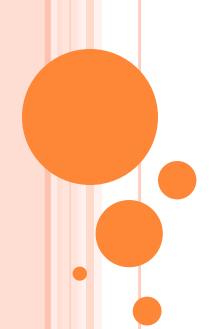


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Intro to Associative Arrays

Associative arrays

- Aka dictionary
- Collection of key-data pairs
- key-value pairs
- o Dictionary → key: word, data: word's definition
- Yellow page → key: name, data: phone number
- Can be viewed as a vector indexed by keys of strings
- Keys could be strings, numbers, or any objects (as long as they can be compared)
- Various ways to implement associative arrays
 - Trees, hash tables, simple lists, etc.



Implementations of Associative Arrays in STL

Two types of associative arrays in STL

Quiz!

- #include <map>
 - Sorted keys
 - Implementation based on trees
 - Complexity in search: O(log(n))
- #include <unordered_map>
 - Unsorted keys
 - Implementation based on hash tables
 - Complexity in search: O(1)
- o Examples



Summary

- Maps provide a way of using "associative arrays" that allow you to store data indexed by keys of any type
- Maps can be accessed using iterators with two members
 - "first" corresponds to the key
 - "second" is the value associated with the key
- Maps are fast to have O(log(n)) or O(1) time for insertion and lookup.
- You need to use multimap if a key is associated with multiple pieces of data.



References

References

- http://www.cprogramming.com/tutorial/stl/stlmap.html: A basic tutorial
- http://www.yolinux.com/TUTORIALS/CppStlMultiMap.html:
 More working examples