



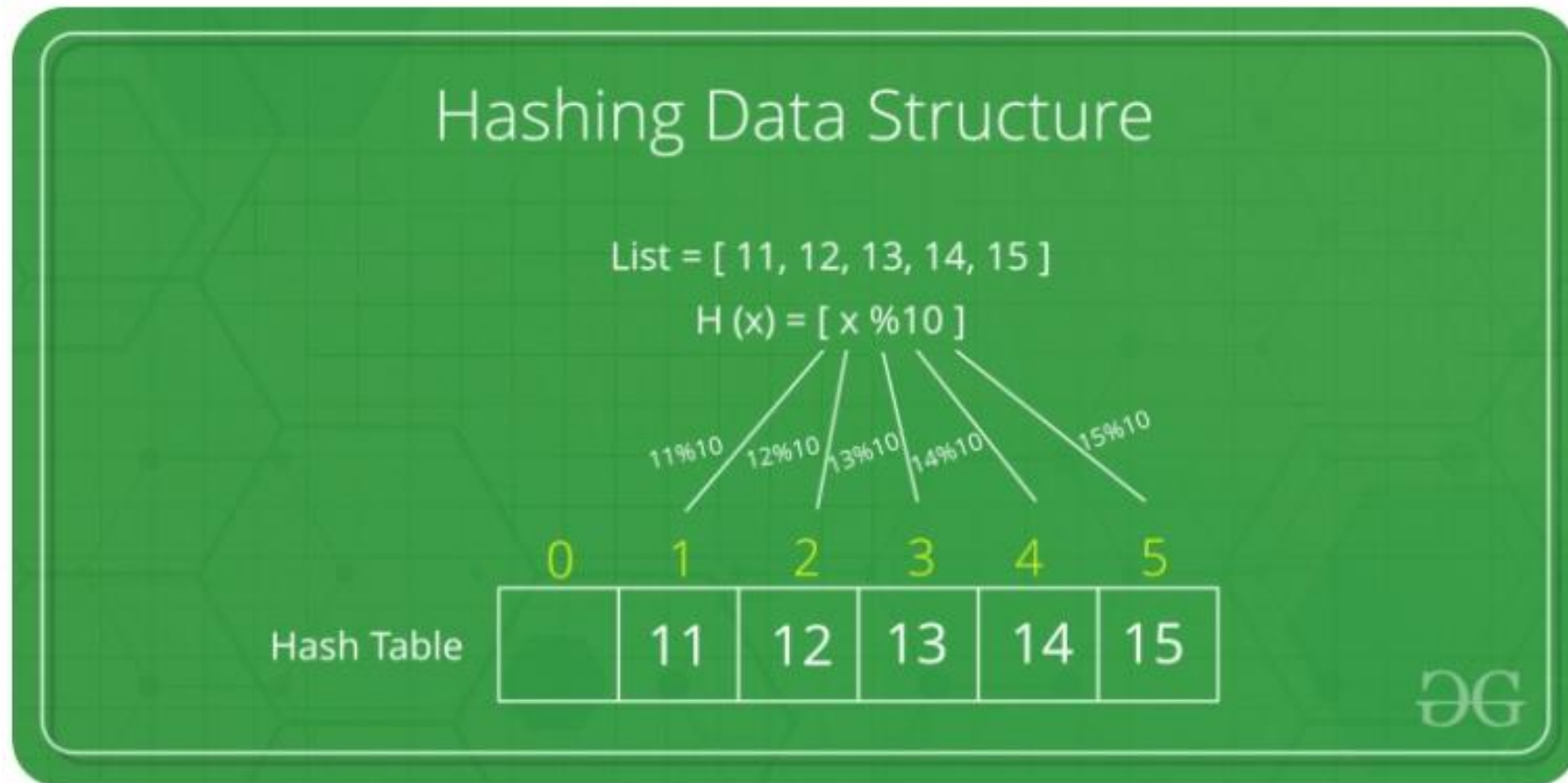
Flash Function in C-Programming

What is hashing?

Hashing is the process of converting a given key into another value.

Hashing is an important Data Structure which is designed to use a special function called the Hash function which is used to map a given value with a particular key for faster access of elements. The efficiency of mapping depends of the efficiency of the hash function used.

Let a hash function $H(x)$ maps the value x at the index $x\%10$ in an Array. For example if the list of values is $[11,12,13,14,15]$ it will be stored at positions $\{1,2,3,4,5\}$ in the array or Hash table respectively.



Types of hashing....

- **Types of a Hash Function In C**

- **Division method.** In this method, the **hash function** is dependent upon the remainder of a division. ...

- **Mid Square Method.** In this method, the middle part of the squared element is taken as the index. ...

- **Digit Folding Method**

Types of Collision Resolution Techniques

- Chaining
- Open Addressing

Disadvantages of Hashing?

- Hash collisions are practically unavoidable. when hashing a random subset of a large set of possible keys.
- Hash tables become quite inefficient when there are many collisions.
- Hash table does not allow null values, like hash map.

Why do we use hashing?

- Main advantage is synchronization.
- In many situations, hash tables turn out to be more efficient than search trees or any other table lookup structure. For this reason, they are widely used in many kinds of computer software, particularly for associative arrays, database indexing, caches and sets.

```
1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit
```

Enter your option

```
1
Enter the Employee Details
Employee ID: 55555
Employee Name: deepak
Employee Age: 20
```

```
1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit
```

Enter your option

```
1
Enter the Employee Details
Employee ID: 66666
Employee Name: ankit
Employee Age: 20
```

```
1. Insert a Record in Hash Table
2. Search for a Record
```

Employee Age: 20

Duplicate Key

```
1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit
```

Enter your option

```
1
Enter the Employee Details
Employee ID: 54545
Employee Name: joseph
Employee Age: 20
```

```
1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit
```

Enter your option

4

```
[ 0]
[ 1]
[ 2]
```

OUTPUT


```
[ 0]
[ 1]
[ 2]
[ 3]
[ 4]
[ 5]54545 joseph 20    55555 deepak 20
[ 6]66666 ankit 20
[ 7]77777 chirag 20
[ 8]
[ 9]
```

1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit

Enter your option

2

Enter the employ ID to search: 11111

Element Not Found

1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table

Employee Age: 20

1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit

Enter your option

1

Enter the Employee Details

Employee ID: 77777

Employee Name: chirag

Employee Age: 20

1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit

Enter your option

1

Enter the Employee Details

Employee ID: 55555

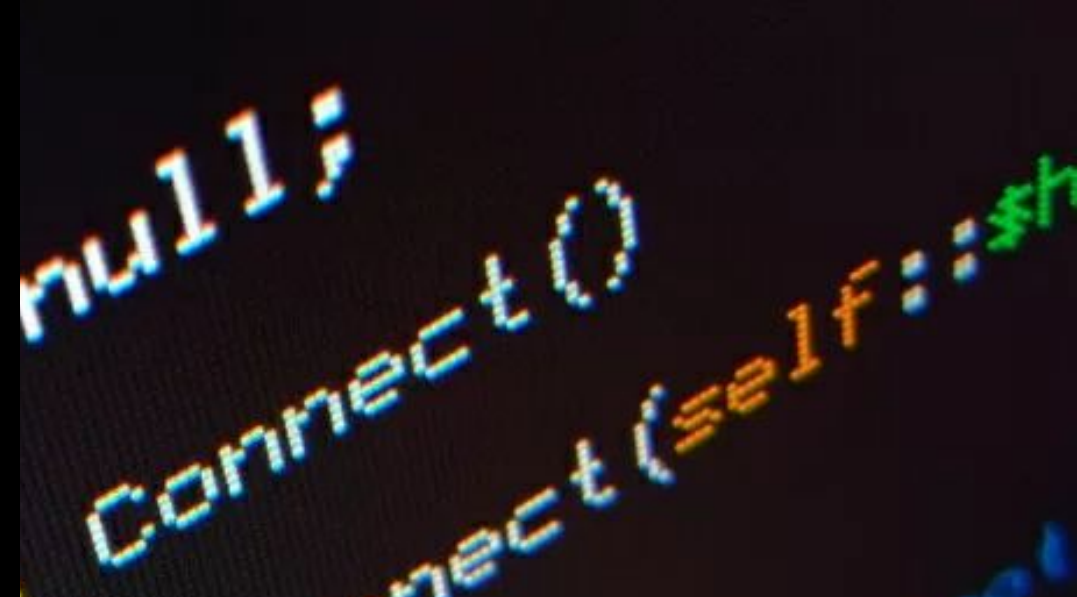
Employee Name: joseph

Employee Age: 20

Duplicate Key

```
Enter your option
3
Enter the element to delete: 4984984
Key 4984984 Not Found
1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit
Enter your option
3
Enter the element to delete: 55555
element deleted!
1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit
Enter your option
4
[ 0]
[ 1]
[ 2]
[ 3]
[ 4]
[ 5]54545 joseph 20
[ 6]66666 ankit 20
[ 7]77777 chirag 20
[ 8]
[ 9]
1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit
Enter your option
^[[2~
```

```
4. Show Hash Table
5. Quit
Enter your option
4
[ 0]
[ 1]
[ 2]
[ 3]
[ 4]
[ 5]54545 joseph 20
[ 6]66666 ankit 20
[ 7]77777 chirag 20
[ 8]
[ 9]
1. Insert a Record in Hash Table
2. Search for a Record
3. Delete a Record
4. Show Hash Table
5. Quit
Enter your option
5
```



THANK YOU

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