

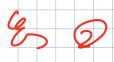
Hash files

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Assume we have a file with 250,000 records, each of them of size 300 bytes, 75 of which for the key field. Each block is of size 1024 bytes. A block pointer is 4 bytes.

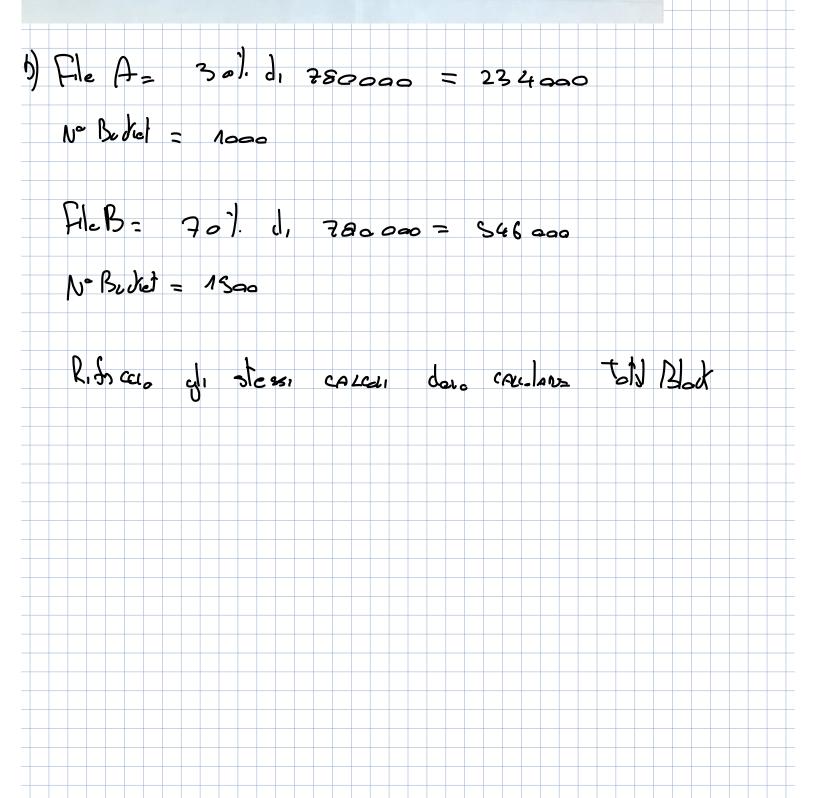
- a) If we use a hash organization with 1200 buckets, how many blocks do we need for the bucket directory?
- b) How many blocks do we need for the buckets, assuming a uniform distribution of records into buckets?
- c) Still assuming a uniform distribution of records, what is the average number of accesses needed to find a record in the file?
- d) How many buckets should we create to have instead an average number of accesses less or equal 10, still assuming a uniform distribution of records in the buckets?

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Assume we have a file with 780.000 records, each of them of size 250 bytes. Each block is of size 1024 bytes. A block pointer is 4 bytes. We are using a hash organization with 2500 buckets.

- A) How many blocks do we need to use for the bucket directory and for the buckets, assuming a uniform distribution of records?
- b) How many blocks do we need to use, assuming that 30% of records are uniformly distributed in 1000 buckets, and the remaining 70% is uniformly distributed in the remaining 1500 buckets?





(SAM

Assume we have a file of 150.000 records, each of them of size 250 bytes, 50 of which are used for the key field. Each block is of size 1024 bytes. A block pointer is of size 4 bytes.

- a) If we use an ISAM organization, we assume that blocks are filled at most at 70% of their capacity, how many blocks do we need for the index file?
- b) If we use binary search, what is the maximum number of accesses to blocks to find a record in the file for case a)?

