Sql

by Pete Brumm

To follow Along

- github.com/pbrumm/presentation_sql
- Install “sqlite manager for firefox”
  - http://bit.ly/sqlitemanager

Databases you may have heard of

Enterprise

- Oracle
- Microsoft Sql Server
- Sybase
- IBM DB2

Open Source

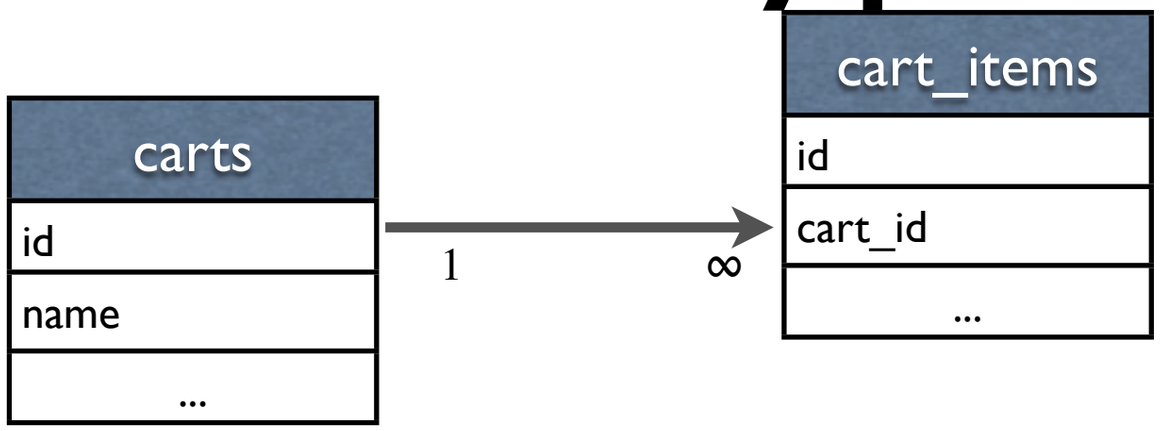
- Postgres
- MySql
- Sqlite

Column types

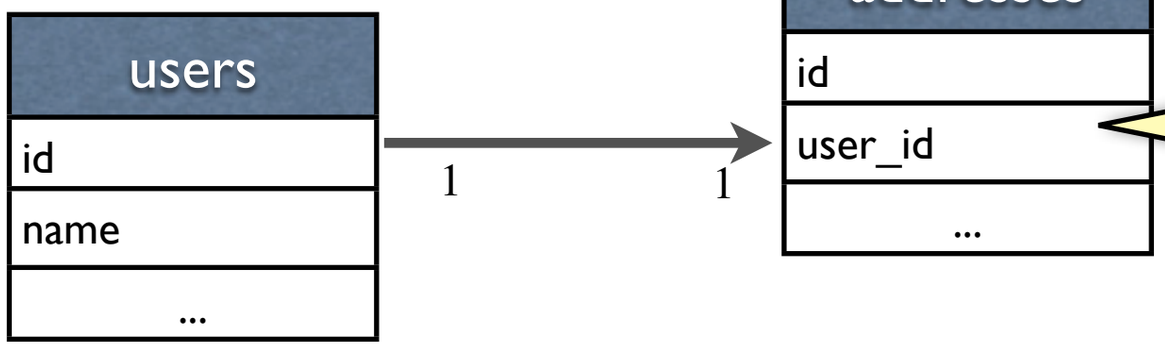
- Integer
- Float
- Double
- Varchar
- Bool
- Datetime
- Char

DB Relation types

one to many

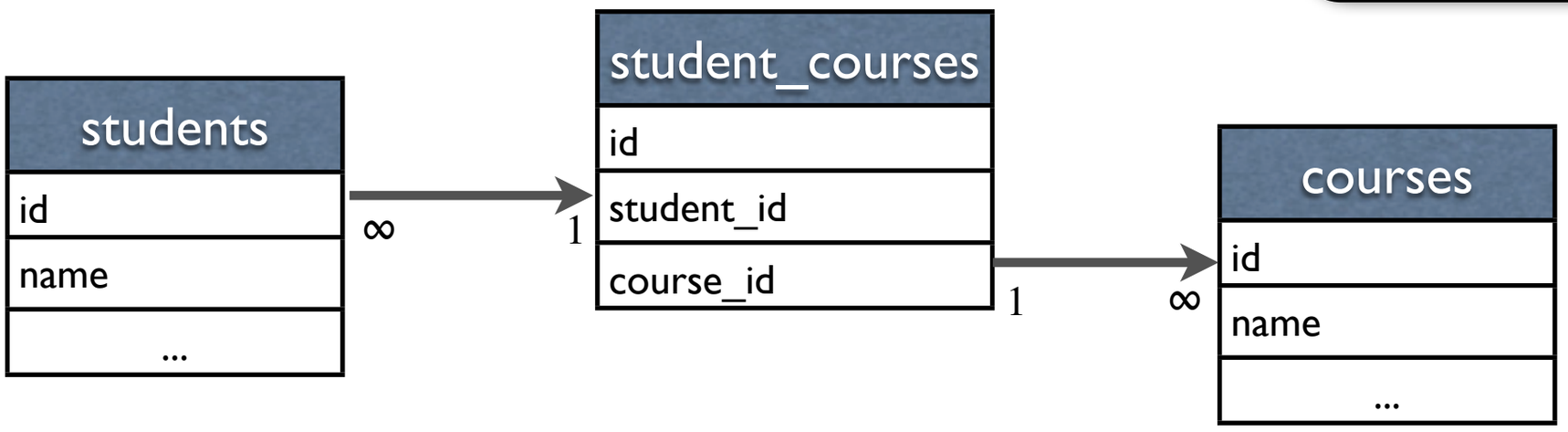


one to one



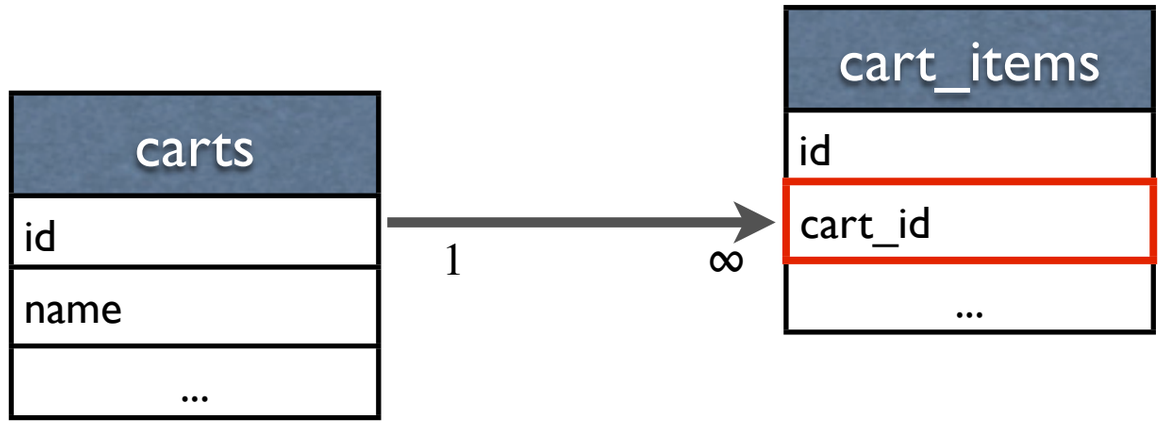
only difference is a unique index on cart_id

many to many

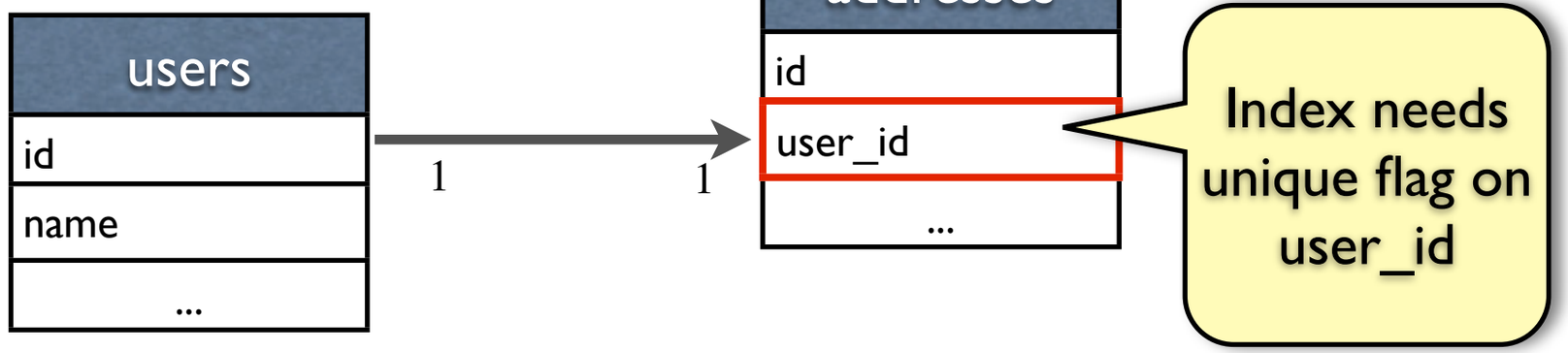


Indexes

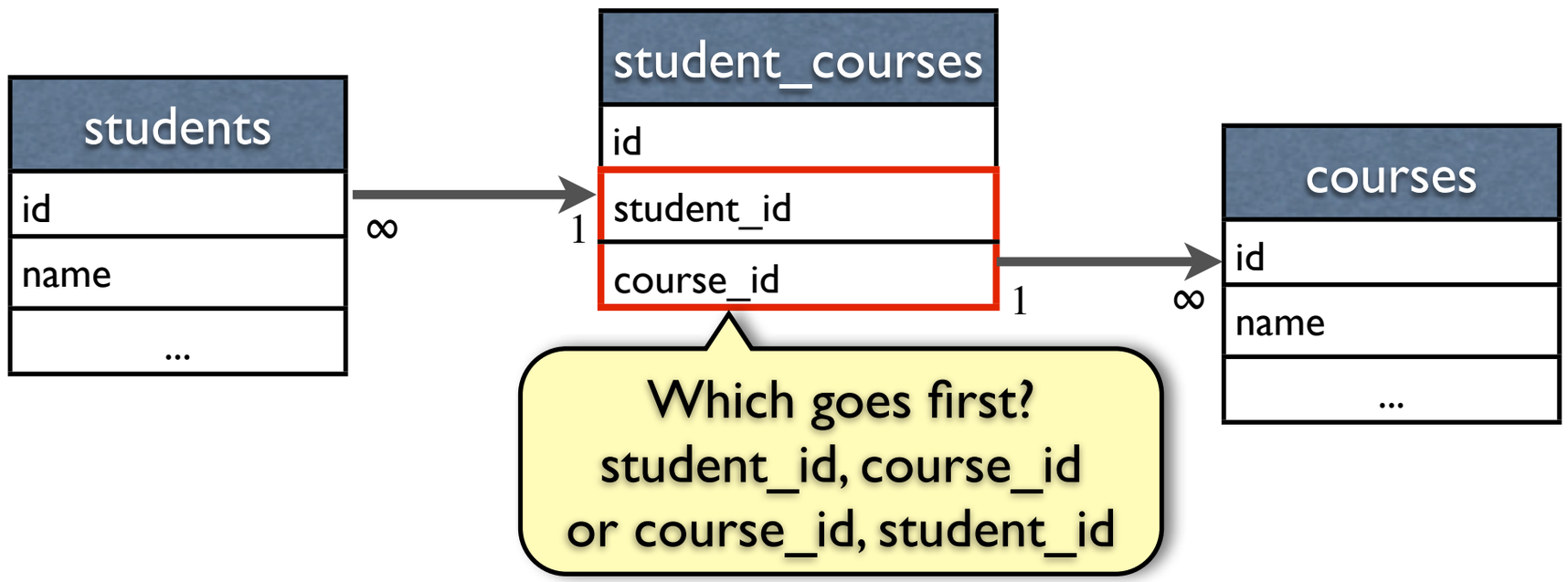
one to many



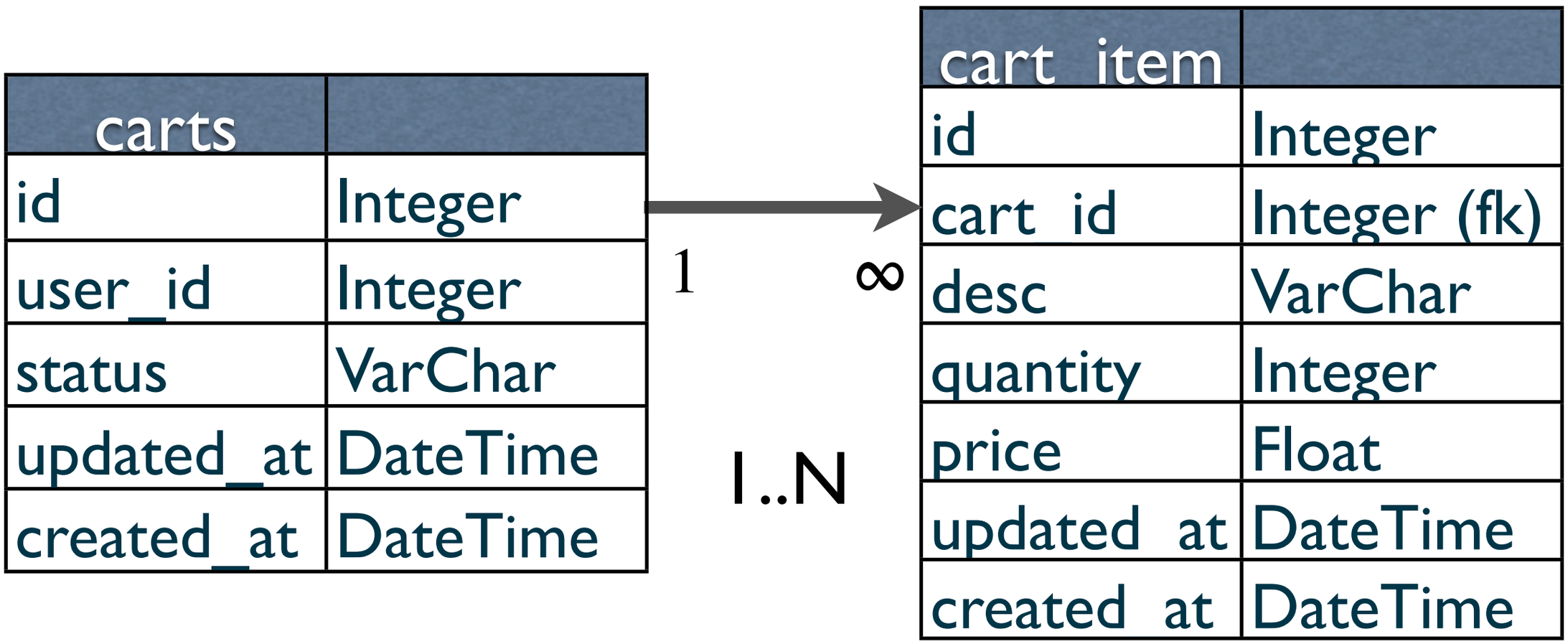
one to one

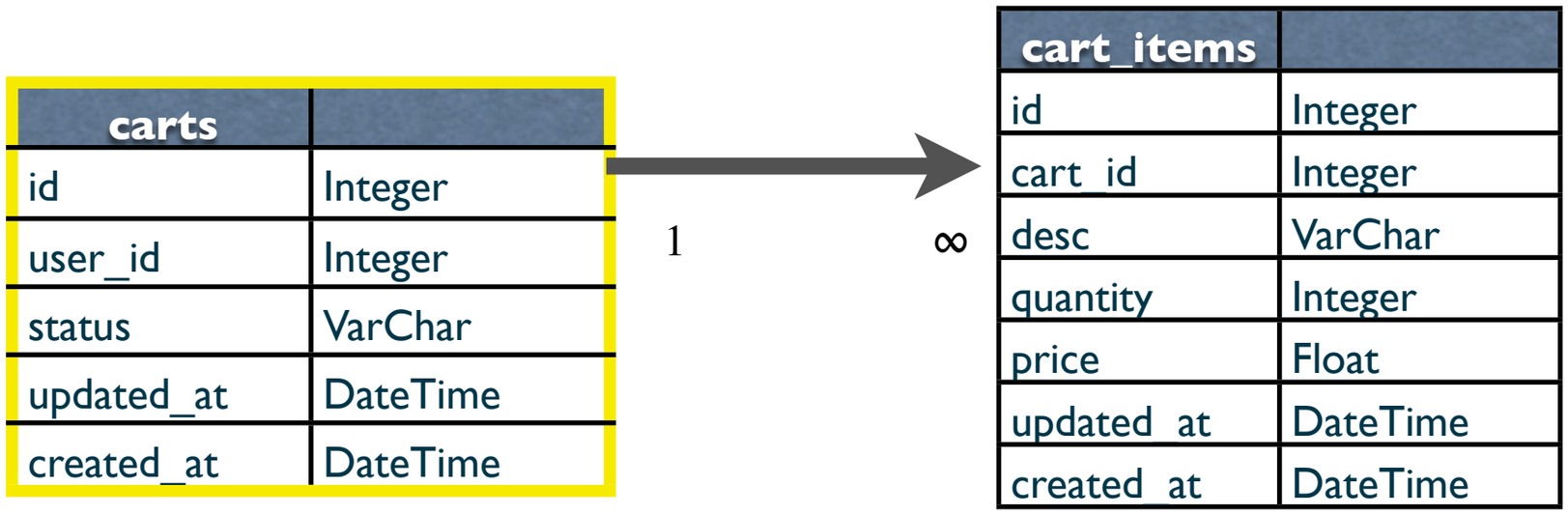


many to many



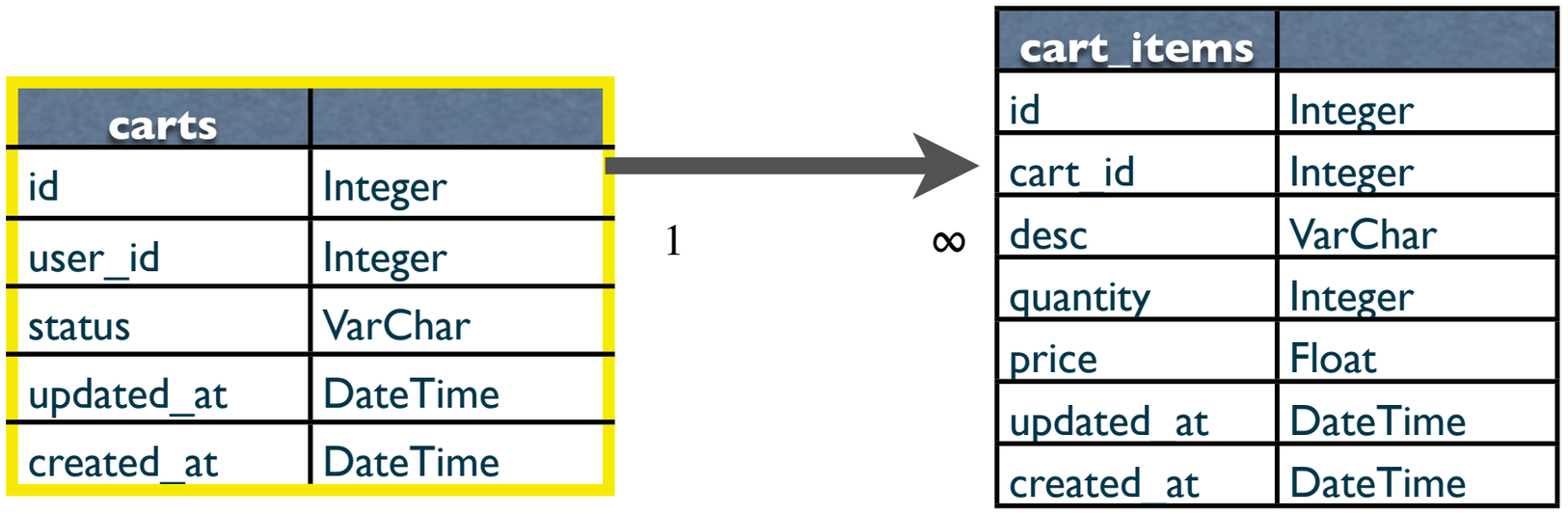
example


carts
id
Integer
user_id
Integer
status
VarChar
updated_at
DateTime
created_at
DateTime
1
∞
1..N
cart_item
id
Integer
cart_id
Integer (fk)
desc
VarChar
quantity
Integer
price
Float
updated_at
DateTime
created_at
DateTime



Lets add a cart

```
INSERT INTO carts
  (user_id, status, total, updated_at, created_at)
VALUES
  (1, 'open', 0, DATETIME('now'), DATETIME('now') )
```



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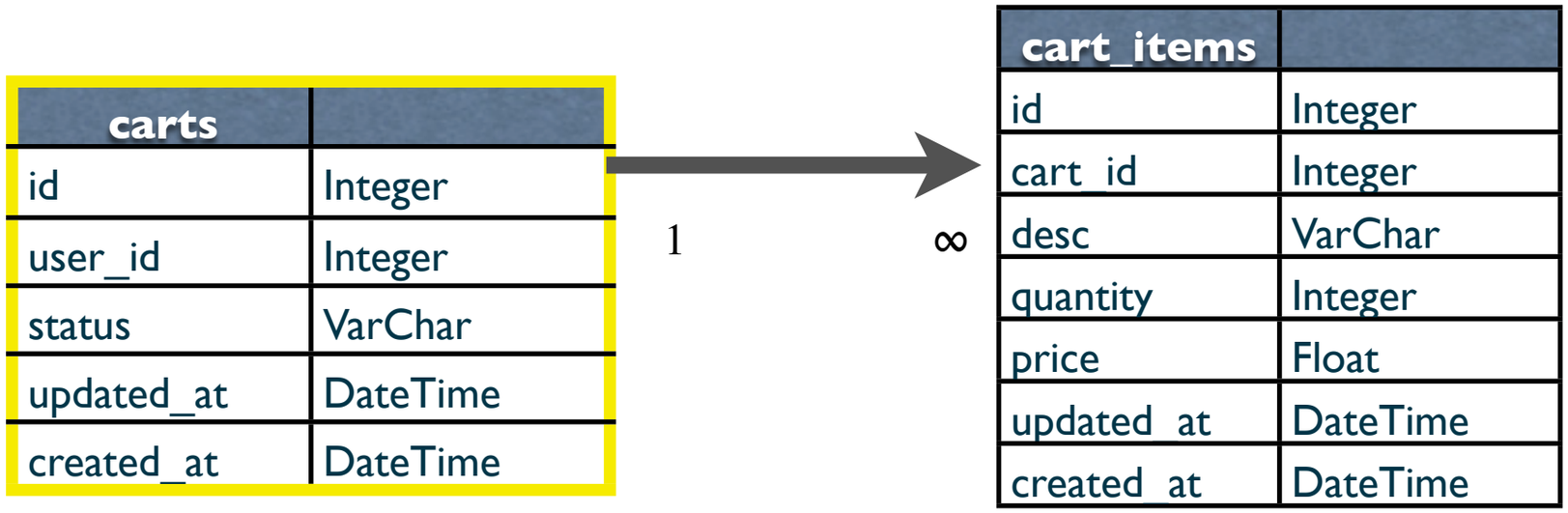

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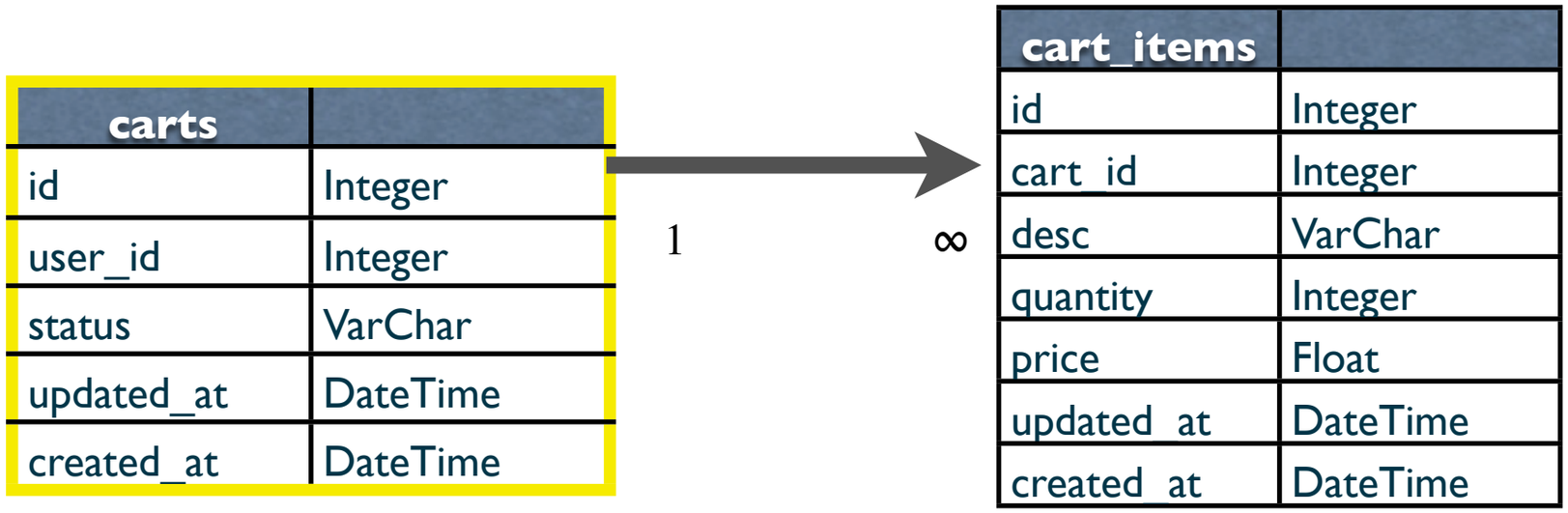

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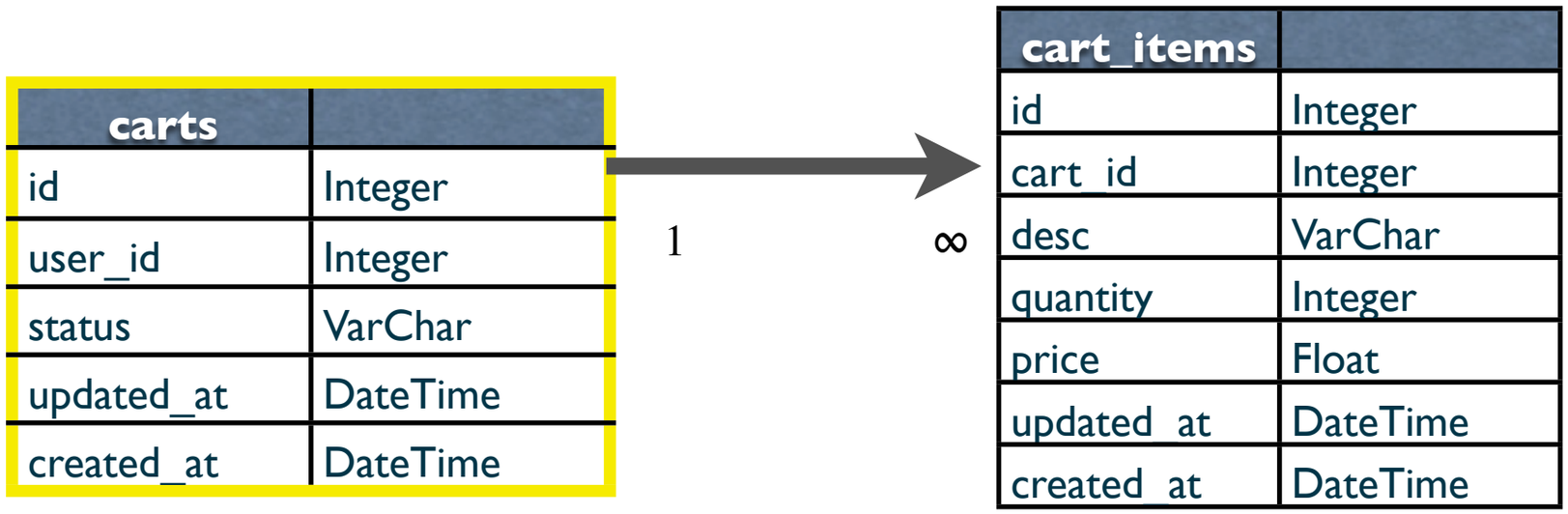

Lets add a cart

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VALUES
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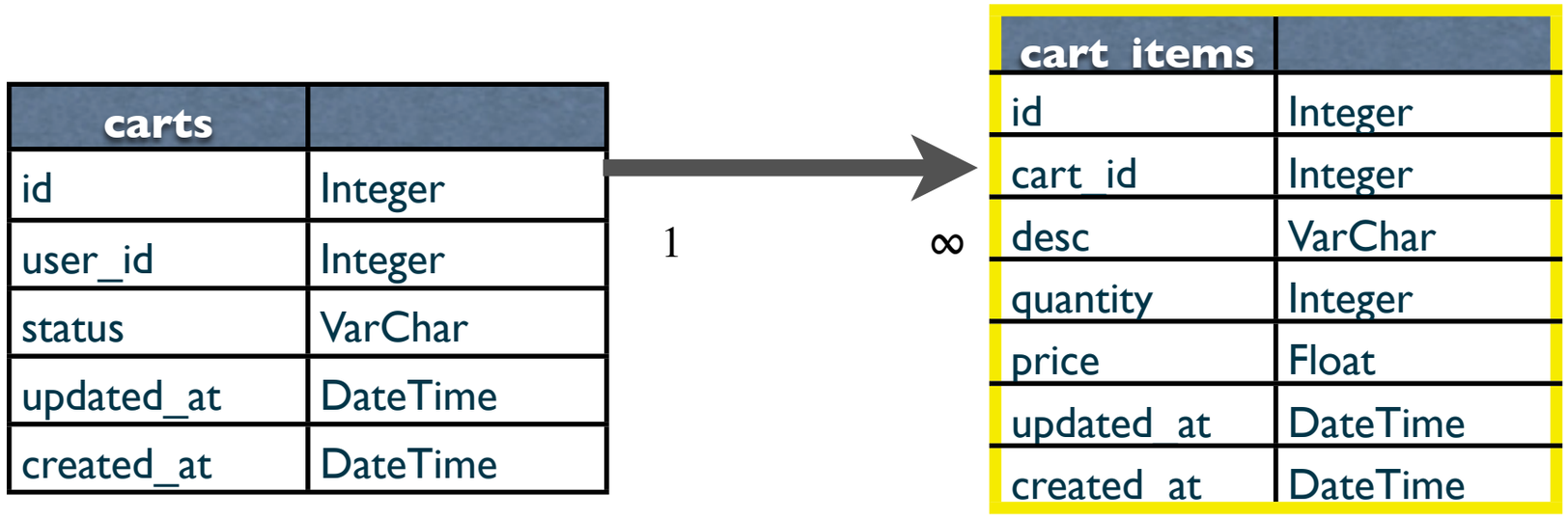
```



Lets add a cart items

```
INSERT INTO cart_items
  (cart_id, desc, quantity, price, updated_at, created_at)
VALUES
  (1, 'book 1', 1, 35.95, DATETIME('now'), DATETIME('now') )


INSERT INTO cart_items
  (cart_id, desc, quantity, price, updated_at, created_at)
VALUES
  (1, 'book 2', 2, 45.95, DATETIME('now'), DATETIME('now') )
```

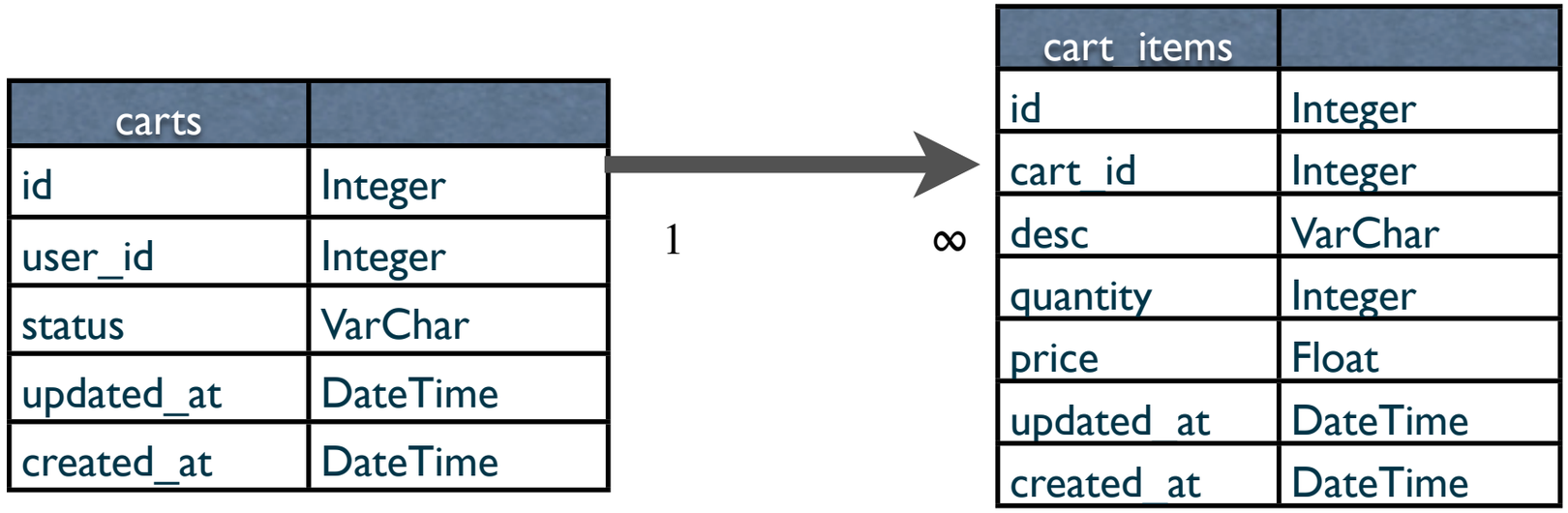
carts	
id	Integer
user_id	Integer
status	VarChar
updated_at	DateTime
created_at	DateTime

1 ∞

cart_item	
id	Integer
cart_id	Integer
desc	VarChar
quantity	Integer
price	Float
updated_at	DateTime
created_at	DateTime

What types of questions can be answered?

- Get all cart_items for a cart
- Remove an cart_item from a cart
- Find all carts that have a status of "open"



Lets query some data

- Get all cart_items for a cart
  - SELECT * FROM cart_items WHERE cart_id = 1
- Remove an cart_item from a cart
  - DELETE FROM cart_items WHERE id = 2
- Find all carts that have a status of “open”
  - SELECT * FROM carts WHERE status = 'open'

get cart with total price IMPLICIT JOIN, JOIN, INNER JOIN

```
SELECT carts.*, SUM(cart_items.price)
FROM carts, cart_items
WHERE carts.id = cart_items.cart_id AND carts.id = 1

SELECT carts.*, SUM(cart_items.price)
FROM carts
JOIN cart_items ON carts.id = cart_items.cart_id
WHERE carts.id = 1

SELECT carts.*, SUM(cart_items.price)
FROM carts
INNER JOIN cart_items ON carts.id = cart_items.cart_id
WHERE carts.id = 1
```

get cart with total price IMPLICIT JOIN, JOIN, INNER JOIN

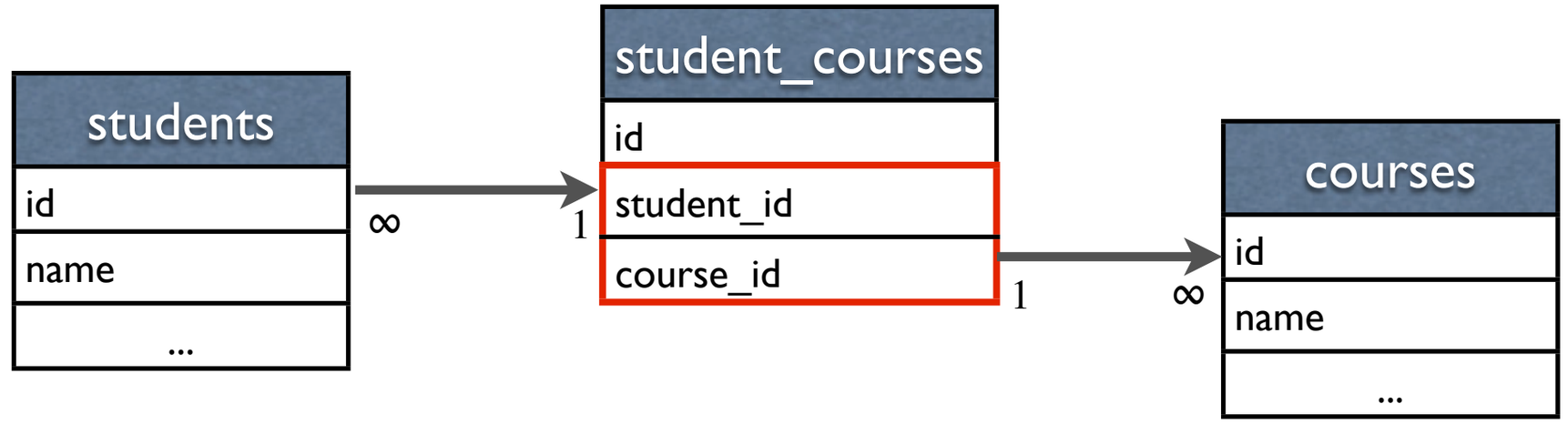
```
SELECT carts.*, SUM(cart_items.price)
FROM cart
WHERE ca                                                    = 1

SELECT ca
FROM cart
JOIN cart_                                                  t_id
WHERE ca

SELECT ca
FROM carts
INNER JOIN cart_items WHERE carts.id = cart_items.cart_id
WHERE carts.id = 1
```

user_id	sum	status	...
1	81.90	open	...

many to many



Students

1	Pete
2	Mike
3	Drew
4	Karen

StudentCourses

Courses

1	Ruby
2	Rails
3	Javascript
4	.Net

many to many

student_courses

student_id	course_id
1	1
1	2
1	3
2	1
2	3
3	1

courses

- id
- name
- ...

∞

Students

1	Pete
2	Mike
3	Drew
4	Karen

Courses

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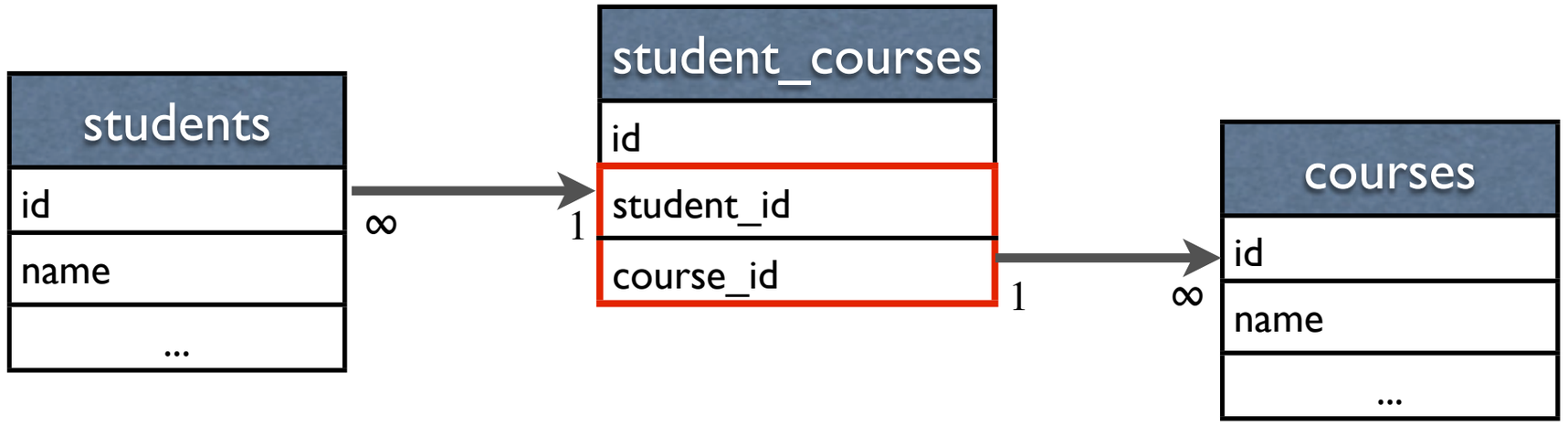
3	Javascript
4	.Net

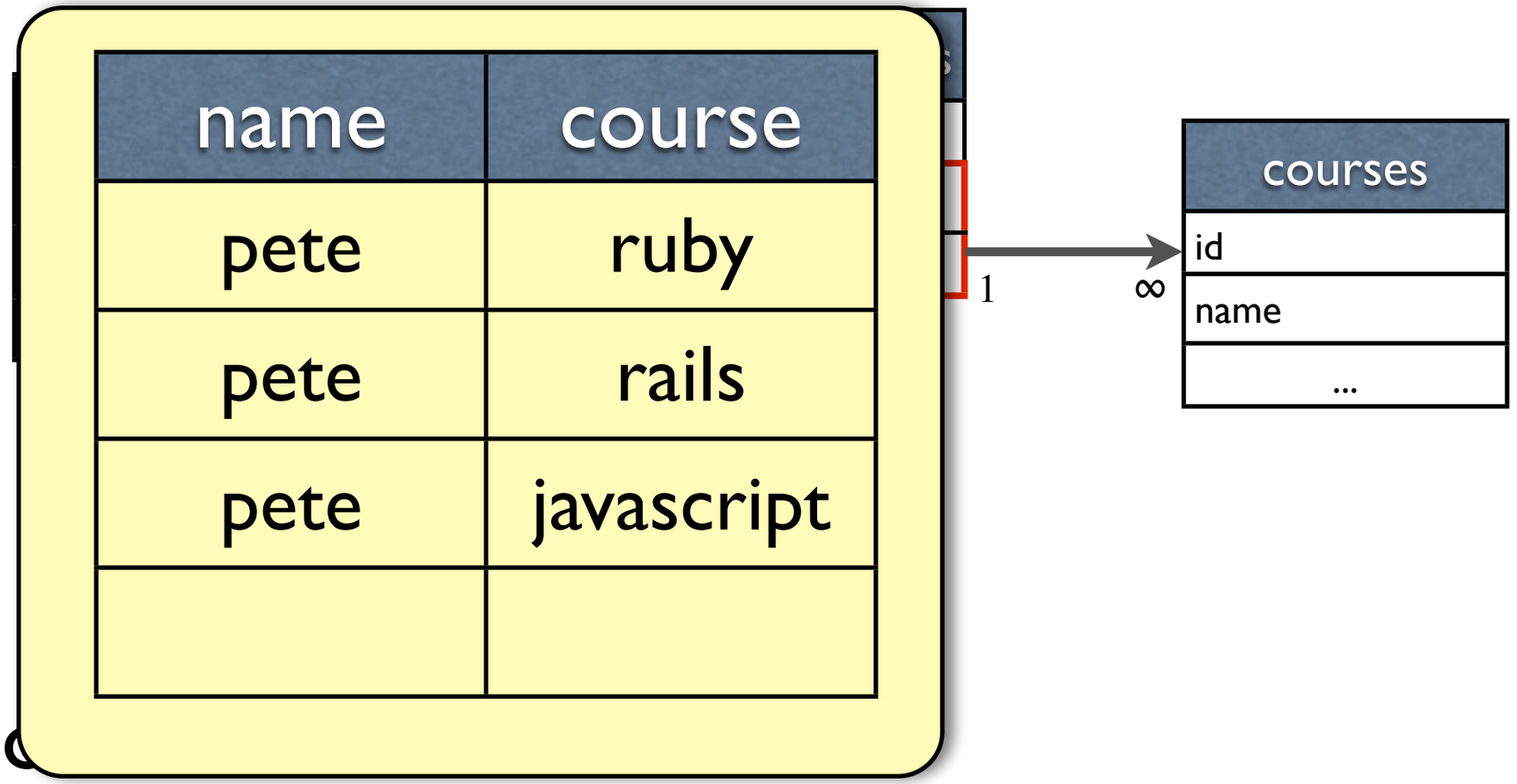
many to many



Get Pete's Courses

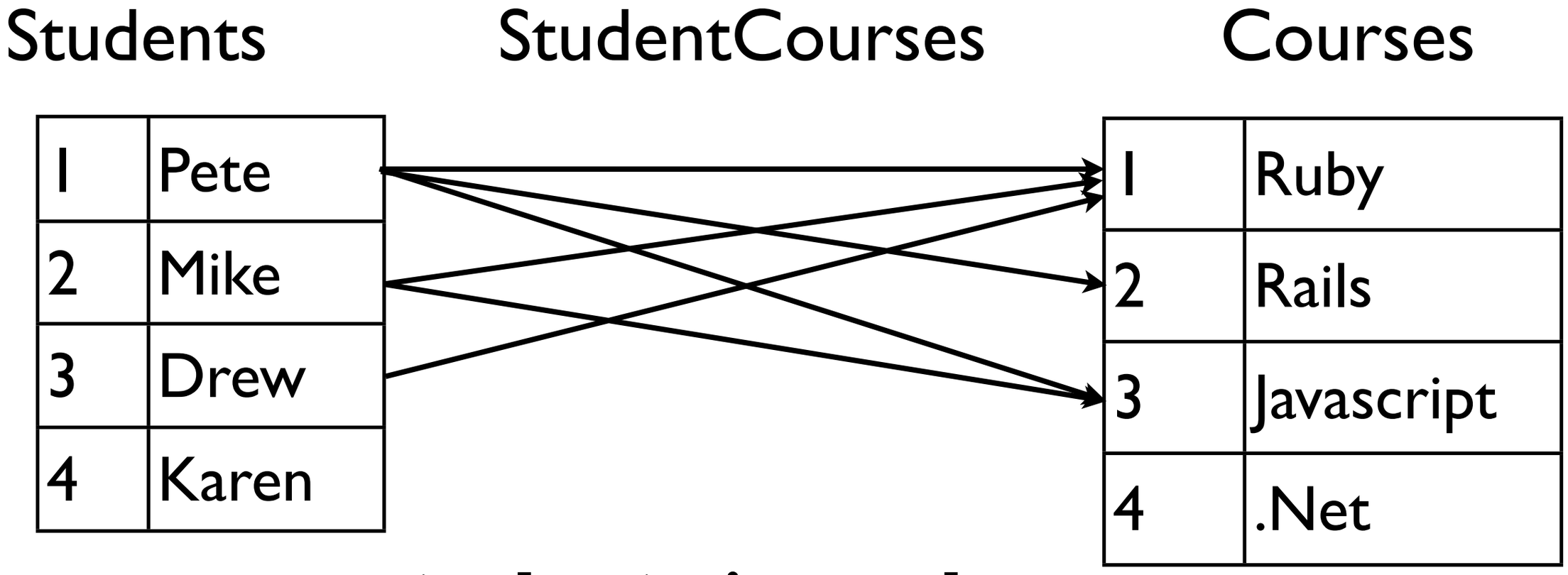
```
SELECT students.name, courses.name
 FROM students
   JOIN student_courses
     ON students.id = student_courses.student_id
   JOIN courses
     ON student_courses.course_id = courses.id
WHERE students.id = 1
```

many to many



Get Pete's Co

```
SELECT students.name, courses.name
 FROM students
   JOIN student_courses
     ON students.id = student_courses.student_id
   JOIN courses
     ON student_courses.course_id = courses.id
WHERE students.id = 1
```



How many students in each course

```
SELECT courses.name, count(students.name)
 FROM courses
   JOIN student_courses
     ON student_courses.course_id = courses.id
   JOIN students
     ON student_courses.student_id = students.id
GROUP BY courses.name
```

Students

1	Pete
2	Mike
3	Drew
4	Karen

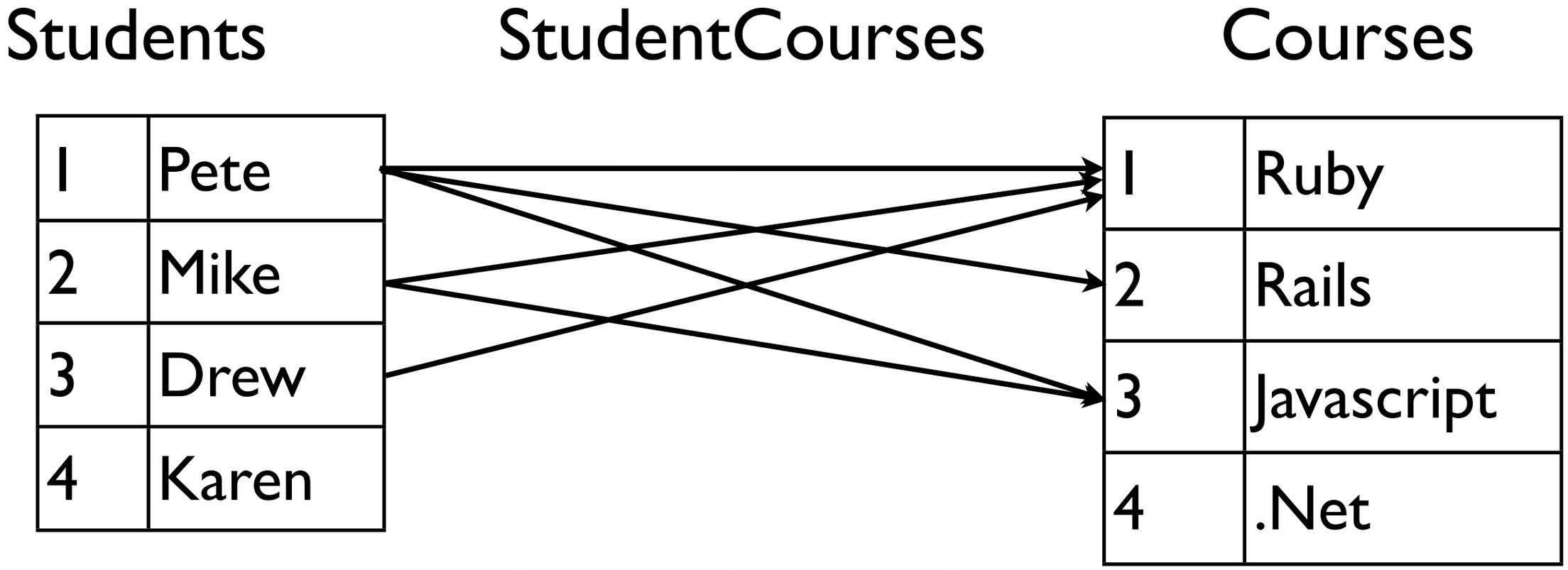
name	count
javascript	2
rails	1
ruby	3

Courses

1	Ruby
2	Rails
3	Javascript
4	.Net

How many students in each course

```
SELECT courses.name, count(students.name)
 FROM courses
   JOIN student_courses
     ON student_courses.course_id = courses.id
   JOIN students
     ON student_courses.student_id = students.id
GROUP BY courses.name
```



How many students in each course

```
SELECT courses.name, count(students.name)
 FROM courses
   LEFT JOIN student_courses
     ON student_courses.course_id = courses.id
   LEFT JOIN students
     ON student_courses.student_id = students.id
GROUP BY courses.name
```

Students

1	Pete
2	Mike
3	Drew
4	Karen

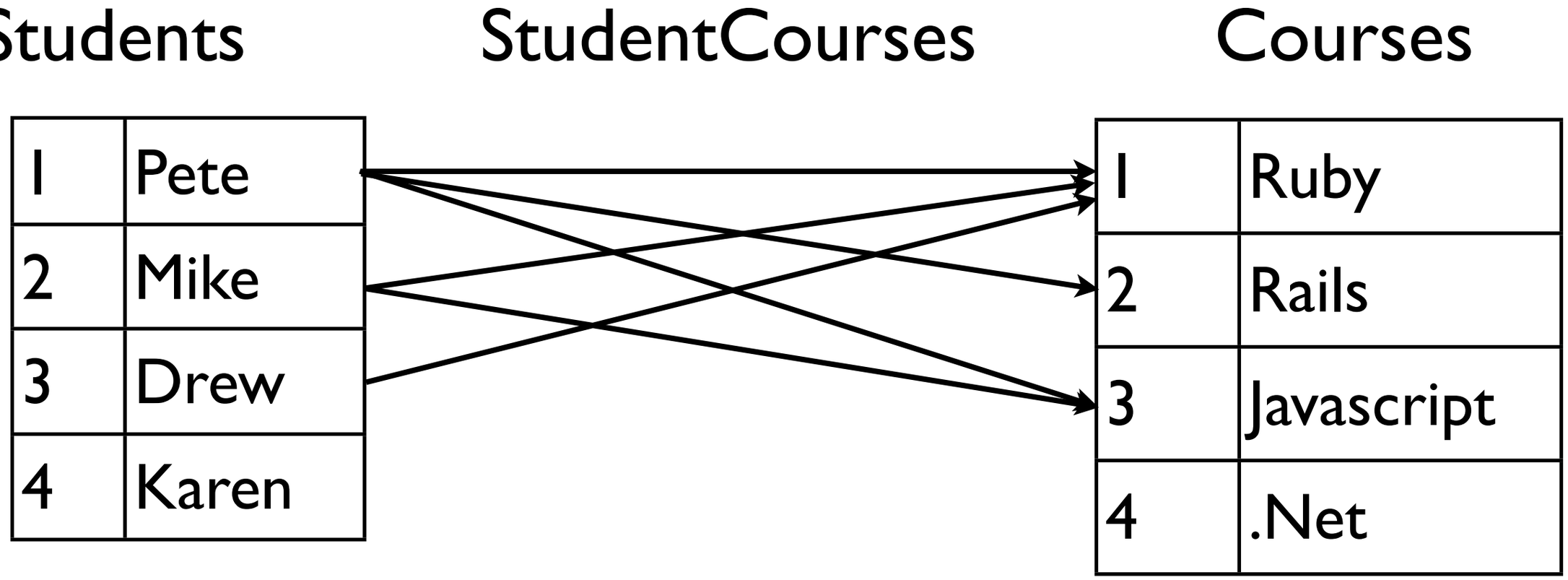
name	count
javascript	2
rails	1
ruby	3
.net	0

Courses

1	Ruby
2	Rails
3	Javascript
4	.Net

How many students in each course

```
SELECT courses.name, count(students.name)
 FROM courses
   LEFT JOIN student_courses
     ON student_courses.course_id = courses.id
   LEFT JOIN students
     ON student_courses.student_id = students.id
GROUP BY courses.name
```



LEFT JOIN

```
SELECT courses.name, students.name
 FROM courses
   LEFT JOIN student_courses
     ON student_courses.course_id = courses.id
   LEFT JOIN students
     ON student_courses.student_id = students.id
```

Students

1	Pete
2	Mike
3	Drew
4	Karen

course	student
ruby	pete
ruby	mike
ruby	drew
rails	pete
javascript	pete
javascript	mike
.net	

Courses

1	Ruby
2	Rails
3	Javascript
4	.Net

LEFT JOIN

```
SELECT courses.name, students.name
 FROM courses
    LEFT JOIN student_courses
      ON student_courses.course_id = courses.id
    LEFT JOIN students
      ON student_courses.student_id = students.id
```

Students

1	Pete
2	Mike
3	Drew
4	Karen

course	student
ruby	pete
ruby	mike
ruby	drew
rails	pete
javascript	pete
javascript	mike
	karen

Courses

1	Ruby
2	Rails
3	Javascript
4	.Net

RIGHT JOIN

```
SELECT courses.name, students.name
 FROM courses
   RIGHT JOIN student_courses
     ON student_courses.course_id = courses.id
   RIGHT JOIN students
     ON student_courses.student_id = students.id
```

Students

1	Pete
2	Mike
3	Drew
4	Karen

course	student
ruby	pete
ruby	mike
ruby	drew
rails	pete
javascript	pete
javascript	mike
.net	
	karen

Courses

1	Ruby
2	Rails
3	Javascript
4	.Net

FULL JOIN

```
SELECT cours
 FROM cours
   FULL JOIN student_courses
     ON student_courses.course_id = courses.id
   FULL JOIN students
     ON student_courses.student_id = students.id
```