

SQL

the sequel

Review

- DELETE
- UPDATE
- INSERT
- SELECT

relationships between tables



authors

id	first_name	last_name
1	J. K.	Rowling
2	John	Green
3	William	Shakespeare
4	Suzanne	Collins
5	Harper	Lee

authors

```
CREATE TABLE authors (  
    id int(10) unsigned NOT NULL AUTO_INCREMENT,  
    first_name varchar(127) NOT NULL,  
    last_name varchar(127) NOT NULL,  
    PRIMARY KEY (id)  
);
```

books

id	isbn	title	author
1	9780142424179	The Fault in Our Stars	John Green
2	0439139600	Harry Potter and the Goblet of Fire	J. K. Rowling
3	9780446310789	To Kill a Mockingbird	Harper Lee
4	9780142414934	Paper Towns	John Green
5	9780545586177	Catching Fire	Suzanne Collins

books

```
CREATE TABLE books (  
    id int(10) unsigned NOT NULL AUTO_INCREMENT,  
    isbn bigint(13) unsigned NOT NULL,  
    title varchar(255) NOT NULL,  
    author varchar(255) NOT NULL,  
    PRIMARY KEY (id)  
);
```


books

id	isbn	title	author
1	9780142424179	The Fault in Our Stars	John Green
2	0439139600	Harry Potter and the Goblet of Fire	J. K. Rowling
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books

id	isbn	title	author_id
1	9780142424179	The Fault in Our Stars	2
2	0439139600	Harry Potter and the Goblet of Fire	1
3	9780446310789	To Kill a Mockingbird	5
4	9780142414934	Paper Towns	2
5	9780545586177	Catching Fire	4

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FOREIGN KEY

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    isbn bigint(13) unsigned NOT NULL,  
    title varchar(255) NOT NULL,  
    author_id int(10) unsigned NOT NULL,  
    PRIMARY KEY (id)  
);
```


FOREIGN KEY

```
CREATE TABLE books (  
    id int(10) unsigned NOT NULL AUTO_INCREMENT,  
    isbn bigint(13) unsigned NOT NULL,  
    title varchar(255) NOT NULL,  
    author_id int(10) unsigned NOT NULL,  
    PRIMARY KEY (id),  
    FOREIGN KEY (author_id) REFERENCES authors(id)  
);
```

ON DELETE / ON UPDATE

- RESTRICT
- SET NULL
- SET DEFAULT
- CASCADE

counting

transactions

id	borrower_id	book_id	borrow_date	due_date	returned
1	2	3	2016-06-03	2016-06-24	true
2	12	9	2016-06-05	2016-06-26	false
3	28	11	2016-06-08	2016-06-29	true
4	15	14	2016-06-09	2016-06-30	false
5	15	15	2016-06-09	2016-06-30	false

COUNT

```
SELECT COUNT(*) FROM transactions;
```

transactions

id	borrower_id	book_id	borrow_date	due_date	returned
1	2	3	2016-06-03	2016-06-24	true
2	12	9	2016-06-05	2016-06-26	false
3	28	11	2016-06-08	2016-06-29	true
4	15	14	2016-06-09	2016-06-30	false
5	15	15	2016-06-09	2016-06-30	false

COUNT

```
SELECT COUNT(DISTINCT borrower) FROM transactions;
```

transactions

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2	12	9	2016-06-05	2016-06-26	false
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DISTINCT

```
SELECT DISTINCT borrower FROM transactions;
```

joining tables

books

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2	0439139600	Harry Potter and the Goblet of Fire	1
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authors

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books and authors

title	author_first	author_last
The Fault in Our Stars	John	Green
Harry Potter and the Goblet of Fire	J. K.	Rowling
To Kill a Mockingbird	Harper	Lee
Paper Towns	John	Green
Catching Fire	Suzanne	Collins

books and authors

```
SELECT books.title, authors.first_name, authors.last_name  
FROM books  
INNER JOIN authors  
ON books.author_id = authors.id;
```


books and authors

title	author_first	author_last
The Fault in Our Stars	John	Green
Harry Potter and the Goblet of Fire	J. K.	Rowling
To Kill a Mockingbird	Harper	Lee
Paper Towns	John	Green
Catching Fire	Suzanne	Collins

JOINS

- INNER JOIN
- LEFT JOIN
- RIGHT JOIN
- FULL JOIN