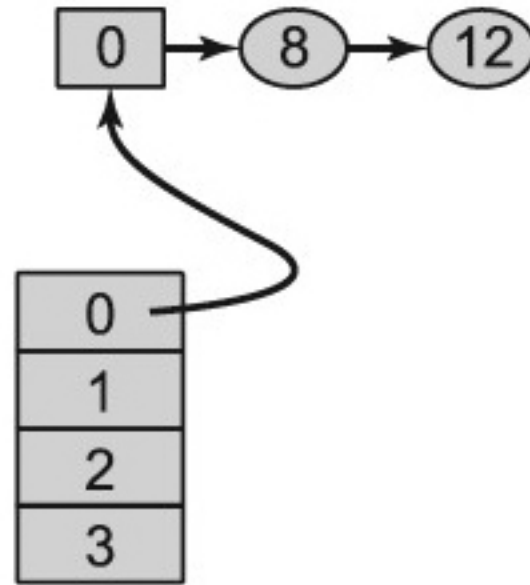


(a)



**FIGURE 13.20A** Recursive initialization of lock-free hash table buckets. (a) The table has four buckets; only bucket 0 is initialized. (b) We wish to insert the item with key 7. Bucket 3 now requires initialization, which in turn requires recursive initialization of bucket 1. (c) Bucket 1 is initialized by first adding the 1 sentinel to the list, then setting the bucket to this sentinel. (d) Then bucket 3 is initialized in a similar fashion, and finally 7 is added to the list. In the worst case, insertion of an item may require recursively initializing a number of buckets logarithmic in the table size, but it can be shown that the expected length of such a recursive sequence is constant.