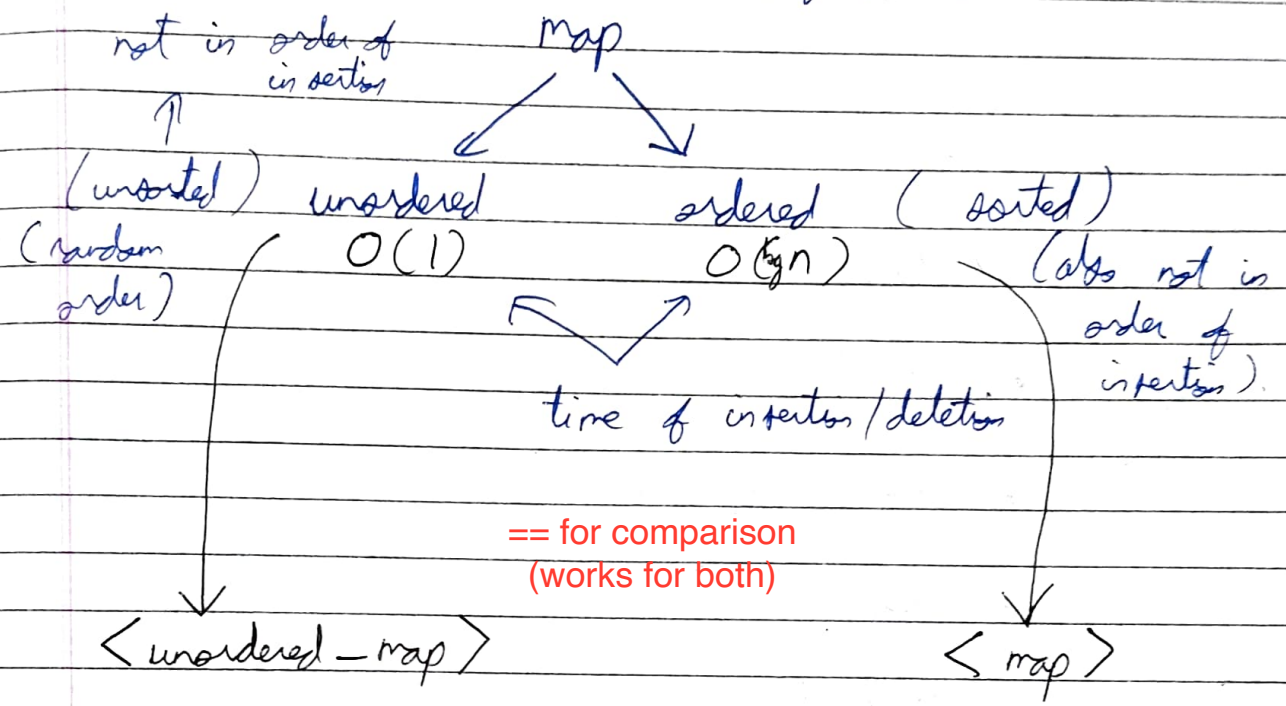
Map

→ container to store key - value pair.

(unique)



⇒ creation :

```
unordered_map < int, char > table ;

map < int, char > table2;
```

⇒ insertion :

① first create a pair and then use .insert ( )

eg - table . insert (make_pair (x, a));

② table [key] = value ;

or table.at(key) = value ;

* iterators : .begin() , .end()

* functions :

① .empty()

② .size()

③ .erase(key)

④ .clear()

(*) ⑤ .find(key)

↓

returns iterator corresponding to key.

if not found then returns : .end()

Sorting a Map by value in C++ STL

Last Updated : 29 Dec, 2022

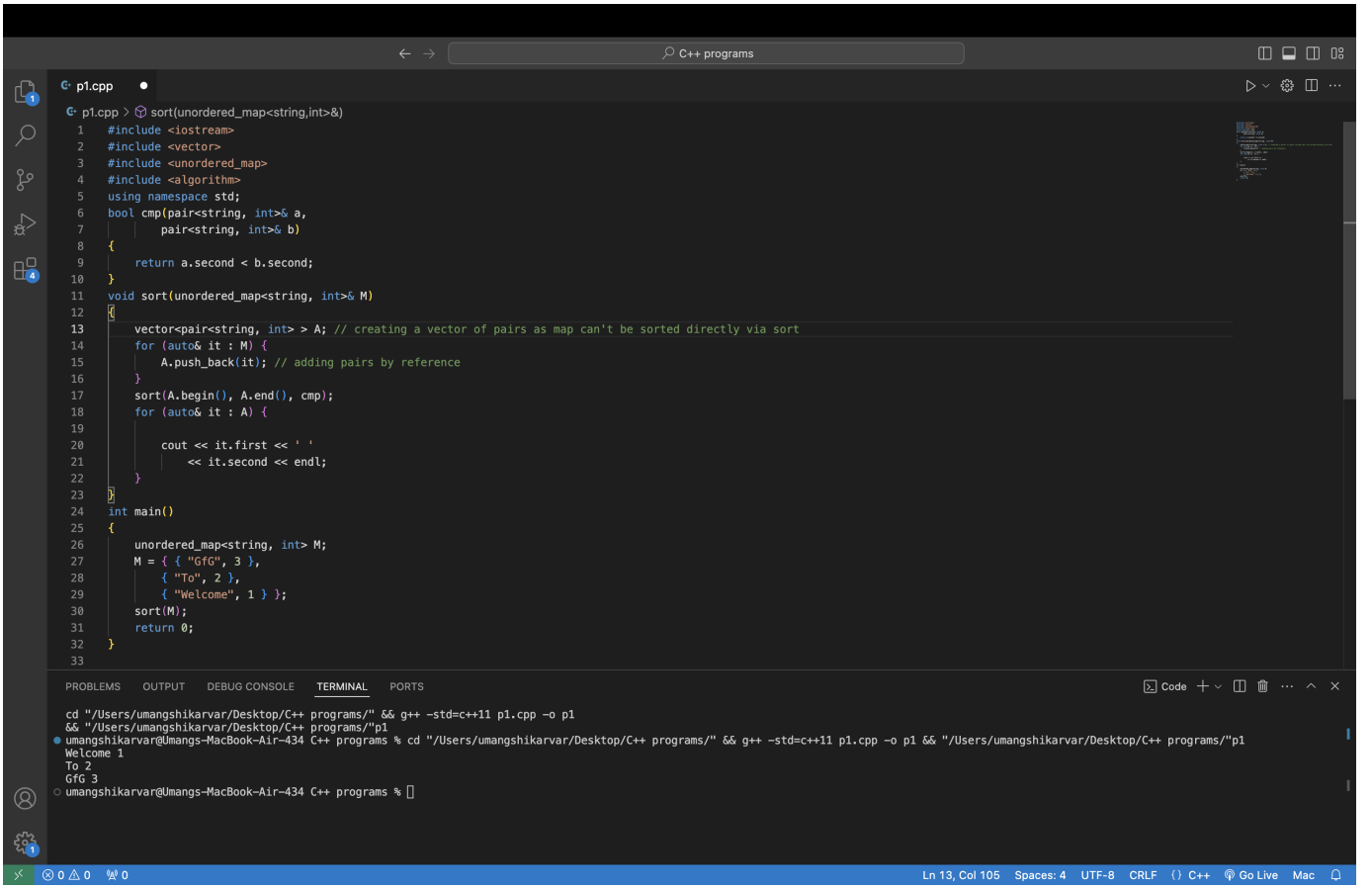
Maps are associative containers that store elements in a mapped fashion. Each element has a key value and a mapped value. No two mapped values can have equal key values. By default, a Map in C++ is sorted in increasing order based on its key. Below is the various method to achieve this:

Method 1 – using the vector of pairs The idea is to copy all contents from the map to the corresponding vector of pairs and sort the vector of pairs according to second value using the lambda function given below:

```
bool cmp(pair<T1, T2>& a,
         pair<T1, T2>& b)
{
    return a.second < b.second;
}

where T1 and T2
are the data-types
that can be the
same or different.
```

Below is the implementation of the above approach:


C++ programs
p1.cpp
p1.cpp > sort(unordered_map<string,int>&)
#include <iostream>
#include <vector>
#include <unordered_map>
#include <algorithm>
using namespace std;
bool cmp(pair<string, int>& a,
pair<string, int>& b)
{
return a.second < b.second;
}
void sort(unordered_map<string, int>& M)
{
vector<pair<string, int> > A; // creating a vector of pairs as map can't be sorted directly via sort
for (auto& it : M) {
A.push_back(it); // adding pairs by reference
}
sort(A.begin(), A.end(), cmp);
for (auto& it : A) {
cout << it.first << ' '
<< it.second << endl;
}
}
int main()
{
unordered_map<string, int> M;
M = { { "GfG", 3 },
{ "To", 2 },
{ "Welcome", 1 } };
sort(M);
return 0;
}
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
Code
cd "/Users/umangshikarvar/Desktop/C++ programs/" && g++ -std=c++11 p1.cpp -o p1
&& "/Users/umangshikarvar/Desktop/C++ programs/"p1
umangshikarvar@Umangs-MacBook-Air-434 C++ programs % cd "/Users/umangshikarvar/Desktop/C++ programs/" && g++ -std=c++11 p1.cpp -o p1 && "/Users/umangshikarvar/Desktop/C++ programs/"p1
Welcome 1
To 2
GfG 3
umangshikarvar@Umangs-MacBook-Air-434 C++ programs %
Ln 13, Col 105
Spaces: 4
UTF-8
CRLF
C++
Go Live
Mac