NOTRE DAME UNIVERSITY
BANGLADESH
Computer Club

Competitive Programming Class Documentation
Level : Intermediate

Instructor : MD. Tanvir Rahman Tareq
Github : Tanvir Tareq

Schedule : Saturday, 10am.
Room No. : Computer Lab-418

Lecture-01
Date : 12th April, 2025

Topic : Standard Template Library (STL)

- **Discussed About :-**

1. What is STL
2. Uses of Vector
3. Uses of Set
4. Uses of Multiset
5. Order_set
6. Pair
7. Template for Order_set → Link

- **Discussed Problems :-**

1. Stack – Leetcode 678. Valid Parenthesis String
2. Inverse Number counter using odered_set Link

- **Next Discussion Topic :-**

1. Map
2. Stack
3. Queue
4. Priority Queue
5. Dequeue

Possible Issues : Code::Blocks Version was not updated for STL. For ignoring Compiler issues we have used Usaco IDE

Class-Code :

```
#include<bits/stdc++.h>
using namespace std;
#include <ext/pb_ds/assoc_container.hpp>
#include <ext/pb_ds/tree_policy.hpp>
using namespace std;
using namespace __gnu_pbds;
// Define the ordered_set template with a customizable comparator
template<typename T, typename Compare   less<T>>
using ordered_set   tree<T, null_type, Compare, rb_tree_tag,
tree_order_statistics_node_update>;
int main() {
ios_base::sync_with_stdio(false);
cin.tie(NULL);
ordered_set<int> st;
st.insert(0);
st.insert(1);
st.insert(2);
st.insert(5);
st.insert(7);
st.insert(8);
cout<<*st.find_by_order(3)<<endl;
// cout<<st.order_of_key(6)<<endl;
// cout<<*st.lower_bound(6)<<'\n';
// cout<<distance(st.begin(), st.lower_bound(6))<<endl;
return 0;
}
```

Inverse Number Counter :-

```
#include<bits/stdc++.h>
using namespace std;
#include <ext/pb_ds/assoc_container.hpp>
#include <ext/pb_ds/tree_policy.hpp>
using namespace std;
using namespace __gnu_pbds;
// Define the ordered_set template with a customizable comparator
template<typename T, typename Compare   less<T>>
using ordered_set   tree<T, null_type, Compare, rb_tree_tag,
tree_order_statistics_node_update>;

int main ()
{
ios_base::sync_with_stdio(false);
cin.tie(NULL);
int n;
cin >> n;
vector<int> v;
```

```
for (int i 0; i<n; i++){
int x;
cin >> x;
v.push_back(x);
}
ordered_set<pair<int, int> > ost;
int ans   0;
for (int i v.size()-1; i>=0; i++){
ans  ost.order_of_key({v[i],-1});
ost.insert({v[i],i});
}
cout << ans << "\n";

return 0;
}
```