=i+1; j<n; j++)
            if(vc[i] > vc[j])
                swap(vc[i], vc[j]);
}
```

$O(N \cdot K)$

sakib

10^4

10^1

a → 1
b → 1
c → 0
i → 1

5 1 2 1 5 3 3 2

1 2 3 4 5
2 2 2 0 2

$v_0 = v_3 \leq v_4$

Insertion Sort

key = 2

j

1 | 2 3 10 4 5

arr[j] = 1
key = 2

v_0 v_1 v_2 v_3 v_4 v_5

1 2 2 3 4 5

$v_0 = v_3 \leq v_4 \leq v_5$