CSCI 2270 Lecture Notes

3/11/2019

Open Addressing via Linear Probing

* insertRecord(r)
  + find hash value (index)
  + if slot is empty, add record here
  + else, iterate by incrementing the index one element at a time until an empty spot is found
    - watch out for array “rollover” (use circular array)

Search Function

* search(key)
  + calculate the hash value (index)
  + go to given index
    - if key matches, retrieve record
    - else, iterate by one until record with matching key is found (remember circular array

Tweaks on Open Addressing

* In prior example, we used “linear probing”
  + if slot is occupied, increment index by one, an check again.
  + keep doing above step until available spot is found
* Problem with linear probing in performance
  + clustering
    - elements get bunched up and performance goes down over time
    - approaches O(n) instead of O(1)
* Quadratic Probing
  + instead of looking at next adjacent slot, we can skip over by i^2 indices

NOTE: djb2 is one of the best general purpose hash functions