

Student Information

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Due Date: 19-Oct 4:00pm.

Exercise 1

Questions

1. Consider a hash table of size $m = \sqrt{n}$. Then under the uniform hashing assumption, as $n \rightarrow \infty$, the number of empty slots tends to
 - a) a constant
 - ☒ b) zero
 - c) infinity
2. If $m = cn, c > 0$ then as $n \rightarrow \infty$, the number of empty slots tends to
 - a) a constant
 - b) zero
 - ☒ c) infinity
3. If $m = n^a, a > 1$ then as $n \rightarrow \infty$, the number of empty slots tends to
 - a) a constant
 - b) zero
 - ☒ c) infinity

Exercise 2

Consider a hash table of size 1000, and $n = 1500$ keys to be hashed uniformly.

Questions

1. The expected number of empty slots is about
 - a) 150
 - ☒ b) 220
 - c) 350
2. The expected number of collisions is about
 - a) 100
 - b) 230
 - ☒ c) 720
3. For a random slot, the average number of keys that hash on that slot is
 - a) 0.5
 - b) 2
 - ☒ c) 1.5

Exercise 3**Questions**

1. If the loading factor is greater 1 then we expect
 - a) all slots to have at least one item
 - ☒ b) most slots to have at least one item
 - c) it can never happen that more than half of the slots are empty
2. If the loading factor is smaller 1 then we expect
 - a) most slots to be empty
 - b) very few slots to have one or more items
 - ☒ c) very few slots to have two or more items