

Datenbanken II

Übungsblatt 1 – WiSe 2019/20

1. Given are two relations, $R(A)$ and $S(A)$. R is not sorted, and S is sorted on attribute A . R and S store the same numerical values, which are uniformly distributed between 5.000.000 and 10.000.000; a certain value can occur multiple times.

Block size is $B = 8192\text{B}$. Tuple size is $t = 120\text{B}$. $n = |R| = |S| = 1.000.000$ tuples. The time needed to read one block is 0.02s.

Determine the execution time for the following queries:

- `SELECT * FROM R WHERE A <> 7000000;`
 - `SELECT * FROM R WHERE A < 7000007;`
 - `SELECT * FROM S WHERE A <> 7000000;`
 - `SELECT * FROM S WHERE A < 7000007;`
2. How many tuples of size 1 Byte, 2^5B , oder 2^7B can be stored on a Slotted Page of size 2^{13}B ? Every field in the header takes 2B.
 3. Consider the following table:

```
CREATE TABLE boats (  
  bid int,           -- 4B  
  bname varchar(20) -- 1B pro Character  
);
```

The tuples are stored on Slotted Pages of size 8KB.

Visualize the contents of a Slotted Page (fields and values) after executing the following statements:

```
INSERT INTO boats VALUES (1, 'Alpha');  
INSERT INTO boats VALUES (2, 'Pi');  
INSERT INTO boats VALUES (3, 'Epsilon');
```