

Databases Autumn 2025

Hand-In Exercise 1

October 2, 2025

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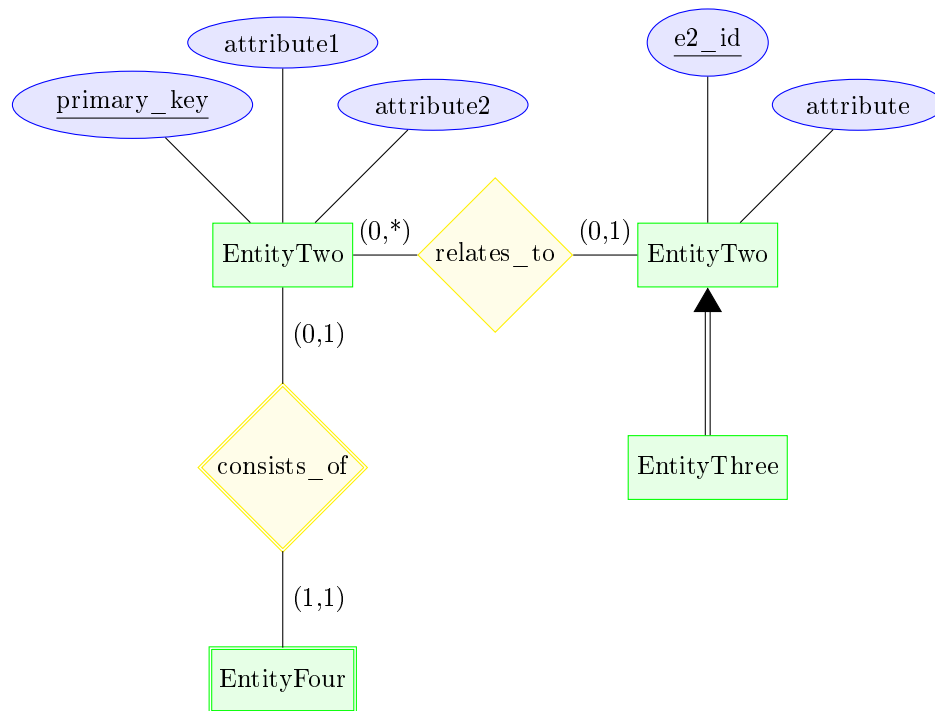
Edie Windsor

Total Points	
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This template showcases various useful latex commands and setups. Remove this for your actual hand-in.

Task 1

If a task asks for an ER diagram, one could use `\usetikzlibrary{er,positioning,arrows.meta}` in the preamble and some code to produce such ER diagrams:



However, it is not *required* to use TikZ for ERs. One can also use external services such as <https://www.diagrams.net/> to create PDF documents of ERs. These can then be inserted into the hand-in using

`\includepdf[pages=1,pagecommand={\pagestyle{fancy}}]{filename}`

to include the PDF document `filename`. It is important to use the `pagestyle fancy`, so that the header is also on the included page. Furthermore, please ensure that your PDF version (or image) of the ER diagram is **readable**.

Task 2

Relational algebra is a treat with \LaTeX , as can be seen in Equation (1):

$$\pi [Attribute1, Attribute2] (\sigma [Attribute = Something] (Entity1) \bowtie Entity2) \quad (1)$$

Other useful symbols related to Relational Algebra are union (\cup), intersection (\cap), logical and \wedge and ‘not equals’ (\neq).

Also, in regards of Relational Algebra, have a look at:

Entity1	(PKE1)
Entity2	(PKE2, Attribute)
relation	(PKE1, PKE2)

Task 3

At one point in time, you might want to include SQL snippets to a solution. One way to do so would be by having an SQL file close by and use `\lstinputlisting` – provided by the `listings` package.

```

1  -- Source: https://www.w3schools.com/sql/sql_create_table.asp
2  CREATE TABLE Persons (
3      PersonID int,
4      LastName varchar(255),
5      FirstName varchar(255),
6      Address varchar(255),
7      City varchar(255)
8  );
9
10 -- Source: https://www.w3schools.com/sql/sql_select.asp
11 SELECT * FROM Persons;
```

Task 4

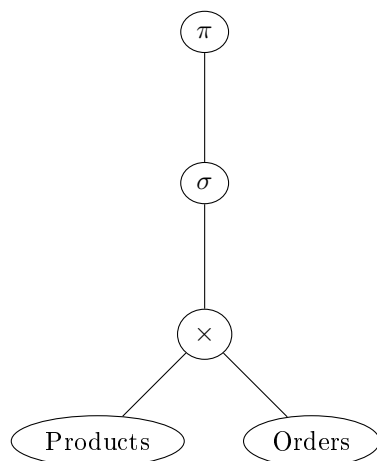
It is also possible to

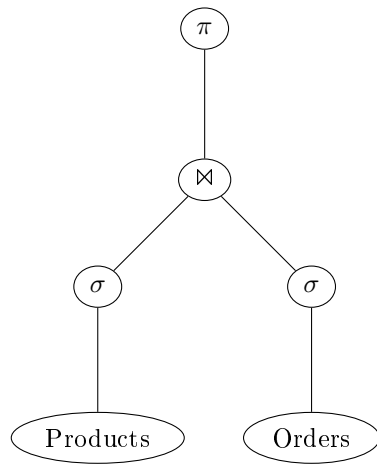
a) have SQL in L^AT_EX:

```

1  SELECT DISTINCT DESCR
2  FROM Products P, Orders O
3  WHERE O.PId = .PId
4  AND CItY = :c AND Weight > :w
5  AND Amount > :a
```

b) Operator Trees using TikZ:





Task 5

If you need more information regarding \LaTeX , visit one of the following places:

- <https://en.wikibooks.org/wiki/LaTeX>
- <https://www.overleaf.com/learn>

We recommend using Overleaf to collaboratively edit \LaTeX documents.