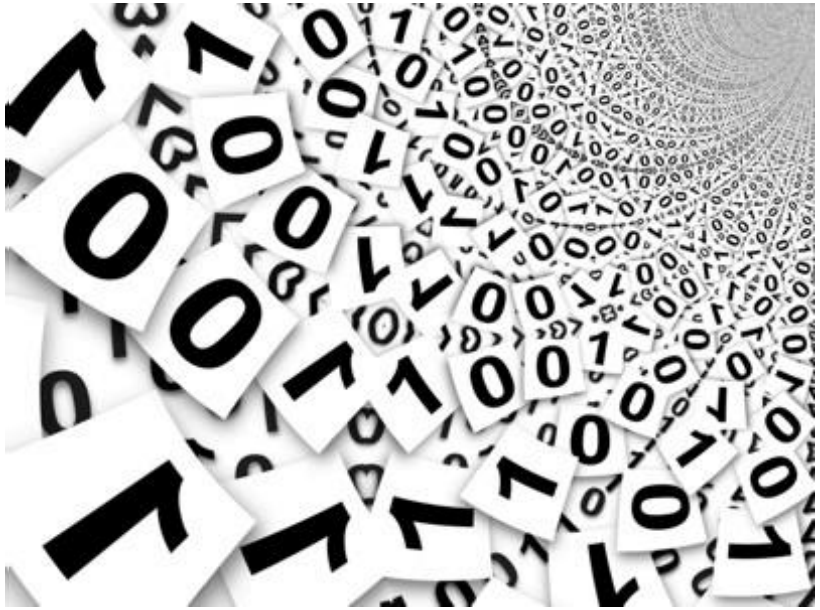
Technische Universität Berlin

Geo-Databases

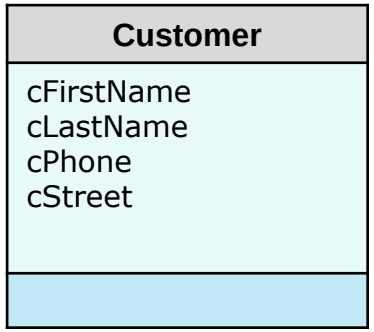
Mapping and Normalization

From UML to SQL



Institute for Geodesy and Geoinformation Science
Technische Universität Berlin

How to: UML to Table




```
CREATE TABLE customer(

cFirstName character(30) NOT NULL,
cLastName  character(30) NOT NULL,
cPhone     varchar(30),
cStreet    character(30)

);
```

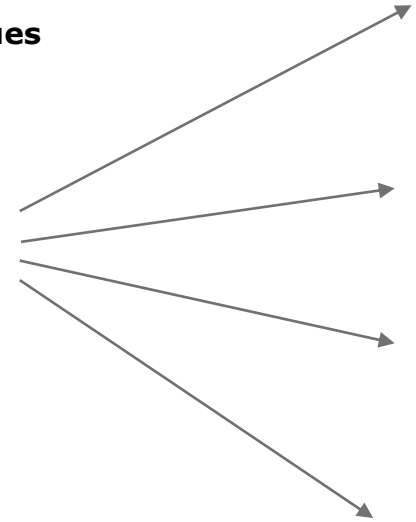

cfirstname character(30)	clastname character(30)	cphone character varying(30)	cstreet character(30)

UML SQL TABLE

Small SQL Toolbox

Some UML Techniques

- Multiplicities
- Associations



Some SQL Techniques

- Queries
- Subqueries
- Joins
- Constraints
- Functions

They want to get used by you!!

Normalization

There are several levels of normalization called *normal forms*, each addressing additional situations where problems may occur.
Normalisation ensures, that the DB is structured in the best possible way.

Small summary:

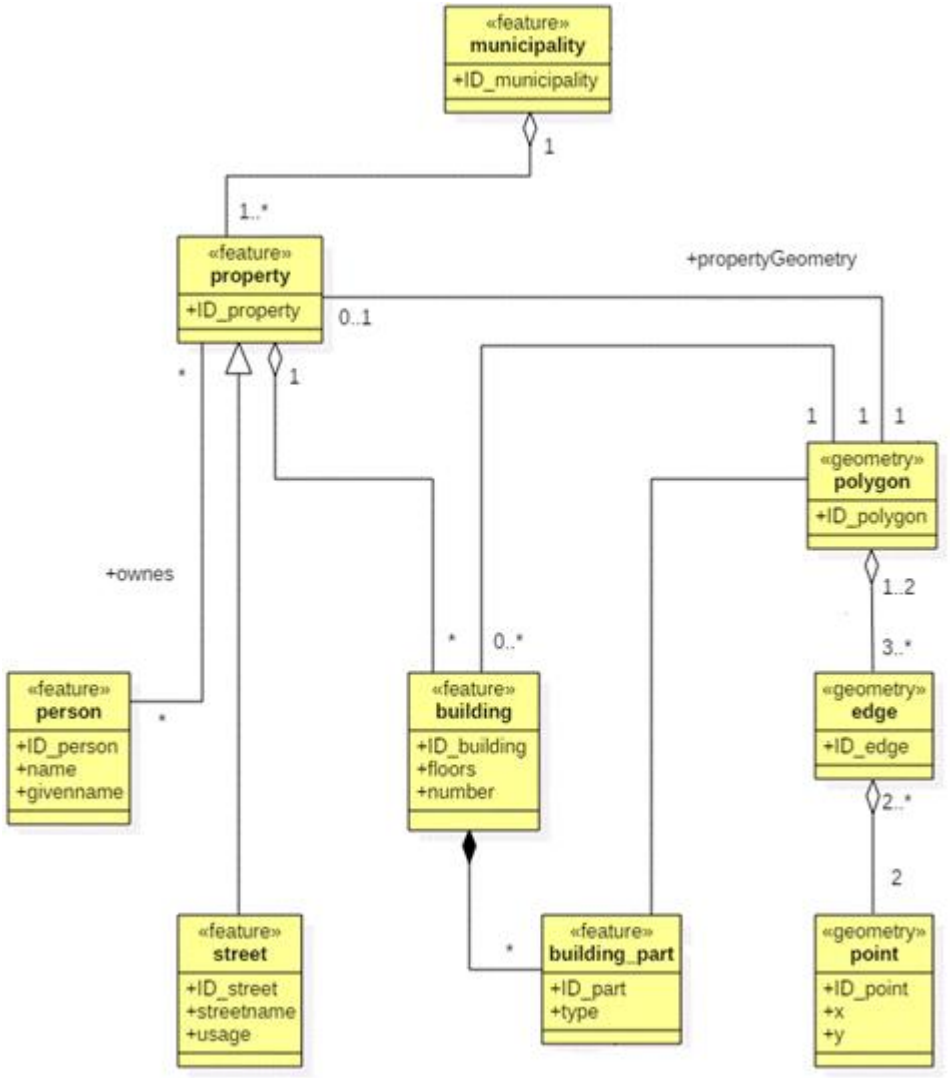
First Normalform (1NF)	Second Normalform (2NF)	Third Normalform (3NF)	Boyce Codd Normalform (BCNF)
▪ No repeating Attributes ▪ Each cell contains only one value	▪ 1NF ▪ No dependency of a column that is not part of the primary key ▪ Strong related to the concept of functional dependency	▪ 2NF ▪ There are no non-key columns dependant on other non-key columns that could not act as the primary key	▪ If every determination could be a primary key -- > A table is based on the key, the whole key, and nothing but the key

Source: http://de.slideshare.net/DamianGordon1/database-normalisation

Task 1

The following UML diagram represents the model of a simplified cadastre database.

Your task now is to map the UML classes to relational tables.



Task 2

Practice each of the normal forms using the following Table.

StudentNo	LastName	FirstName	Class	Teacher	Subject	SubjectNo	Time in h
1	Mustermann	Laura	11	Baum	Math	1	17
2	Musterfrau	Jens	12	Tree	Physics	2	22
3	Mannmuster	Robert	12	Richter	Math, Sport, Chemistry	1, 3, 4	17, 7, 13
4	Fraumuster	Adela	13	Tree	Electronics	5	11
5	Mustermann	Laura	11	Summer	Physics	2	22