CS 225

Data Structures

March 25 – Hashing Analysis

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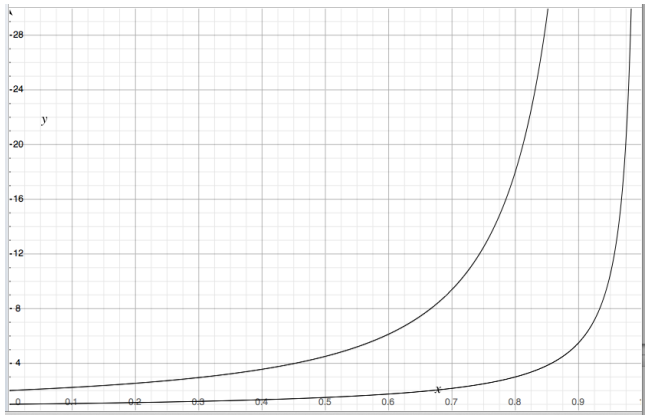
Running Times

The expected number of probes for find(key) under SUHA

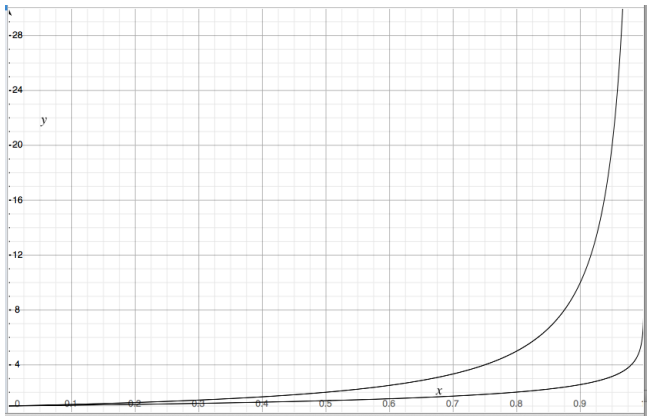
Linear Probing:

- Successful: **½(1 + 1/(1-α))**
- Unsuccessful: **½(1 + 1/(1-α))^2**



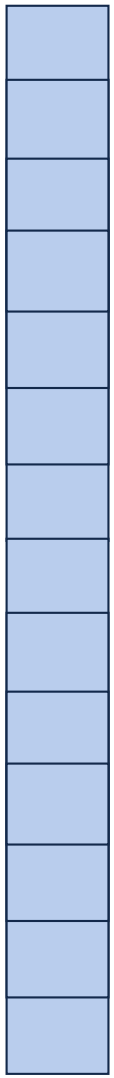
Double Hashing:

- Successful: **1/α * ln(1/(1-α))**
- Unsuccessful: **1/(1-α)**



ReHashing

What if the array fills?



Which collision resolution strategy is better?

- Big Records:

- Structure Speed:

What structure do hash tables replace?

What constraint exists on hashing that doesn't exist with BSTs?

Why talk about BSTs at all?

Running Times

	Hash Table	AVL	Linked List
Find	SUHA: Worst Case:		
Insert	SUHA: Worst Case:		
Storage Space			

std data structures

std::map

std data structures

std::map

::operator[]
::insert
::erase

::lower_bound(key) ➔ Iterator to first element ≤ key
::upper_bound(key) ➔ Iterator to first element > key

std data structures

std::unordered_map

::operator[]

::insert

::erase

~~::lower_bound(key) → Iterator to first element ≤ key~~

~~::upper_bound(key) → Iterator to first element > key~~

std data structures

std::unordered_map

::operator[]
::insert
::erase

~~::lower_bound(key) → Iterator to first element ≤ key~~
~~::upper_bound(key) → Iterator to first element > key~~

::load_factor()
::max_load_factor(ml) → Sets the max load factor

CS 225 Final Exam

Exam Details:

CBTF Exam, 3 Hours Long

Format: 1 Theory Exam **+** 1 Programming Exam

When you finish your exam, you're done with CS 225! :)

Signup Process:

CS 225 Exam will run **Thurs, May 2** - **Wed, May 8**

(including both Saturday and Sunday)

You can sign up for your slot **right now!**