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Datenbanken II (SS 2019)

Exercise 3

Task 1 How is the storage managed within a DBMS? Why does a DBMS use an own storage management instead of files and blocks of an operating system?

Task 2 Assigning Records to Pages

In an exemplary DBMS, tuples are stored on pages with a size of 100 Byte.

(a) For the management of meetings with other people, a student uses a DBMS (characterized above). The following table structure is used:

- **Name**:varchar(10)
- **Date**:char(10)
- **Time**:char(5)
- **Venue**:varchar(15)
- **Activity**:varchar(15)
- **Bring along**:varchar(10)

Describe two possible ways to represent a record of this type on a page of a DBMS. Is a record always stored exactly on one page?

(b) .
Simulate stepwise the insertion of data from the following table:

Name	**Date**	**Time**	**Venue**	**Activity**	**Bring along**
Kai	16.06.2008	11:00	Layla	Brunch	nichts
Jana	30.07.2008	15:00	Stadtpark	Skaten	Skates
Nicole	11.08.2008	18:30	Springbrunnen	Kaffetrinken	Rosen

The following meta information need to be considered:

- Page number
- Previous page
- Succeeding page
- Tuple-Offset
- Tuple-Length
- Attribute-Count
- Attribute-Length

Each meta information needs 1 Bytes to be stored.

(c) Simulate the following updates:

- Last-minute the student detects an embarrassing fault ? Skating is not with Jana but with Markus!
- Furthermore, Markus selects a different venue: Einkaufszentrum.

(d) How does the storage of records change considering the Decomposition Storage Model or Partition Attributes Across? Which advantageous regarding processing of operations do the alternative storage model provide?

Task 3 Which aspects of the storage management changes considering main-memory databases?

Good Luck!