

CS 166: Database Management Systems

FALL 2004

HOMEWORK 3 (Extra Credit)

Assigned: November 23, 2004

DUE: Thursday, December 2, 2004 (3:40pm, OLMH 1208)

Suppose we have a 'PART' file in the database with 'Part#' as hash key. This file contains the following 15 Part# values: **2369, 3760, 4692, 4871, 5659, 1821, 1074, 7115, 1620, 2428, 3943, 4750, 6975, 4981, and 9208**. The file uses **8** buckets, numbered from 0 to 7. Each bucket is one disk block and holds only **TWO** records. Load these records according to the order specified above into expandable hash files based on:

- a. (50 points) Extendible hashing
- b. (50 points) Linear hashing

Show the structure of the buckets and directory at each important step (e.g. when splitting occurs or overflow bucket is created). For extendible hashing, also show the global and local depths at each stage. Since we start off with 8 buckets, the hash function $h(K) = K \bmod 8$ will initially be used. For your convenience, the binary values of hash keys are provided below. Assume the least significant bits are used.

K	Binary Value
2369	00100101000001
3760	00111010110000
4692	01001001010100
4871	01001100000111
5659	01011000011011
1821	00011100011101
1074	00010000110010
7115	01101111001011
1620	00011001010100
2428	00100101111100
3943	00111101100111
4750	01001010001110
6975	01101100111111
4981	01001101110101
9208	10001111111000