Implementation of DBMS
Exercise Sheet 10
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1) Suppose we have a file of 1,000,000 records that we want to hash into a table with 1000 buckets. 100 records will fit in a block, and we wish to keep blocks as full as possible, but not allow two buckets to share a block. Empty buckets do not consume a block. What is the minimum and maximum number of blocks that we need to store this hash table?

2) Suppose that keys are hashed to four-bit sequences and that blocks can hold three records. If we start with a hash table with two empty blocks (corresponding to 0 and 1), show how the hash table evolves if we insert records with the following hash values:
0000, 0001, ..., 1111, and the method of hashing is extensible hashing.

3) In an extensible hash table with n records per block, what is the probability that an overflow will have to be handled recursively, i.e., all members of the block will go into the same one of the two blocks created in the split?