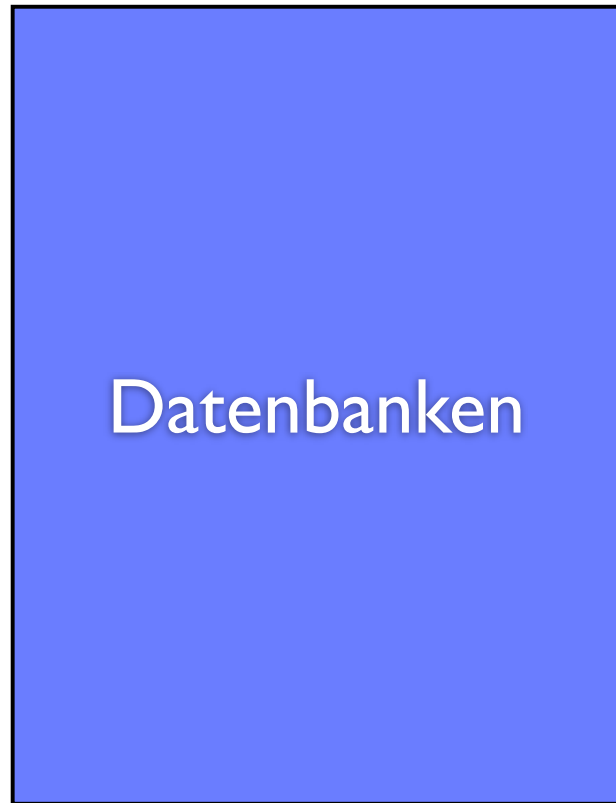
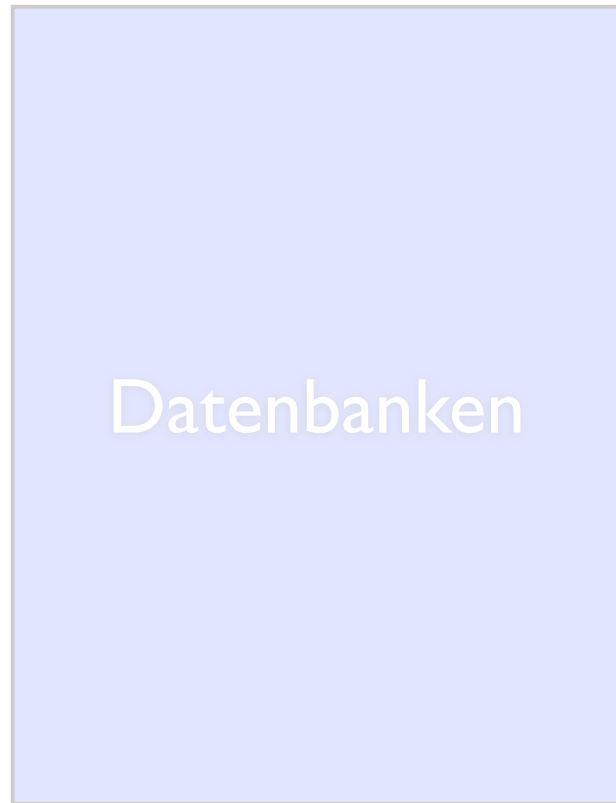


# Datenbanken





Nutzer 1...n



Extern

**Sichten** auf die Datenbank

Zugriff auf DB mit  
unterschiedlichen **Sprachen**

(PHP, Perl, Java, ...)



logische Struktur

ER

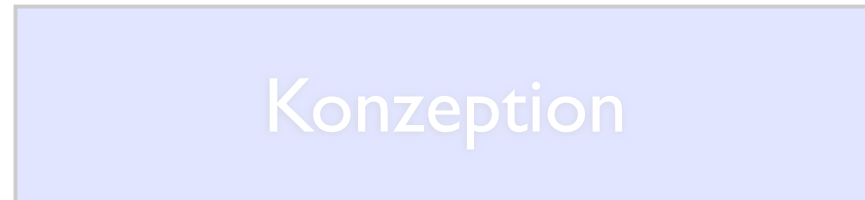
**Redundanzen vermeiden!**

Eindeutig

Konzeption

Vereinfachung/  
**Normalform**

**SQL - Abfragen**  
**Tabellenstruktur**



A photograph of a server room. In the foreground, there are several rows of server racks with glass doors, showing internal components. The racks are white and black. A person in a green shirt and dark pants is standing in the background, looking at one of the racks. The floor is made of light-colored tiles with a grid pattern. The ceiling has recessed lighting. The word "Server" is written in large black letters in the center of the image.

# Server



The diagram illustrates the layers of database architecture. It consists of four blue rectangular boxes with black outlines. At the top is a wide box labeled 'Intern'. Below it is a smaller box labeled 'SQL-Server'. At the bottom level, there are two boxes: 'phy. Ebene' on the left and 'Servertechnik' on the right. The 'Servertechnik' box is wider than the 'phy. Ebene' box. The text is white on a blue background.

Intern

Zugriff auf den Server mittels unterschiedlichen Clients  
und Programmiersprachen

SQL-Server

phy. Ebene

Servertechnik

Datenverlust ist Firmentod

**Redundante  
Systeme**

Programmiersprache



SQL-Abfrage



SQL-Server



Datenbank (Tabellenstruktur)

SQL

**create**

```
CREATE TABLE termine (  
    terminID int(11) NOT NULL auto_increment,  
    titel text NOT NULL,  
    bericht text NOT NULL,  
    bild text NOT NULL,  
    datum date NOT NULL default '0000-00-00',  
    uhrzeit time NOT NULL default '00:00:00',  
    t_stamp timestamp(14) NOT NULL,  
    kontaktperson text NOT NULL,  
    PRIMARY KEY (terminID)  
) TYPE=ISAM PACK_KEYS=1;
```

**insert**

explain

```
mysql>
mysql>
mysql>
mysql>
mysql>
mysql> explain schueler;
```

Field	Type	Null	Key	Default	Extra
schuelerID	int(11)		PRI	0	auto_increment
name	varchar(100)				
vorname	varchar(100)				
strasse	varchar(100)				
hausnummer	int(11)			0	
plz	int(11)			0	
ort	varchar(100)				
telefon	varchar(50)				
fax	varchar(50)				
email	varchar(100)				

10 rows in set (0.00 sec)

```
mysql> explain inklasse;
```

Field	Type	Null	Key	Default	Extra
schuelerID	int(11)		PRI	0	
klasseID	int(11)		PRI	0	

2 rows in set (0.00 sec)

```
mysql> explain klasse;
```

Field	Type	Null	Key	Default	Extra
klasseID	int(11)		PRI	0	auto_increment
kl_name	varchar(50)				
kl_lehrer	varchar(50)				

3 rows in set (0.00 sec)

```
mysql> █
```



**select**

```
mysql> select * from klasse;
```

klasseID	kl_name	kl_lehrer
1	9d	REHN
7	13infLK	
3	11infVLK	
4	11infGK	
5	11gemGK	
6	10b	
8	AG_Netz	
9	AG_Web	
10	14EDVA	

```
9 rows in set (0.02 sec)
```

```
mysql> █
```

**SELECT** name, vorname

**FROM** schueler, inklasse, klasse

**WHERE**

schueler.schuelerID=inklasse.schuelerID

**AND**

inklasse.klasseID=klasse.klasseID

**AND**

' \$KLASSE ' =klasse.klasseID ORDER BY NAME

## **Übung:**

- 1) Ausgabe aller Fahrten  
eines Busfahres
- 2) Ausgabe aller Fahrten
- 3) Ausgabe aller Teilnehmer

alter

ID	Name	Vorname	Alter
1	Schmidt	Hans	13
2	Schuster	Mark	16
3	...	...	...
4			
5			
...			
1345			
1346			
1347	Henner	Test	99