Lab 2

→ Algos boils down to comparison/sorting/searching.

⇒ Three sorting Algos.

1) Bubble Sort [Best O(n), Worst $O(n^2)$]
2) Selection [Best/Worst, $O(n^2)$]
3) Insertion [O(n), $O(n^2)$]

Bubble Sort

```
int main()
{
    int n, i, arr[10], j, temp;          C.1
    // Get numbers from user
    for(i=1; i<n; i++)                   C.n
    {
        for(j=0; j<(n-1); j++)           C.(n x n)
        {
            if(arr[j] > arr[j+1])
            {
                temp = arr[j];
                arr[j] = arr[j+1];
                arr[j+1] = temp;
            }
        }
    }
```

Example

arr[5, 1, 4, 2, 8]

First Pass

(5, 1, 4, 2, 8) → (1, 5, 4, 2, 8) → (1, 4, 5, 2, 8) → (1, 4, 2, 5, 8)

Second Pass

(1, 4, 2, 5, 8) → (1, 2, 4, 5, 8)

Third Pass

(1, 2, 4, 5, 8).

→ Have to do one pass.