

DSA-2020-Lab 7

Sorting

- **bubble Sort**

- Write the vector<int> based Bubble sort
 - Using two nested loops
 - Using do while and a nested loop
 - Using the Bubbling function which should return a bool if any change happens during the bubbling.
- Write the list<int> based Bubble Sort function
 - Repeat for above question
 - first swap using data swap
 - second through pointers swap

- **Write the Merge function**

- vector<int> Vs based merge function
- list<int> L based on
- Analyze its time complexity

- **Write the code for Merge Sort**

- vector<int> Vs based merge function
- list<int> L based on

- **Write the code for Selection Sort**

- vector<int> Vs
- list<int> L

- **Write the code for Insertion Sort**

- vector<int> Vs
- list<int> L

- **Write the code for Bucket Sort**

- First on a given list do bucketing... and then within each bucket insert in sorted order and then merge them all together, One after the other.

SUDO For BucketSort:

```
void BucketSort(vector<int> Vs) {
    NumberOfBuckets = 16;
    vector<vector<int>> Bs(NumberOfBuckets);
    Vs.size(); // 16
    for(i:0->Vs.size())
    {
        int IndexOfBucket = Vs[i] % NumberOfBuckets;
        InsertionSort(Bs[IndexOfBucket],Vs[i]);
    }
    Pass all Buckets to this function:
        MergeInSortedWay
}
```

NOTE: EVERY QUESTION's derivation of Time Complexity is MUST. 25% credit is writing and explaining about your algorithm's Time complexity (in comments section of the code).

<https://visualgo.net/en/sorting>

Link to visually see sorting using different algorithms.

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