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Hashing Functions

Hashing is a technique or process of mapping keys, and values into the hash table by using a hash function. It is done for faster access to elements. The efficiency of mapping depends on 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.



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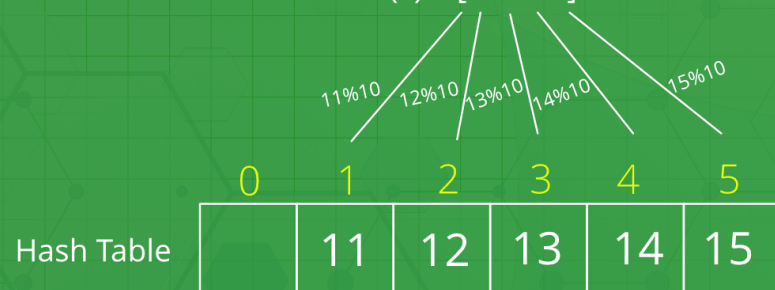
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Hashing Data Structure

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List = [11, 12, 13, 14, 15]

$H(x) = [x \% 10]$



remainder of key divided by table_size. That is, the hash function is

$h(\text{key}) = \text{key} \bmod \text{table_size}$

i.e. $\text{key} \% \text{table_size}$

For Example

$37599 \% 17 = 12$

- But for **key = 573**, its hash function is also

$573 \% 17 = 12$  Article marked as read.

1. The multiplication method:

- In multiplication method, we multiply the key k by a constant real number c in the range $0 < c < 1$ and extract the *fractional part of $k * c$* .
- Then we multiply this value by table_size m and take the floor of the result. It can be represented as

$$h(k) = \text{floor} (m * (k * c \bmod 1))$$

or

$$h(k) = \text{floor} (m * \text{frac} (k * c))$$


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