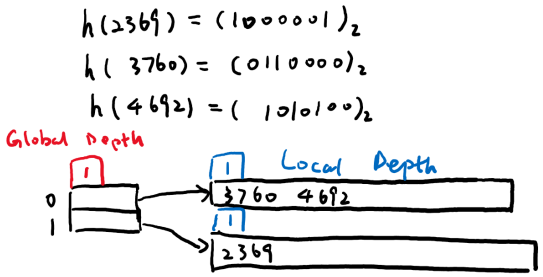
Lecture Notes 16
CSE 350 Spring 2026

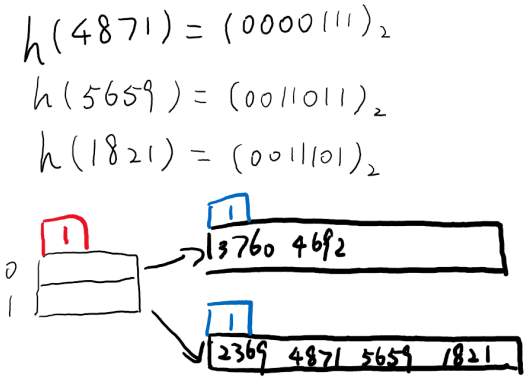
Quiz 3/26/2026

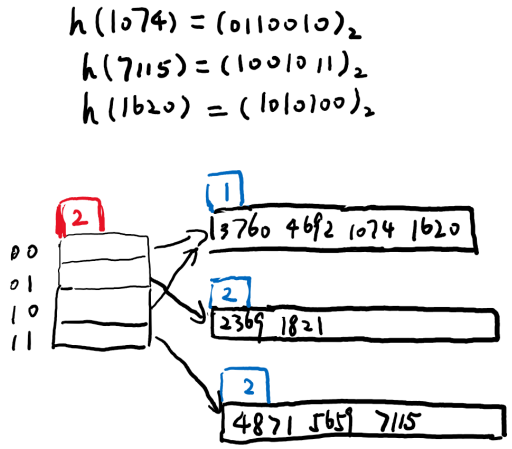
Part A. Extendible hashing

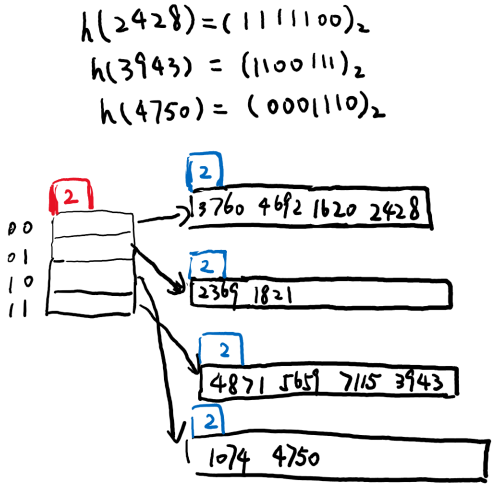
Suppose that we are using extendible hashing on a file that contains records with the following index-key values: (2369, 3760, 4692, 4871, 5659, 1821, 1074, 7115, 1620, 2428, 3943, 4750, 6975, 4981, 9208).

Load the data entries for these records into a hash index in the given order using extensible hashing. Assume that every block (bucket) can store up to four (4) values. Initially, the global depth is 1 and there are two empty buckets both with local depth 1. Show the structure of the directory every 3 insertions, and the global and local depths. Use the hash function: h(k) = k mod 128 and then apply the extensible hashing index





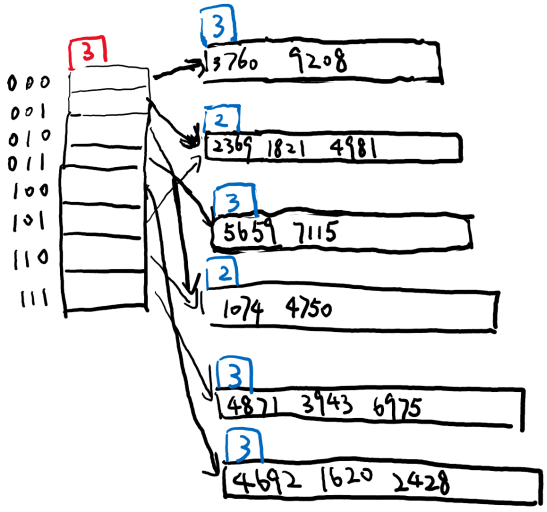




$h(6975) = (0111111)_2$

$h(4981) = (1110101)_2$

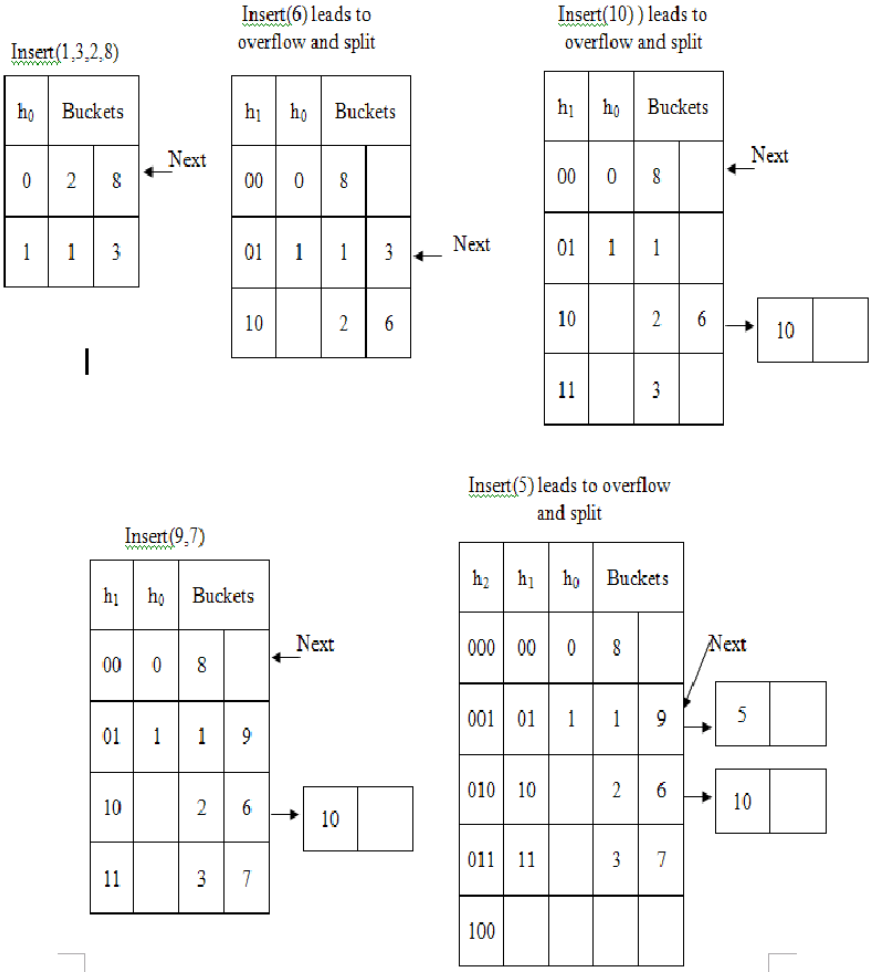
$h(9208) = (1111000)_2$



Part B. Linear hashing

Suppose we are using linear hashing as discussed in class. Assume two records per bucket and the hash function $h(x) = x$. The intermediate hash functions $h_i(x)$, are given by the lowest i bits of $h(x)$. Assume a split is initiated whenever an overflow bucket is created. Starting with an empty hash file with the hash function $h_1(x)$ and two buckets, show the significant intermediate steps (overflows and splits) when keys are inserted in the order given below:

(1,3,2,8,6,10,9,7,5,11).



Insert(11) leads to overflow and split

h_2	h_1	h_0	Buckets	
000	00	0	8	
001	01	1	1	9
010	10		2	6
011	11		3	7
100				
101			5