

CmpE130 Homework 7

Due date: 10 Nov. 2009, beginning of class

1. Suppose that 393,000 addresses are allocated to hold 288,200 records in a randomly hashed file and that each address can hold one record. Compute the following values:
 - a. The packing density for the file.
 - b. The expected number of addresses with no records assigned to them by the hash function.
 - c. The expected number of addresses with one record assigned (no synonyms).
 - d. The expected percentage of overflow records.
2. Consider the file described in the previous question. What is the expected percentage of overflow records if the 393,000 locations are organized as
 - a. 131,000 3-record buckets?
 - b. 65,500 6-record buckets?
3. A hash table has 16 locations (0-15). The hash function used is to take the key modulo 16. Collision resolution is by progressive overflow (linear probing). Show the resulting table after the insertion of the following keys, and find the average search length.

39
75
51
61
135
27
145
99
44
125
107

4. What will the result be if quadratic probing is used instead of progressive overflow collision resolution? (For each successive probe, the distance travelled doubles).