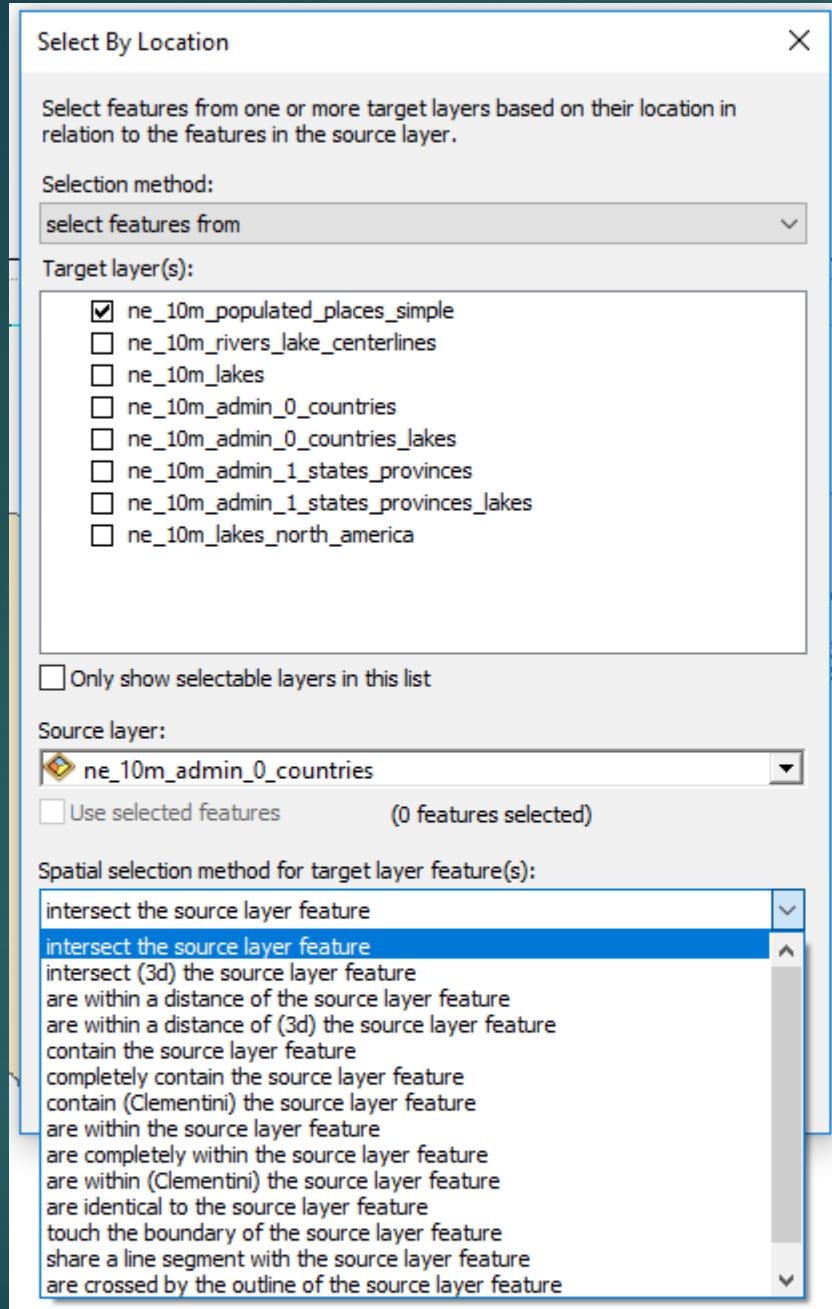


# SQL & DBMS

LECTURE 5: WEEK 4



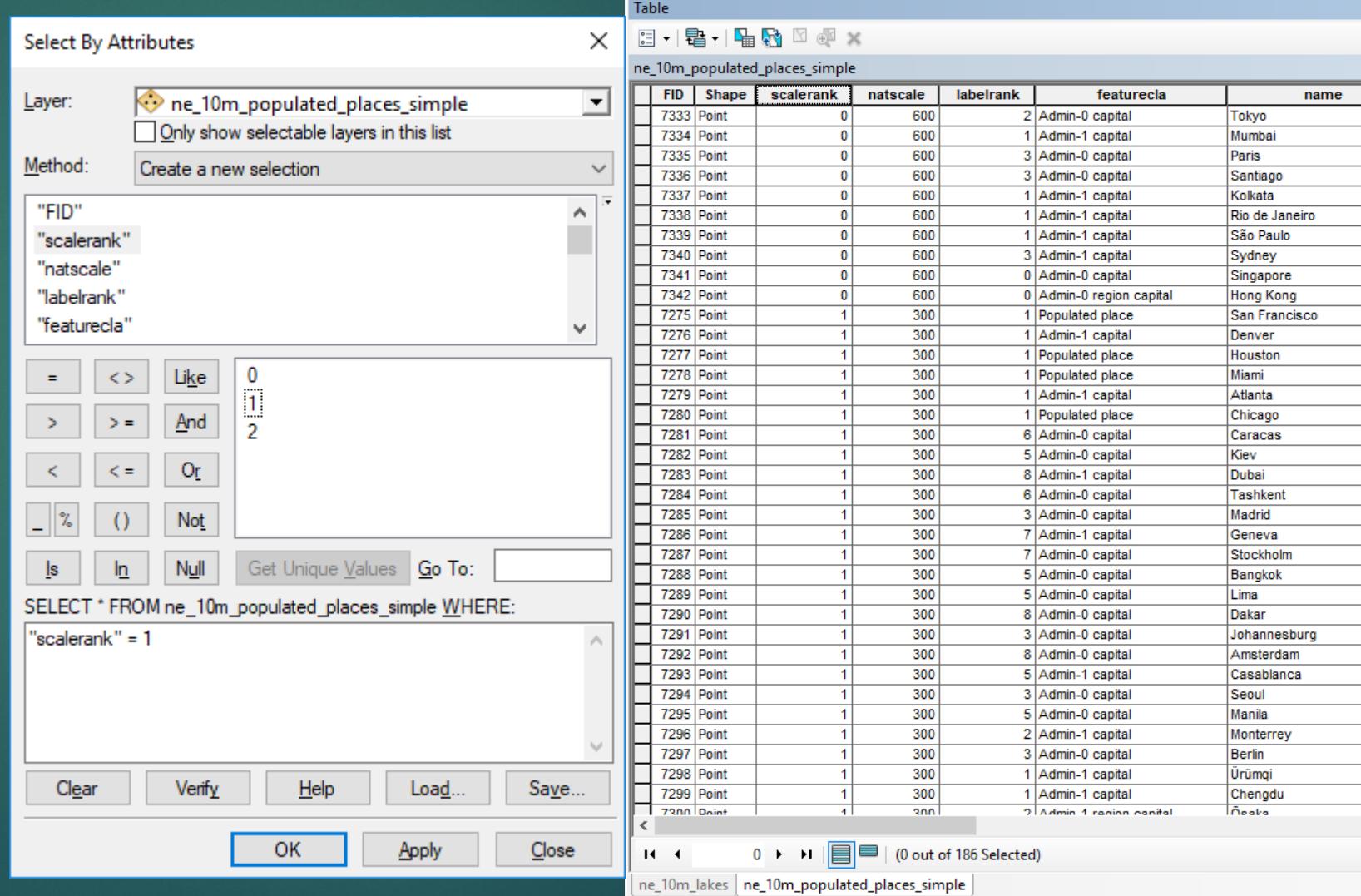
# Select By Location

- ▶ Selecting based on how the layer interacts with other layers
  - ▶ Overlay
  - ▶ Proximity
- ▶ One of the key ways in which we can do Proximity analysis

# Attribute Queries...

## Using SQL in GIS

- ▶ ArcGIS (along with other GIS applications) use a form of SQL to perform queries
- ▶ Two main places: Selection and Definition Queries



The image shows a 'Select By Attributes' dialog box and a 'Table' view of a GIS layer.

**Select By Attributes Dialog:**

- Layer:** ne\_10m\_populated\_places\_simple
- Method:** Create a new selection
- Filter:** "scalerank" = 1
- Buttons:** Clear, Verify, Help, Load..., Save..., OK, Apply, Close

**Table View:**

FID	Shape	scalerank	natscale	labelrank	featurecla	name
7333	Point	0	600	2	Admin-0 capital	Tokyo
7334	Point	0	600	1	Admin-1 capital	Mumbai
7335	Point	0	600	3	Admin-0 capital	Paris
7336	Point	0	600	3	Admin-0 capital	Santiago
7337	Point	0	600	1	Admin-1 capital	Kolkata
7338	Point	0	600	1	Admin-1 capital	Rio de Janeiro
7339	Point	0	600	1	Admin-1 capital	São Paulo
7340	Point	0	600	3	Admin-1 capital	Sydney
7341	Point	0	600	0	Admin-0 capital	Singapore
7342	Point	0	600	0	Admin-0 region capital	Hong Kong
7275	Point	1	300	1	Populated place	San Francisco
7276	Point	1	300	1	Admin-1 capital	Denver
7277	Point	1	300	1	Populated place	Houston
7278	Point	1	300	1	Populated place	Miami
7279	Point	1	300	1	Admin-1 capital	Atlanta
7280	Point	1	300	1	Populated place	Chicago
7281	Point	1	300	6	Admin-0 capital	Caracas
7282	Point	1	300	5	Admin-0 capital	Kiev
7283	Point	1	300	8	Admin-1 capital	Dubai
7284	Point	1	300	6	Admin-0 capital	Tashkent
7285	Point	1	300	3	Admin-0 capital	Madrid
7286	Point	1	300	7	Admin-1 capital	Geneva
7287	Point	1	300	7	Admin-0 capital	Stockholm
7288	Point	1	300	5	Admin-0 capital	Bangkok
7289	Point	1	300	5	Admin-0 capital	Lima
7290	Point	1	300	8	Admin-0 capital	Dakar
7291	Point	1	300	3	Admin-0 capital	Johannesburg
7292	Point	1	300	8	Admin-0 capital	Amsterdam
7293	Point	1	300	5	Admin-1 capital	Casablanca
7294	Point	1	300	3	Admin-0 capital	Seoul
7295	Point	1	300	5	Admin-0 capital	Manila
7296	Point	1	300	2	Admin-1 capital	Monterrey
7297	Point	1	300	3	Admin-0 capital	Berlin
7298	Point	1	300	1	Admin-1 capital	Ürümqi
7299	Point	1	300	1	Admin-1 capital	Chengdu
7300	Point	1	300	2	Admin-1 region capital	Beijing

# SQL Structure:

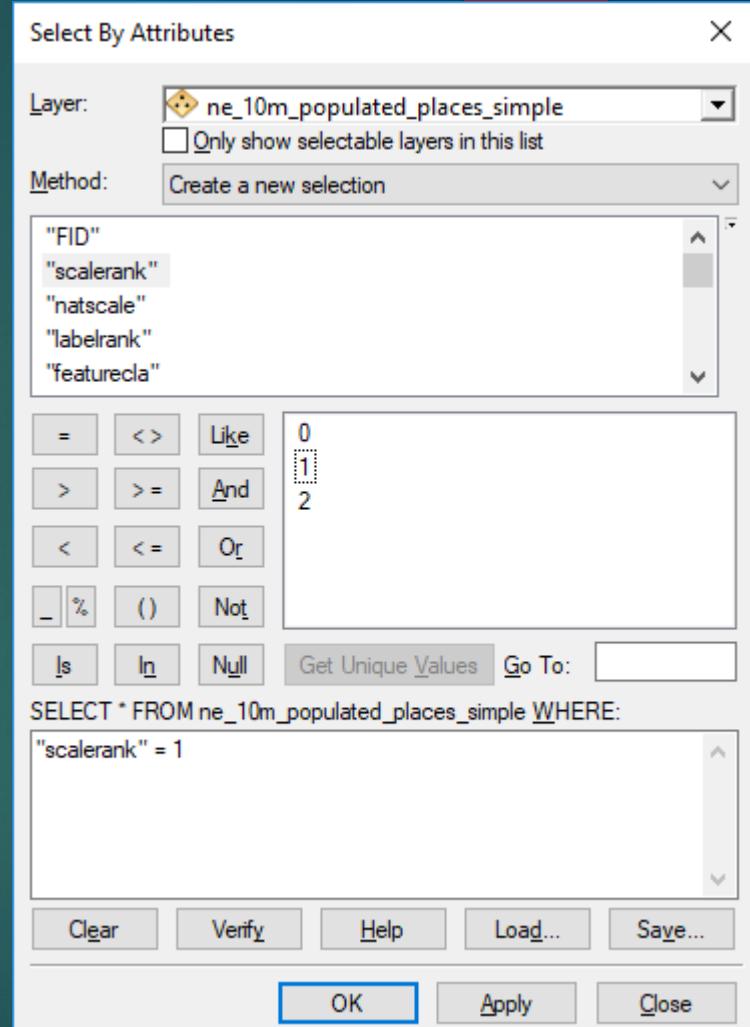
- ▶ SELECT
- ▶ FROM
- ▶ WHERE
- ▶ Extra: (Order by, Group by, etc.)

```
SELECT * FROM mytable WHERE nation = UK;
```

```
SELECT nation, COUNT(treetypes) as treespeciesvariety, FROM mytable  
WHERE treetypes = elm
```

The query tools in ArcGIS only concern themselves with the *where clause* part of an SQL query.

The `SELECT * FROM dataset WHERE` part is conveniently taken care of for you.



# SQL (standard query language)

SQL is a special-purpose programming language designed for managing data held in a relational database management system (RDBMS)

— Wikipedia

Operator	Description	Example
=	Equal to	Author = 'Alcott'
<>	Not equal to (most DBMS also accept != instead of <>)	Dept <> 'Sales'
>	Greater than	Hire_Date > '2012-01-31'
<	Less than	Bonus < 50000.00
>=	Greater than or equal	Dependents >= 2
<=	Less than or equal	Rate <= 0.05
BETWEEN	Between an inclusive range	Cost BETWEEN 100.00 AND 500.00
LIKE	Match a character pattern	First_Name LIKE 'Will%'
IN	Equal to one of multiple possible values	DeptCode IN (101, 103, 209)
IS or IS NOT	Compare to null (missing data)	Address IS NOT NULL

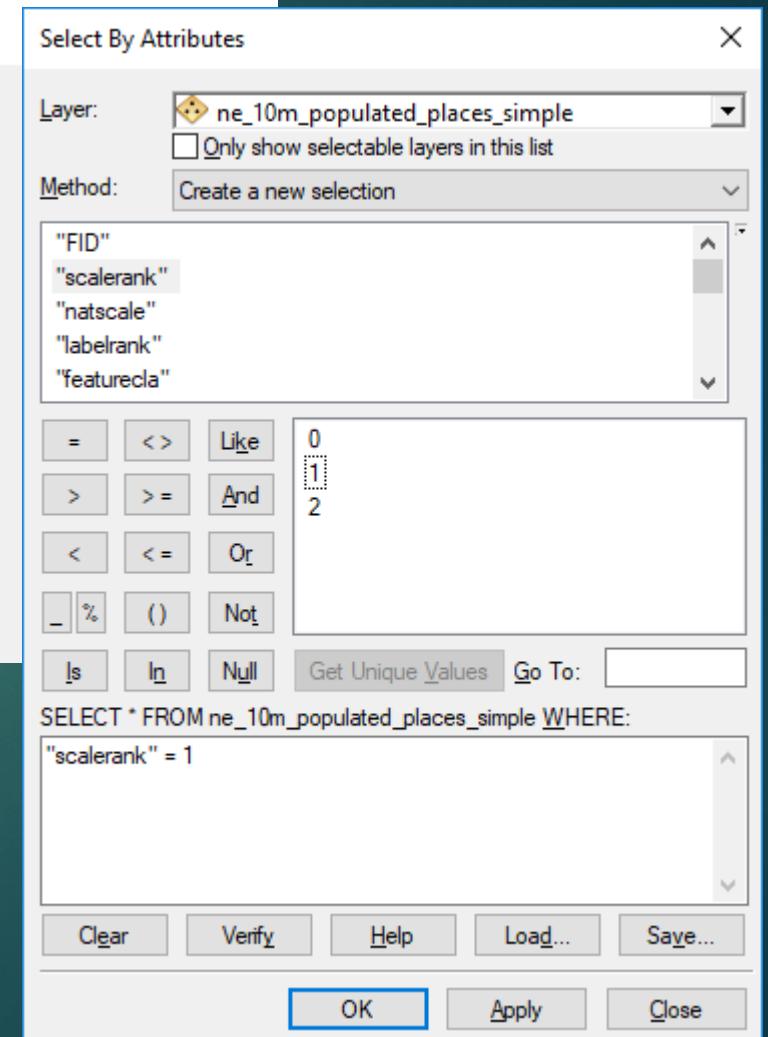
- Sometimes the field/attribute name has quotes or brackets around it. This conforms to the dataset's format requirements; they're rarely required though. The provided query builder adds them for you, so don't sweat which ones go where.

```
/* Basic Query */
-- {field name} {operator} {value}
"PCT_PRESENT" >= 50

-- Text strings always require single-quotes around them.
"STATE" = 'Washington'

/* Compound Query */
-- {basic query} {connector} {basic query}
"STATE" = 'Washington' AND "POP" >= 50000

-- Can set query order with parentheses, too.
("STATE" = 'Washington' OR "STATE" = 'Oregon') AND "POP" >= 50000
```



# The 'null-value'

- `null` is the absence of a recorded value for a field.
- **NOT** the same as zero or empty string `''`. Those are recorded values with content.
- GIS work often needs to account for them.
  - Statistical calculations ignore features with nulls in used attributes.
  - Queries ignore nulls when running their logic, unless they're explicitly tested for in the query.

```
-- Looking for unnamed features?  
"NAME" IS NULL  
  
-- Perhaps you suspect some unnamed features have empty strings?  
"NAME" IS NULL OR NAME = ''
```

- Shapefiles (and some other dataset formats) do not allow null-values.

# Activity: Try a SQL query:

Manager	Employee	Title	Hire Date	SALARY
Zlotkey	Abel	Sales Representative	May 10, 1996	11,000.00
	Hutton	Sales Representative	Mar 18, 1997	8,800.00
	Taylor	Sales Representative	Mar 23, 1998	8,600.00
	Livingston	Sales Representative	Apr 22, 1998	8,400.00
	Johnson	Sales Representative	Jan 03, 2000	6,200.00
Weiss	Landry	Stock Clerk	Jan 13, 1999	2,400.00
	Markle	Stock Clerk	Mar 07, 2000	2,200.00
	Mikkilineni	Stock Clerk	Sep 27, 1998	2,700.00
Vollman	Ladwig	Shipping Clerk	Jul 13, 1995	3,600.00
	Stiles	Shipping Clerk	Oct 25, 1997	3,200.00
	Seo	Shipping Clerk	Feb 11, 1998	2,700.00
	Patel	Stock Clerk	Apr 05, 1998	2,500.00

What would the following commands return:

SELECT \* FROM table WHERE "salary" > '3,000.00'

SELECT \* FROM table WHERE "manager" = 'Weiss' & "title" = 'shipping clerk'

SELECT Employee, Average(Salary) as AvgSalary, Title FROM table WHERE Title = "Stock Clerk" group by Manager

# Queries using Logical Operators

You can not only **select** data based on these kinds of queries, but also **update** or **delete** them

OR selection:

records with (Area > 20.0)  
OR (Municip = City)

ID	Area	Landuse	Municip
1	10.5	Urban	City
2	330.3	Farm	County
3	2.4	Suburban	Township
4	96.0	Suburban	County
5	22.1	Urban	City
6	30.2	Farm	Township
7	4.4	Urban	County

NOT selection:

records with  
Landuse NOT Urban

ID	Area	Landuse	Municip
1	10.5	Urban	City
2	330.3	Farm	County
3	2.4	Suburban	Township
4	96.0	Suburban	County
5	22.1	Urban	City
6	30.2	Farm	Township
7	4.4	Urban	County

Simple selection:

records with Area > 20.0

ID	Area	Landuse	Municip
1	10.5	Urban	City
2	330.3	Farm	County
3	2.4	Suburban	Township
4	96.0	Suburban	County
5	22.1	Urban	City
6	30.2	Farm	Township
7	4.4	Urban	County

AND selection:

records with (Landuse = Urban) and  
(Municip = City)

ID	Area	Landuse	Municip
1	10.5	Urban	City
2	330.3	Farm	County
3	2.4	Suburban	Township
4	96.0	Suburban	County
5	22.1	Urban	City
6	30.2	Farm	Township
7	4.4	Urban	County

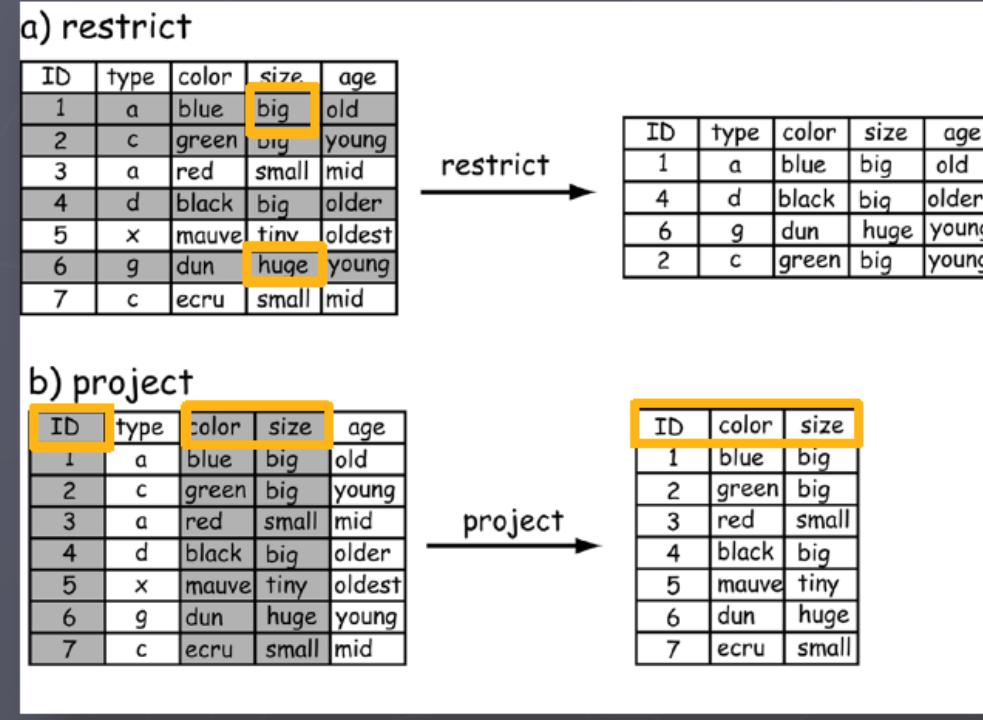
One **language** to  
formulate such queries is  
the **Structured Query  
Language (SQL)**

# Relational Algebra

Relational Algebra is the **foundational underpinning** of **query languages** for databases

It defines how **relations** (tables) can be **manipulated** and **combined** to form new relations

E.g., **projection reduced** the number of **attributes** in a target table with respect to the source table



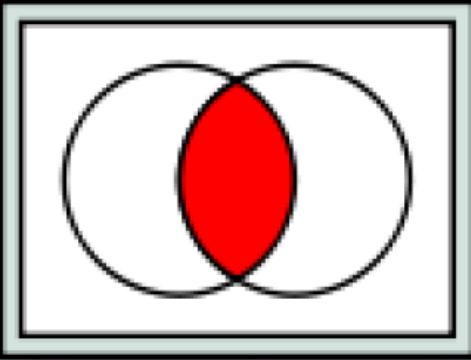
To get the results above, use these queries:

Top: `SELECT * FROM restrict where size = big OR size = huge;`

Bottom: `SELECT ID, color, size FROM project;`

# Relational Algebra

think of Venn diagrams...



a) union

ID	type	color	size	age
1	a	blue	big	old
6	g	dun	huge	young

ID	type	color	size	age
2	c	green	big	young
4	d	black	big	older

union

ID	type	color	size	age
1	a	blue	big	old
4	d	black	big	older
6	g	dun	huge	young
2	c	green	big	young

b) intersect

ID	color	size
1	blue	big
2	green	big
3	red	small
4	black	big
5	mauve	tiny
6	dun	huge
7	ecru	small

In both

ID	color	size
1	blue	big
5	mauve	tiny
9	ivory	big

intersect

ID	color	size
1	blue	big
5	mauve	tiny

c) difference

ID	color	size
1	blue	big
2	green	big
3	red	small
4	black	big
5	mauve	tiny
6	dun	huge
7	ecru	small

without

ID	color	size
1	blue	big
5	mauve	tiny
9	ivory	big

difference

ID	color	size
2	green	big
3	red	small
4	black	big
6	dun	huge
7	ecru	small

d) join

ID	type
1	a
2	b
3	b
4	a

link by key

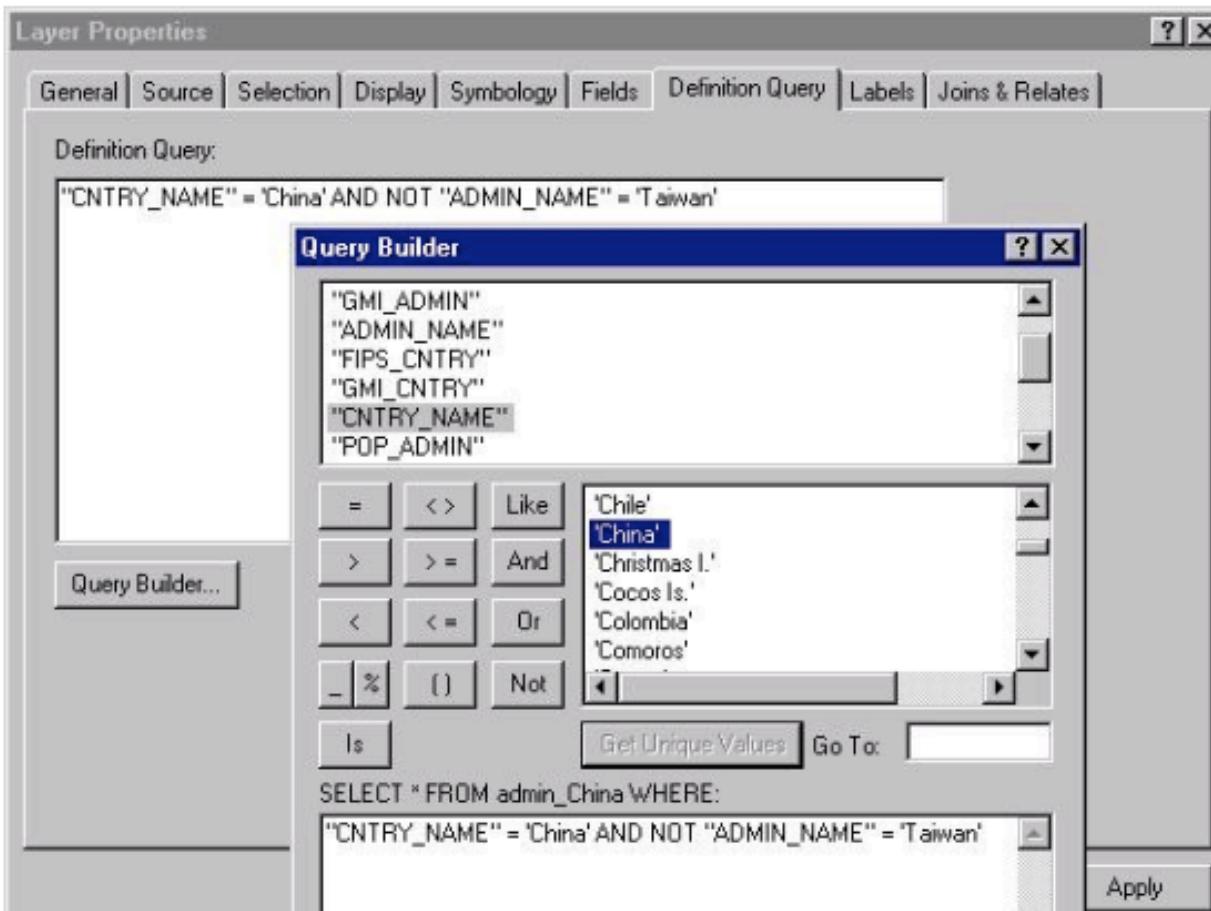
type	color	size	age
a	blue	big	old
b	dun	tiny	old

join

ID	type	color	size	age
1	a	blue	big	old
2	b	dun	tiny	old
3	b	dun	tiny	old
4	a	blue	big	old

# Definition Query

- Features not returned by the query are completely excluded from the application's interface.
- Nice way to limit features in map/analysis, but not delete in underlying data.



# DBMS

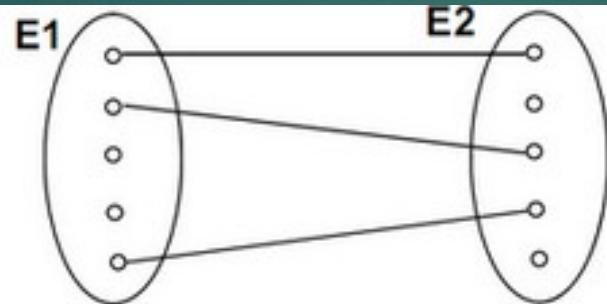
A **database** is an organized collection of data. The data are typically organized to model relevant aspects of reality in a way that supports processes requiring this information. For example, modeling the availability of rooms in hotels in a way that supports finding a hotel with vacancies.

Database management systems (DBMSs) are specially designed applications that interact with the user, other applications, and the database itself to capture and analyze data. A general-purpose **database management system (DBMS)** is a software system designed to allow the definition, creation, querying, update, and administration of databases.

— Wikipedia

# Different kinds of relationships between entities (fields)

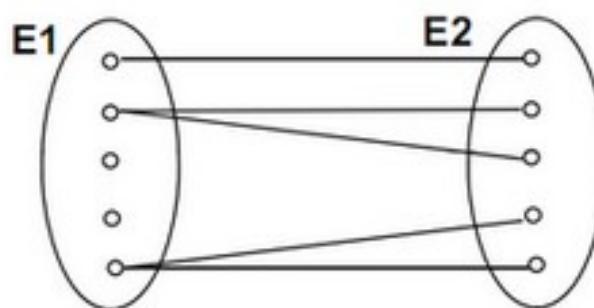
**One to one**  
**1:1**



Examples:

- People and Tax ID / SSN
- Student to Student ID number

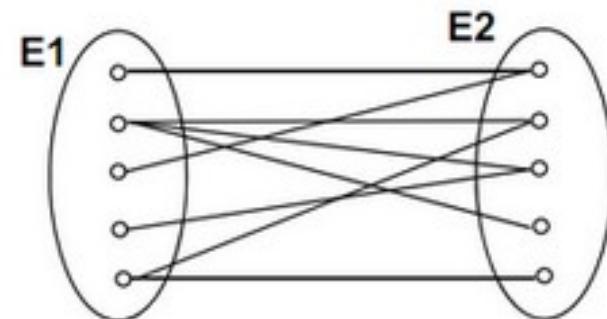
**One to many**  
**1:M**



Examples:

- Teachers and students in kindergarten
- Mother with children
- Checking out unique library books

**Many to many**  
**M:N**



Examples:

- Teachers and Students in College
- Grocery Stores & Product

# Features of a Database Management System (DBMS)

- ▶ Can store a lot of data
- ▶ Can be accessed through SQL code
- ▶ Table headings should be consistent (underscores, lower case etc.) to allow for joins
- ▶ Data can be entered, retrieved, deleted, edited [In ArcMap: Attribute Table w/ Field Calculator, Edit Session]
- ▶ You can put security features in like passwords, encryption, user accounts
- ▶ You can allow certain users to only view (not edit)
- ▶ Can save a list of edits called versioning
- ▶ Examples: Microsoft Access, ArcGIS Geodatabases

# Terms to know:

- ▶ **RDBMS:** Relational database management system (what does relational mean?)
- ▶ **REFERENTIAL INTEGRITY:** Ensuring that users specify certain data types (e.g. no letters in a zip code field)
- ▶ **PRIMARY KEY:** A unique identifier for a row, a column with no repeating values can be a primary key.
- ▶ **COMPOSITE KEY:** A primary key that can be derived from two variables that are not unique on their own, but are unique when combined.
  - ▶ (e.g. City field + State field)

Austin Parks and Recreation Land Ownership and Development Status																		
acquisitio	acquisit_1	acquisit_2	acre_sourc	address	city_munic	counc	council_1	county	d	dev	developm_2	land_owner	landowner_	lwc	management	...		
Warranty Deed	Fee simple		GIS Value	2516 Hartford Rd., Austin, Texas 78703	Austin	9	9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Natural Area	Cit			
Warranty Deed	Fee simple		Deed	7022 Hart Ln., Austin, Texas 78731	Austin	10	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Special Use Area	Cit			
Special Warranty Deed (Parkland Dedication)	Fee simple	Other	Survey	12401 Riata Trace Pkwy., Austin, Texas 78727	Austin	6	1;4;6;7;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Mixed-use Park	Cit			
Deed (Dedicated Parkland)	Fee simple		GIS Value	2803 Loyola Ln., Austin, Texas 78723	Austin	1	1;2;3;4;7;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Active Park	Cit			
			GIS Value	2874 Shoal Crest Ave., Austin, Texas 78705	Austin	9	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal		Special Use Area	Cit			
			GIS Value	3006 Stratford Dr., Austin, Texas 78746	Austin	8	1;2;3;4;5;7;8;9;10	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal		Natural Area	Cit			
Deed pf Gift of Land (Dedicated Parkland); Warranty Deed	Other	Multiple	Survey	1200 Montopolis Dr., Austin, Texas 78741	Austin	3	1;2;3;4;5;8;9	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Active Park	Cit			
Affidavit of Declaration Transferring Departmental Asset	Transfer	Transfer	GIS Value	3701 Grooms St., Austin, Texas 78705	Austin	9	9	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Special Use Area	Cit			
			GIS Value	10801 Sierra Oaks, Austin, Texas 78759	Austin	10	1;4;6;7;10	Travis		Developed	City of Austin Parks and Recreation	Municipal		Mixed-use Park	Cit			
Special Warranty Deed (Dedicated Parkland)	Fee simple	Other	Survey	403 W St Johns Ave., Austin, Texas 78752	Austin	4	1;3;4;6;7;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Special Use Area	Cit			
			GIS Value	5200 Bolm Rd., Austin, Texas 78721	Austin	3	1;2;3;4;5;7;8;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal		Mixed-use Park	Cit			
Deed (Dedicated as Art Museum)	Fee simple		GIS Value	304 E 44th St., Austin, Texas 78751	Austin	9	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Historical/Cultural	Cit			
			GIS Value	907 W Slaughter Ln., Austin, Texas 78748	Austin	5	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal		Mixed-use Park	Cit			
			GIS Value	1705 Waterston St., Austin, Texas 78703	Austin	9	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal		Special Use Area	Cit			
			GIS Value	1114 Nile St., Austin, Texas, 78702	Austin	1	1;2;3;4;5;7;8;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal		Mixed-use Park	Cit			
Gift Deed of Land	Donation	Donation	Deed	4105 Jefferson St., Austin, Texas 78731	Austin	10		Texas		Undeveloped	City of Austin Parks and Recreation	Municipal	No	Natural Area	Cit			
			GIS Value	2100 Barton Springs Rd., Austin, Texas 78746	Austin	5;8	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal		Mixed-use Park	Cit			
			GIS Value	1800 S Lakeshore Blvd., Austin, Texas 78741	Austin	3;9	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal		Corridor	Cit			
Warranty Deed (Undivided 1/4 Interest)	Fee simple		GIS Value	5308 Chico St., Austin, Texas 78721	Austin	3	1;2;3;4;5;7;8;9;10	Travis		Developed	Austin Independent School District	School	No	Active Park	Cit			
Warranty Deed	Fee simple		GIS Value	1500 Alameda Dr., Austin, Texas 78704	Austin	9	1;2;3;4;5;7;8;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Active Park	Cit			
Transfer from Northwest Travis County MUD #1 & 2	Transfer	Transfer	GIS Value	9000 Middlebie Rd., Austin, Texas 78750	Austin	6	6;7;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Active Park	Cit			
			GIS Value	6305 Hall St., Austin, Texas 78757	Austin	7	7	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal		Natural Area	Cit			
Warranty Deed	Fee simple		Survey	1031 Payton Gin Rd., Austin, Texas 78758	Austin	4	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Special Use Area	Cit			
			GIS Value	422 Guadalupe St., Austin, Texas 78701	Austin	9	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal		Passive Park	Cit			
Deed	Fee simple		Deed	2410 Durwood Ave., Austin, Texas 78704	Austin	3	1;2;3;5;8;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Active Park	Cit			
Parkland Dedication Deed (Dedicated Parkland)	Fee simple		Deed	7420 Apperson St., Austin, Texas 78617	Austin LTD	2	2;3	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal	No	Natural Area	Cit			
Dedication; Warranty Deed (Dedicated Parkland)	Fee simple	Multiple	GIS Value	2614 Pecos St., Austin, Texas 78703	Austin	10	1;3;4;5;7;8;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Active Park	Cit			
Warranty Deed	Fee simple		GIS Value	1811 W 11th St., Austin, Texas 78703	Austin	9	9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Active Park	Cit			
Special Warranty Deed(Dedicated Parkland)	Fee simple		GIS Value	12613 Blaine Rd., Austin, Texas 78753	Austin	7	1;4;6;7	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal	No	Passive Park	Cit			
Special Warranty Deed(Dedicated Parkland)	Fee simple		GIS Value	6100 Constellation Cir., Austin, Texas 78617	Austin	2	2;3	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal	No	Natural Area	Cit			
General Warranty Deed (Dedicated Parkland)	Fee simple	Capital Budge	Survey	5201 Freidrich Ln., Austin, Texas 78744	Austin	2	1;2;3;5;8;9	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Natural Area	Cit			
			GIS Value	1405 Kenwood Ave., Austin, Texas 78704	Austin	9	3;9	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal		Natural Area	Cit			
Warranty Deed; Warranty Deed (Undivided 1/4 Interest)	Fee simple		GIS Value	8500 Rockwood Ln., Austin, Texas 78757	Austin	7	1;4;6;7;9;10	Travis		Developed	Austin Independent School District	School	No	Active Park	Cit			
			Donation	201 W 30th St., Austin, Texas 78705	Austin	9	1;3;4;5;7;8;9;10	Travis	Oth	Developed	City of Austin Parks and Recreation	Municipal	No	Mixed-use Park	Cit			
			GIS Value	1012 E 16th St., Austin, Texas 78702	Austin	1	Citywide	Travis		Developed	City of Austin	Municipal		Special Use Area	Cit			
Warranty Deed (Undivided 1/4 Interest)	Other		Survey	2400 Lehigh Dr., Austin, Texas 78723	Austin	1	1;3;4;7;9	Travis		Developed	Austin Independent School District	School	No	Active Park	Cit			
			GIS Value	14501 Lippincott St. Austin, Texas 78725	Austin	0	1;2;3	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal		Natural Area	Cit			
Special Warranty Deed (Dedicated Parkland)	Fee simple	Capital Budge	GIS Value	1201 E Rundberg Ln., Austin, Texas 78753	Austin	4	1;4;6;7;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Mixed-use Park	Cit			
Deed	Fee simple		Deed	2816 E 12th St., Austin, Texas 78702	Austin	1	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Special Use Area	Cit			
Deed	Fee simple		GIS Value	3300 E 12th St., Austin, Texas 78721	Austin	1	Citywide	Travis		Developed	City of Austin	Municipal	No	Special Use Area	Cit			
			GIS Value	650 Dawson Rd., Austin, Texas 78704	Austin	9	5;9	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal		Natural Area	Cit			
Deed (Undivided 3/4 Interest)	Fee simple		GIS Value	1500 Rosewood Ave., Austin, Texas 78702	Austin	1	1;2;3;4;5;7;8;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Active Park	Cit			
			GIS Value	13320 Lyndhurst St., Austin, Texas 78729	Austin	6	6;7;10	Williamso		Developed	City of Austin Parks and Recreation	Municipal		Active Park	Cit			
			GIS Value	5400 Jimmy Clay Dr., Austin, Texas 78744	Austin	2	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal		Special Use Area	Cit			
			GIS Value	1150 Blk of Springdale Rd., Austin, Texas 78721	Austin	1	Citywide	Travis		Developed	City of Austin	Municipal		Special Use Area	Cit			
Special Warranty Deed (Dedicated Parkland)	Fee simple	Capital Budge	GIS Value	2207 E 16th St., Austin, Texas 78702	Austin	1	1	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Active Park	Cit			
Special Warranty Deed (Dedicated Parkland)	Fee simple		Survey	6700 Bolm Rd., Austin, Texas 78725	Austin	3	1;2;3;4;5;9	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal	No	Natural Area	Cit			
			GIS Value	200 N IH 35 Srvd SB, Austin, Texas 78701	Austin	9	1;2;3;4;5;7;8;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal		Active Park	Cit			
			GIS Value	2200 Veterans Dr., Austin, Texas 78703	Austin	10	8;9;10	Travis		Undeveloped	City of Austin Parks and Recreation	Municipal		Special Use Area	Cit			
Deed	Fee simple		GIS Value	1213 Shoal Creek Blvd., Austin, Texas 78701	Austin	9	Citywide	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Special Use Area	Cit			
			GIS Value	700 E Live Oak St., Austin, Texas 78704	Austin	9	1;2;3;5;8;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal		Active Park	Cit			
Gift General Warranty Deed (Dedicated Parkland)	Donation	Donation	Deed	3918 S Mopac Expy Srvd., Austin, Texas 78746	Austin	5;8	1;2;3;5;6;7;8;9;10	Travis		Developed	City of Austin Parks and Recreation	Municipal	No	Corridor	Cit			

Table																									
Parks																									
managing_a	managing_1	object	other_prot	park_acres	park_id	park_name	park_statu	park_type	prora	refere	reference_	rest_prot_	restrictio	service_ar	state	status_co	street_nam	street_	stree	tpl					
City of Austin Park	Municipal	200	None	1.727213	361	Hartford Planting Strip	Open	Planting Strips/Triangles	86	Other	Street Address		None	0-0.5 miles	TX	<Null>	Hartford	2516	Rd.	Natura					
City of Austin Park	Municipal	12	None	1.15	215	Murchison Pool	Open_Fee	Special	173	Other	Street Address	Joint Use Ag	Other	0-25 miles	TX	Pool Fee	Hart	7022	Ln.	Design					
City of Austin Park	Municipal	62	None	8.08	256	Riata Neighborhood Park	Open	Neighborhood	221	Other	Street Address		Deed/Covenant	0-5 miles	TX	<Null>	Riata Trace	12401	Pkwy	Design					
City of Austin Park	Municipal	218	None	11.292692	152	Dottie Jordan Neighborhood Park	Open	Neighborhood	93	Other	Street Address		Deed/Covenant	0-5 miles	TX	<Null>	Loyola	2803	Ln.	Design					
City of Austin Park	Municipal	102		1.985393	189	Lamar Senior Activity Center	Open	Special	44	Other	Street Address			0-25 miles	TX	<Null>	Shoal Crest	2874	Ave.	Design					
City of Austin Park	Municipal	211		0.101085	412	Stratford Overlook Greenbelt	Open	Greenbelt	272	Other	Street Address			0-5 miles	TX	<Null>	Stratford	3006	Dr.	Natura					
City of Austin Park	Municipal	167	None	7.61	209	Montopolis Neighborhood Park	Open	Neighborhood	166	Other	Street Address		Deed/Covenant	0-5 miles	TX	<Null>	Montopolis	1200	Dr.	Design					
City of Austin Park	Municipal	155	None	0.455005	352	Sparky Pocket Park	Open	Pocket	177	Other	Street Address		None	0-0.5 miles	TX	<Null>	Grooms	3701	St.	Design					
City of Austin Park	Municipal	24		76.05124	172	Great Hills Neighborhood Park	Open	Neighborhood	123	Other	Street Address			0-5 miles	TX	<Null>	Sierra Oaks	10801		Design					
City of Austin Park	Municipal	259	None	0.241	413	Highland Neighborhood Park	Open	Neighborhood	273	Other	Street Address		Deed/Covenant	0-5 miles	TX	<Null>	W St Johns	403	Ave.	Design					
City of Austin Park	Municipal	38		28.265698	168	Govale Neighborhood Park	Open	Neighborhood	119	Other	Street Address			0-5 miles	TX	<Null>	Bolm	5200	Rd.	Design					
City of Austin Park	Municipal	5	State Specifi	2.562405	159	Elizabeth Ney Museum	Open	Special	72	Other	Street Address	Restrictive C	Deed/Covenant	0-25 miles	TX	<Null>	E 44th	304	St.	Design					
City of Austin Park	Municipal	95		342.269844	203	Mary Moore Searight Metro Park	Open	Metropolitan	137	Other	Street Address			0-25 miles	TX	<Null>	W Slaughter	907	Ln.	Design					
City of Austin Park	Municipal	26		0.238088	177	Haskell House	Open	Special	97	Other	Street Address			0-25 miles	TX	<Null>	Waterston	1705	St.	Design					
City of Austin Park	Municipal	41		48.830355	124	Boggy Creek Greenbelt	Open	Greenbelt	20	Other	Street Address			0-5 miles	TX	<Null>	Nile	1114	St.	Design					
City of Austin Park	Municipal	248	None	1.51	415	Gregg Hill Pocket Park	Open	Pocket	961	Other	Street Address	Deed has sp	Deed/Covenant	0-0.5 miles	TX	<Null>	Jefferson	4105	St.	Natura					
City of Austin Park	Municipal	133		307.849066	324	Zilker Metro Park	Open	Metropolitan	275	Other	Street Address			0-100 miles	TX	<Null>	Barton Springs	2100	Rd.	Design					
City of Austin Park	Municipal	37		6.062636	363	International Shores at Town Lake Metro Park	Open	Metropolitan	118	Other	Street Address			0-25 miles	TX	<Null>	S Lakeshore	1800	Blvd.	Design					
City of Austin Park	Municipal	168	None	4.234748	235	Ortega School Park	Open_Restricted	School	202	Other	Street Address	1/4 Undivide	Other	0-5 miles	TX	Restricted D	Chico	5308	St.	Design					
City of Austin Park	Municipal	103	None	6.861583	194	Little Stacy Neighborhood Park	Open	Neighborhood	147	Other	Street Address		None	0-5 miles	TX	<Null>	Alameda	1500	Dr.	Design					
City of Austin Park	Municipal	57	None	8.277963	214	Mountain View Neighborhood Park	Open	Neighborhood	171	Other	Street Address		None	0-5 miles	TX	<Null>	Middlebie	9000	Rd.	Design					
City of Austin Park	Municipal	184		1.22999	170	Hall/Goodnight Planting Strip	Open	Planting Strips/Triangles	131	Other	Street Address			0-0.5 miles	TX	<Null>	Hall	6305	St.	Natura					
City of Austin Park	Municipal	261	None	1.04	187	Kennemer Pool	Open_Fee	Special	19	Other	Street Address	Joint Use Ag	None	0-25 miles	TX	Pool Fee	Payton Gin	1031	Rd.	Design					
City of Austin Park	Municipal	70		1.749102	255	Republic Square	Open	Special	219	Other	Street Address			0-25 miles	TX	<Null>	Guadalupe	422	St.	Design					
City of Austin Park	Municipal	243	None	7.8	166	Gillis Neighborhood Park	Open	Neighborhood	103	Other	Street Address		None	0-5 miles	TX	<Null>	Durwood	2410	Ave.	Design					
City of Austin Park	Municipal	16	None	12.745	230	Old Moore's Crossing Neighborhood Park	Open	Neighborhood	155	Other	Street Address	Deed/Covenant	0-5 miles	TX	<Null>	Apperson	7420	St.	Natura						
City of Austin Park	Municipal	69	None	6.359354	252	Reed Neighborhood Park	Open	Neighborhood	214	Other	Street Address	Deed/Covenant	0-5 miles	TX	<Null>	Pecos	2614	St.	Design						
City of Austin Park	Municipal	94	None	1.489113	138	Mary Frances Baylor Clarksville Pocket Park	Open	Pocket	154	Other	Street Address		None	0-0.5 miles	TX	<Null>	W 11th	1811	St.	Design					
City of Austin Park	Municipal	227	None	6.133511	398	Oertli Neighborhood Park	Open	Neighborhood	140	Other	Street Address	Deed/Covenant	0-5 miles	TX	<Null>	Blaine	12613	Rd.	Natura						
City of Austin Park	Municipal	183	None	7.783554	406	Dry Creek Greenbelt	Open	Greenbelt	78	Other	Street Address	Deed/Covenant	0-5 miles	TX	<Null>	Constellation	6100	Cir.	Natura						
City of Austin Park	Municipal	280	None	5.179	248	Ponciana Neighborhood Park	Open	Neighborhood	208	Other	Street Address	Deed/Covenant	0-5 miles	TX	<Null>	Freidrich	5201	Ln	Natura						
City of Austin Park	Municipal	53		1.258052	389	Blunn Creek Pocket Park	Open	Pocket	17	Other	Street Address			0-0.5 miles	TX	<Null>	Kenwood	1405	Ave.	Natura					
City of Austin Park	Municipal	170	None	6.628595	245	Pillow School Park	Open_Restricted	School	191	Other	Street Address	1/4 Undivide	Multiple	0-5 miles	TX	Restricted D	Rockwood	8500	Ln	Design					
City of Austin Park	Municipal	6	None	9.983087	100	Adams-Hemphill Neighborhood Park	Open	Neighborhood	30	Other	Street Address		Zoning	0-5 miles	TX	<Null>	W 30th	201	St.	Design					
City of Austin Park	Municipal	197		39.321909	394	Oakwood Cemetery	Open	Cemetery	143	Other	Street Address			0-25 miles	TX	Cemetery	E 16th	1012	St.	Design					
City of Austin Park	Municipal	178	None	3.27	102	Andrews School Park	Open_Restricted	School	35	Other	Street Address	1/4 Undivide	Other	0-5 miles	TX	Restricted D	Lehigh	2400	Dr.	Design					
City of Austin Park	Municipal	110		9.234032	106	Austin's Colony Neighborhood Park	Open	Neighborhood	48	Other	Street Address			0-5 miles	TX	<Null>	Lippincott	14501	St.	Natura					
City of Austin Park	Municipal	249	None	47.271	174	Gustavo "Gus" L. Garcia District Park	Open	District	129	Other	Street Address		Deed/Covenant	0-5 miles	TX	<Null>	E Rundberg	1201	Ln.	Design					
City of Austin Park	Municipal	233	None	9.97	154	Downs Mabson Fields	Open	Special	74	Other	Street Address		None	0-25 miles	TX	<Null>	E 12th	2816	St.	Design					
City of Austin Park	Municipal	120	None	29.72451	393	Evergreen Cemetery	Open	Cemetery	88	Other	Street Address		None	0-25 miles	TX	Cemetery	E 12th	3300	St.	Design					
City of Austin Park	Municipal	93		0.505158	202	Mary Dawson Pocket Park	Open	Pocket	152	Other	Street Address			0-0.5 miles	TX	<Null>	Dawson	650	Rd.	Natura					
City of Austin Park	Municipal	98	None	14.914363	185	Kealing School Park	Open	School	135	Other	Street Address	3/4 Undivide	Deed/Covenant	0-5 miles	TX	<Null>	Rosewood	1500	Ave.	Design					
City of Austin Park	Municipal	31		2.252183	386	Forest North Neighborhood Park	Open	Neighborhood	91	Other	Street Address			0-5 miles	TX	<Null>	Lyndhurst	13320	St.	Design					
City of Austin Park	Municipal	97		203.118644	181	Jimmy Clay Golf Course	Open_Fee	Golf Course	124	Other	Street Address			0-25 miles	TX	Golf Fee	Jimmy Clay	5400	Dr.	Design					
City of Austin Park	Municipal	252		7.128159	398	Plummers Cemetery	Open	Cemetery	200	Other	Street Address			0-25 miles	TX	Cemetery	Springdale	1150	Rd.	Design					
City of Austin Park	Municipal	286	None	0.627101	135	Chestnut Pocket Park	Open	Pocket	62	Other	Street Address	Deed/Covenant	0-0.5 miles	TX	<Null>	E 16th	2207	St.	Design						
City of Austin Park	Municipal	112	None	67.1	399	Bolm Road District Park	Closed	District	22	Other	Street Address	Deed/Covenant	0-5 miles	TX	<Null>	Bolm	6700	Rd.	Not Op						
City of Austin Park	Municipal	77		3.242403	236	Sir Swante Palm Neighborhood Park	Open	Neighborhood	223	Other	Street Address			0-5 miles	TX	<Null>	N IH 35	200	Svrd	Design					
City of Austin Park	Municipal	216		0.67362	372	Veterans Pocket Park	Open	Pocket	267	Other	Street Address			0-0.5 miles	TX	<Null>	Veterans	2200	Dr.	Natura					
City of Austin Park	Municipal	27	None	1.556376	381	Heath Eiland and Morgan Moss BMX Skate Park	Open	Special	101	Other	Street Address		None	0-25 miles	TX	<Null>	Shoal Creek	1213	Blvd.	Design					
City of Austin Park	Municipal	51		4.45858	120	Big Stacy Neighborhood Park	Open	Neighborhood	7	Other	Street Address			0-5 miles	TX	<Null>	E Live Oak	700	St.	Design					
City of Austin Park	Municipal	244	None	6.0148	416	Gaines Park	Open	Greenbelt	962	Other	Street Address	Official Nam	Deed/Covenant	0-5 miles	TX	<Null>	S Mopac Svrd SB	3918	Expy	Natura					

status_co	street_nam	street_stree	tpl_landus	unit	uni	unit_id	year_open	zip_code
<Null>	Hartford	2516 Rd.	Natural Lands	0	0		1969	78703
Pool Fee	Hart	7022 Ln.	Designed Lands	0	0		1973	78731
<Null>	Riata Trace	12401 Pkwy	Designed Lands	0	0		2001	78727
<Null>	Loyola	2803 Ln.	Designed Lands	0	0		1973	78723
<Null>	Shoal Crest	2874 Ave.	Designed Lands	0	0		0	78705
<Null>	Stratford	3006 Dr.	Natural Lands	0	0		0	78746
<Null>	Montopolis	1200 Dr.	Designed Lands	0	0		1974	78741
<Null>	Grooms	3701 St	Designed Lands	0	0		2008	78705
<Null>	Sierra Oaks	10801	Designed Lands	1	0	Great Hills	0	78759
<Null>	W St Johns	403 Ave.	Designed Lands	0	0		2014	78752
<Null>	Bolm	5200 Rd.	Designed Lands	0	0		0	78721
<Null>	E 44th	304 St.	Designed Lands	0	0		1941	78751
<Null>	W Slaughter	907 Ln.	Designed Lands	1	0	South Aus	0	78748
<Null>	Waterston	1705 St.	Designed Lands	0	0		0	78703
<Null>	Nile	1114 St.	Designed Lands	1	0	Rosewoo	0	78702
<Null>	Jefferson	4105 St	Natural Lands	0	0		1975	78731
<Null>	Barton Springs	2100 Rd	Designed Lands	1	0	Austin Are	0	78746
<Null>	S Lakeshore	1800 Blvd.	Designed Lands	0	0		0	78741
Restricted D	Chico	5308 St	Designed Lands	0	0		1967	78721
<Null>	Alameda	1500 Dr.	Designed Lands	1	0	South Rive	1929	78704
<Null>	Middlebie	9000 Rd.	Designed Lands	0	0		1997	78750
<Null>	Hall	6305 St.	Natural Lands	0	0		0	78757
Pool Fee	Payton Gin	1031 Rd.	Designed Lands	0	0		1974	78758
<Null>	Guadalupe	422 St	Designed Lands	0	0		0	78701
<Null>	Durwood	2410 Ave.	Designed Lands	0	0		1947	78704
<Null>	Apperson	7420 St	Natural Lands	0	0		2003	78617
<Null>	Pecos	2614 St	Designed Lands	0	0		1954	78703
<Null>	W 11th	1811 St.	Designed Lands	1	0	Friends of	1978	78703
<Null>	Blaine	12613 Rd.	Natural Lands	0	0		2013	78753
<Null>	Constellation	6100 Cir.	Natural Lands	0	0		2013	78617
<Null>	Freidrich	5201 Ln	Natural Lands	1	0	Ponciana	1986	78744
<Null>	Kenwood	1405 Ave.	Natural Lands	0	0		0	78704
Restricted D	Rockwood	8500 Ln	Designed Lands	0	0		1966	78757
<Null>	W 30th	201 St.	Designed Lands	1	0	North Univ	0	78705
Cemetery	E 16th	1012 St	Designed Lands	1	0	Save Aust	0	78702
Restricted D	Lehigh	2400 Dr.	Designed Lands	0	0		1967	78723
<Null>	Lippincott	14501 St.	Natural Lands	0	0		0	78725
<Null>	E Rundberg	1201 Ln.	Designed Lands	0	0		1993	78753
<Null>	E 12th	2816 St.	Designed Lands	0	0		1955	78702
Cemetery	E 12th	3300 St.	Designed Lands	0	0		1925	78721
<Null>	Dawson	650 Rd.	Natural Lands	1	0	Bouldin Cr	0	78704
<Null>	Rosewood	1500 Ave.	Designed Lands	1	0	Kealing Ne	1967	78702
<Null>	Lyndhurst	13320 St.	Designed Lands	0	0		0	78729
Golf Fee	Jimmy Clay	5400 Dr.	Designed Lands	0	0		0	78744
Cemetery	Springdale	1150 Rd	Designed Lands	0	0		0	78721
<Null>	E 16th	2207 St.	Designed Lands	1	0	Chestnut	2002	78702
<Null>	Bolm	6700 Rd.	Not Open to Public	0	0		2013	78725
<Null>	N IH 35	200 Svard	Designed Lands	0	0		0	78701
<Null>	Veterans	2200 Dr	Natural Lands	0	0		0	78703
<Null>	Shoal Creek	1213 Blvd.	Designed Lands	0	0		1931	78701
<Null>	E Live Oak	700 St.	Designed Lands	1	0	South Rive	0	78704
<Null>	S Mopac Svard SB	3918 Expy	Natural Lands	1	0	Barton Hill	1991	78746

Urban Trails															
build_stat	length_mil	location	managing_a	objectid	priori	shape_len	trail_surf	urban_tr_1	urban_tr_2	urban_tr_3	urban_tr_4	urban_trai	width		
EXISTING	0.22	ALONG_ROADWAY	City of Austin Public Works	389	TIER II	98.91131	Concrete	BICYCLE PROJECT DATABASE	URBAN TRAIL	MONTOPOLIS BIKE/PED BRIDGE	LEVANDER LOOP TO MONTOPOLIS DR	487	12		
EXISTING	4.74	ALONG_ROADWAY	City of Austin Public Works	399	TIER I	7533.714842	Concrete	UTMP	URBAN TRAIL	US 290 MANOR EXPRESSWAY TRAIL	ED BLUESTAIN BLVD NB TO JOYCE TURNER DR	495	12		
EXISTING	4.74	ALONG_ROADWAY	City of Austin Public Works	401	TIER I	1179.2508	Concrete	UTMP	URBAN TRAIL	US 290 MANOR EXPRESSWAY TRAIL	ED BLUESTAIN BLVD NB TO JOYCE TURNER DR	29	12		
EXISTING	0.09	WITHIN_PARKS	City of Austin Public Works	406	TIER I	194.821069	Concrete	BICYCLE PROJECT DATABASE	URBAN TRAIL	NORTH ACRES BRIDGE	PARK PLZ TO FURNESS DR	535	12		
EXISTING	0.14	ALONG_ROADWAY	City of Austin Public Works	495	TIER I	680.939176	Concrete	UTMP	URBAN TRAIL	ANN AND ROY BUTLER TRAIL	N IH 35 NB BRIDGE OVER THE COLORADO RIVER	556	12		
EXISTING	0.25	WITHIN_PARKS	City of Austin Public Works	496	TIER II	146.285457	Concrete	UTMP	URBAN TRAIL	MOPAC SHARED USE PATH TO SHOAL CREEK	BEVERLY S SHEFFIELD NORTHWEST DISTRICT PARK	84	12		
EXISTING	0.07	ALONG_CREEK	City of Austin Public Works	243	TIER I	395.764953	Concrete	PARD_TRAILS_AUTHORIZED	URBAN TRAIL	ANN AND ROY BUTLER TRAIL	DEEP EDDY AVE	270	12		
EXISTING	1.61	WITHIN_PARKS	City of Austin Public Works	245	TIER I	5263.987434	Concrete	UTMP	URBAN TRAIL	THE BOARDWALK TRAIL AT LADY BIRD LAKE	E RIVERSIDE DR TO LAKESHORE POINT	272	12		
EXISTING	0.14	WITHIN_PARKS	City of Austin Public Works	246	TIER I	754.168666	Concrete	UTMP	URBAN TRAIL	THE BOARDWALK TRAIL AT LADY BIRD LAKE	BOARDWALK TO E RIVERSIDE DR	555	12		
EXISTING	0.08	WITHIN_PARKS	City of Austin Public Works	180	TIER I	434.96631	Concrete	BICYCLE_FACILITIES_NEW	URBAN TRAIL	NORTHERN WALNUT CREEK TRAIL	BALCONES PARK CONNECTOR	189	12		
EXISTING	1.34	WITHIN_PARKS	City of Austin Public Works	182	TIER I	7058.205085	Concrete	UTMP	URBAN TRAIL	AUSTIN TO MANOR TRAIL	LINDELL LN TO DAFFAN LN	191	12		
EXISTING	1.27	ALONG_ROADWAY	City of Austin Public Works	183	TIER I	6696.457027	Concrete	UTMP	OUTSIDE_CITY_LIMITS	AUSTIN TO MANOR TRAIL	JOHNNY MORRIS RD TO DECKER LN	193	12		
EXISTING	1.03	ALONG_ROADWAY	City of Austin Public Works	184	TIER I	2656.923378	Concrete	UTMP	URBAN TRAIL	LANCE ARMSTRONG BIKEWAY	STEPHEN F AUSTIN DR TO SHOAL CREEK TRAIL	194	12		
EXISTING	1.74	ALONG_RAILROAD	City of Austin Public Works	185	TIER I	9161.820579	Concrete	NEIGHBORHOOD_PLAN	URBAN TRAIL	SOUTHERN WALNUT CREEK TRAIL	FM 969 RD TO DELWAU LN	195	12		
EXISTING	1.49	ALONG_CREEK	City of Austin Public Works	194	TIER I	7874.717859	Concrete	UTMP	OUTSIDE_CITY_LIMITS	ONION CREEK TRAIL	ONION CREEK TRAIL TO E SH 71 EB	108	12		
EXISTING	0.33	ALONG_CREEK	City of Austin Public Works	290	TIER I	164.295467	Concrete	PARD_TRAILS_AUTHORIZED	URBAN TRAIL	JOHNSON CREEK TRAIL	ATLANTA ST TO CESAR CHAVEZ TO MOPAC S RAMP	42	12		
EXISTING	1.03	ALONG_CREEK	City of Austin Public Works	291	TIER I	957.873315	Concrete	PARD_TRAILS_AUTHORIZED	URBAN TRAIL	JOHNSON CREEK TRAIL	VETERANS DR TO ENFIELD RD	505	12		
EXISTING	0.07	ALONG_CREEK	City of Austin Public Works	292	TIER I	548.546943	Concrete	BICYCLE_PROJECT_DATABASE	URBAN TRAIL	JOHNSON CREEK TRAIL	PATTERSON AVE TO ATLANTA ST	21	12		
EXISTING	1.03	ALONG_CREEK	City of Austin Public Works	293	TIER I	554.747818	Concrete	PARD_TRAILS_AUTHORIZED	URBAN TRAIL	JOHNSON CREEK TRAIL	VETERANS DR TO ENFIELD RD	44	12		
EXISTING	0.2	WITHIN_PARKS	City of Austin Public Works	295	TIER I	282.331406	Concrete	BICYCLE_FACILITIES_NEW	URBAN TRAIL	PFLUGER BRIDGE	PFLUGER BRIDGE	517	12		
EXISTING	1.03	ALONG_ROADWAY	City of Austin Public Works	296	TIER I	1289.553186	Concrete	UTMP	URBAN TRAIL	LANCE ARMSTRONG BIKEWAY	STEPHEN F AUSTIN DR TO SHOAL CREEK TRAIL	543	12		
EXISTING	0.2	WITHIN_PARKS	City of Austin Public Works	297	TIER I	125.353616	Concrete	BICYCLE_FACILITIES_NEW	URBAN TRAIL	PFLUGER BRIDGE	PFLUGER BRIDGE	66	12		
EXISTING	0.29	WITHIN_PARKS	City of Austin Public Works	298	TIER II	707.845217	Concrete	NEIGHBORHOOD_PLAN	URBAN TRAIL	SHOAL CREEK TRAIL	W 4TH ST TO W CESAR CHAVEZ ST	186	12		
EXISTING	1.03	ALONG_ROADWAY	City of Austin Public Works	302	TIER I	1485.707774	Concrete	UTMP	URBAN TRAIL	LANCE ARMSTRONG BIKEWAY	STEPHEN F AUSTIN DR TO SHOAL CREEK TRAIL	544	12		
EXISTING	1.61	WITHIN_PARKS	City of Austin Public Works	304	TIER I	3249.138582	Concrete	UTMP	URBAN TRAIL	THE BOARDWALK TRAIL AT LADY BIRD LAKE	E RIVERSIDE DR TO LAKESHORE POINT	554	12		
EXISTING	0.22	ALONG_ROADWAY	City of Austin Public Works	310	TIER II	339.063751	Concrete	BICYCLE_PROJECT_DATABASE	URBAN TRAIL	MONTOPOLIS BIKE/PED BRIDGE	LEVANDER LOOP TO MONTOPOLIS DR	486	12		
EXISTING	0.22	ALONG_ROADWAY	City of Austin Public Works	122	TIER II	725.54228	Concrete	BICYCLE_PROJECT_DATABASE	URBAN TRAIL	MONTOPOLIS BIKE/PED BRIDGE	LEVANDER LOOP TO MONTOPOLIS DR	1	12		
EXISTING	0.33	ALONG_ROADWAY	City of Austin Public Works	2	TIER I	1739.305721	Concrete	BICYCLE_PROJECT_DATABASE	URBAN TRAIL	JOHNSON CREEK TRAIL	ENFIELD RD TRAIL CONNECTION	20	12		
EXISTING	0.07	ALONG_CREEK	City of Austin Public Works	3	TIER I	999.154836	Concrete	BICYCLE_PROJECT_DATABASE	URBAN TRAIL	JOHNSON CREEK TRAIL	PATTERSON AVE TO ATLANTA ST	491	12		
EXISTING	4.74	ALONG_ROADWAY	City of Austin Public Works	11	TIER I	23399.237977	Concrete	UTMP	URBAN TRAIL	US 290 MANOR EXPRESSWAY TRAIL	ED BLUESTAIN BLVD NB TO JOYCE TURNER DR	494	12		
EXISTING	0.33	ALONG_CREEK	City of Austin Public Works	24	TIER I	1106.278082	Concrete	PARD_TRAILS_AUTHORIZED	URBAN TRAIL	JOHNSON CREEK TRAIL	ATLANTA ST TO CESAR CHAVEZ TO MOPAC S RAMP	503	12		
EXISTING	1.03	ALONG_CREEK	City of Austin Public Works	26	TIER I	3950.050239	Concrete	PARD_TRAILS_AUTHORIZED	URBAN TRAIL	JOHNSON CREEK TRAIL	VETERANS DR TO ENFIELD RD	504	12		
EXISTING	0.25	ALONG_ROADWAY	City of Austin Public Works	40	TIER I	1308.643405	Concrete	UTMP	URBAN TRAIL	JOLLYVILLE RD TO LOOP 360 CONNECTOR	RESEARCH BLVD SVRD SB TO JOLLYVILLE RD	159	12		
EXISTING	1.17	ALONG_ROADWAY	City of Austin Public Works	73	TIER I	6154.34339	Concrete	TRAILS_PLAN_INVENTORY	URBAN TRAIL	MCKINNEY FALLS PKWY TRAIL	MCKINNEY FALLS PKWY TO E WILLIAM CANNON DR	54	12		
EXISTING	0.78	ALONG_ROADWAY	City of Austin Public Works	151	TIER I	4128.965737	Concrete	NEIGHBORHOOD_PLAN	URBAN TRAIL	RED LINE TRAIL	N LAMAR BLVD TO DENSON DR	203	12		
EXISTING	0.01	WITHIN_PARKS	City of Austin Public Works	171	TIER I	63.693634	Concrete	PARD_TRAILS_AUTHORIZED	URBAN TRAIL	ANN AND ROY BUTLER TRAIL	DEEP EDDY AVE	225	12		
EXISTING	0.03	WITHIN_PARKS	City of Austin Public Works	172	TIER I	170.113737	Concrete	PARD_TRAILS_AUTHORIZED	URBAN TRAIL	ANN AND ROY BUTLER TRAIL	DEEP EDDY AVE	226	12		
EXISTING	0.09	WITHIN_PARKS	City of Austin Public Works	226	TIER I	285.406369	Concrete	BICYCLE_PROJECT_DATABASE	URBAN TRAIL	NORTH ACRES BRIDGE	PARK PLZ TO FURNESS DR	142	12		
EXISTING	0.5	ALONG_CREEK	City of Austin Public Works	49	TIER I	2614.48713	Concrete	UTMP	URBAN TRAIL	COUNTRY CLUB CREEK TRAIL	E OLTORF RD TO COUNTRY CLUB CREEK GREENBELT	168	12		
EXISTING	0.29	WITHIN_PARKS	City of Austin Public Works	65	TIER II	804.933798	Concrete	NEIGHBORHOOD_PLAN	URBAN TRAIL	SHOAL CREEK TRAIL	W 4TH ST TO W CESAR CHAVEZ ST	542	12		
EXISTING	0.57	ALONG_ROADWAY	City of Austin Public Works	92	TIER I	3031.131749	Concrete	UTMP	URBAN TRAIL	LANCE ARMSTRONG BIKEWAY	SHADY LN TO AIRPORT BLVD	71	12		
EXISTING	0.41	WITHIN_PARKS	City of Austin Public Works	96	TIER I	2169.091206	Concrete	BICYCLE_FACILITIES_NEW	URBAN TRAIL	SOUTHERN WALNUT CREEK TRAIL	183 TOLLWAY TRAIL TO SOUTHERN WALNUT CREEK TRAIL	76	12		
EXISTING	0.2	WITHIN_PARKS	City of Austin Public Works	87	TIER I	634.975818	Concrete	BICYCLE_FACILITIES_NEW	URBAN TRAIL	PFLUGER BRIDGE	PFLUGER BRIDGE	516	12		
EXISTING	2.38	ALONG_ROADWAY	City of Austin Public Works	103	TIER I	12583.87907	Concrete	BICYCLE_FACILITIES_NEW	URBAN TRAIL	STRATFORD TO BARTON SPRINGS CONNECTO	STRATFORD DR TO TUSCAN TER	83	12		
EXISTING	0.25	WITHIN_PARKS	City of Austin Public Works	104	TIER II	1636.495655	Concrete	BICYCLE_FACILITIES_NEW	URBAN TRAIL	MOPAC SHARED USE PATH TO SHOAL CREEK	SHOAL CREEK BLVD TO GREAT NORTHERN BLVD	526	12		

Table



## Zoning

FID	Shape	created_by	date_creat	time_creat	modified_b	date_modif	time_modif	shape_area	shape_len	zoning_id	zoning_zty
0	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	40283.59355	785.519892	121037	GR
1	Polygon	MeeksS	2/27/2009	00:00:00.000	MeeksS	2/27/2009	00:00:00.000	53630.6434	981.218476	224405	CS-V-CO-NP
2	Polygon	MeeksS	2/27/2009	00:00:00.000	MeeksS	2/27/2009	00:00:00.000	38630.39065	808.361954	224172	MF-2-NP
3	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	7780.89205	355.536668	121170	GR
4	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	3201.1427	358.867121	121246	GR
5	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	19047.3406	552.474392	121256	GR
6	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	36024.3687	814.541564	121426	CBD
7	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	2553.06885	296.015326	121483	CBD
8	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	35690.62935	810.711277	121515	CBD
9	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	104923.77435	1285.907964	135677	SF-3-NP
10	Polygon	CastroT	12/13/2007	00:00:00.000	MeeksS	12/19/2008	00:00:00.000	1778660.51928	11710.281131	206997	SF-2
11	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	44700.955	877.847168	121581	CBD
12	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	2925.89345	300.539335	121630	CBD-H
13	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	7309.5858	409.736364	121639	CBD-H
14	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	1362.37585	151.335144	121658	CBD-H
15	Polygon	CastroT	9/21/2007	00:00:00.000	CastroT	9/21/2007	00:00:00.000	11683.35415	442.183234	198540	GR
16	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	11122.0128	425.135225	121001	GO-NP
17	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	8625.9877	398.499931	119647	CS-1-MU-CO-NP
18	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	12138.5522	441.232025	135712	SF-3-NP
19	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	78638.33545	1276.510413	121767	CS-MU-NP
20	Polygon	MeeksS	2/27/2009	00:00:00.000	MeeksS	2/27/2009	00:00:00.000	22602.15175	618.900797	224466	CS-V-CO-NP
21	Polygon	MeeksS	3/9/2009	00:00:00.000	MeeksS	3/9/2009	00:00:00.000	974300.00977	4311.274912	225605	LI-CO
22	Polygon	CastroT	3/9/2009	00:00:00.000	CastroT	3/9/2009	00:00:00.000	63476.231887	1193.329139	136001	SF-6
23	Polygon		11/30/1899	00:00:00.000	MeeksS	3/9/2009	00:00:00.000	24508.89455	655.782186	122456	GR-CO
24	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	833.1995	117.84	121872	CS-NP
25	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	26246.5051	660.899969	121892	CS-NP
26	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	6841.44465	369.696479	128850	MF-3-NP
27	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	15167.4494	502.327582	122699	CS-MU-CO-NP
28	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	15047.8198	501.035502	118989	CS-CO-NP
29	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	9789.3031	457.997091	126855	MF-5-NP
30	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	20690.24095	971.653226	127654	P-NP
31	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	36270.55905	829.804558	122082	GR-MU-CO
32	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	42121.6849	853.347002	122125	GR-MU-CO-NP
33	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	20858.34545	588.254132	123236	LR
34	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	16211.08155	509.386885	124284	LO-MU-NP
35	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	9118.62505	392.108775	121357	CS-1-NP
36	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	8466.1663	381.210287	128444	MF-4-H-NP
37	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	5965.9745	337.912585	126390	MF-4-NP
38	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	25181.31035	635.234896	136452	SF-5-NP
39	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	30266.1907	690.473188	122199	GR
40	Polygon	CastroT	3/25/2009	00:00:00.000	CastroT	3/25/2009	00:00:00.000	136766.10195	2120.746629	119837	GO
41	Polygon		11/30/1899	00:00:00.000	MeeksS	3/26/2009	00:00:00.000	50225.60205	1107.434287	125885	MF-2-CO-NP
42	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	1968.41375	182.519651	122260	GR
43	Polygon	MeeksS	1/27/2014	00:00:00.000	meekss	7/21/2015	00:00:00.000	600955.005258	3545.137143	400462369	ERC
44	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	5404.6416	316.819798	119911	LO
45	Polygon	MeeksS	2/27/2009	00:00:00.000	MeeksS	2/27/2009	00:00:00.000	9408.5891	413.119064	224564	MF-3-NP
46	Polygon	MeeksS	2/27/2009	00:00:00.000	MeeksS	2/27/2009	00:00:00.000	14417.9766	494.644621	224326	GR-V-CO-NP
47	Polygon	MeeksS	2/27/2009	00:00:00.000	MeeksS	2/27/2009	00:00:00.000	8157.504532	380.997881	224393	CS-1-V-CO-NP
48	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	19241.1086	631.502345	119999	DMU
49	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	35546.2665	812.866955	120006	DMU
50	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	11088.26095	459.105937	120030	DMU
51	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	2495.1053	199.855636	120040	DMU
52	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	41098.275	850.956478	120052	DMU
53	Polygon		11/30/1899	00:00:00.000		11/30/1899	00:00:00.000	6000.00000	200.00000	120070	DMU-2

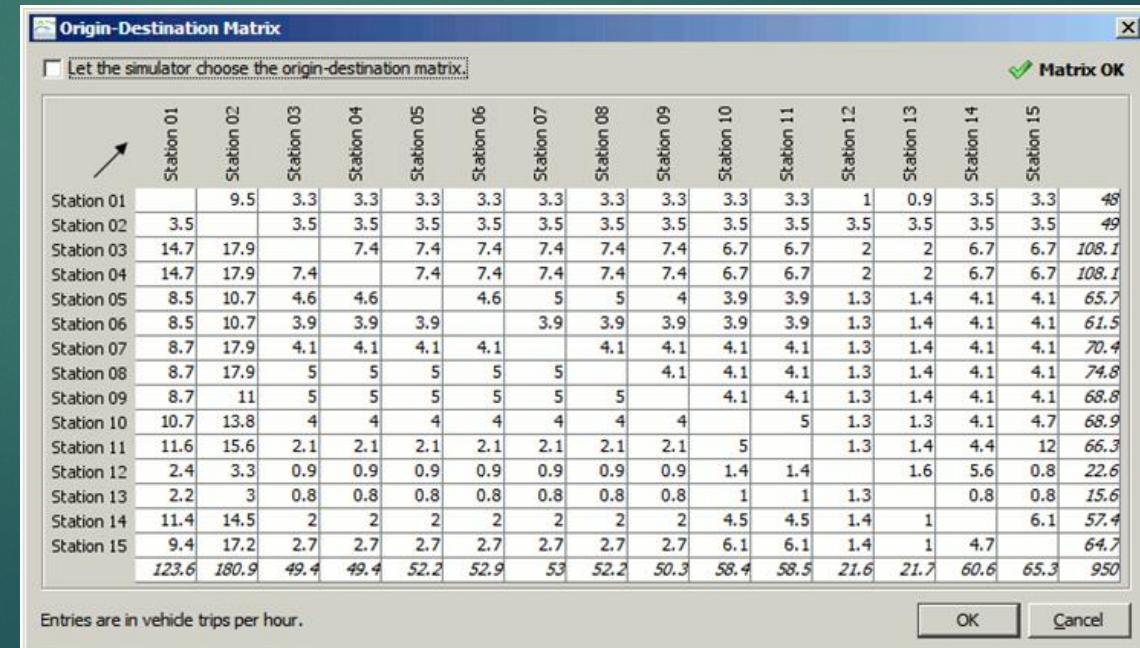
# Traditional RDBMS is not good for all data, including:

- ▶ Raster data
- ▶ Long text (books, etc.)
- ▶ Images
- ▶ Origin/destination (network data)

Origin-Destination Matrix

Let the simulator choose the origin-destination matrix.

Matrix OK



	Station 01	Station 02	Station 03	Station 04	Station 05	Station 06	Station 07	Station 08	Station 09	Station 10	Station 11	Station 12	Station 13	Station 14	Station 15
Station 01		9.5	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	1	0.9	3.5	3.3	48
Station 02	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	49
Station 03	14.7	17.9		7.4	7.4	7.4	7.4	7.4	7.4	6.7	6.7	2	2	6.7	6.7 108.1
Station 04	14.7	17.9	7.4		7.4	7.4	7.4	7.4	7.4	6.7	6.7	2	2	6.7	6.7 108.1
Station 05	8.5	10.7	4.6	4.6		4.6	5	5	4	3.9	3.9	1.3	1.4	4.1	4.1 65.7
Station 06	8.5	10.7	3.9	3.9	3.9		3.9	3.9	3.9	3.9	3.9	1.3	1.4	4.1	4.1 61.5
Station 07	8.7	17.9	4.1	4.1	4.1	4.1		4.1	4.1	4.1	4.1	1.3	1.4	4.1	4.1 70.4
Station 08	8.7	17.9	5	5	5	5	5		4.1	4.1	4.1	1.3	1.4	4.1	4.1 74.8
Station 09	8.7	11	5	5	5	5	5	5		4.1	4.1	1.3	1.4	4.1	4.1 68.8
Station 10	10.7	13.8	4	4	4	4	4	4	4		5	1.3	1.3	4.1	4.7 68.9
Station 11	11.6	15.6	2.1	2.1	2.1	2.1	2.1	2.1	2.1	5		1.3	1.4	4.4	12 66.3
Station 12	2.4	3.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.4	1.4		1.6	5.6	0.8 22.6
Station 13	2.2	3	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1	1	1.3		0.8	0.8 15.6
Station 14	11.4	14.5	2	2	2	2	2	2	2	4.5	4.5	1.4	1		6.1 57.4
Station 15	9.4	17.2	2.7	2.7	2.7	2.7	2.7	2.7	2.7	6.1	6.1	1.4	1	4.7	64.7
	123.6	180.9	49.4	49.4	52.2	52.9	53	52.2	50.3	58.4	58.5	21.6	21.7	60.6	65.3 950

Entries are in vehicle trips per hour.

OK Cancel