CSCI 21062
Advanced Database Management Systems

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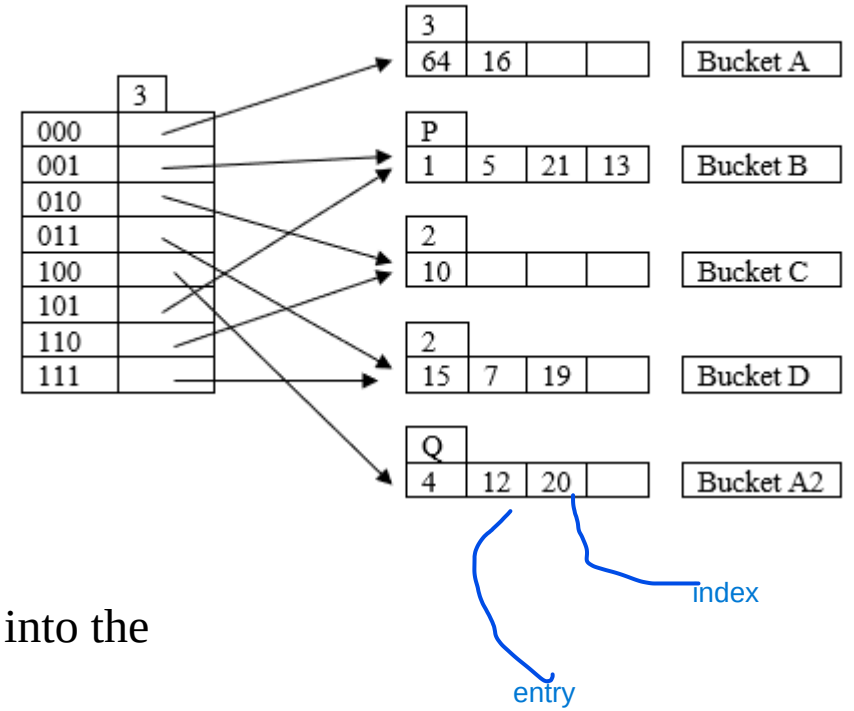
Solution - Exercises Note 1

- Consider the following extendible hashing index diagram. You may assume that the entries in the index are hash values.



(i) What is the value of the global depth?

3

(ii) What are the values of P and Q

P = 2, Q = 3

(iii) What is the use of the local depth?

to determine whether a directory doubling is needed

(iv) Is it possible to give the last entry that was inserted into the index? Give reasons

No – we do not store the order that the records are stored

(v) Is it possible to say that a split has occurred due to an insertion of any entry? If so what could be the possible entry that was inserted.

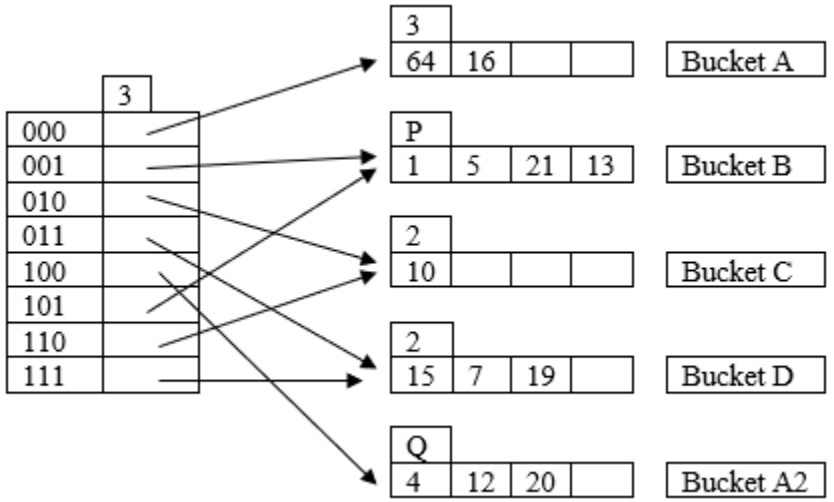
Yes. Any one from the list 64, 16, 4, 12, 20

(vi) List the steps to search the hash value 20.

Get the binary value – 10100

Check the last three digits – 100 (because global depth, d is 3)

Follow the pointer in 100 i.e. bucket A2



By using a diagram show the index after inserting the entry with hash value 9

Binary of 9 - 1001

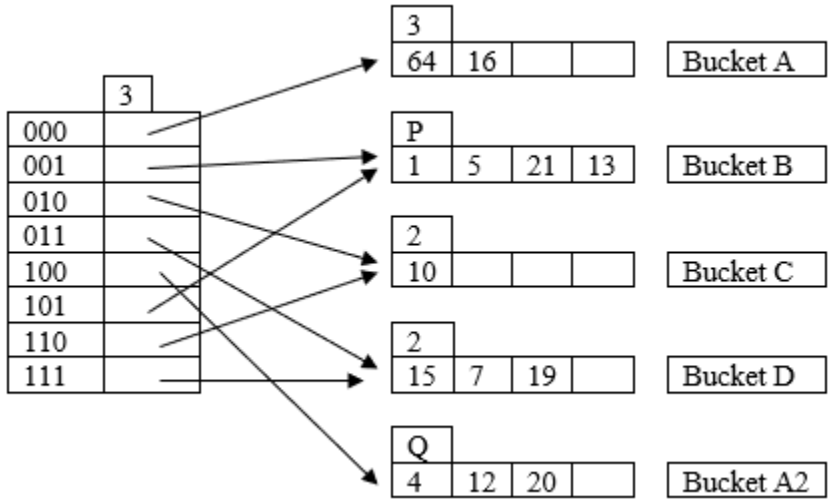
Take the last three digit – 001

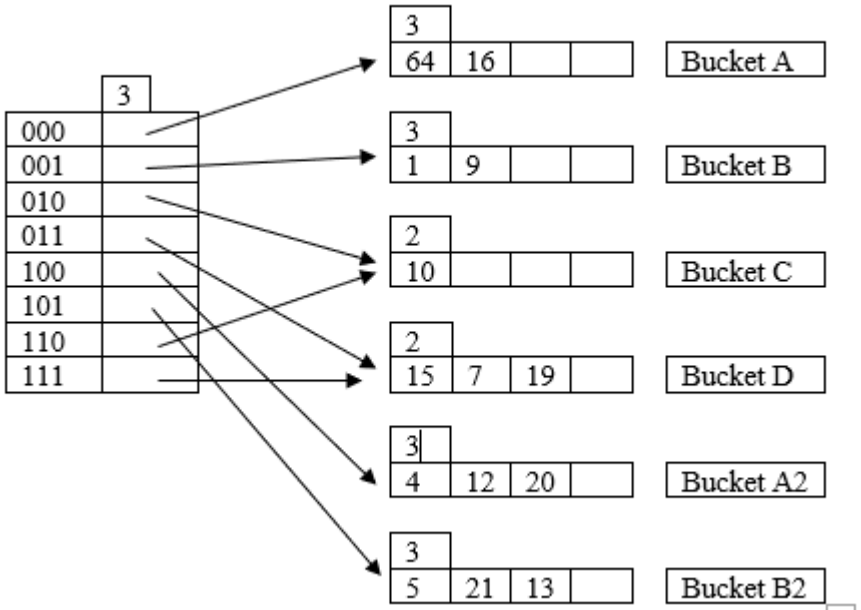
Points to bucket B

B is full

Spilt the bucket by allocating a new bucket. and redistribute the contents

across the old bucket and its split image.

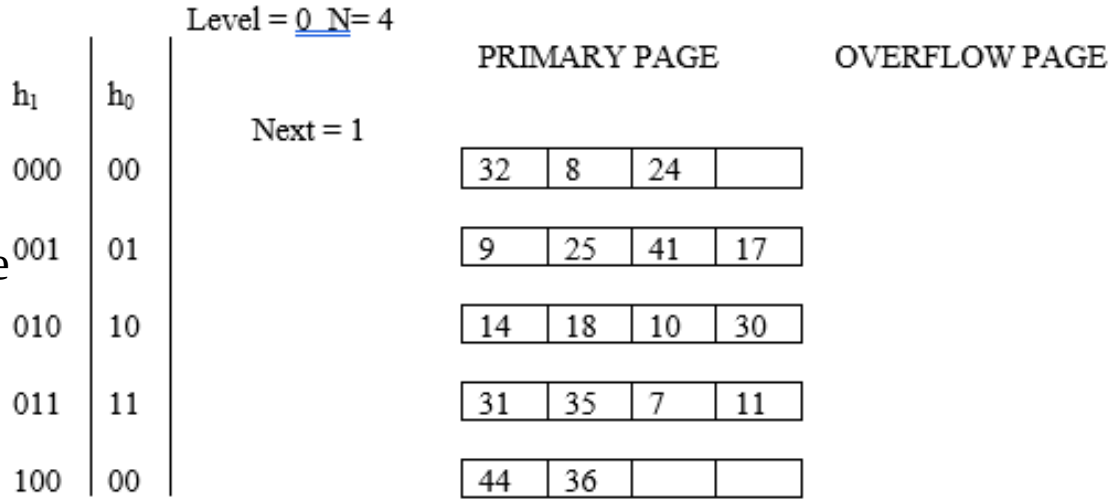




- Consider the following linear hashing index. Using this index answer the following questions.

(i) Show the bucket that the Next pointer is pointing at.
bucket 1

(ii) Is it possible to give the last entry that was inserted into the index? Give reasons.
No - we do not store the order that the records are stored



(iii) Is it possible to say that a split has occurred due to an insertion of any entry? If so what could be the possible entry that was inserted.
Yes – any one from the list 32, 8, 24, 44, 36

(iv) Show the index after inserting the entries 4 and 15 respectively.

- 4 – 100
- 15 - 1111

9 – 1001
25 – 11001
41 – 101001
17 - 10001