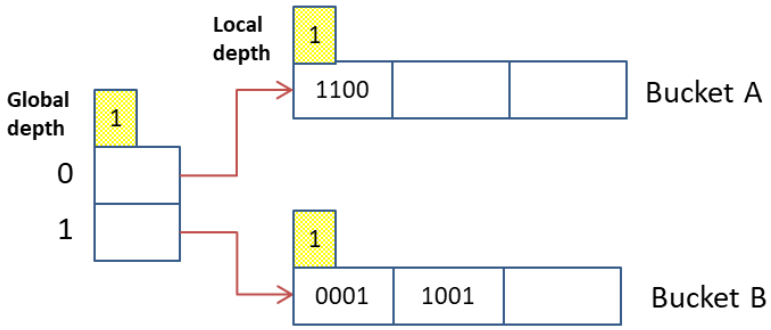
Extensible Hash Index Example

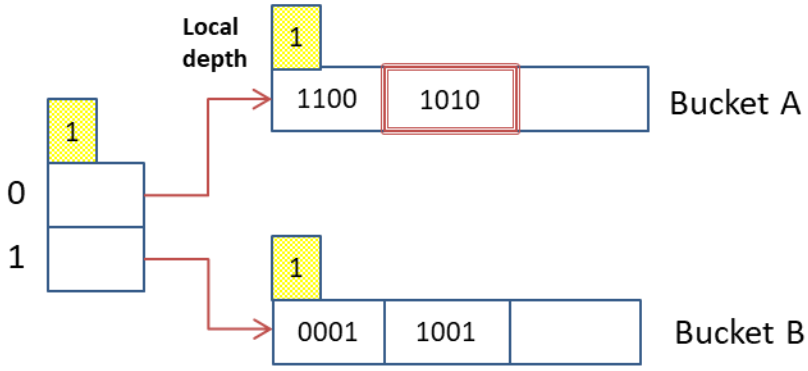
Consider an extensible hash index that uses 4 bits and each block of the index contains up to 3 entries. Initially the index has three keys (elements). Show the resulting hash index after the entries 1010, 0111, 1000, and 1011 have been inserted.



For each insertion, we take the key hash value and look at the last k bits of the key, where k is the global depth of the index. For our example, the global depth = 1, hence we look at the last bit of the search key to determine the bucket it belongs in.

If bucket has space, just insert element and you are done. If bucket (refer to it as X) is full, then create new bucket (lets refer to it as X2). Redistribute elements among X and X2, and update the local/global depth. The global index might have to be expanded if global depth < current local depth.

Step 1 : Insert 1010. The last bit of the search key is 0, hence, we insert element in Bucket A and it has room so we are done.



Next step, show the index after inserting 0111, 1000, 1011. Note, you might need to create new buckets and expand the global index depth.