

Relational Databases

How can we persist data in a web application?



Databases

To save (or **persist**) data, you need to somehow write the data to permanent storage, like the hard disk



Databases

For a microblogging system, users have many posts and posts have tags and users may be following other users and so on.



Databases

Relational databases (also sometimes referred to as RDBMS, relational database management systems) were developed to provide a means of organizing data and their relationships, persisting that data, and querying that data.



id	user	email
1	Sally	sally @ gmail.com
2	Jeff	jeff @ gmail.com
3	Matt	matt @ hotmail.com
4	Sophie	pretty_girl@aol.com



id	user	email
1	Sally	sally @ gmail.com
2	Jeff	jeff @ gmail.com
3	Matt	matt @ hotmail.com
4	Sophie	pretty_girl@aol.com

Row, Single entity



id	user	е	mail
1	Sally	Sä	ılly @ gmail.com
2	Jeff	j∈	ff@gmail.com
3	Matt	n	natt @ hotmail.com
4	Sophie	p	retty_girl @ aol.com

Column, Attribute



id	user	email
1	Sally	sally @ gmail.com
2	Jeff	jeff @ gmail.com
3	Matt	matt @ hotmail.com
4	Sophie	pretty_girl @ aol.com

Primary Key, Identifier



Schema

id	user	email
1	Sally	sally @ gmail.com
2	Jeff	jeff @ gmail.com
3	Matt	matt @ hotmail.com
4	Sophie	pretty_girl@aol.com

id	post_id	tag_id
1	1	3
2	3	2
3	4	3
4	1	1

id	tag_name
1	music
2	awesomeness
3	facts
4	boring

id	user_id	post
1	1	this is my first post!
2	1	this is great
3	3	I am Matt!
4	2	I am not a pretty girl!



Schema

id	user	email
1	Sally	sally @ gmail.com
2	Jeff	jeff @ gmail.com
3	Matt	matt @ hotmail.com
4	Sophie	pretty_girl@aol.com

id	post_id	tag_id
1	1	3
2	3	2
3	4	3
4	1	1

id	tag_name
1	music
2	awesomeness
3	facts
4	boring

Foreign Key, Relationships

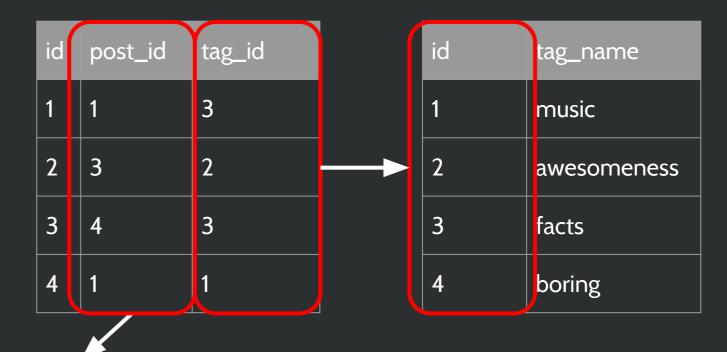
id	user_id	post
1	1	this is my first post!
2	1	this is great
3	3	I am Matt!
4	2	I am not a pretty girl!



Schema

id	user	email
1	Sally	sally @ gmail.com
2	Jeff	jeff @ gmail.com
3	Matt	matt @ hotmail.com
4	Sophie	pretty_girl@aol.com

Foreign Key, Relationships



id	user_id	post
1	1	this is my first post!
2	1	this is great
3	3	I am Matt!
4	2	I am not a pretty girl!





Relational Databases