

Introducing queries

INTRODUCTION TO SQL



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What is SQL useful for?

patrons

card_num	name	member_year	total_fine
54378	Izzy	2012	9.86
94722	Maham	2020	0
45783	Jasmin	2022	2.05
90123	James	1989	0

books

id	title	author	genre	pub_year
638	Being Mortal	Atul Gawande	Non-Fiction	2015
912	Educated	Tara Westover	Non-Fiction	2018
322	Night	Elie Wiesel	Non-Fiction	1956
156	Where the Wild Things Are	Maurice Sendak	Childrens	1963

checkouts

id	start_date	due_date	card_num	book_id
567	2022-05-13	2022-05-27	54378	638
568	2022-06-10	2022-06-24	54378	322
569	2022-06-27	2022-07-11	45783	156
570	2022-08-14	2022-08-28	90123	912

Best for large datasets

hello world

Which products had
the highest sales
last week?



Which products get the worst
review scores from customers?



How did website traffic
change when a feature
was introduced?



Keywords

Keywords are reserved words for operations

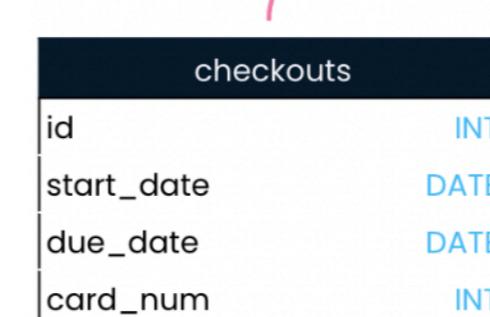
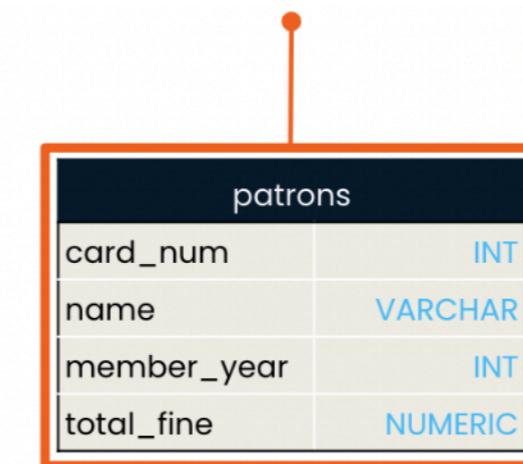
Common keywords: `SELECT` , `FROM`

`SELECT` name

patrons

card_num	name	member_year	total_fine
54378	Izzy	2012	9.86
94722	Maham	2020	0
45783	Jasmin	2022	2.05
90123	James	1989	0

`FROM` patrons



Our first query

```
SELECT name  
FROM patrons;
```

name
Izzy
Maham
Jasmin
James

patrons

card_num	name	member_year	total_fine
54378	Izzy	2012	9.86
94722	Maham	2020	0
45783	Jasmin	2022	2.05
90123	James	1989	0

- Query results often called *result set*

Selecting multiple fields

```
SELECT card_num, name  
FROM patrons;
```

card_num	name
54378	Izzy
94722	Maham
45783	Jasmin
90123	James

```
SELECT name, card_num  
FROM patrons;
```

name	card_num
Izzy	54378
Maham	94722
Jasmin	45783
James	90123

Selecting multiple fields

```
SELECT name, card_num, total_fine  
FROM patrons;
```

card_num	name	total_fine
54378	Izzy	9.86
94722	Maham	0
45783	Jasmin	2.05
90123	James	0

Selecting all fields

```
SELECT *  
FROM patrons;
```

card_num	name	member_year	total_fine
54378	Izzy	2012	9.86
94722	Maham	2020	0
45783	Jasmin	2022	2.05
90123	James	1989	0

Let's practice!

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Writing queries

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Aliasing

Use *aliasing* to rename columns

```
SELECT name AS first_name, year_hired  
FROM employees;
```

	first_name	year_hired
	Darius	2020
	Raven	2017
	Eduardo	2022
	Maggie	2021
	Amy	2020
	Meehir	2021

Selecting distinct records

```
SELECT year_hired  
FROM employees;
```

year_hired
2020
2017
2022
2021
2020
2021

```
SELECT DISTINCT year_hired  
FROM employees;
```

year_hired
2020
2017
2022
2021

DISTINCT with multiple fields

employees

id	name	dept_id	job_level_id	year_hired
54378	Darius	1	3	2020
94722	Raven	2	3	2017
45783	Eduardo	2	1	2022
90123	Maggie	3	2	2011
67284	Amy	2	2	2009
26148	Meehir	3	3	2021

```
SELECT dept_id, year_hired  
FROM employees;
```

dept_id	year_hired
1	2020
2	2017
2	2022
3	2021
2	2020
3	2021

DISTINCT with multiple fields

```
SELECT DISTINCT dept_id, year_hired  
FROM employees;
```

dept_id	year_hired
1	2020
2	2017
2	2022
3	2021
2	2020

Views

- A *view* is a virtual table that is the result of a saved SQL `SELECT` statement
- When accessed, views automatically update in response to updates in the underlying data

```
CREATE VIEW employee_hire_years AS  
SELECT id, name, year_hired  
FROM employees;
```

Using views

```
SELECT id, name  
FROM employee_hire_years;
```

id name
----- -----
54378 Darius
94722 Raven
45783 Eduardo
90123 Maggie
67284 Amy
26148 Meehir

Let's practice!

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SQL flavors

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SQL flavors

- Both free and paid
- All used with relational databases
- Vast majority of keywords are the same
- All must follow universal standards
- Only the additions on top of these standards make flavors different



¹ Table flatlay photo created by freepik www.freepik.com

Two popular SQL flavors

PostgreSQL

- Free and open-source relational database system
- Created at the University of California, Berkeley
- "PostgreSQL" refers to both the PostgreSQL database system and its associated SQL flavor

SQL Server

- Has free and paid versions
- Created by Microsoft
- T-SQL is Microsoft's SQL flavor, used with SQL Server databases

Comparing PostgreSQL and SQL Server

- Like dialects of the same language
- Example: limiting number of results

PostgreSQL:

```
SELECT id, name  
FROM employees  
LIMIT 2;
```

id	name
54378	Darius
94722	Raven

```
SELECT TOP(2) id, name  
FROM employees;
```

id	name
54378	Darius
94722	Raven

Choosing a flavor

Just like with ice cream, any flavor is probably a good choice!



Here is the extracted text from the image:

****PostgreSQL****

- Research funds provided by DARPA
 - Free and open source

Developed at the University of California, Berkeley

****SQL Server****

- Has both free and enterprise versions
 - Created by Microsoft
 - Queried using T-SQL

Let's practice!

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Congratulations!

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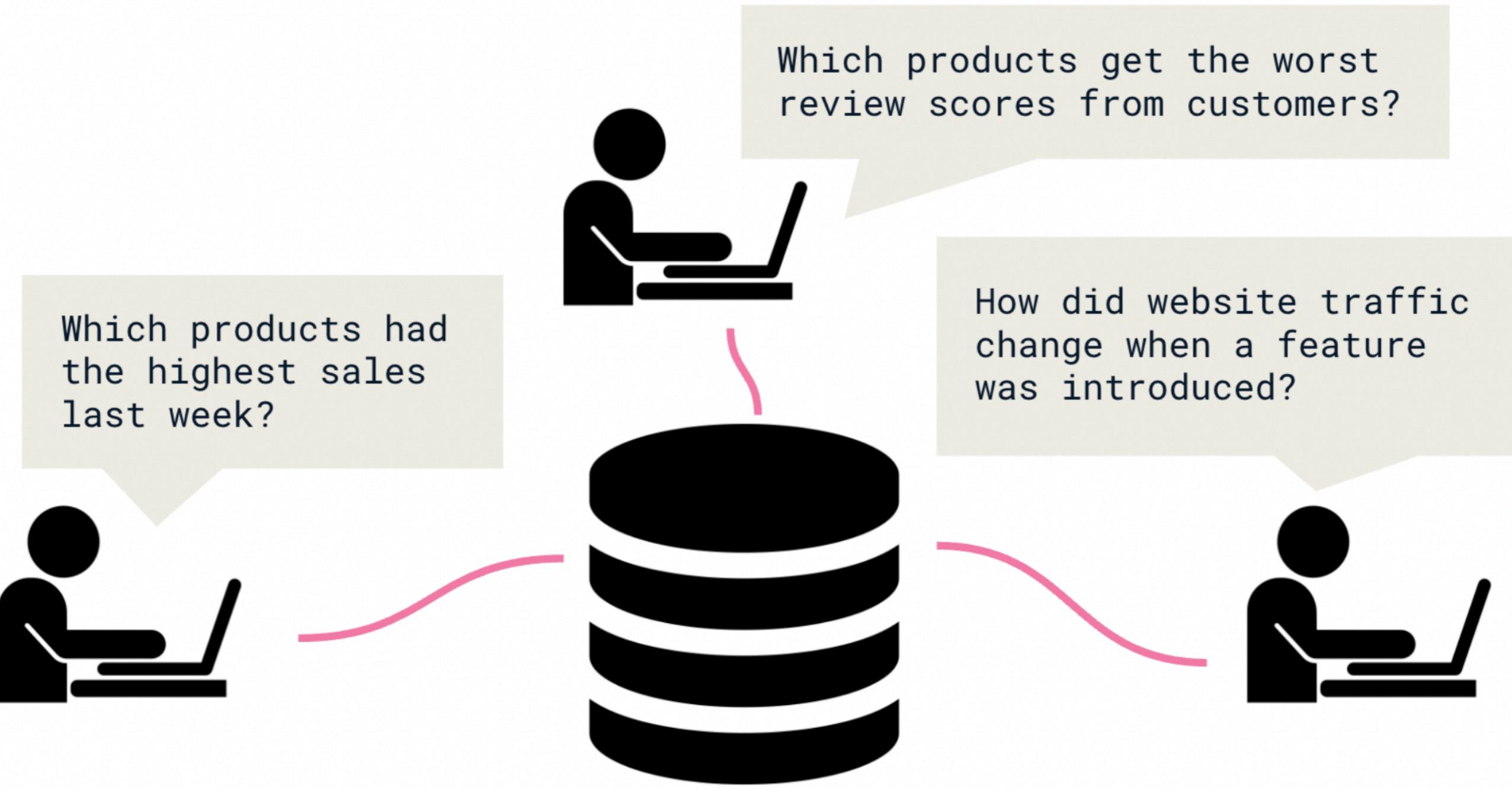
A dark blue circular badge with the word "SQL" written in white capital letters.

SQL

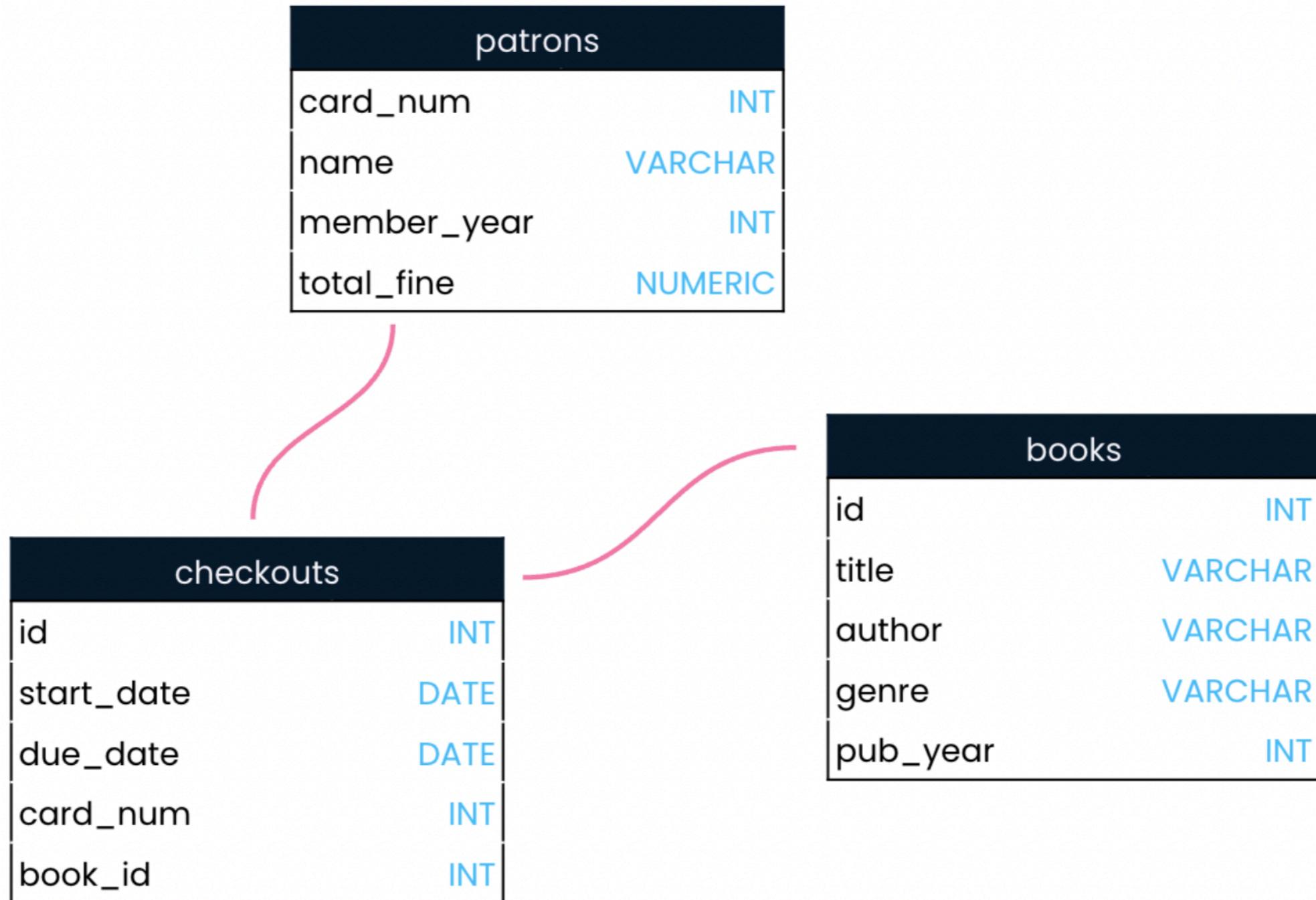
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What you've learned

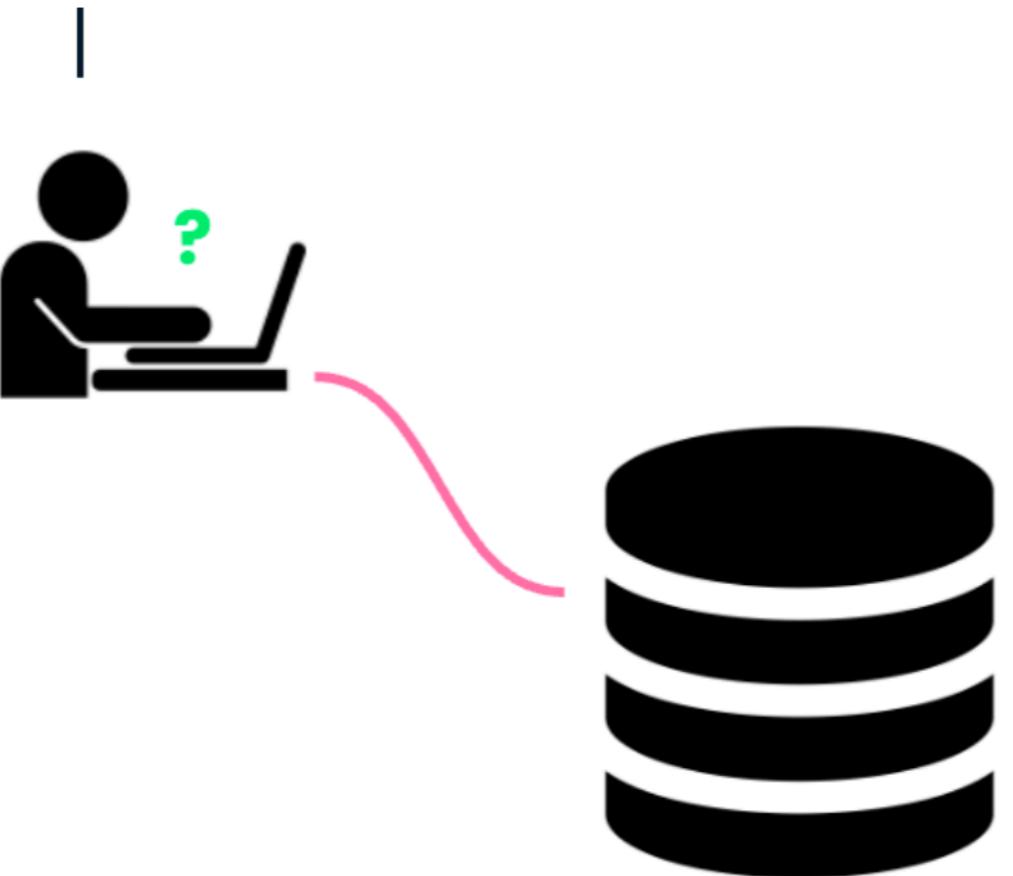


What you've learned



What you've learned

```
SELECT DISTINCT genre AS unique_genre  
FROM books  
LIMIT 15;
```



Where to go next

The next step is to learn more keywords and to choose which flavor you'll learn them in!

Learn PostgreSQL on DataCamp:

- Intermediate SQL Queries

Learn SQL Server on DataCamp:

- Introduction to SQL Server



Thank you!

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