

Homework 4 Answers

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Definitions

Hash Table – A list of object that runs in constant time.

Hash Function – Converts an object into an integer to be used to hash.

Hash code – Integer before moduloed

Associative array, map – Synonym of hash table (Associative array is not in Java and order is maintained.)

Key-Value Pair – Set of two linked items

Collision – when same value appears for 2 different hashes

Collision Resolution – fixed by linear probing or chaining.

Linear Probing – when a collision happens the hash table looks and finds open spot for a number that is hashed and places the number. Harder.

Chaining – adds the object to the number in a linked list. Easier

Load factor – Percent of occupied space. When percentage is hit resize and rehash.

Resize – Creates a new, bigger array, you chose the size.

Rehash – Reentering the data into the hash table.

hashCode() – Method of the object class.

Hash Map, Hash Set – Default class for hash tables

Override – Implements a method that is also in the parent class.

Modulo – Remainder. Goes from 0 to (N-1).

Q and A answers

- $O(1)$ for any
- Array, get location by number. Linked list cant do $O(1)$.
- Hashing with chaining is worst. Resize Rehash but it is extremely unlikely.

- 1) Deterministic. 2) Efficient. 3) Uniform Distribution (aka Random)
- Remainder to find hash number.
- The number of objects is much larger than table.
- Resize and Rehash
- Hash 1 will run faster so less collision but uses more memory. Hash 2 is slower but less memory.
- Hashed into integers. Uses Binary with each character.
- By default, uses pointer value.