

Double Hashing

Double Hashing:- $\text{hash}(\text{key}, i) = (h_1(\text{key}) + ih_2(\text{key})) \% m$

- ⇒ if $h_2(\text{key})$ is relatively prime to m , then it always find a free slot if there is one.
- ⇒ Distributes keys more uniformly than linear probing and quadratic hashing.
- ⇒ No clustering.

49, 63, 56, 52, 54, 48

0	49
1	
2	54
3	63
4	56
5	52
6	48

$$\text{hash}(\text{key}, i) = (h_1(\text{key}) + ih_2(\text{key})) \% m$$

$$m = 7$$

$$h_1(\text{key}) = (\text{key} \% 7)$$

$$h_2(\text{key}) = 6 - (\text{key} \% 6)$$

Why $h_2(\text{key})$ and m should be relatively prime?

Performance Analysis of search

$$\infty = n/m \text{ (should be } \leq 1)$$

Assumption : Every probe sequence looks at a random location

$(1 - \infty)$ Fraction of the table is empty

$$\text{Expected No. of probes required} = 1/(1 - \infty)$$