Federal Agency for Cartography and Geodesy

Session:

Building the database – hands on experience

V1.0

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Content

First steps before processing the names collected

- Structure for storing the data, maintaining records
- Feature categories/classification

Demonstration of the processing of names collected

- Spreadsheet or Database?
- Create main tables and enter names into a database
- Database queries and reports (e.g. gazetteers as printouts)

Hands on experience

What are the purposes of a DB?

Gazetteer

(printed)

Web

Names DATABASE

national

GIS

Map

Names DATABASE

international

Structure for storing the data, maintaining the records

1. Gathering of names information

2. Authorizing toponyms

3. Storing the data, maintaining the records

paper:	Gazetteer
digital:	Text file, Spreadsheet, Database

Structure: Tables !!

Columns:
attribute information to the name

Rows:

One for each name

Name	Feature Type	Coordi-nates	.....
Name1			
Name2			
Name3			
.....			

Structure: Tables !!

Columns:
attribute information to the name

Rows:

One for each name

Name	Feature Type	Coordi-nates	.....
Rio de Janeiro	Populated Place	-22,92	-43,38
Rio Iguaçu	stream	-22,74	-43,25
Chácara Entrerios	mountain	-22,48	-43,05
Petrópolis	Administ. Unit	-22,48	-43,18

Structure: Tables !!

Columns:
attribute information to the name

Rows:

One for each name

Absolutely necessary!

Field name	Data type	Description
Geographical Name	Text	the name
Feature Type	Text	e.g. River, Mountain, Populated Place. The types should be chosen from a standardized list, if exists.
Coordinates, e.g.:		
Longitude	Number	Geographical Coordinates
Latitude	Number	Geographical Coordinates
		Instead of Geographical Coordinates, other systems may be used, for instance UTM with X and Y coordinates.

Structure for storing the data, maintaining the records

Structure: Tables !!

Rows:

One for each name

Columns:
attribute information to the name

recommended

Field name	Data type	Description
FeatureID (for databases)	Integer	A unique identifier assigned to the name. This ID will be used to link the name with other database tables.
Variant Name	Text	Other names assigned to the feature, if any
Administrative Unit	Text	Name or Code of the Administrative Unit where the name is situated in.
Map Sheet	Text	Reference to a map sheet in a topographic map series. The data type may be Integer if the sheet name contains only numbers no letters.
Description	Text	Comments, e.g. on the history of the name, and verbal statements on the extension of the feature.
Source	Text	Source of the name. e.g. captured in the field by interview
Date	Date	Date of the entry to the Database. Other option: date of approval by the Board.
Status	Text	Comment, e.g. name is approved or not approved by the Board.

Structure for storing the data, maintaining the records

INSPIRE GN schema: elements

mandatory

- name(s) (text, spelling)
- geomety
- feature type
- unique identifier

'voidable'

- language {three letter codes from ISO 639-3 or -5}
- nameStatus {official, standardised, historical, other}
- link to relatedSpatialObject
- script {four letters codes defined in ISO 15924}
- nativeness {endonym, exonym}
- transliterationScheme
- grammatical gender {masc., fem., neuter, common}
- grammatical number {singular, plural, dual}
- pronunciation
- sourceOfName
- typeLocal
- lifeCycleInfo (begin/end of the object in the source DB)
- …

Feature categories/classification

CODE

This column contains a specific code of maximally four letters which provides a further specification of the nature of the particular feature. It occasionally proved difficult to draw a sharp distinction between the names of polders and area names. The category 'polder' therefore includes all those names in which the word 'polder' occurs. In addition, this category also includes the names of drained lakes which are clearly visible as a landscape unit on the map, such as Schermer, Flevoland, etc.
Where no recognizable feature can be discerned from the topography, the name is coded as an area or local name.

The explanation of the 40 codes used is as follows:

ADMD	administrative division
AF	airfield, airport
AN	area name, local name
AQDT	aqueduct
BLDG	building, group of buildings
BRDG	bridge, viaduct
CEM	cemetery
CHAN	channel, fairway
CNAN	canal, waterway, ditch
DAM	dam, groyne, pier
DIKE	dike, embankment
DIST	residential district
FORT	fort, entrenchment
FRST	forest
HBR	harbour
HILL	hill, dune, mountain
HTH	(former) heathland
IND	industrial estate
INL	inlet, estuary
IS	island
LAKE	lake, pool, pond
LH	lighthouse
LOCK	sluice, lock
MISC	miscellaneous landmarks e.g. beacon, belvedere, dock, decoy, burial mound, light,

NAME OF FEATURE	CODE	LONGITUDE	LATITUDE	UTM-REF.	ADM. CODE	SHEET +ED.	REMARKS
Enning	BLDG	06 51 53	51 54 55	32U LC53155385	GE	410-4	
Ennipwetering . . .	CNAN	04 52 40	52 10 11	31U FT28408170	U	310-4	
Ens	POPL	05 49 41	52 38 14	31U FU91353580	F1	21W-4	
ENSCHEDE	POPL	06 53 48	52 13 14	32U LC56308775	O	340-4	35
Enschotsche Akkers .	AN	05 08 10	51 34 15	31U FT48001555	NB	500-4	
Ensertocht	CNAN	05 49 54	52 37 45	31U FU91653490	F1	21W-4	
Enservaart	CNAN	05 50 18	52 40 36	31U FU91854020	F1	21W-4	
Ens Gent	BLDG	05 53 00	52 47 33	31U FU94405320	O	16W-4	

Gazetteer of

The Netherlands

- **Feature codes**

  … is it a river, a mountain, a populated place, etc?

Feature categories/classification

Feature types provided

EGN Feature classification

→ **8 classes and 27 sub-classes**

(1) Countries, administrative units and other areas,

(2) Populated Places,

(3) Non-residential structures and buildings,

(4) Transport and telecommunication features,

(5) Terrain features,

(6) Hydrographic features,

(7) Conservation areas,

(8) Miscellaneous

→ **essentially for the purpose of query-filtering**

(defined by EGN Reference Group)

Code		Feature Type	Short Definition	Feature Type Examples
1		**COUNTRIES, ADMINISTRATIVE UNITS AND OTHER AREAS**	Countries, territorial units of a country for administrative purposes and other man-made areas	
	1.1	**Country**	Country of Europe	
	1.2	**Administrative units**	Territorial units of every country for statistics and administrative purposes *Including:*	
			Nomenclature of Territorial Units for Statistics in EU (NUTS 1, 2 and 3)	länder (Germany) autonomous region (Spain) province
			Local Administrative Units (LAU 1 and 2)	municipality
			Other administrative units	
	1.3	**Other non-administrative units**	Other type of man-made areas like economic, cultural, linguistic or tourist areas	
2		**POPULATED PLACES**	Buildings for housing of any category like cities, towns, villages, etc.	
	2.1	**Administrative capitals**	Populated places with capital status *Including:*	
			Administrative capitals of NUTS 1, 2 and 3	capital of country, autonomous region (Spain), province
			Administrative capitals of LAU 1 and 2	capital of municipality
			Other administrative capitals	
	2.2	**Other populated places**	Populated places without administrative status *Including:*	
			Cities, towns, villages, hamlets...	city, town, village, hamlet
			Parts of them	neighborhood

Feature categories/classification

Brazil - Feature codes?

Definitions

SOURCE: www.nga.mil

- Geographical Names INDEX
- Feedback

GIS Compatible Output Format

Field Name	Field Description	Field Type	Default Selection
RC	Region Font Code. A code that determines the character mapping used in the SHORT_FORM, Generic, and Full_Name fields (see Character Set Conversion Table [Char_Sets_20060703.pdf],: 1 = Americas/Western Europe; 2 = Eastern Europe; 3 = Africa/Middle East; 4 = Russia/ Central Asia; 5 = Asia/Pacific; 6 = Vietnam.	number	Y
UFI	Unique Feature Identifier. A number which uniquely identifies a Geoname feature.	number	Y
UNI	Unique Name Identifier. A number which uniquely identifies a name.	number	Y
LAT	Latitude of the Geoname feature in ± decimal degrees; DD; (± dd.dd...): no sign (+) = North; 05°03'09"E » 5.0525 negative sign (-) = South; 05°03'09"S » -5.0525	number	Y
LONG	Longitude of the feature in ± decimal degrees; DD; (± dd.dd...): no sign (+) = East; negative sign (-) = West.	number	Y
DMS_LAT	Latitude of the Geoname feature in ±degrees, minutes, and seconds; DMS; (±ddmmss): no sign (+) = North; negative sign (-) = South.	number	Y

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Demonstration of the processing of names collected

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- Create main tables and enter names into a database
- Database queries and reports (e.g. gazetteers as printouts)

Hands on experience

Spreadsheet or Database?

1) Spreadsheet
(software: e.g. Microsoft Excel)

advantage:

extended processing capabilities

disadvantage:

digital processing limited to operations within the spreadsheet

Name	Feature Designation Name	Latitude	Longitude
Rio de Janeiro	Populated Place	-22,92	-43,38
Rio Iguaçu	Stream	-22,74	-43,25
Chácara Entrerios	Mountain	-22,48	-43,05
Petrópolis	Administrative unit	-22,48	-43,18

demo3.xls

Spreadsheet or Database?

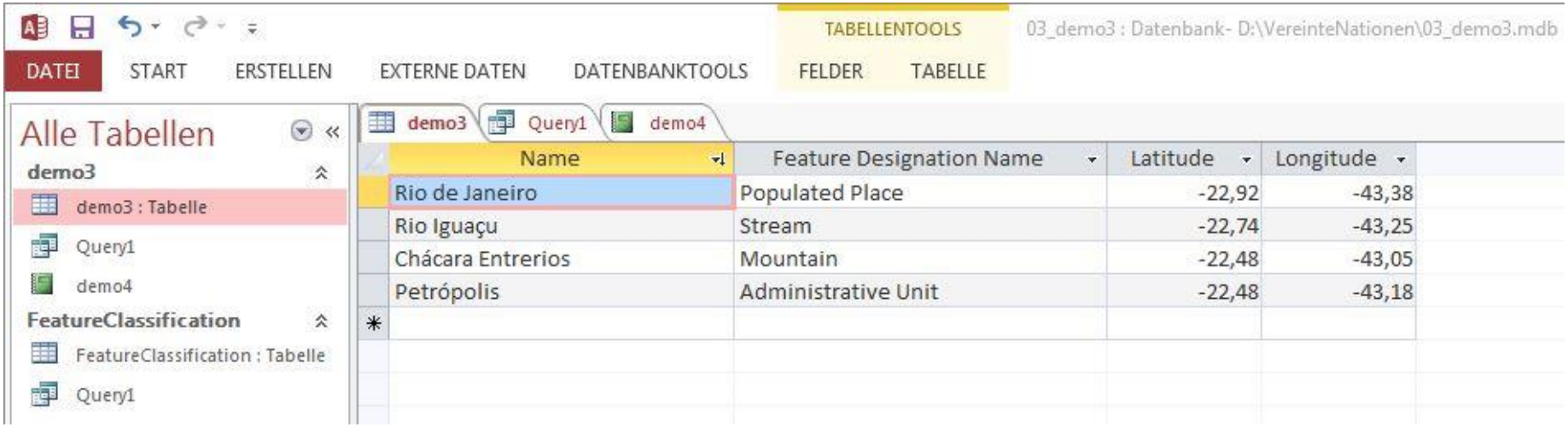
2) Database
(software: e.g. Microsoft Access)

advantages:

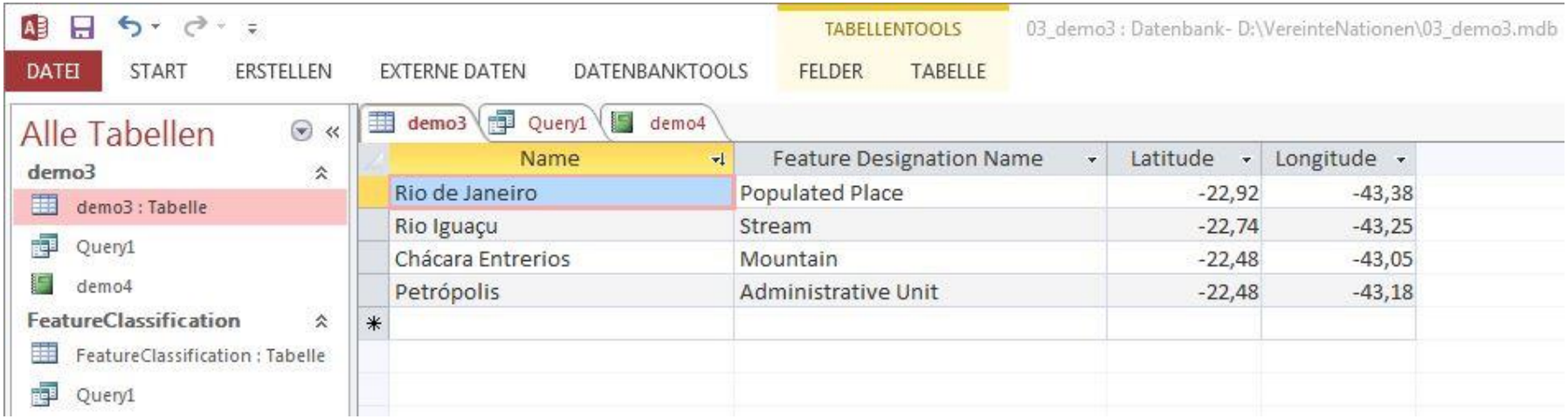
data can be connected with other databases,
complex processing capabilities

disadvantages:

some programming and/or user skills required

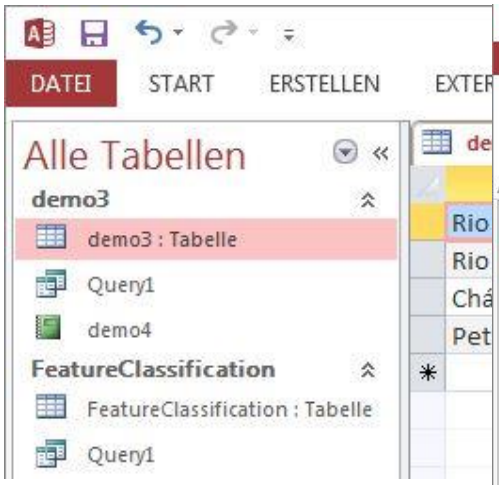


Create main tables and enter names into a database with MS Access

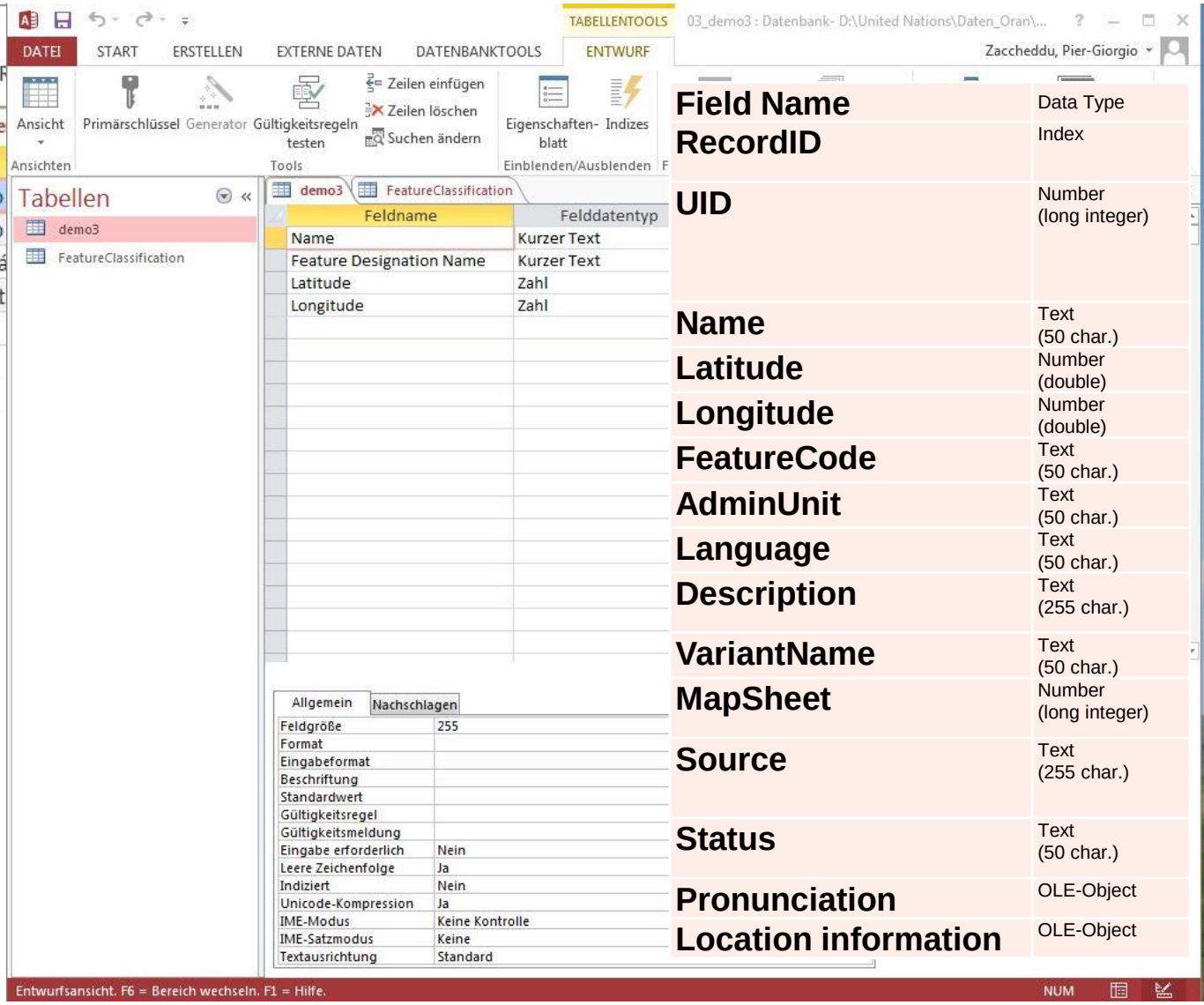


names table
Datasheet view and design view

Create main tables and enter names into a database with MS Access

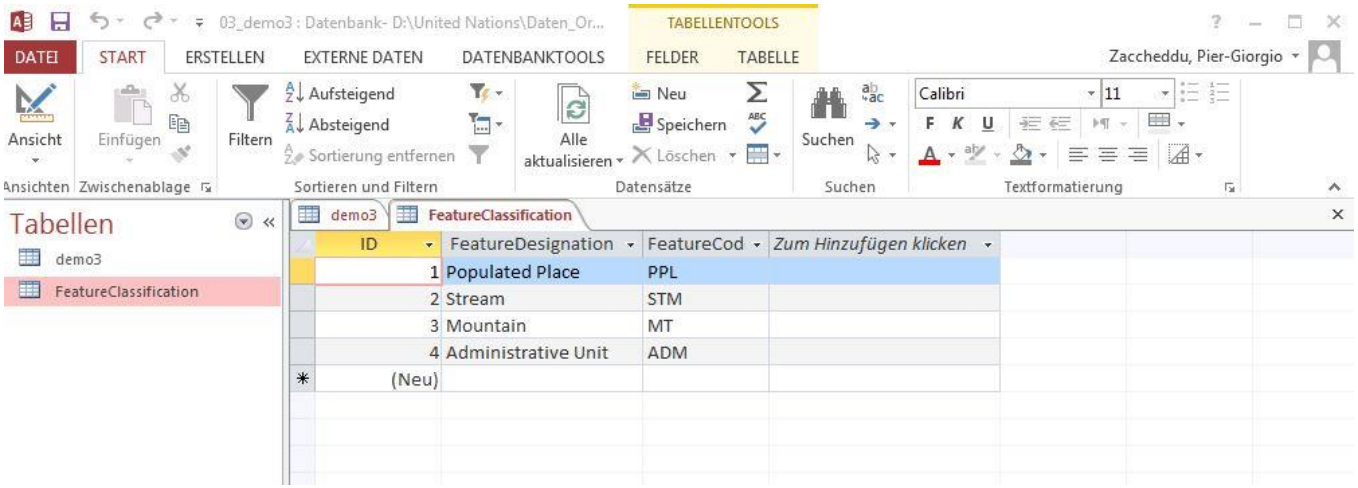


names table
Datasheet view and design view



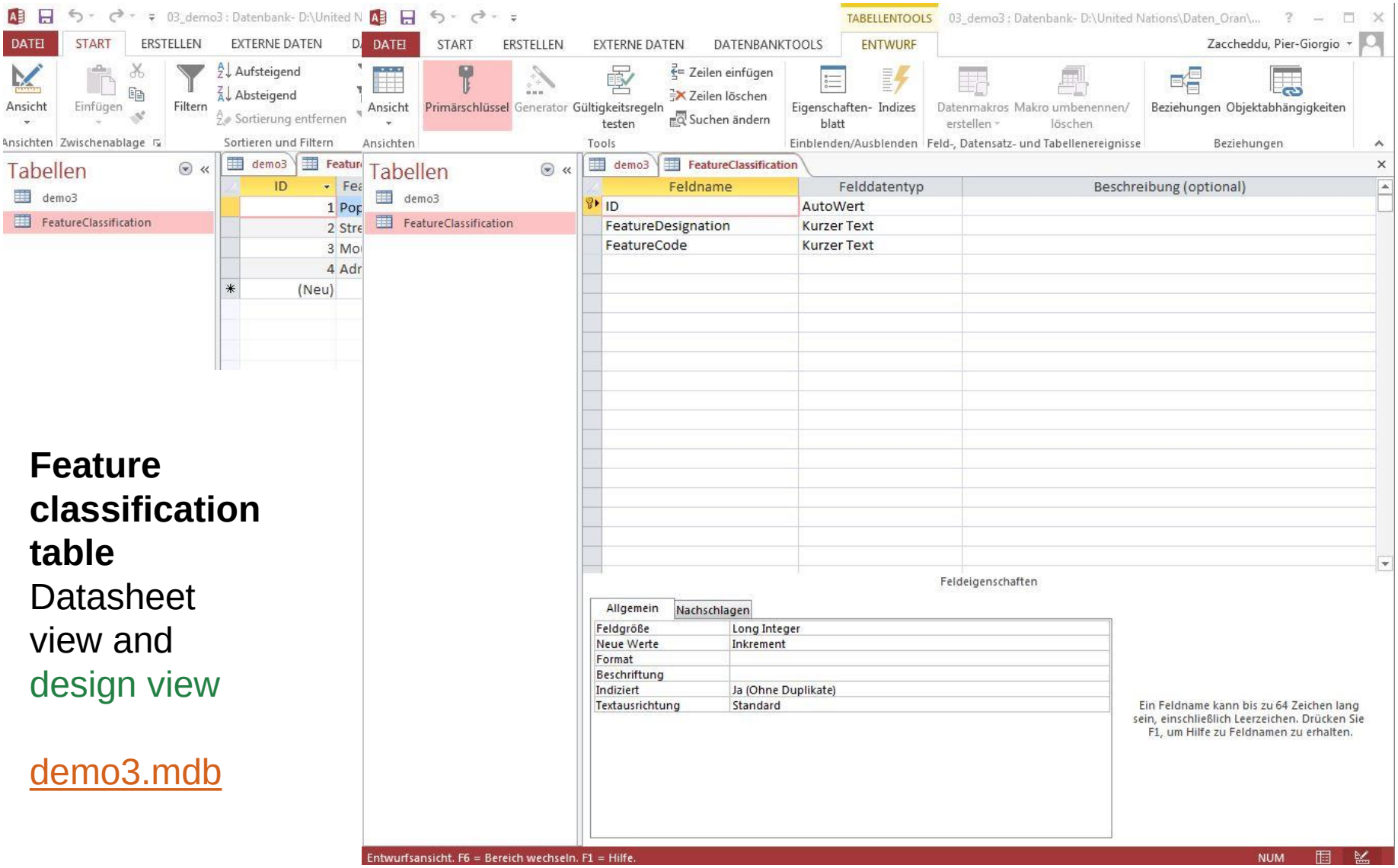
Field Name	Data Type
RecordID	Index
UID	Number (long integer)
Name	Text (50 char.)
Latitude	Number (double)
Longitude	Number (double)
FeatureCode	Text (50 char.)
AdminUnit	Text (50 char.)
Language	Text (50 char.)
Description	Text (255 char.)
VariantName	Text (50 char.)
MapSheet	Number (long integer)
Source	Text (255 char.)
Status	Text (50 char.)
Pronunciation	OLE-Object
Location information	OLE-Object

Create main tables and enter names into a database with MS Access



Feature classification table
Datasheet view and design view

Create main tables and enter names into a database with MS Access



Feature classification table
Datasheet view and design view

demo3.mdb

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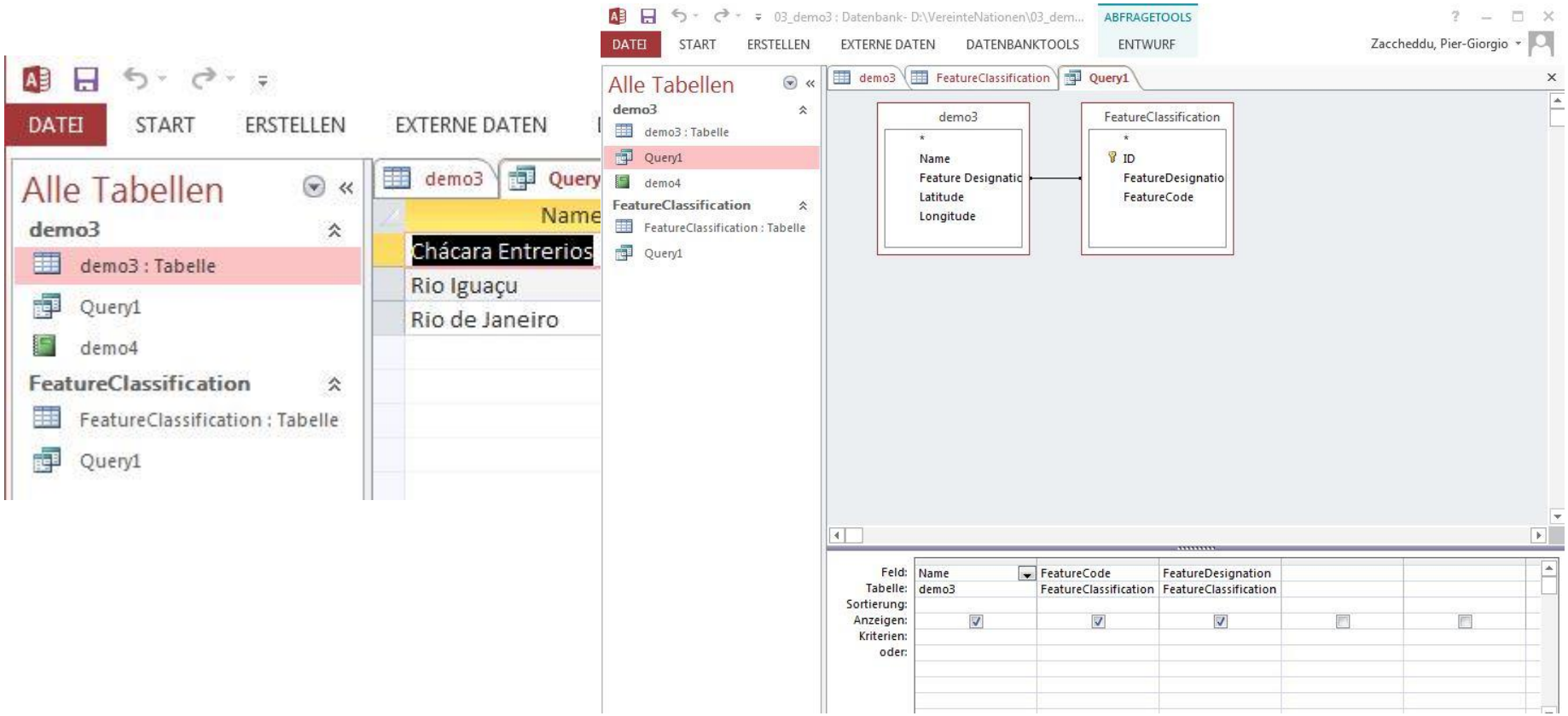
Database queries and reports with MS Access (e.g. gazetteers)

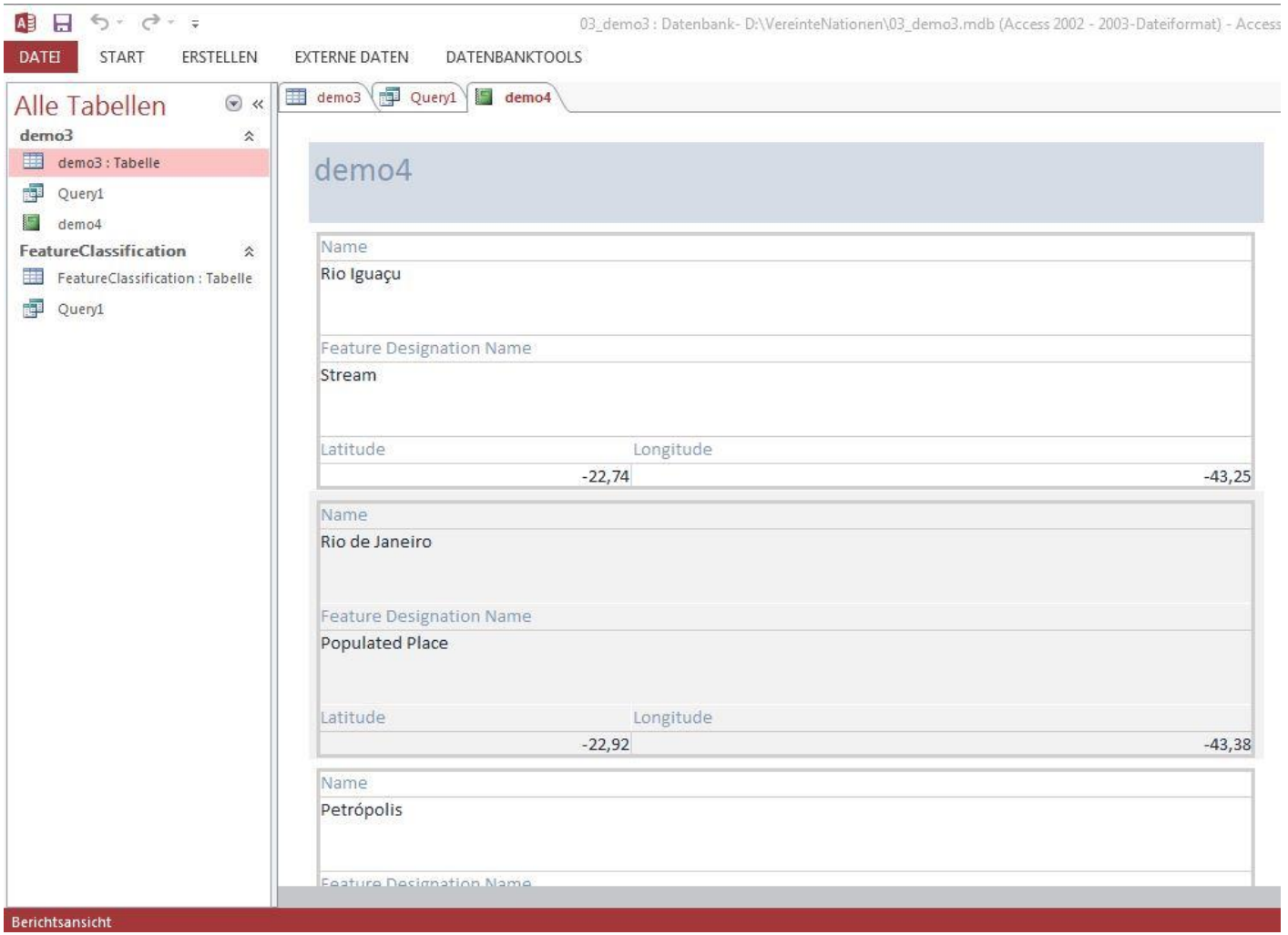


The main advantage of database **queries** is that you can join information from different tables in the database, i.e. here **joining the names table and the feature classification**

Database queries and reports with MS Access (e.g. gazetteers)

The **report tool** can be used to print the data in a layout defined by the creator.
→ gazetteer

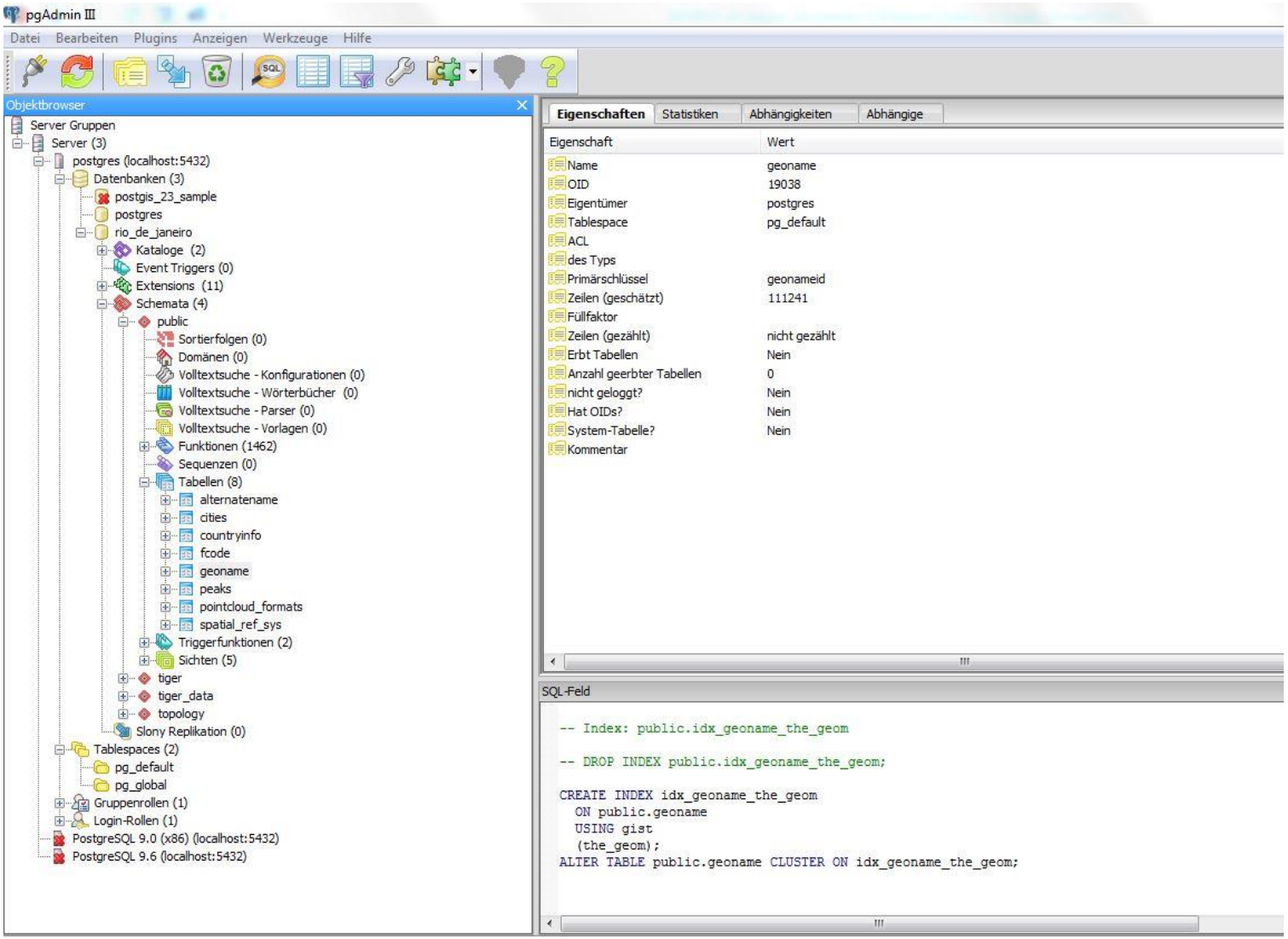
It can build upon a query or a table and can be created in different designs.



Create main tables and enter names into a database with PostgreSQL/PostGIS

Definition and creation of a sql-database with the tool pgAdmin

soft- and hardware skills are needed!



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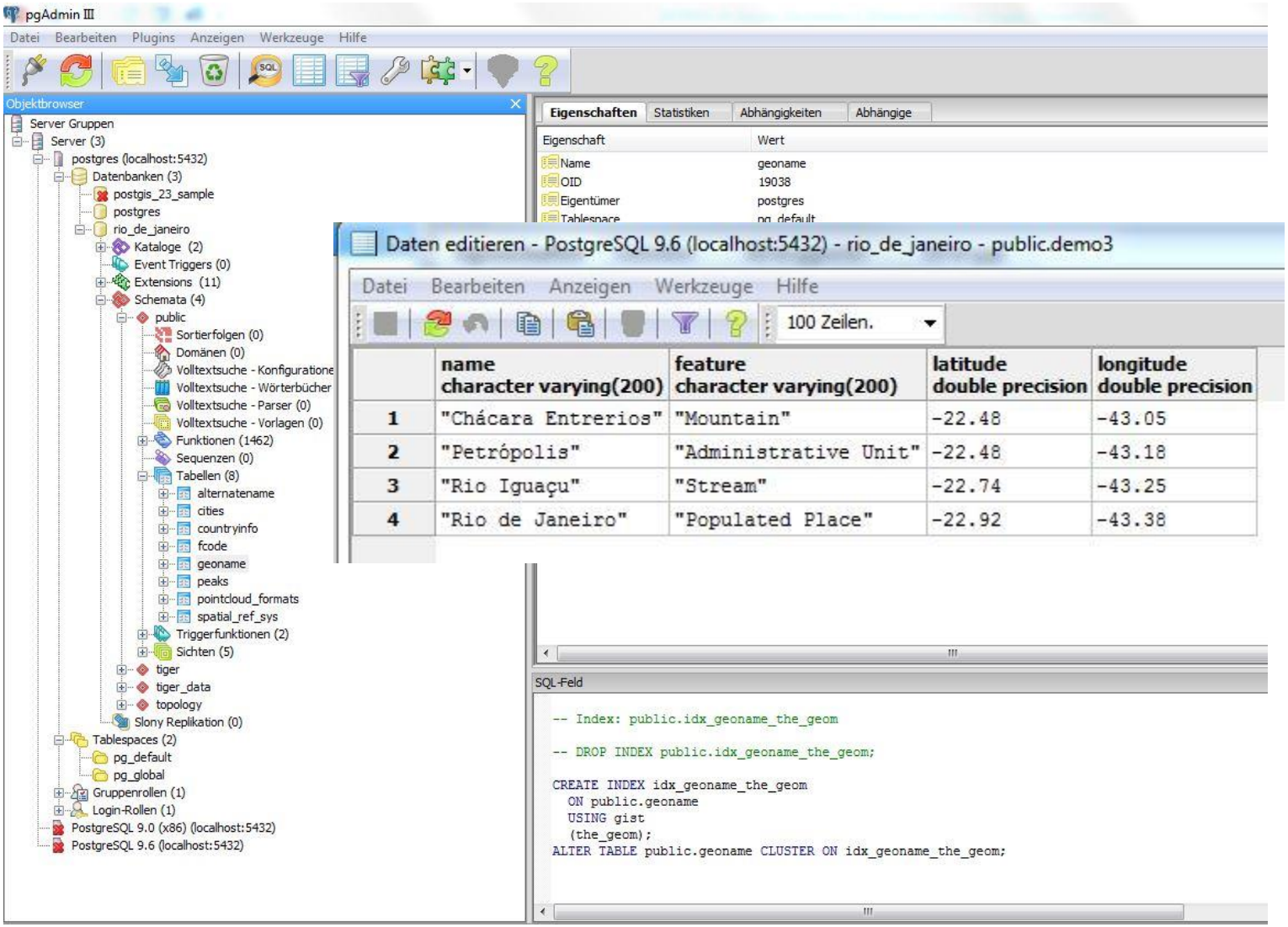


Databases with MS Access and PostgreSQL/PostGIS

PostgreSQL /PostGIS

Daten editieren - PostgreSQL 9.6 (localhost:5432) - rio_de_janeiro - public.demo3

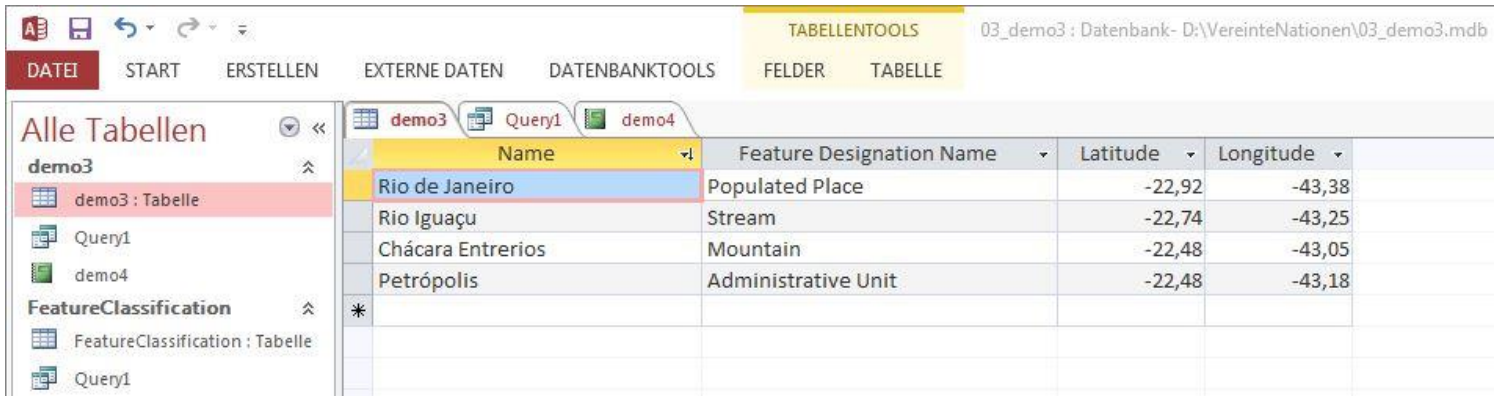
Datei Bearbeiten Anzeigen Werkzeuge Hilfe

100 Zeilen.

	name character varying(200)	feature character varying(200)	latitude double precision	longitude double precision
1	"Chácara Entrerios"	"Mountain"	-22.48	-43.05
2	"Petrópolis"	"Administrative Unit"	-22.48	-43.18
3	"Rio Iguaçu"	"Stream"	-22.74	-43.25
4	"Rio de Janeiro"	"Populated Place"	-22.92	-43.38

The same result with both database tools!!!

MS Access



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Hands on experience

Training Course on Toponymy,

Creating a Geographical Names Database and producing Gazetteers and Maps

– Exercise –

Pier-Giorgio Zaccheddu, Andreas Illert

Knowledge:
Steps in designing a database

- Determine the purpose of your database.
- Determine the tables you need in the database.
- Determine the fields you need in the tables.
- Identify fields with unique values.
- Determine the relationships between tables.
- Refine your design.
- Add data and create other database objects.

Scope of the Exercise:

1. (a) create main tables for a names database or
   (b) use of a predefined names database
2. insert the data from the field collection into a database
3. print a gazetteer from the database
4. create a map with the geographical names in a Geographical Information System (GIS)
5. Publish the names data using Google Maps/Earth

Thank you for your attention!