How to implement a hash table in C++

Data Structures | Chaining | Hashing | List

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A **hash table (https://www.educative.io/edpresso/what-is-a-hash-table)** is a data structure that stores information in key-value pairs. The index of each value to be stored is calculated using a hash function; this process is known as hashing (https://www.educative.io/edpresso/what-is-hashing).

Implementation

Different implementations are possible for a hash table depending on the method for dealing with collisions. In the implementation below, collisions are resolved using chaining (https://www.educative.io/edpresso/what-is-chaining-in-hash-tables), which is why every index of the hash table has a linked list (https://www.educative.io/edpresso/what-is-a-linked-list) associated with it.

> The linked list provided in the C++ Standard Template Library (STL) has been used in the code below.

```cpp
#include <iostream>
#include <list>

using namespace std;

class HashTable{
private:
  list<int> *table;
  int total_elements;

  // Hash function to calculate hash for a value:
  int getHash(int key){
    return key % total_elements;
  }

public:
  // Constructor to create a hash table with 'n' indices:
  HashTable(int n){
    total_elements = n;
    table = new list<int>[total_elements];
  }

  // Insert data in the hash table:
  void insertElement(int key){
    table[getHash(key)].push_back(key);
  }

  // Remove data from the hash table:
  void removeElement(int key){
    int x = getHash(key);
```

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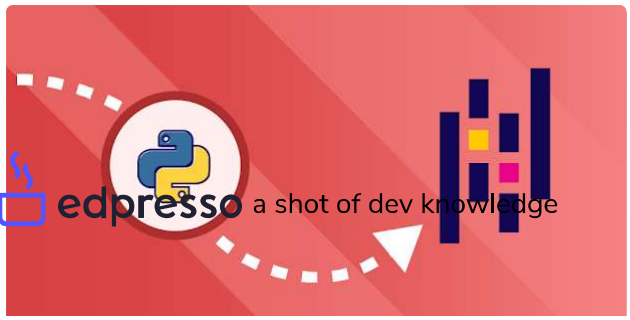

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