

```
1  //HASH TABLE
2
3  #include <iostream>
4
5  using namespace std;
6
7  struct Node {
8      int key;
9      Node* next;
10 };
11
12 struct HashTable {
13     Node** head;
14     int size;
15 };
16
17 HashTable createHashTable(int size = 0) {
18     HashTable newTable;
19     newTable.size = size;
20     newTable.head = new Node * [size];
21
22     for (int i = 0; i < size; i++) newTable.head[i] = nullptr;
23
24     return newTable;
25 }
26
27 int calculateHash(int id) {
28     return id % 10;
29 }
30
31 void insertTableNode(Node*& head, int key) {
32     head = new Node{ key, head };
33 }
34
35 void insertItem(HashTable& table, int key) {
36     int index = calculateHash(key);
37     insertTableNode(table.head[index], key);
38 }
39
40 void deleteItem(HashTable& table, int key) {
41     int index = calculateHash(key);
42     Node* prev = nullptr, * cur = table.head[index];
43     while (cur && cur->key != key) {
44         prev = cur, cur = cur->next;
45     }
46
47     if (!cur) return;
48
49     if (!prev) {
```

```
50     table.head[index] = table.head[index]->next;
51 }
52 else {
53     prev->next = cur->next;
54 }
55 delete cur;
56 }
57
58 void displayHashTable(HashTable table) {
59     for (int i = 0; i < table.size; i++) {
60         cout << i << " -> ";
61         for (Node* p = table.head[i]; p; p = p->next) {
62             cout << p->key << " ";
63         }
64         cout << endl;
65     }
66 }
```