Querying a database

INTERMEDIATE SQL



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Course roadmap

- Querying databases
- Count and view specified records
- Understand query execution and style
- Filtering
- Aggregate functions
- Sorting and grouping



Our films database

films	
id	INT4
title	VARCHAR
release_year	INT4
country	VARCHAR
duration	INT4
language	VARCHAR
certification	VARCHAR
gross	INT8
budget	INT8

people		
id	INT4	
name	VARCHAR	
birthdate	DATE	
deathdate	DATE	

reviews	
id	INT4
film_id	INT4
num_user	INT4
num_critic	INT4
imdb_score	FLOAT4
num_votes	INT4
facebook_likes	INT4

roles		
id	INT4	
film_id	INT4	
person_id	INT4	
role	VARCHAR	

COUNT()

- COUNT()
- Counts the number of records with a value in a field
- Use an alias for clarity

```
SELECT COUNT(birthdate) AS count_birthdates
FROM people;
```

```
|count_birthdates|
|-----|
|6152 |
```



COUNT() multiple fields

```
SELECT COUNT(name) AS count_names, COUNT(birthdate) AS count_birthdates
FROM people;
```

```
|count_names|count_birthdates|
|-----|-----|
|6397 |6152 |
```



Using * with COUNT()

- COUNT(field_name) counts values in a field
- COUNT(*) counts records in a table
- * represents all fields

```
SELECT COUNT(*) AS total_records
FROM people;
```

```
|total_records|
|-----|
|8397 |
```

DISTINCT

 DISTINCT removes duplicates to return only unique values

```
SELECT language FROM films;
```

```
|language |
|-----|
|Danish |
|Danish |
|Greek |
|Greek |
```

• Which languages are in our films table?

```
SELECT DISTINCT language FROM films;
```

```
|language |
|----|
|Danish |
|Greek |
```

COUNT() with DISTINCT

• Combine COUNT() with DISTINCT to count unique values

```
SELECT COUNT(DISTINCT birthdate) AS count_distinct_birthdates
FROM people;
```

```
|count_distinct_birthdates|
|-----|
|5398 |
```

- COUNT() includes duplicates
- DISTINCT excludes duplicates

Let's practice!

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Query execution

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Order of execution

SQL is not processed in its written order

```
-- Order of execution
SELECT name
FROM people
LIMIT 10;
```

- LIMIT limits how many results we return
- Good to know processing order for debugging and aliasing
- Aliases are declared in the SELECT statement

Debugging SQL

```
SELECT nme
FROM people;
```

```
field "nme" does not exist
LINE 1: SELECT nme

^
HINT: Perhaps you meant to reference the field "people.name".
```

- Misspelling
- Incorrect capitalization
- Incorrect or missing punctuation

Comma errors

Look out for comma errors!

```
SELECT title, country duration
FROM films;
```

```
syntax error at or near "duration"

LINE 1: SELECT title, country duration
```

Keyword errors

```
SELCT title, country, duration
FROM films;
```

```
syntax error at or near "SELCT"

LINE 1: SELCT title, country, duration

^
```



Final note on errors

Most common errors:

- Misspelling
- Incorrect capitalization
- Incorrect or missing punctuation, especially commas

Learn by making mistakes



Let's practice!

INTERMEDIATE SQL



SQL style INTERMEDIATE SQL



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SQL formatting

- Formatting is not required
- But lack of formatting can cause issues

```
select title, release_year, country from films limit 3
```



Best practices

```
SELECT title, release_year, country
FROM films
LIMIT 3;
```

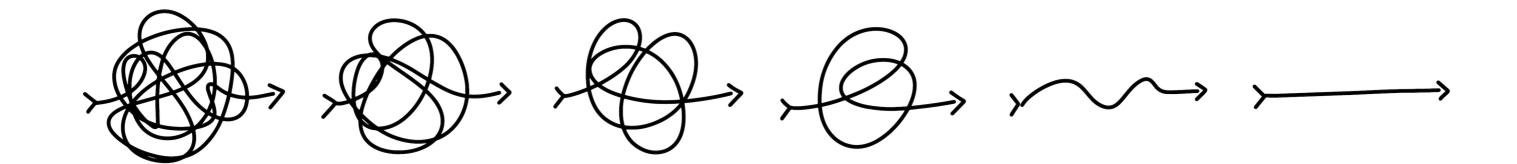
- Capitalize keywords
- Add new lines

Style guides

```
SELECT
    title,
    release_year,
    country
FROM films
LIMIT 3;
```

Style guides

Holywell's style guide: https://www.sqlstyle.guide/



Write clear and readable code

Semicolon

```
SELECT title, release_year, country
FROM films
LIMIT 3;
```

- Best practice
- Easier to translate between SQL flavors
- Indicates the end of a query

Dealing with non-standard field names

- release year instead of release_year
- Put non-standard field names in double-quotes

```
SELECT title, "release year", country
FROM films
LIMIT 3;
```

Why do we format?

- Easier collaboration
- Clean and readable
- Looks professional
- Easier to understand
- Easier to debug

Let's practice!

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