Hashing

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.

Using hashing we can store and retrieve data in O(1) time.

Search Key ( 34,55,41,68,76,97,23)

Hash functions 🡪 K Mod 10 , K Mod n , Mid square , folding method

Collision resolution in Hashing

* Open Hashing ( Chaining )
* Closed Hashing ( Linear Probing , Quadratic Probing , Double Hashing )

Open Hashing ( Chaining )

Advantage – Deletion is easy

Disadvantage – Searching O(n) ,Wastage of available space

Load factor = keys / slots

Linear Probing (43,135,72,23,99,19,82)

R(k)= K mod 10

R (K ,i) = (R(k)+i) mod 10

Advantage – no Wastage of available space

Disadvantage – Searching O(n) , Deletion is difficult

Primary clustering

Secondary clustering

Quadratic Probing (42,16,91,33,18,27,36,62)

R(k)= K mod 10

R (K ,i) = (R(k)+i2) mod 10

Advantage – no extra space (Primary clustering resolved )

Disadvantage – no guarantee of filling all slots , Searching O(n), Secondary clustering