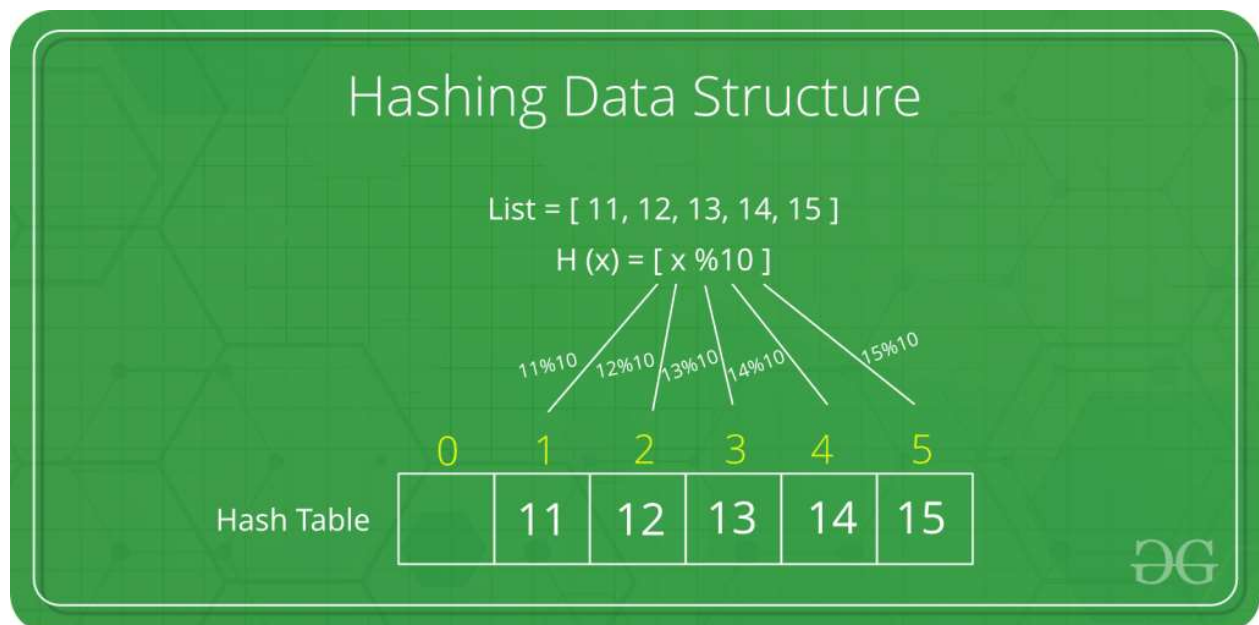


**Hashing Data Structure** :Hashing is a technique or process of mapping keys, values into the hash table by using a hash function. It is done for faster access to elements. The efficiency of mapping depends on the efficiency of the hash function used.

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.

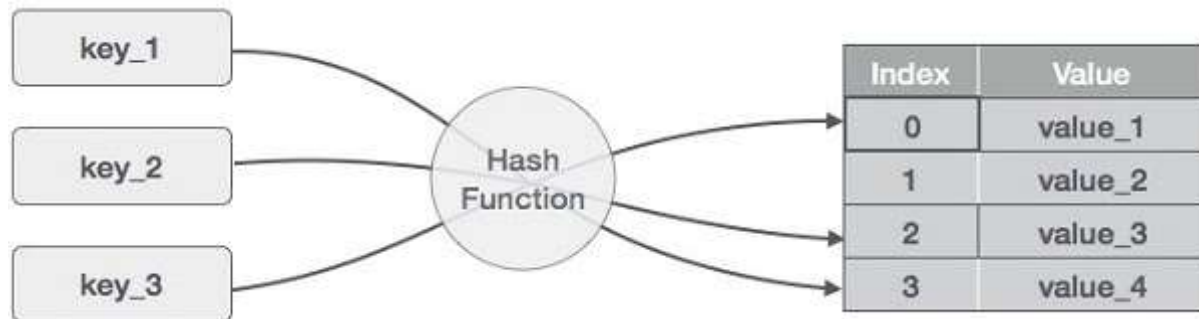


Hash Table is a data structure which stores data in an associative manner. In a hash table, data is stored in an array format, where each data value has its own unique index value. Access of data becomes very fast if we know the index of the desired data.

Thus, it becomes a data structure in which insertion and search operations are very fast irrespective of the size of the data. Hash Table uses an array

as a storage medium and uses a hash technique to generate an index where an element is to be inserted or is to be located from.

Hashing is a technique to convert a range of key values into a range of indexes of an array. We're going to use a modulo operator to get a range of key values. Consider an example of a hash table of size 20, and the following items are to be stored. Items are in the (key,value) format.



Sr.No.	Key	Hash	Array Index
1	1	$1 \% 20 = 1$	1
2	2	$2 \% 20 = 2$	2
3	42	$42 \% 20 = 2$	2
4	4	$4 \% 20 = 4$	4
5	12	$12 \% 20 = 12$	12
6	14	$14 \% 20 = 14$	14
7	17	$17 \% 20 = 17$	17
8	13	$13 \% 20 = 13$	13
9	37	$37 \% 20 = 17$	17