

Relational Data Model

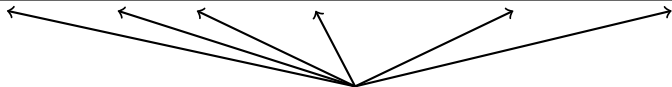
Data Management and Business Performance Management

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Table = Schema + Contents

Student					
<u>SID</u>	MatrNo	Name	FirstName	Immatriculation	Exdate
1	500123	Agarwal	Ayaan	WS 2016/2017	2019/07/21
2	503456	Özdem	Ali	SS 2019	
3	505789	Phan	Thi Mai Nhi	WS 2018/2019	



Schema

- ▶ Table name (green)
- ▶ Column name (brown)
- ▶ Primary key (underlined, pink)
- ▶ Data types: Number (SID), String (Name), Date (ExDate)

Contents

- ▶ Records (grey lines)

Structural Representation / SQL Statement

Student
<u>SID</u>
MatrNo
Name
FirstName
Immatriculation
Exdate

```
create table Student (  
    SID integer not null,  
    MatrNo integer not null,  
    Name varchar(50) not null,  
    FirstName varchar(50) not null,  
    Immatriculation varchar(12) not null,  
    Exdate date,  
    primary key SID  
)
```

Foreign Keys

Student
<u>SID</u>
MatrNo
Name
Vorname
Immatriculation
Exdate
Dept

Dept=DID

Department		
<u>DID</u>		
Name		
Location		

Student					
<u>SID</u>	MatrNo	Name	...	Exdate	Dept
1	500123	Agarwal	...	2019/07/21	1
2	503456	Özdem	...		1
3	505789	Phan	...		2

Department		
<u>DID</u>	Name	Location
1	MBAE	WH
2	BC	TA

- ▶ Dept contains references to department records
- ▶ Student 1 and 2 are registered in the MBAE programme
- ▶ Student 3 is registered in Business Computing

Data Types (Example Subset)

Type Name	Domain	Example Values
Numerical Data Types		
integer	integral numbers	-100, 200
decimal(5,3)	fixed precision numbers	10,156
float	floating point numbers	10,154789
String Data Types		
char(3)	fixed length	'DB '
varchar(3)	variable length	'DB'
Date/Time Data Types		
date	date with time	2019/03/26 09:30:12

Integrity Constraints

- ▶ **Primary key / Unique Constraint**
Uniqueness of column values
Identification of records
- ▶ **Foreign key**
Relationships between tables
Referential integrity, target must exist
- ▶ **Check Constraint**
Restriction on column values
Quantities of line items within orders must be greater than 0
- ▶ **Not Null Constraint**
Must contain values, i.e. cannot be empty

Reasons for Null Values

- ▶ **Information not provided**
Private telefon number
- ▶ **Information not existing, yet**
Exmatriculation date exists only after Exmatriculation
- ▶ **Column not suitable**
Table for person records with data for students and other persons,
column MatrNo only applicable for student records