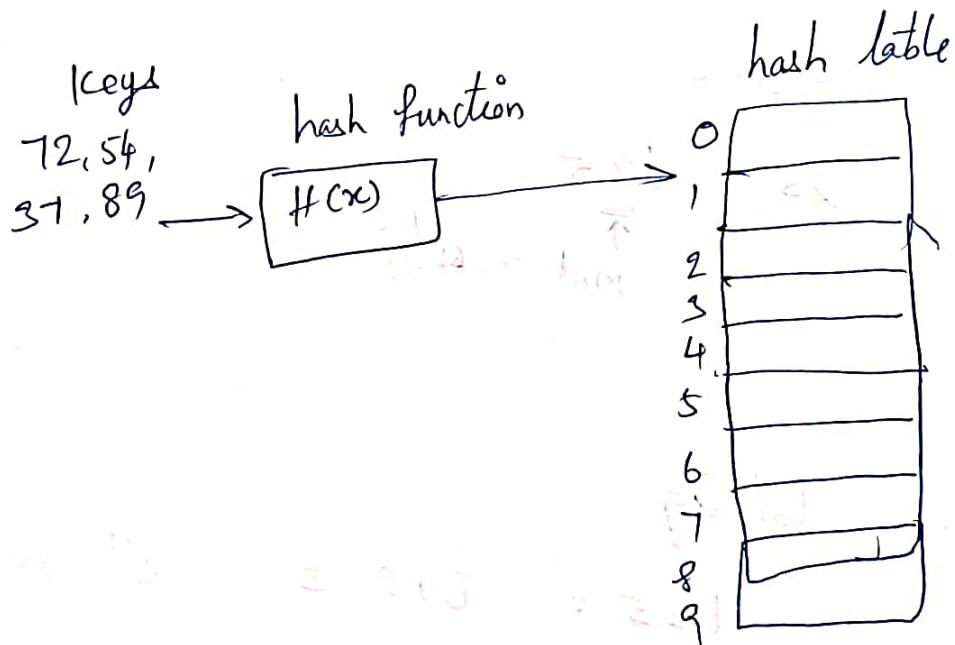


UNIT - IV

Hashing:

- It is a DS
- It is a technique of mapping large chunk of data into small tables using a hashing function.
- Also known as message digest function.

Eg:



Hash function

→ Put data into table

→ Types

- ① Division method
- ② Mid square
- ③ Digit folding.

① Division Method

$$H(\text{key}) = \text{key} \% \text{Table size}$$

eg; $H(54) = 54 \% 10 = 4$

$$H(72) = 72 \% 10 = 2$$

$$H(37) = 37 \% 10 = 7$$

$$H(89) = 89 \% 10 = 9$$

② Mid square

$$25^2 = 625$$

↑
mid position

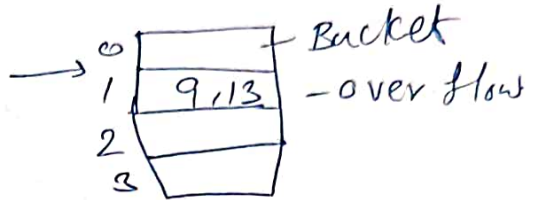
③ Digit folding

$$625 = 6 + 2 + 5 = 13^{\text{th}} \text{ position}$$

Collision

Key: 9, 13,

$H(x)$



$$9 \% 4 = 1$$

$$13 \% 4 = 1$$

'9' will be deleted.

Techniques to avoid collision

① separate chaining / External hashing

② open addressing / closed hashing

Separate chaining

Eg-1

131, 3, 4, 21, 61, 24, 7, 97, 8, 9

