Bubble Sort & Selection Sort

Bubble Sort

- **time complexity**

    - **Worst = O(n^2)**
    - Best = Omega(n)
    - Average =

- **in-place vs not-in-place**

    - **in-place**
- **stable vs unstable**

    - **stable**

        - [2, 2, 1] 오름차순 정렬시 stable

```java
public class MyBubbleSort {
    static void sort(int[] arr){
        for(int i=0;i<arr.length-1;i++){
            for(int j=0;j<arr.length-i-1;j++){
                if(arr[j]>arr[j+1]){
                    swap(arr,j,j+1);
                }
            }
        }
    }
```

Selection Sort

- **time complexity**

    - **Worst = O(n^2)**
    - Best = O(n^2)
    - Average O(n^2)
- **in-place vs not-in-place**

    - **in-place**
- **stable vs unstable**

    - **unstable**

        - [2, 2, 1] 오름차순 정렬시 stable 깨짐

```java
public class MySelectionSort {
    public static void sort(int[] arr){
        for(int i=0;i<arr.length-1;i++){
            int maxIdx=i;
            for(int j=i;j<arr.length;j++){
                if(arr[maxIdx]<arr[j]){
```

```java
                    maxIdx=j;
                }
            }
            //swap
            swap(arr,i,maxIdx);
        }
    }
    public static void swap(int[] arr, int a, int b){
        int temp = arr[a];
        arr[a] = arr[b];
        arr[b] = temp;
    }
}
```