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CSCE 313 – Section 504

Machine Problem 1 – Report

Questions

- For part 1, do you notice any wastage of memory when items are deleted? If so, can your program avoid such wastage? How would you do so?
    - Yes, there is some wastage of memory. When we delete an item, we assign a value to the key, but nothing to data. We could assign a value to data to fill the wastage.
- Can you think of a scenario where there is space in the memory but no insertion is possible?
    - Yes, after deleting, and then inserting another key value. The linked list is full, but there is one block that doesn't have any data in it from deleting one of the key values. You can't insert another value until you have deleted one.
- What is the maximum size of the value when the pointers are 8 bytes?
    - 2^{64}-1
- For Part 2, derive a general expression for the range of numbers that go into the i-th tier of the list.
    - t = number of tiers, the ith tier will contain the following minimum and maximum values
    - Minimum value: (t-1)(INT_MAX/t)
    - Maximum value: INT_MAX which is 2,147,483,647