

Hashing

TASK1:

We have class Student having attribute id of integer type and name of string type.

Use standard library ADT for Hashing to hash records of students. Assume hash table range is 100.

Take student id as key and student name as value.

Perform the following functions.

1-Hash 10 records of any id and name using any hashing function ie, linear hash, quadratic hash or double hashing.

Note: You should use built in insert function to hash records. no need to implement your own insert/add function. Whereas you have need to implement hash function only. And insert records using that hash function.

2- Store multiple records to any of one index of hash table. whereas index ranges from (0-99)

Assume we have following records in hash table.

pair<int,String> : pair<key, value> : pair<id,name>

pair1<123,"Alice">

pair2<123, "Bob">

pair3<456,"Charlie">

pair4<456, "Alice">

pair5<789,"Bob">

3-Show first, last, third and All records in Hash table.

4-Show all records having the same id/key. ie if given id is 123 then it should display pair1 and pair2.

5-Show all records having the same name/value. ie if given name is "Alice" then it should display pair1 and pair4

6-Check if a given name/value has duplication in hash table or not. ie if given name is "Charlie" then there is no duplication.

7-Show all name/value duplication in hash table. it should display pair1 and pair2 has duplications.

8-Check size of hash table. ie records stored in hash table

9- Delete record store at start, 50th, last index of hash table.

10- Delete all records against a given input id/key.

11- Check size of hash table.

12- Reverse the content of hash table.

13- Make an other hash table, and add pair<key, value> of your choice.

14- Swap content of Hash table1 and hash table2.

NOTE: YOU DONT NEED TO IMPLEMENT YOUR OWN FUNCTION FOR INSERT, DELETE, SEARCH, REVERSE, SWAP OPERATIONS.

ALL YOU NEED IS TO USE/CALL BUILT IN FUNCTION AVAILABLE IN STL HASH ADT CLASS.

TASK2:

Build an 3-ordered dictionary.

Assume the structure of hash table as follow.

pair<string,String> : pair<String, value> : pair<word,type>

1-Stored words using hash function. and also store its type.ie: verb, noun, adjective.ie:
Hash fuction should return firt three character of word.
<"HomeWork", "verb">
<"Alice","noun">
<"intelligent", "adjective">

2-Search a particular word in table, if found then display word and its type, else add that word in table.
3-Display all words in table.
4-Display all words starting with a character or characters.
5-Display all verbs, nouns and adjectives.

Following built in function are supported in STL Hash ADT.
empty()//Test whether container is empty (public member function)
size()//Return container size (public member function)
max_size()//Return maximum size (public member function)

begin()//move iterator to beginning (public member type)
end()//Move iterator to end (public member type)
cbegin()// Return const_iterator to beginning (public member function)
cend()//Return const_iterator to end (public member function)

find()//Get iterator to element (public member function)
count()//Count elements with a specific key (public member function)
equal_range()// Get range of elements with specific key

insert()//Insert elements
erase()//Erase elements
clear()//Clear content
swap()//Swap content
reserve()//reverse content of hasshtable.