Lecture-17

Bubble sort

```cpp
#include <bits/stdc++.h>
void bubbleSort(vector<int>& arr, int n)
{
// Write your code here.
for(int i=0;i<n-1;i++){
for(int j=0;j<n-i-1;j++){
if(arr[j]>arr[j+1]){
swap(arr[j], arr[j+1]);
}
}
}
}
```

- Optimized solution -->

```cpp
#include <bits/stdc++.h>
void bubbleSort(vector<int>& arr, int n)
{
// Write your code here.
for(int i=0;i<n-1;i++){
bool swapped = false;
for(int j=0;j<n-i-1;j++){
if(arr[j]>arr[j+1]){
swap(arr[j], arr[j+1]);
swapped = true;
}
}
if(!swapped){
break;
}
}
}
```

- Bubble sort is a stable algorithm
- Inplace sorting algorithm-->

https://www.baeldung.com/java-in-place-sorting#:~:text=The%20in%2Dplace%20algorithms%20are,the%20input%20with%20the%20output.