ICL2 Tutorial 1 Introduction & SQL

23rd of February

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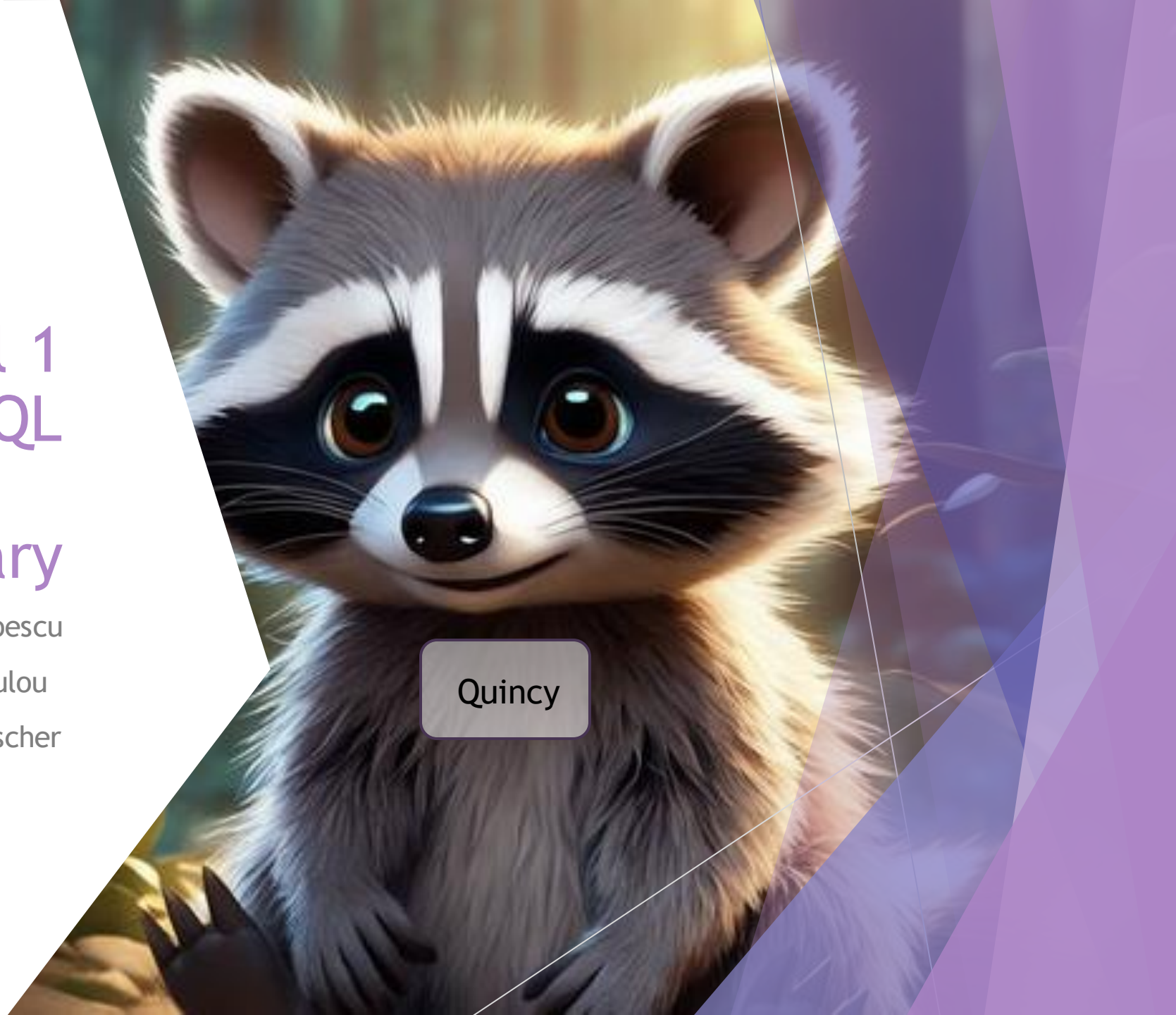

Who are we?

- Dominic Fischer
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- Maritina Panagiotopoulou
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- Irina Stroescu
  irina-camelia.stroescu@uzh.ch

- Quincy – only available in the tutorial

Who are you?

- Tell us your name (if we don't know it already) + one keyword (it can be a hobby, a game, a TV series) that you would like to be associated with (in our heads)

Tutorial

- Short recap of the lecture's topics
- Answers to your questions
- Tips and feedback for the exercises

- Participation in the tutorial is optional, but highly recommended!

Tutorial

- The tutorial is going to take place more or less every other week
- We thought about the dates and tried to distribute the tutorials in a way that is most convenient for you
  - Check OLAT (course schedule or calendar) to be sure!

Programme

Sitzung	Themen	Slides (folder Lecture Materials)	Release of exercises: Wednesdays 18:00 (except exercise 1)	Submission of exercises: Tuesdays 23:59	tutorial
1	Introduction (MK)	ecl2-en.pdf	Ex1: 23.02.2024 (DF)		23.02.2024
2	Ambiguity (MK)	ecl2-en.pdf	Ex2: 28.02.2024 (MP)	Ex1: 27.02.2024	01.03.2024
3	Lexical Semantics I (MK)	ecl2-en.pdf			
4	Lexical Semantics II (MK)		Ex3: 13.03.2024 (DF)	Ex2: 12.03.2024	15.03.2024
5	Experimental and Computational Psycholinguistics (LJ)				
6	Experimental and Computational Psycholinguistics (LJ)				
Easter Break			Break	Break	Break
7	Experimental and Computational Psycholinguistics (LJ)			Ex3: 09.04.2024	12.04.2024
8	Distributional Semantics (MK)				
9	Statement Logic (MK)		Ex4: 24.04.2024 (MP)		26.04.2024
10	Predicate Logic (MK) (Labor Day)				
11	Sentence Semantics I (MK)		Ex5: 08.05.2024 (IS)	Ex4: 07.05.2024	10.05.2024
12	Sentence Semantics II (MK)				
13	Sentence Semantics III (MK)			Ex5: 21.05.2024	24.05.2024
14	Ethics in NLP, Semantic Web (MK)	ethics+nlpEN			Monster tutorial: 31.05.2024 or 03.06.2024

Maritina will be your guru

Exercises

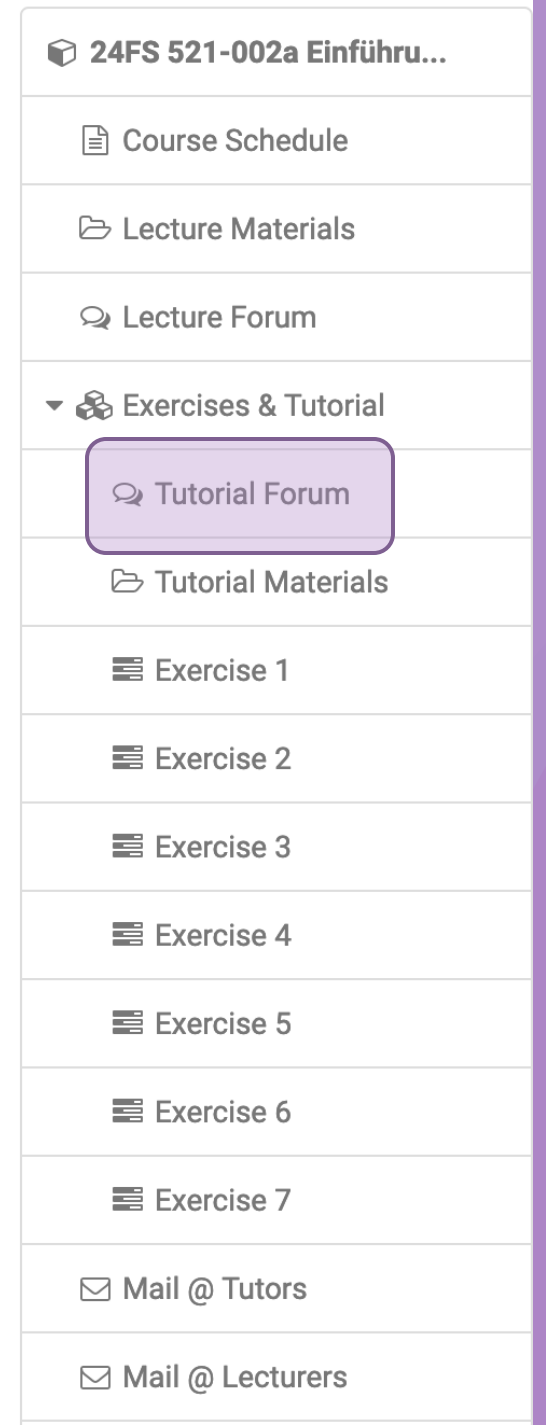
- 6 Exercises
- Grades: 1, 0.75, 0.5, 0.25, 0 points
- Total points = exercise grade
- 25% of the final grade (75% exam)
- Released on Wednesday at 18:00 via OLAT
- Submission deadline on Tuesday at 23:59
- Please hand it in on time via OLAT!
- Except for the first one, 2 weeks to work on an exercise

Exercises

- **Work in pairs of two (mandatory)**
  - Please state both names in the filename (pdf)
    olatname1_olatname2_icl2_exercise0X.pdf
  - Only one person submits the exercise on OLAT
- **Read the instructions carefully!**

Questions

- **Forum on OLAT**
  Post on the OLAT forum if you have any doubts, questions or remarks regarding the exercises
- **Ask in the tutorial.**
- **Only if it is very specific,** write an e-mail to us

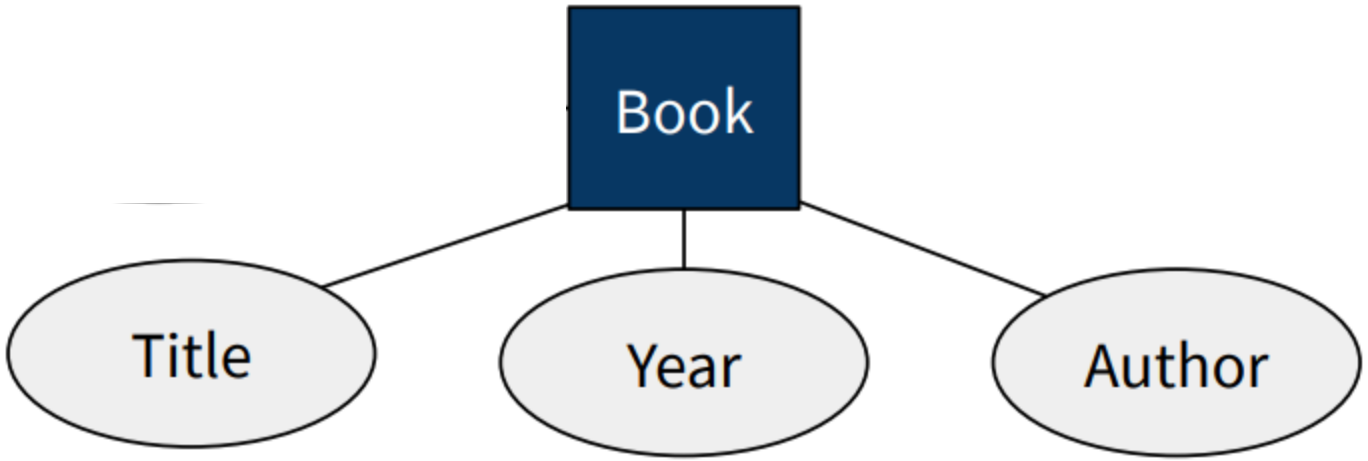



Now, let me explain some stuff…

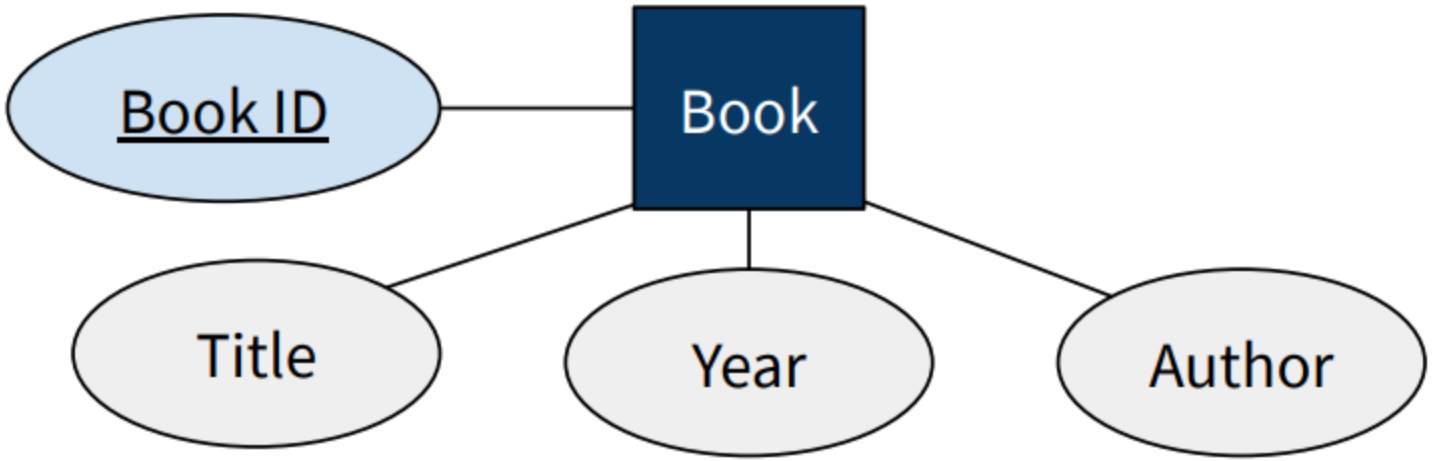
Representation of meaning: Databases

- We want to represent meaning
- We need data, and we need it structured and managed → Databases
- Example: a list of books

Entities and Attributes



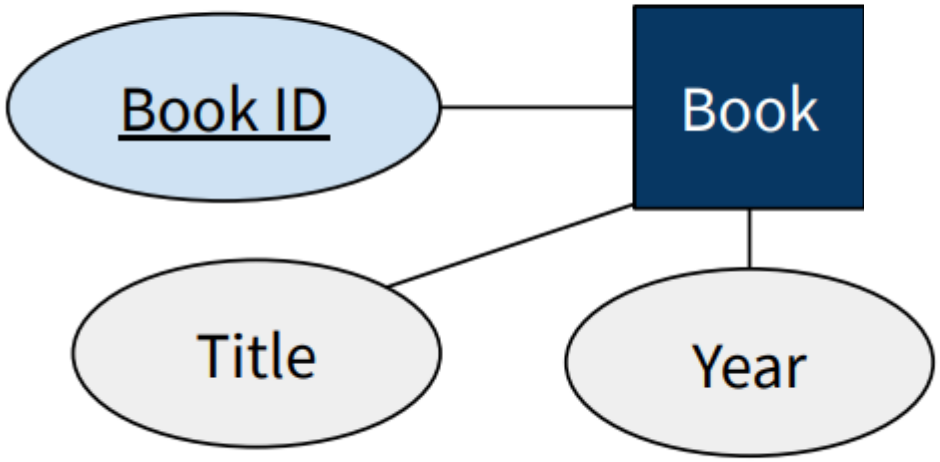
Identification Key

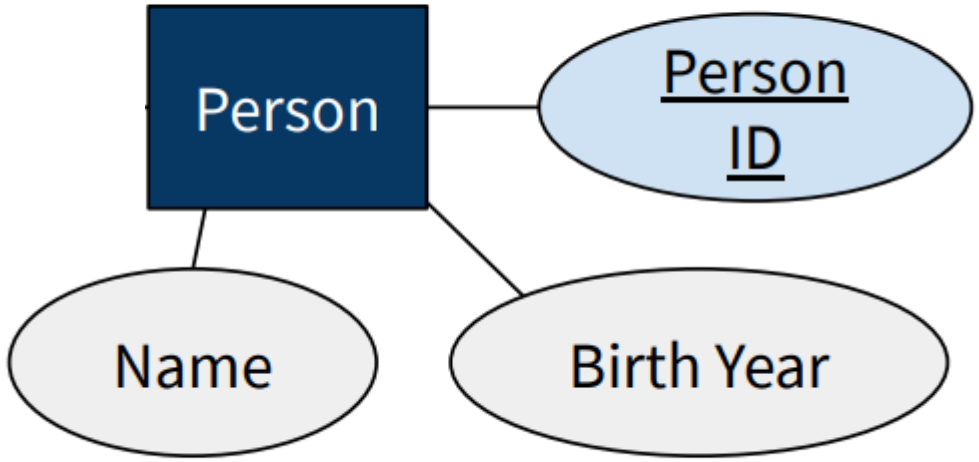


Visualization

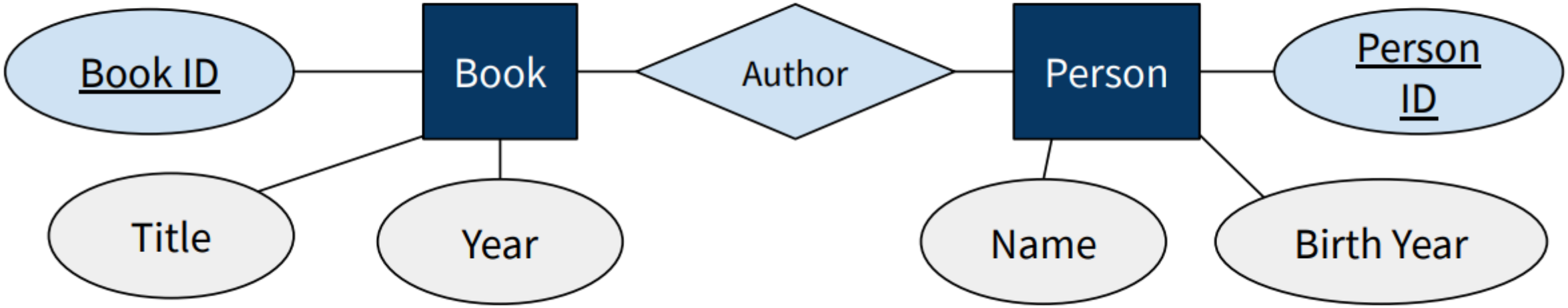
Book ID	Title	Year	Author
1	Lockwood	2013	Jonathan Stroud
2	Hamlet	1603	William Shakespeare
…	…	…	…

Multiple Entities





… with Relationships



Visualization

Book ID	Title	Year	Author
1	Lockwood	2013	Jonathan Stroud
2	Hamlet	1603	William Shakespeare
…	…	…	…

Person ID	Name	Birth Year
1	Jonathan Stroud	1970
2	William Shakespeare	1564
3	Quincy	2024
…	…	…

SQL

SQL is a language to query, manipulate and transform a relational Database.

- (related) Two-dimensional tables
- Any (but defined) number of named columns (keys)
- And any number of rows of data (values)
- Comparable to an excel spreadsheet.

Operations

Operation	Function
SELECT DISTINCT AS COUNT SUM AVG MIN MAX	Select columns Only distinct Display different name Count Sum Average Minimum Maximum
FROM	From table
WHERE = LIKE IS NOT NULL AND OR	Further specification Equals Capture similarities Exclude null values And Or

Operation	Function
ORDER BY … DESC	Order by … descending
ORDER BY … ASC	Order by … ascending
GROUP BY	Group by …
INNER JOIN ON	Merge databases condition

SELECT
FROM

```
SELECT *
FROM customers;
```

```
SELECT name, birth_date
FROM customers;
```

DISTINCT

```
SELECT DISTINCT city
FROM customers;
```

AS

```
SELECT title AS book_title
FROM library
WHERE pub_year = 2017;
```

COUNT()
SUM()
AVG()

```
SELECT COUNT(*)
FROM books
```

```
SELECT SUM(price)
FROM orders;
```

```
SELECT AVG(price)
FROM orders;
```

MIN()
MAX()

```
SELECT MIN(price)
FROM orders;
```

```
SELECT MAX(price)
FROM orders;
```

WHERE
LIKE or = (equals)

```
SELECT title
FROM library
WHERE pub_year = 2017;

SELECT name
FROM movies
WHERE name LIKE 'The %';

SELECT name
FROM movies
WHERE name LIKE '_ove';
```

AND
OR

```
SELECT name
FROM customers
WHERE canton = 'ZH’
      AND birth_year < 2003;

SELECT name
FROM customers
WHERE canton = 'BS’
      OR canton = 'BL';
```

IS NOT NULL

```
SELECT phone_number
FROM customers
WHERE phone_number IS NOT NULL;
```

ORDER BY

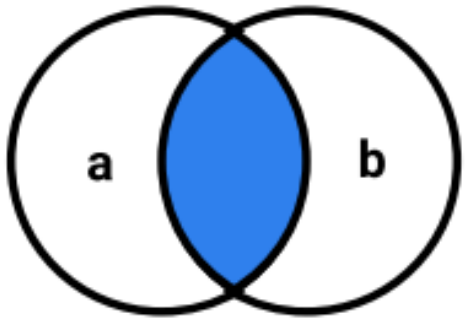
```
SELECT * FROM customers
ORDER BY birth_date DESC LIMIT 5;
```

GROUP BY

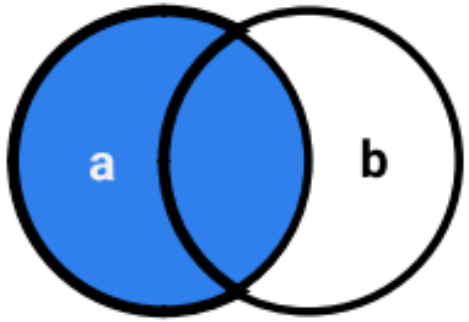
Group rows that have the same value in the column specified

```
SELECT rating, COUNT(*)
FROM movies
GROUP BY rating;
```

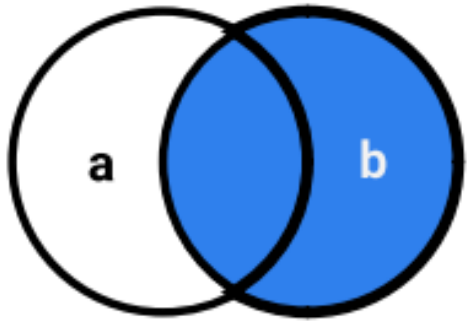
Joins



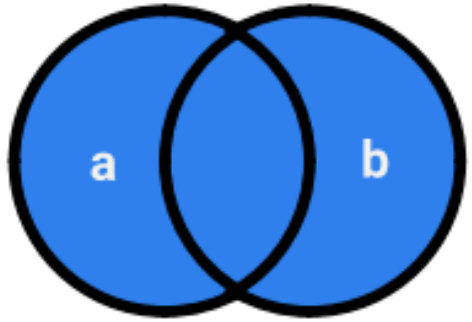
a INNER JOIN b



a LEFT JOIN b



a RIGHT JOIN b



a FULL OUTER JOIN b

Inner Join

SELECT scientists.name, prizes.name	Select scientist name and prize name
FROM scientists	
INNER JOIN prizes	Merge both tables
ON prizes.id = scientists.id;	Where a scientist's prize id matches a prize id

What is going to be displayed?

→ A table with the scientists who won a prize; the first column being the scientist's name and the second being the prize

Visualization

```
SELECT scientists.name, prizes.name
FROM scientists
INNER JOIN prizes
    ON prizes.id = scientists.prize_id;
```

id	name	prize_id
1	Quincy	1
2	Nelson Mandela	3
…	…	…

id	name
1	Nobel Prize in Food Waste Reduction
2	Nobel Prize in Chemistry
3	Nobel Peace Prize
…	…

Visualization

```
SELECT scientists.name, prizes.name
FROM scientists
INNER JOIN prizes
    ON prizes.id = scientists.prize_id;
```

name	prize_id
Quincy	Nobel Prize in Food Waste Reduction
Nelson Mandela	Nobel Peace Prize

Representation of meaning: Outlook

- Databases are great, but for CL, they are often not sufficient because of language complexity
- You are going to come across some of the problems language poses…
- …aswell as possible solutions


Questioooooooooon!!