



**Kampus
Merdeka**
INDONESIA JAYA



Translating ERD Into Relational Model

Bachelor of Information Systems

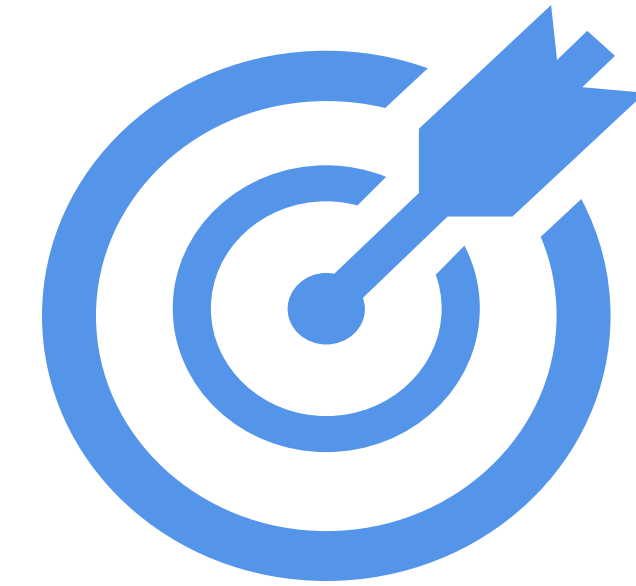


INTRODUCTION TO
DATABASE AND INFORMATION SYSTEM



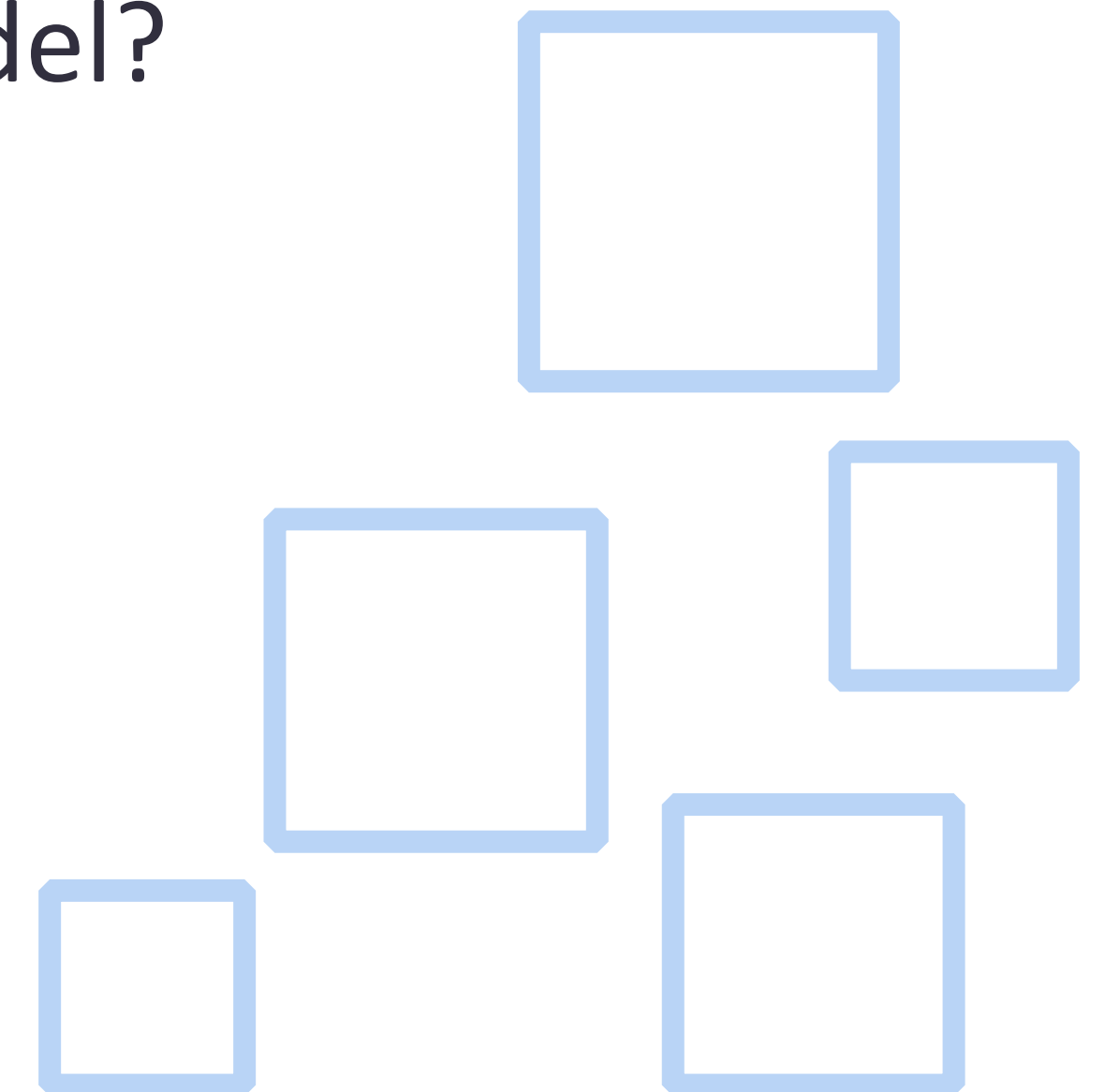
Learning Objective(s)

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This material should address the following question(s).

- What are the steps to translate ERD into relational data model?

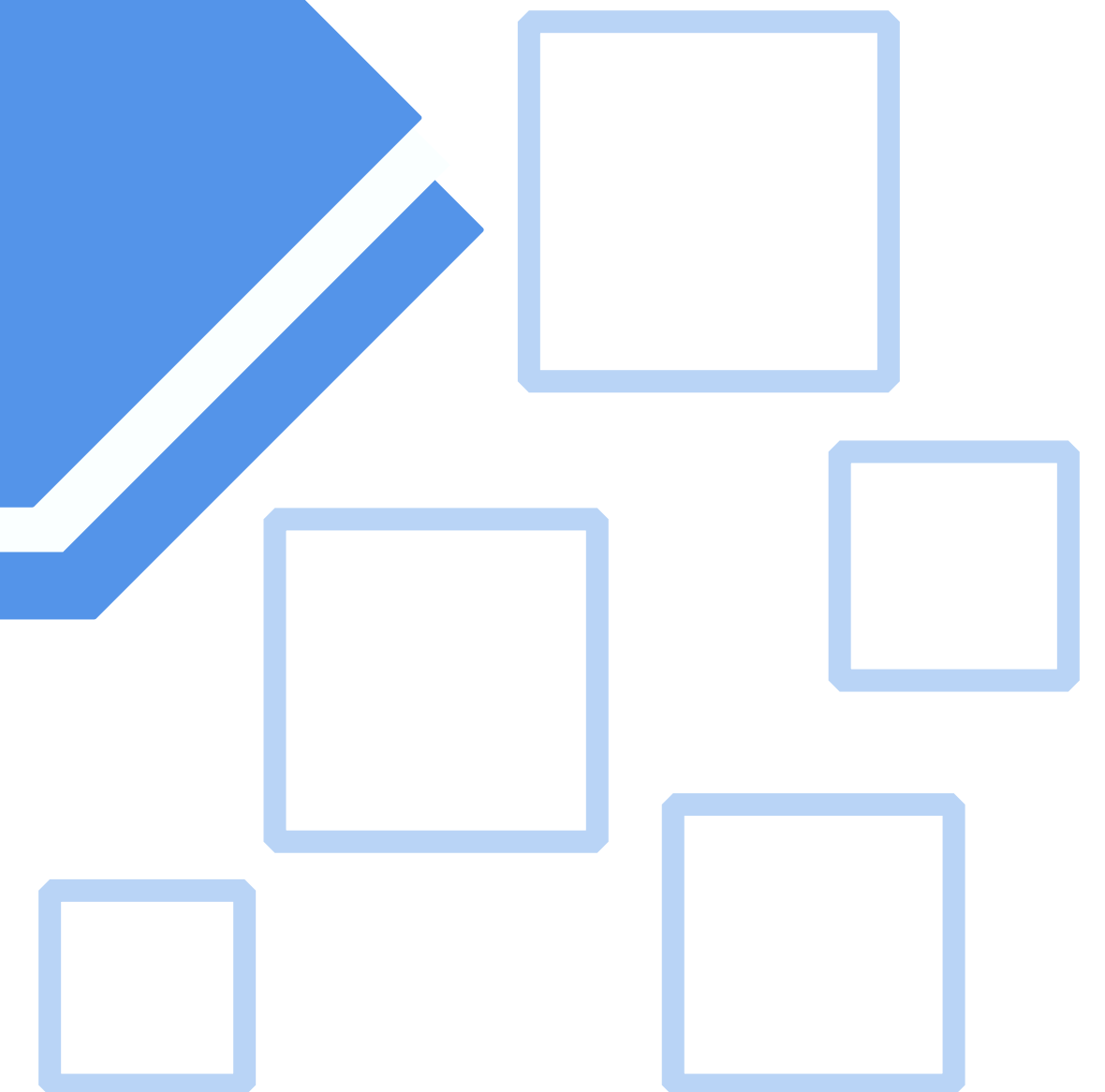


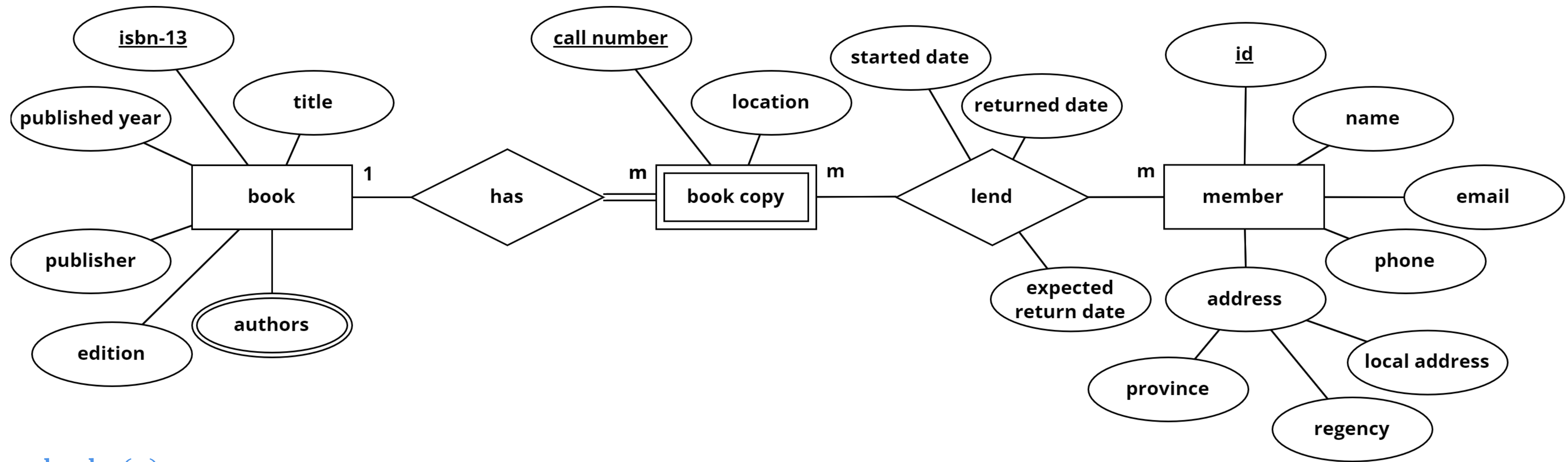
Translation Steps



Step 1. Every entity turns into a relation

Every entity, either strong or weak, turns into a relation.

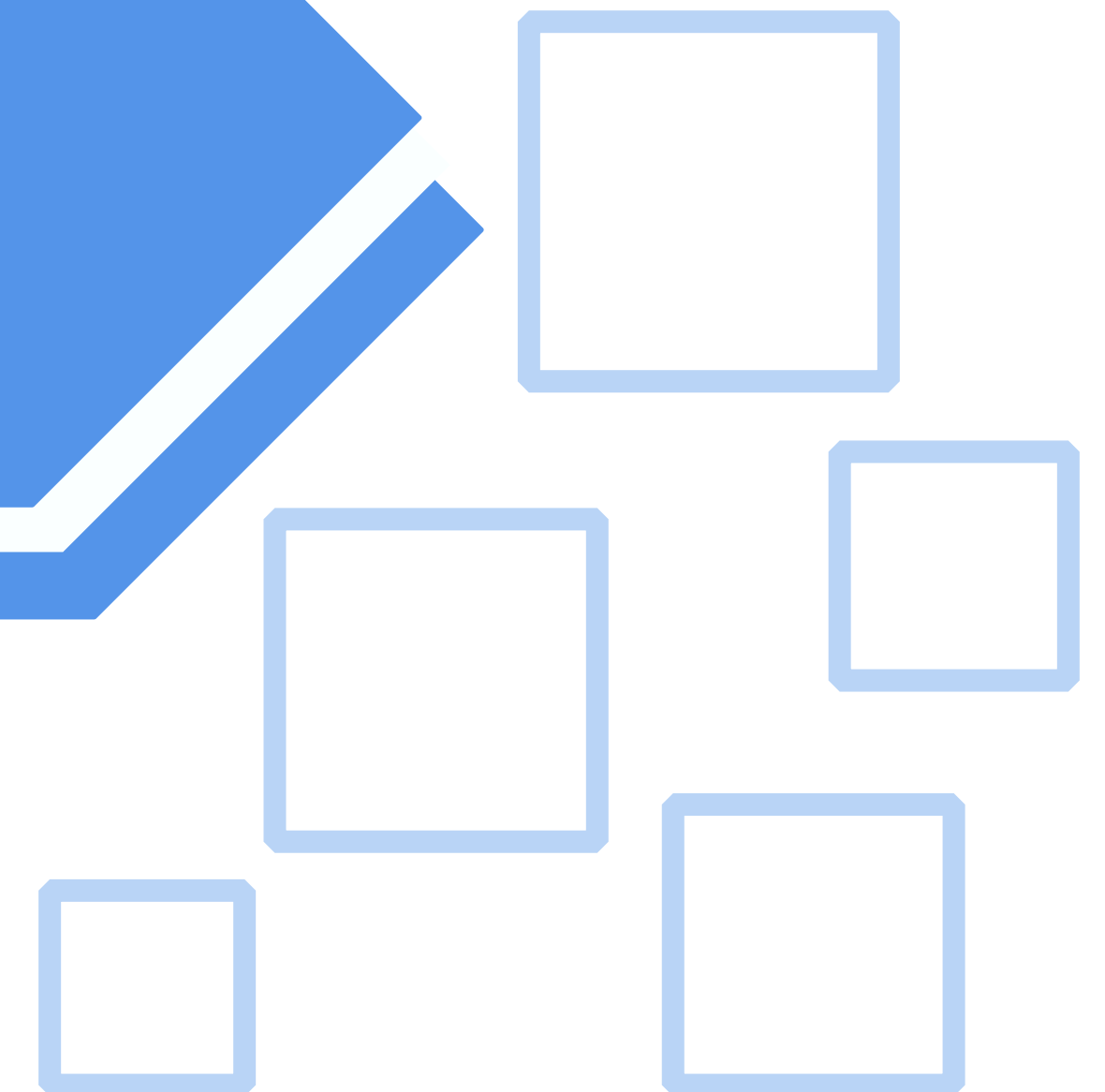


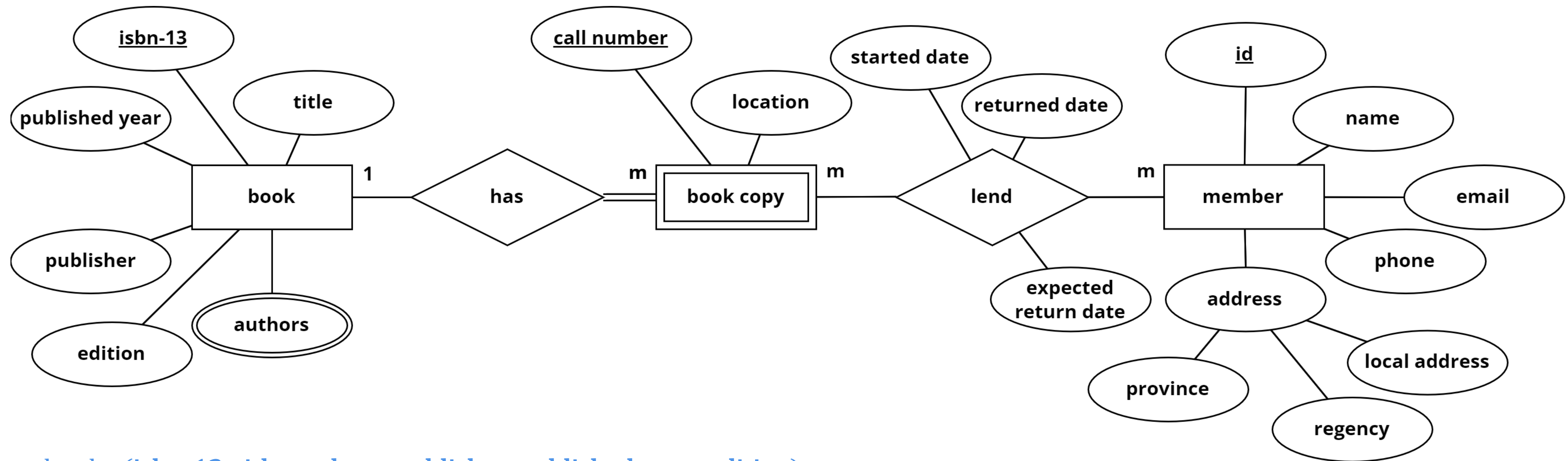


books (...)
members (...)
bookcopies (...)

Step 2. Attributes turn into attributes

Ordinary and multivalued attributes turn into relation's attributes. Whereas composite attributes are omitted and their subattributes turn into relation's attributes.

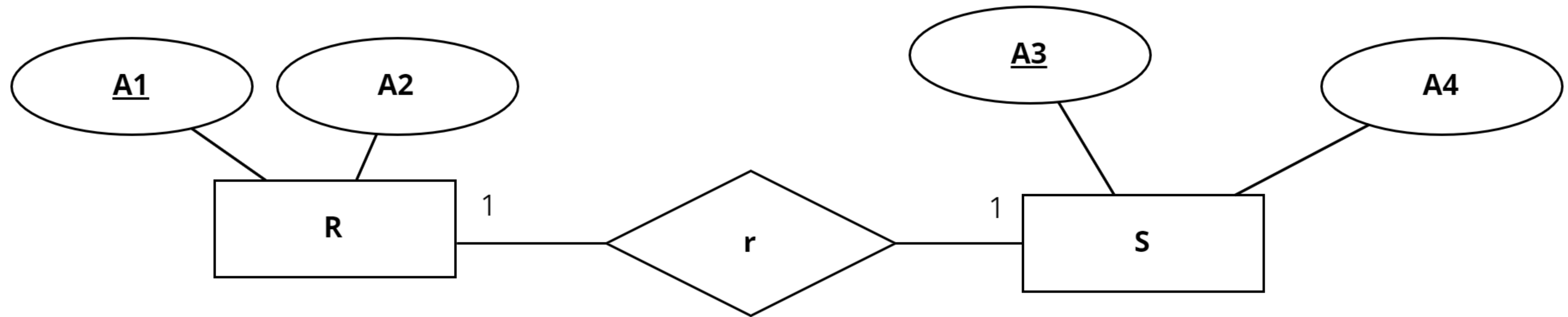




books (isbn_13, title, authors, publisher, published_year, edition)
 members (id, name, email, phone, province, regency, local_address)
 bookcopies (call number, location)

★ Step 3a. Foreign key in a 1:1 relationship

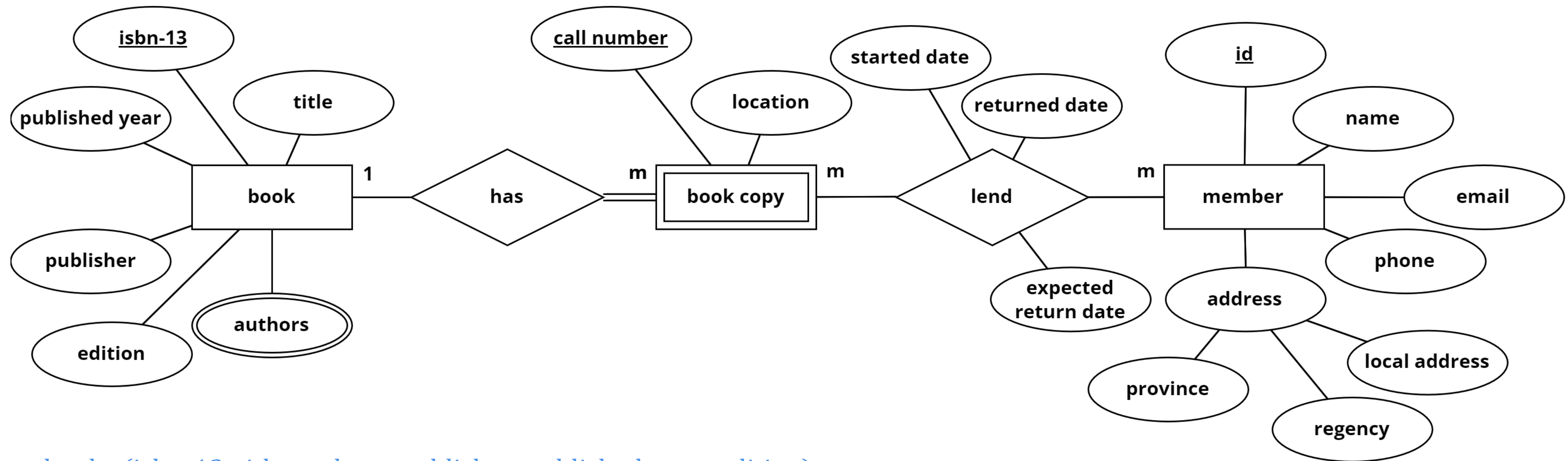
In the case of R and S are in a 1:1 relationship, then $PK(R)$ is copied into S as a foreign key and vice versa.



R (A₁, A₂, A₃)
S (A₃, A₄, A₁)

★ Step 3b. Foreign key in a 1:M relationship

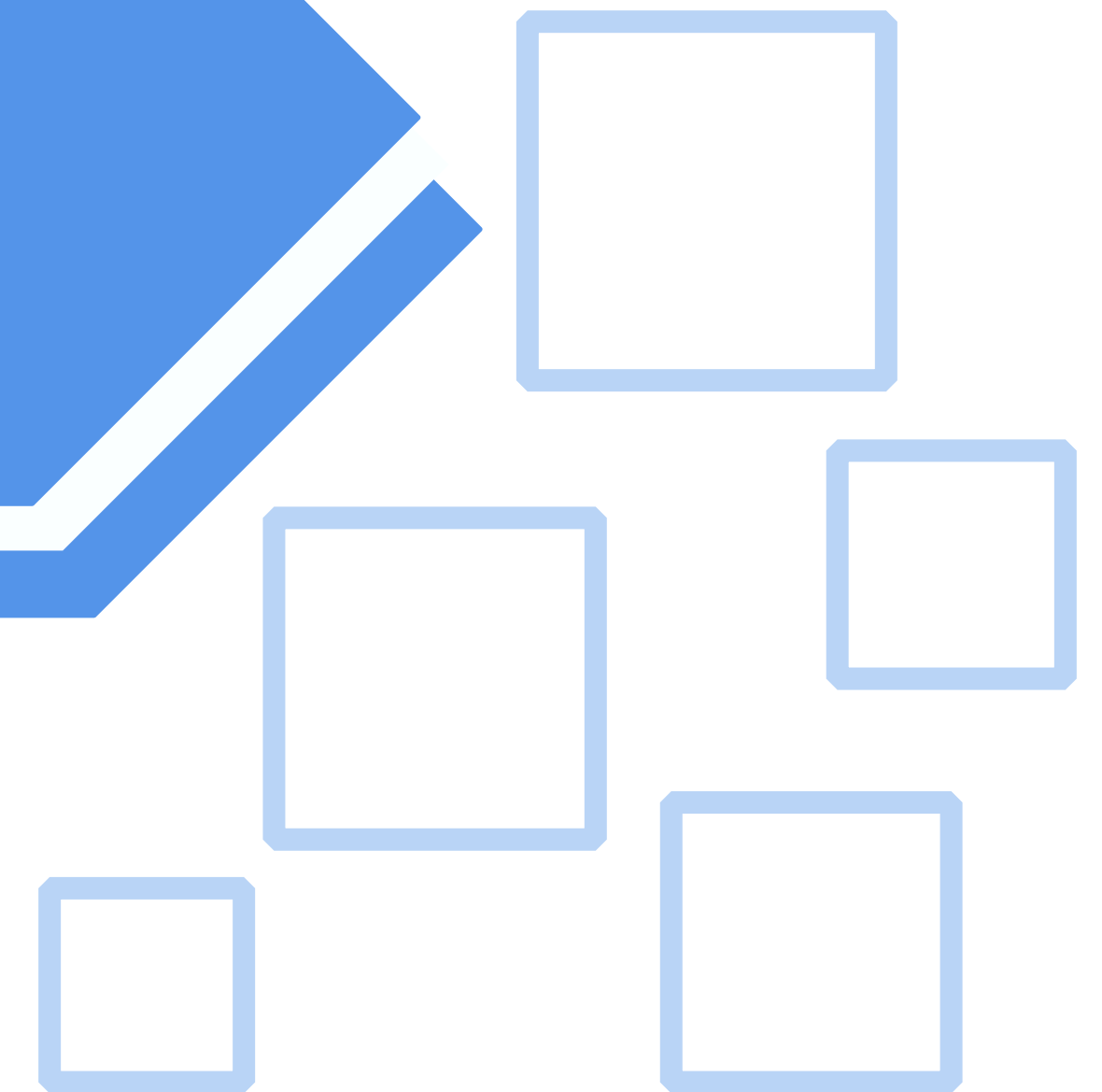
In the case of R and S are in a 1:M relationship, then PK(R) is copied into S as a foreign key but **not** vice versa.

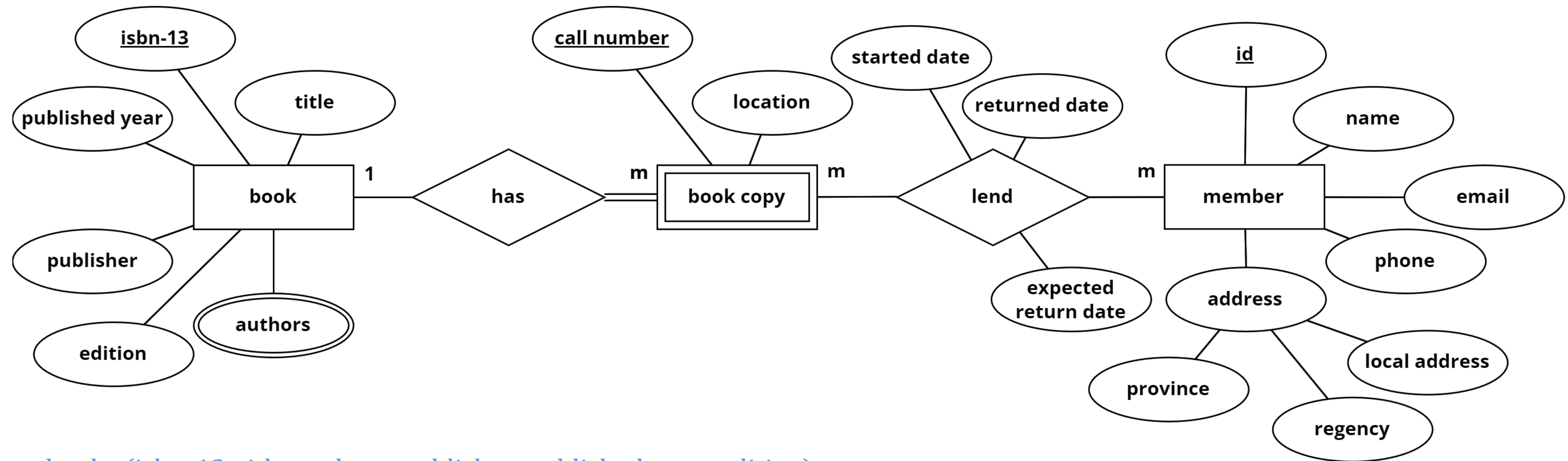


books (isbn_13, title, authors, publisher, published_year, edition)
 members (id, name, email, phone, province, regency, local_address)
 bookcopies (call number, isbn_13, location)

Step 3c. A M:N relationship into a relation

In the case of R and S are in an M:N relationship, then RS relation emerges with both PK(R) and PK(S) are copied as foreign keys in RS.





books (isbn_13, title, authors, publisher, published_year, edition)

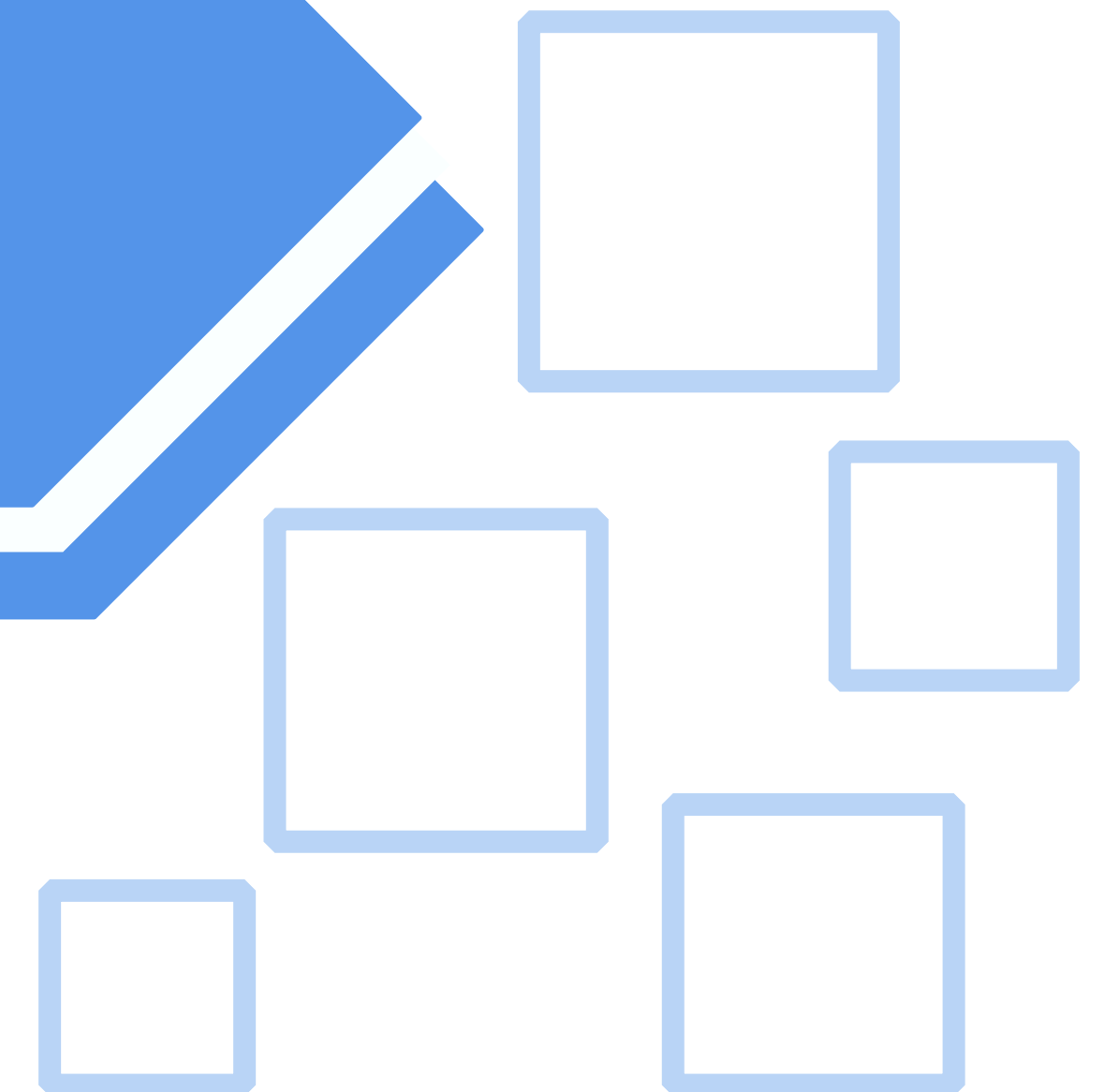
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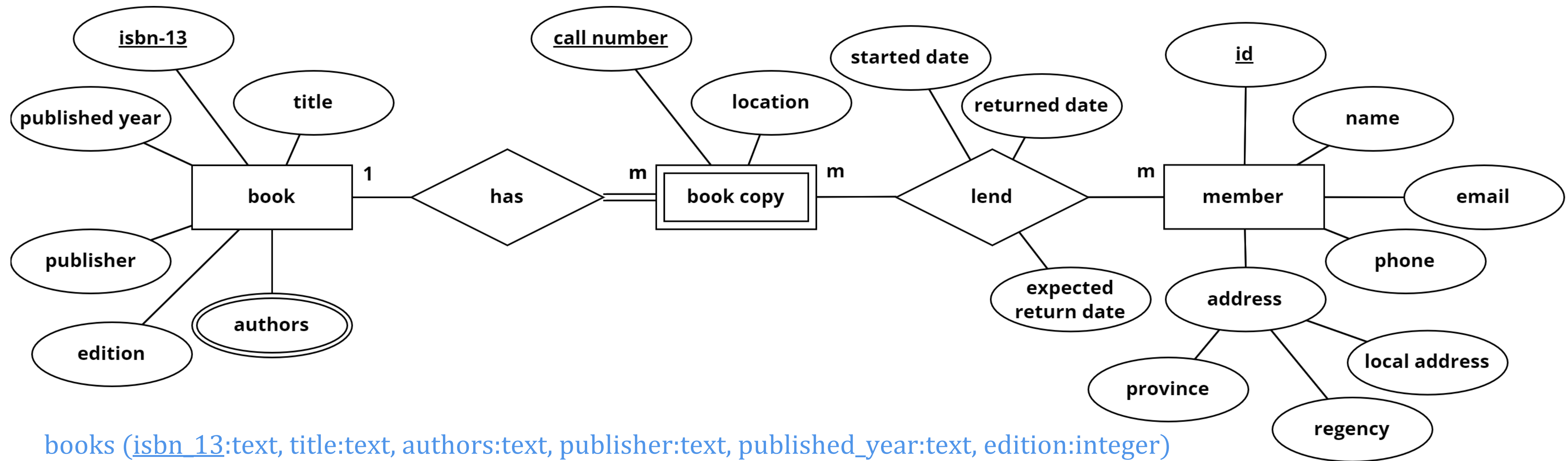
bookcopies (call number, isbn_13, location)

bookcopy_member (call number, id, started date, returned_date, expected_return_date)

Step 4. Complete attributes with types

Whenever possible, inform the readers about the type of every attribute.





books (isbn_13:text, title:text, authors:text, publisher:text, published_year:text, edition:integer)

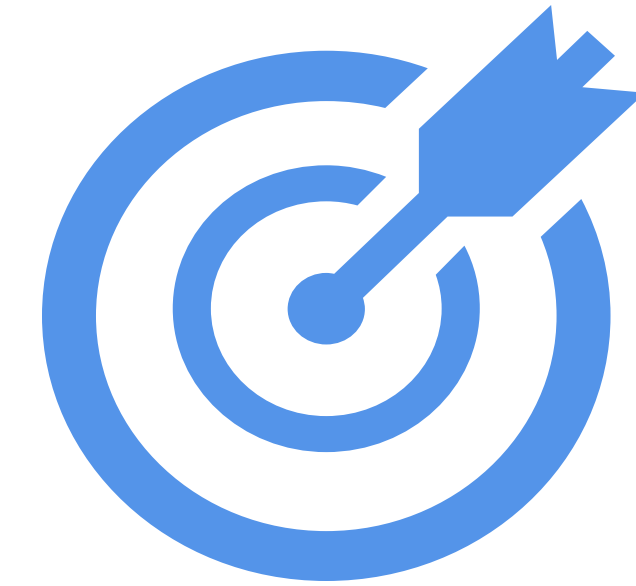
members (id:integer, name:text, email:text, phone:text, province:text, regency:text, local_address:text)

bookcopies (call number:text, isbn_13:text, location:text)

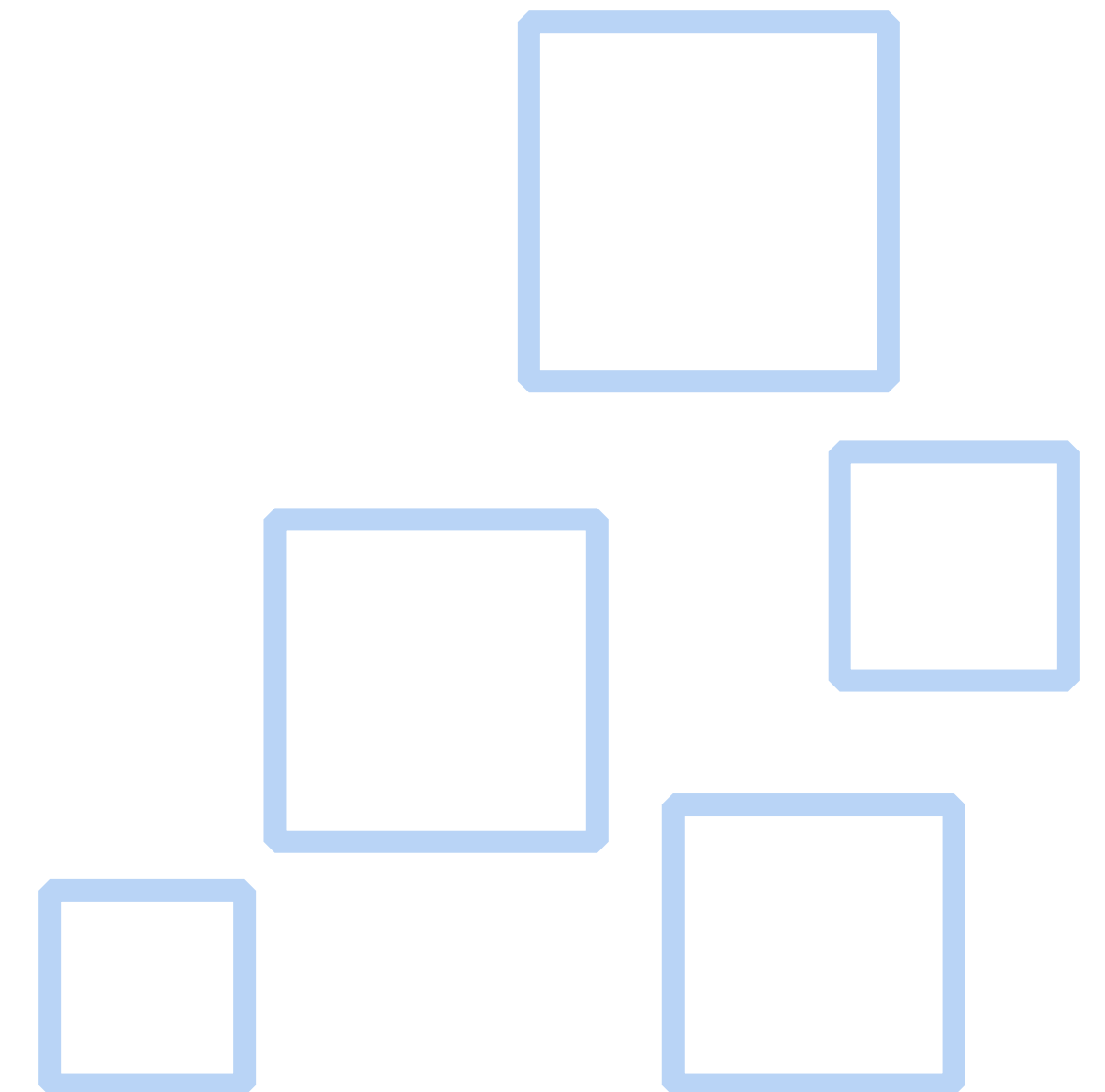
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Conclusion

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- ✓ There are at least four steps to translate an ERD into a relational model.
- ✓ Entities, attributes, and relationships are treated gradually.

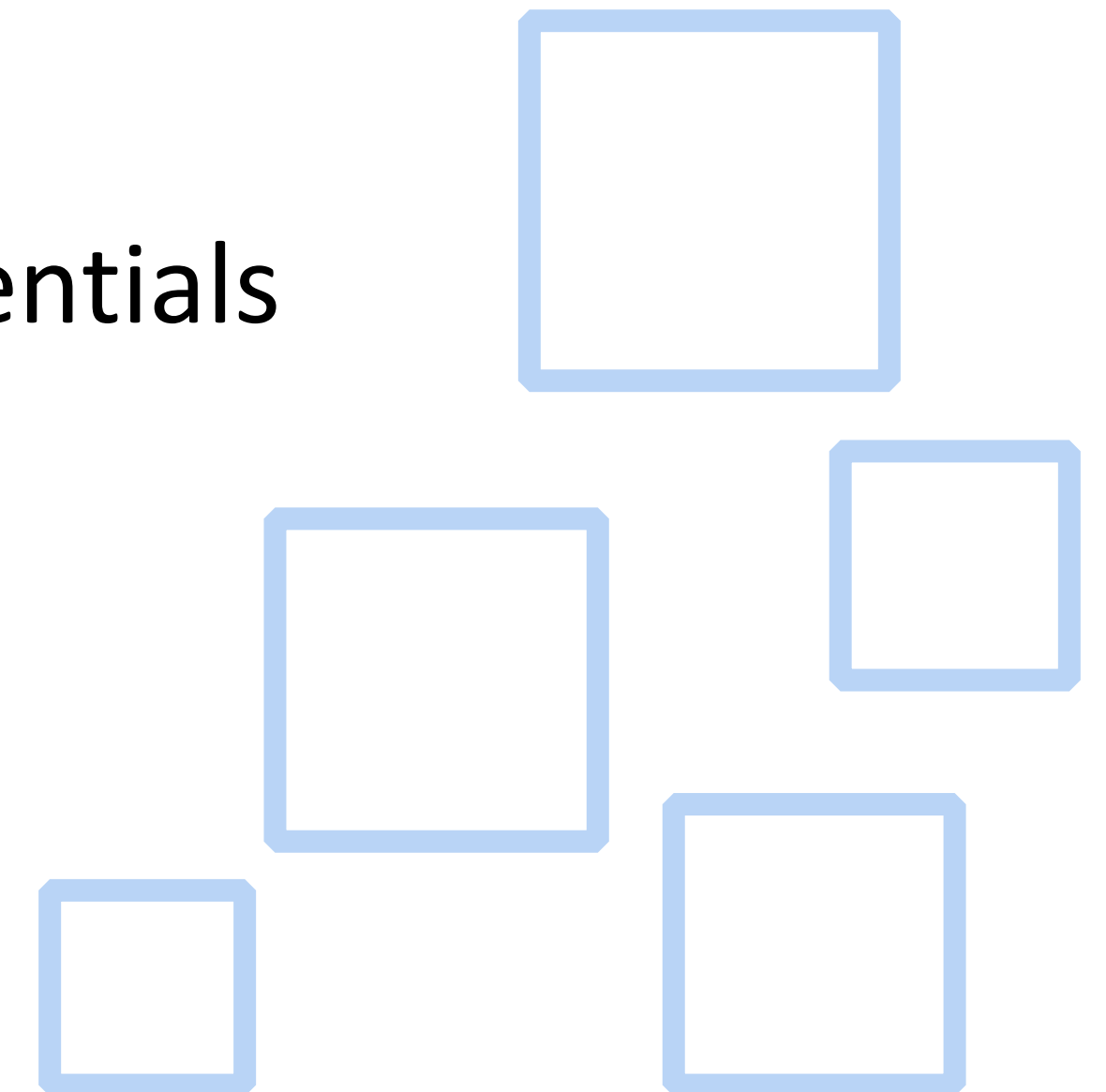


References

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- A. Silberschatz, et. al., Database System Concepts.
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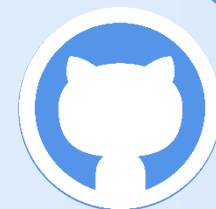


Course



Mario E. S. Simaremare

@simaremare



Lecturer



Samuel I. G. Situmeang

@exemuel

