UNIT – II

EXTENDIBLE HASHING:

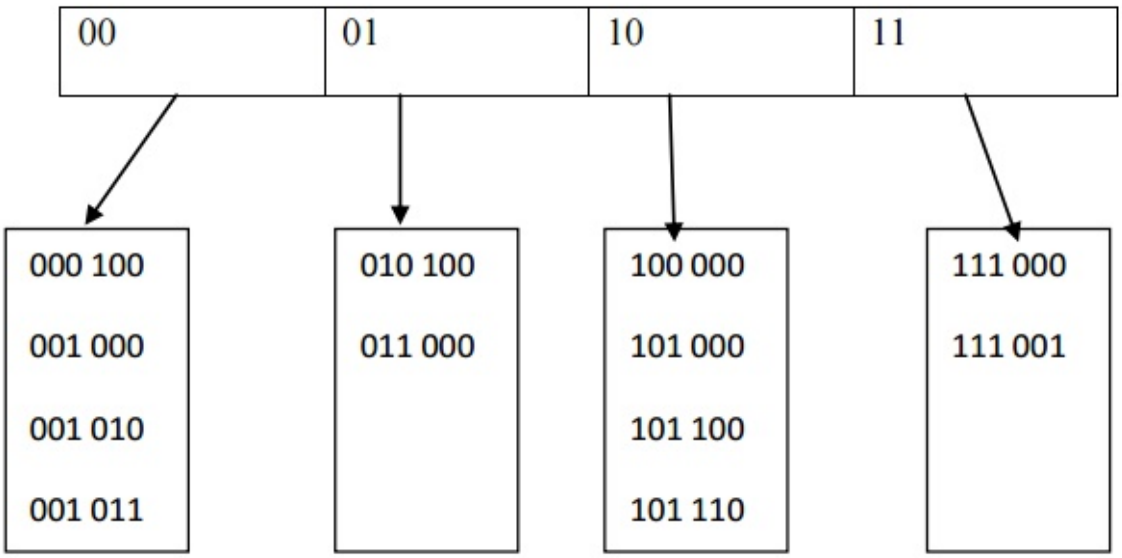
When open address hashing or separate chaining hashing in used ,collisions could causes several blocks to be examined during a find even for a well distributed hashtable .Furter more, when the table gets too full, an extremely expensive rehashing steps must be performed, which require O(N) disk accesses.

These problem can be overcome by using extendible hashing.

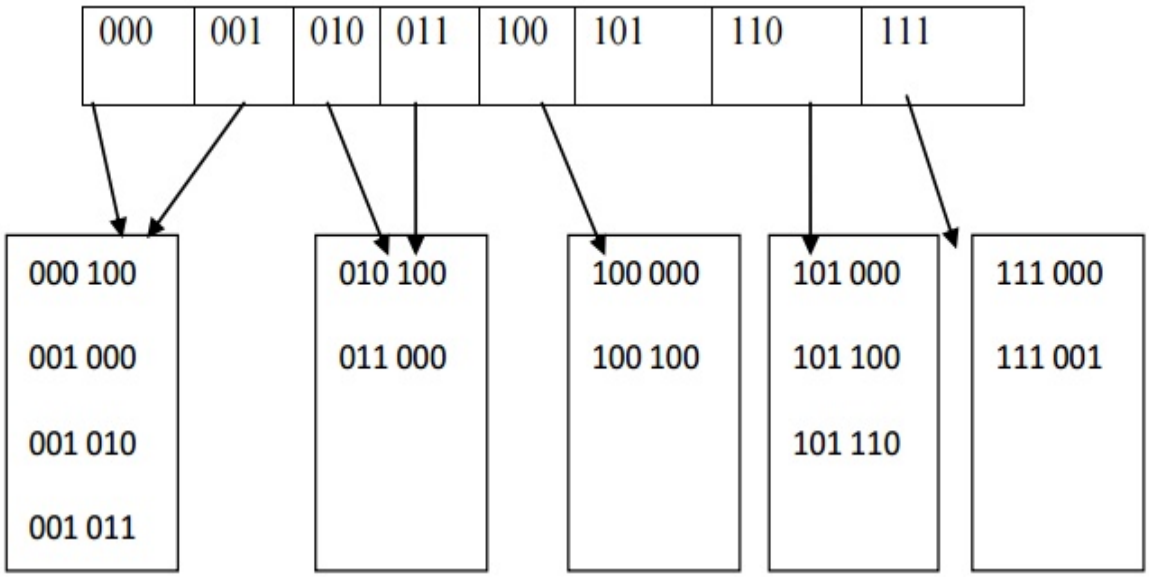
Extendible hashing, allows a find to be performed in two disk accesses come.Insertion also requires few disk accesses.

Let us suppose,consider our data consist of several six bit intergers.The root of the tree contains four pointers determied by the leading two bits of the data.Ecah leaf has upto M=4 element.In each leaf the first two bits are indentified, this is indicated by the number in parenthesis .

D will be represent the number of bits used by the root,also know as the directory.The number of entries in the directory 2D.dl is the number of leading bits that all the elements of some leaf L have in common .dL < D.The extendible hashing scheme for this data is given below.



Suppose that we want to insert the key 100100.This would go into the leaf,But as the third leaf is already full there is no room.We thus split this leaf into two leaves,which are now determined by the first three bit. Now the directory size is increased to 3.



Similarly, if the key 000000 is inserted ,then the first leaf split generating two leaves with d_L=3.The 000 and 001 pointers are updated

Advantage:

- Provides quick access time for insert and find operation are large data bases.

Disadvantages:

- This algorithm does not work if there are more then M duplicates.
- If the elements in a leaf occurs in more then D+1 leading bits ,several directory split is possible the expected size of directory is O ($N^{1+1/M}$/M).