Entities and Their Existence
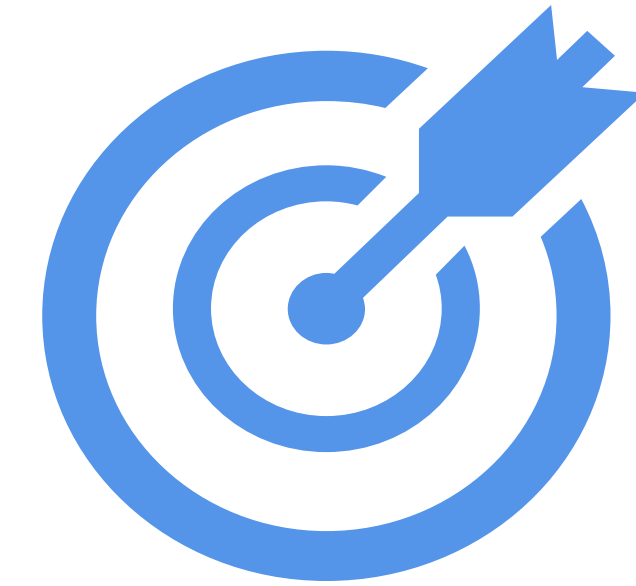
Bachelor of Information Systems

INTRODUCTION TO
DATABASE AND INFORMATION SYSTEM

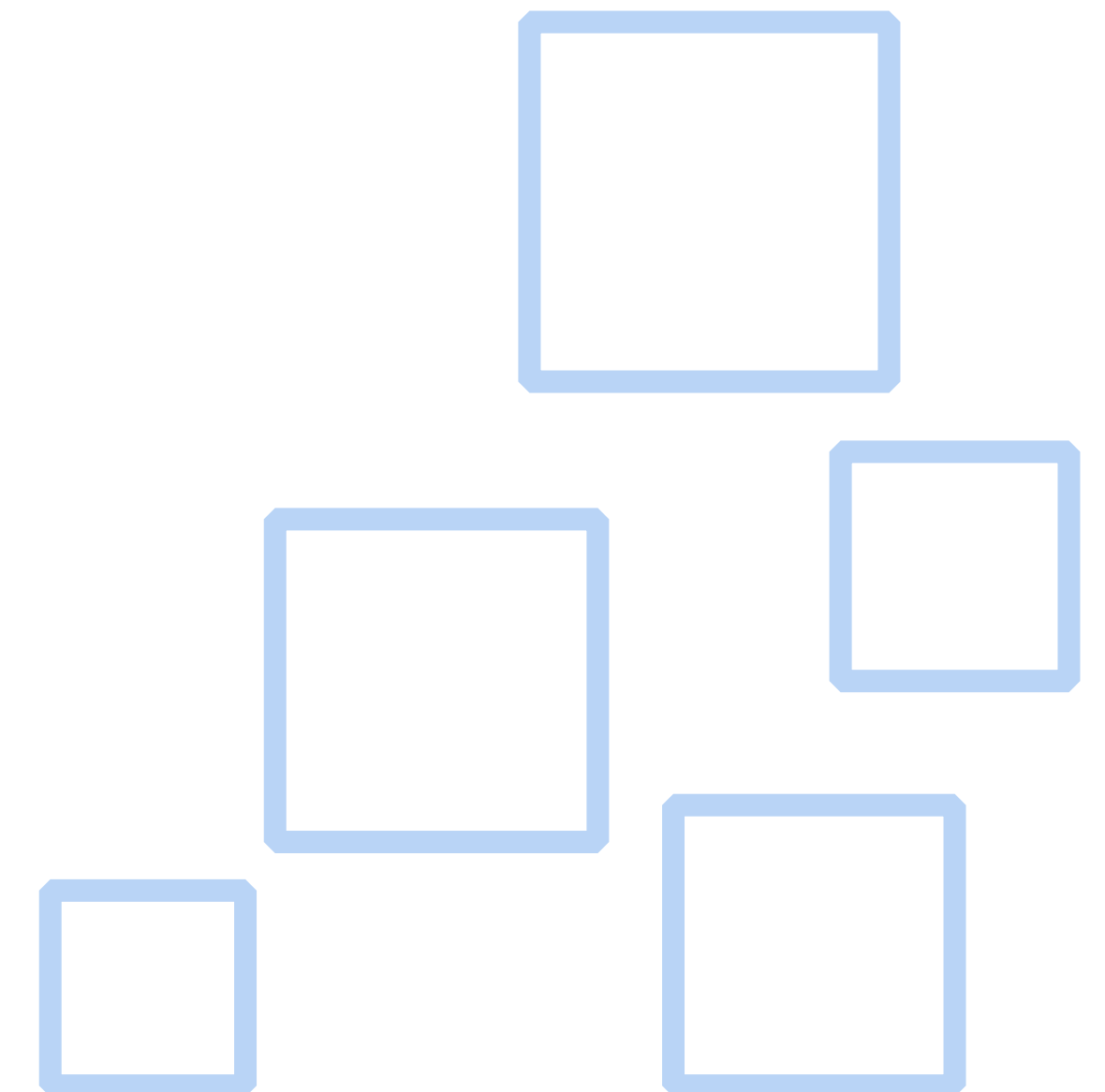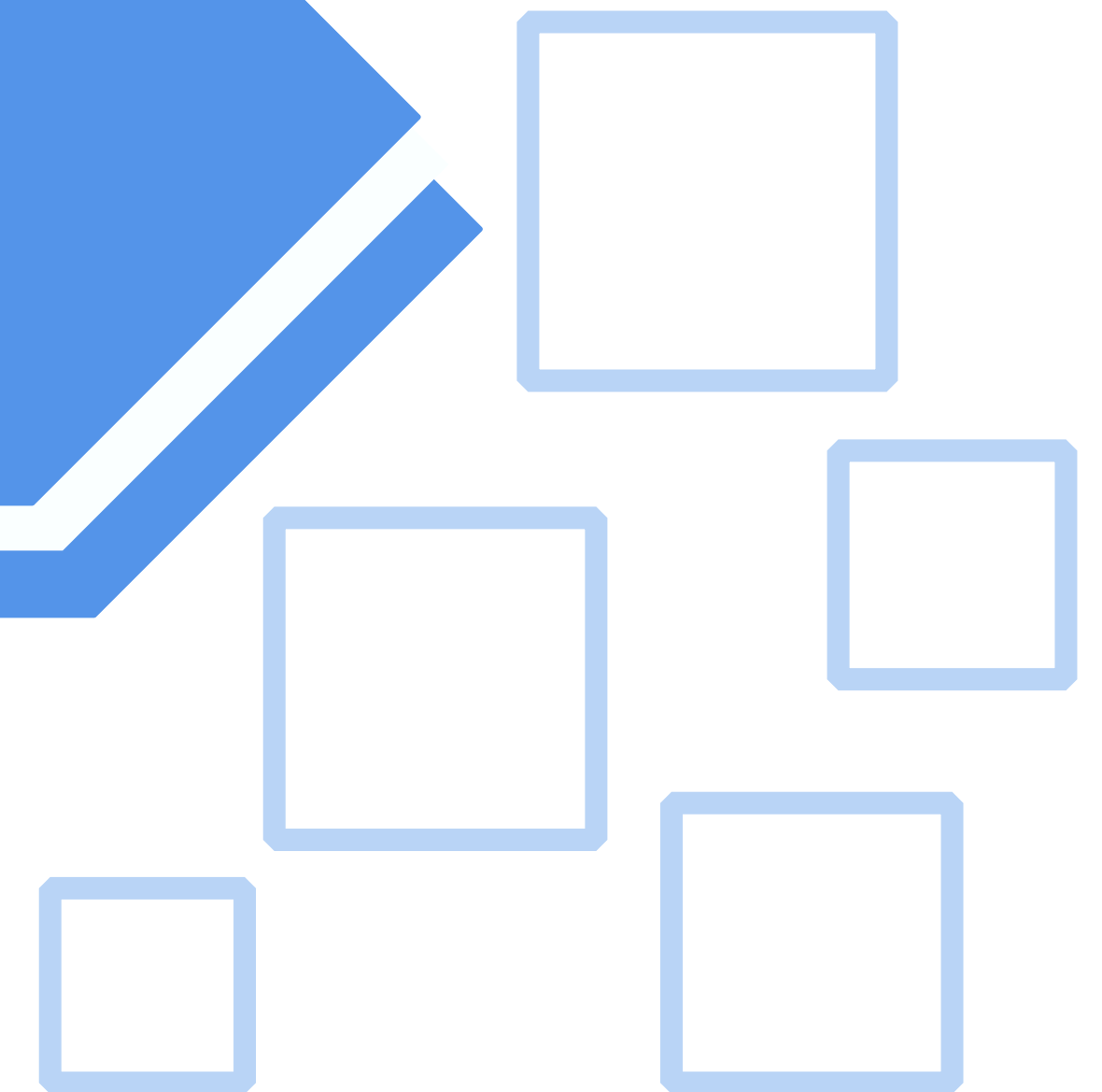# Learning Objective(s)

This material should address the following question(s).

? What is an entity?

? Can an entity exist without the others?

✦ An entity

An entity is an object, or a thing in the real world.

It applies to either physical or conceptual.

Case Study
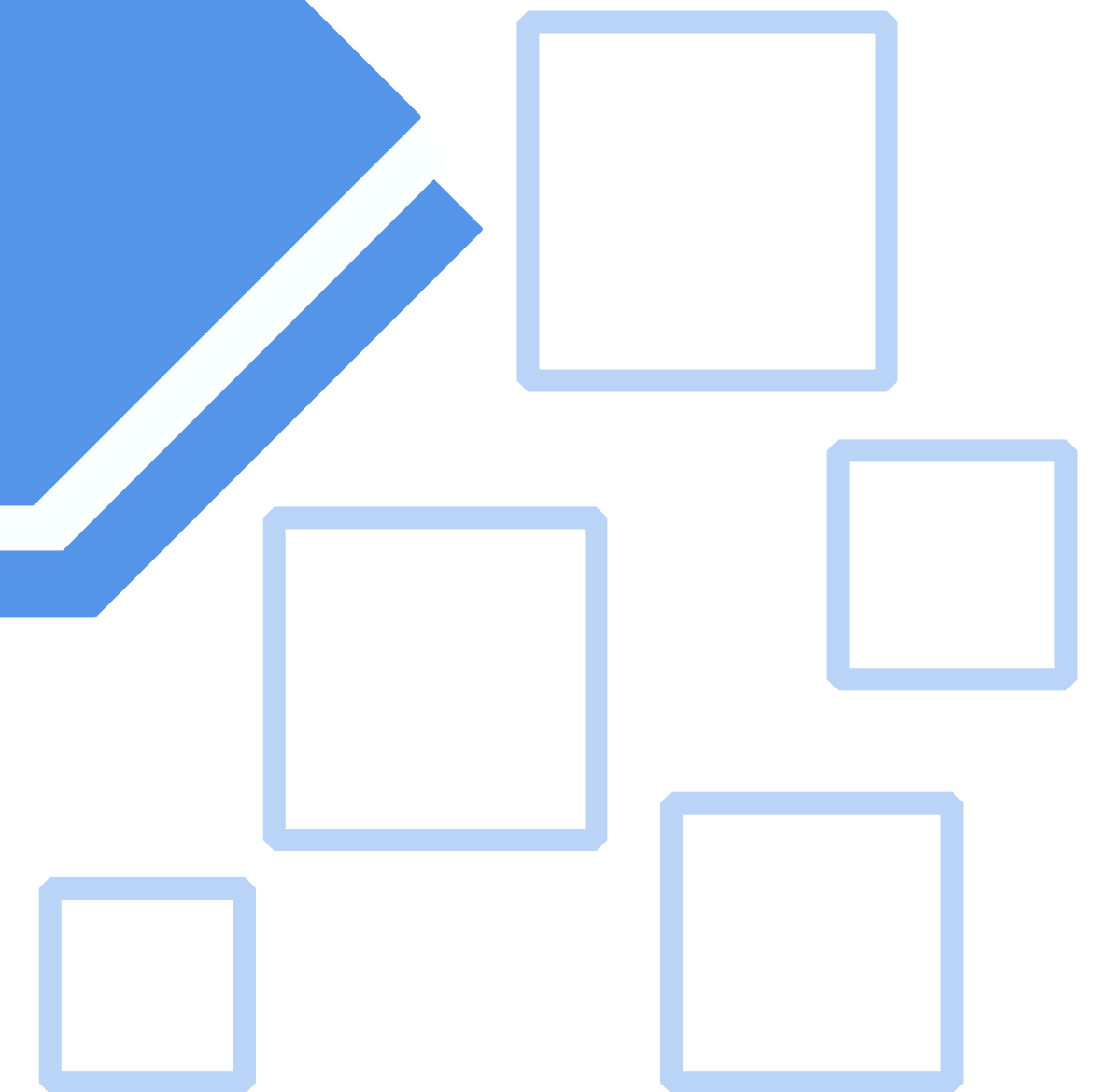
Inside the campus library.

Case Study

Inside the campus library.

- A library has a multitude copies of books, articles, etc.
  - New collections come every year.
- Anyone may come and enjoy the collections.
  - Library members can lend books for a particular period of time.

- There are some objects (**entities**) mentioned:
  - Books, articles, and others.
  - Library visitors and members.
  - Book lending for a limited time.

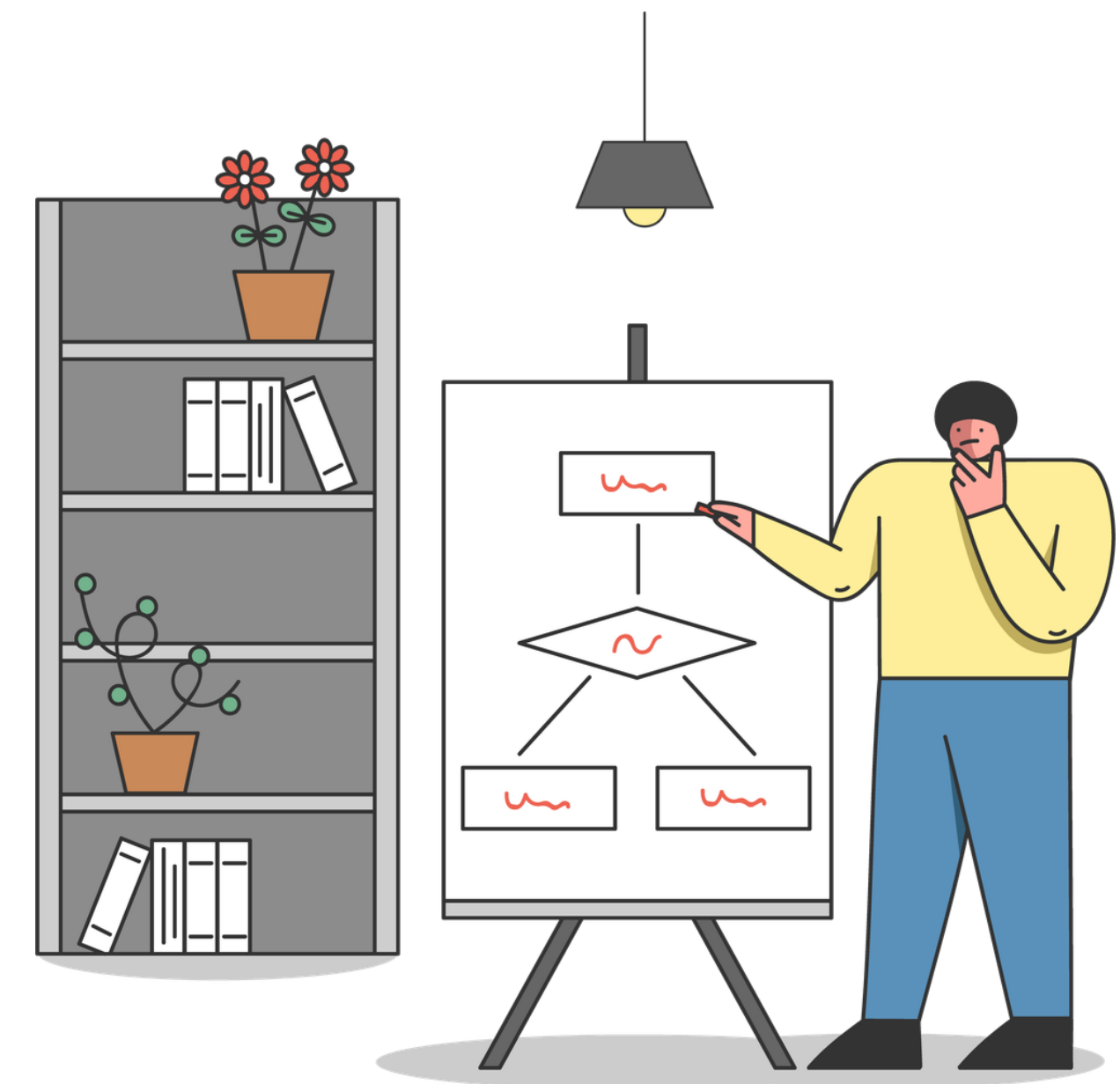- Some safe assumptions:
  - Book copies,
  - etc.

INTRODUCTION TO
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Entity relationships

An entity may have a relationship with one or more entities including itself.

Entity Relationships

- The library may have multiple **copies** of a **book**. or

- A **book** is printed into a number of **copies** and stored in the library.

WILEY

The Data Warehouse Toolkit

KIMBALL GROUP

The Definitive Guide
to Dimensional
Modeling

Third Edition

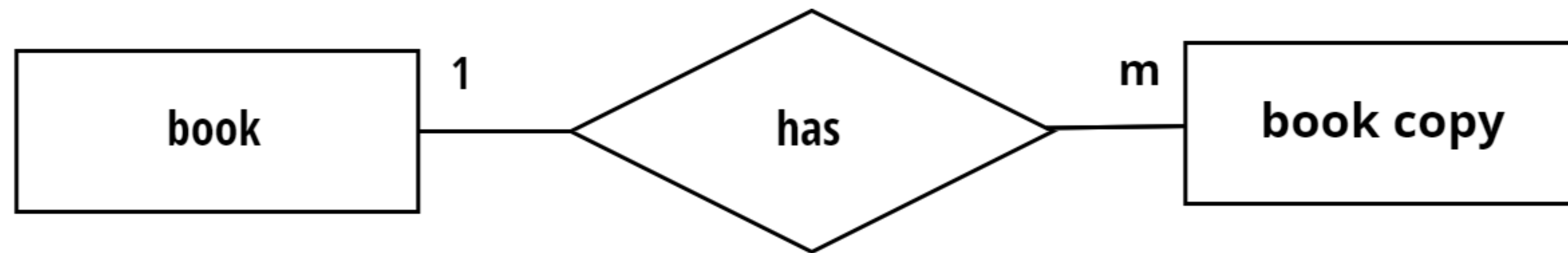Ralph Kimball
Margy Ross

Three copies of The Data Warehouse Toolkit:
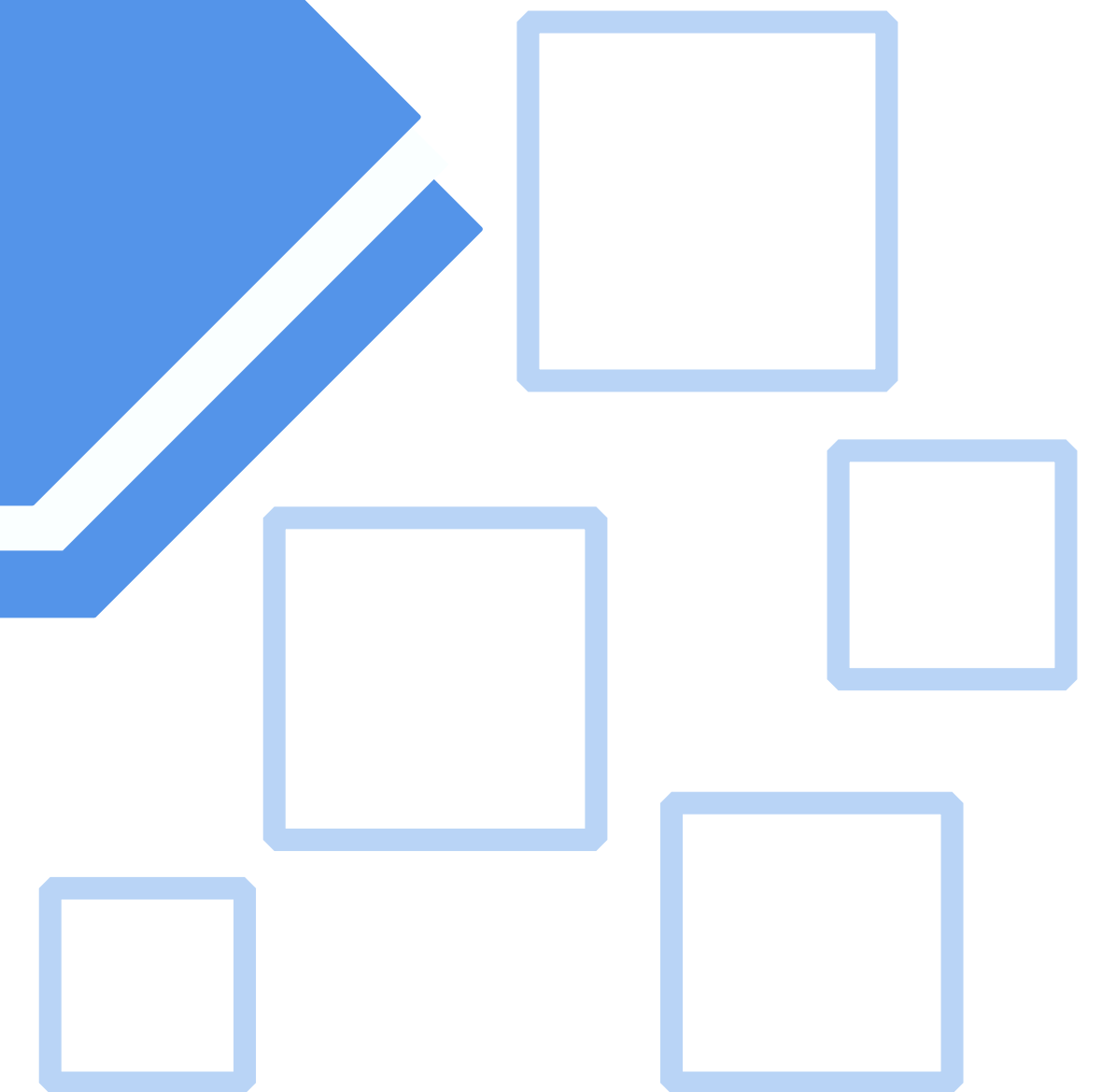The Definitive Guide to Dimensional Modeling,
3rd Edition

Book - Book Copy Relationship

A book may have multiple copies.
In other words, it is one-to-many cardinality.

The existence of an entity

An entity is called as a **strong entity** when its existence is fully **independent** from the others, otherwise it is a **weak entity**.

Entity Existence

- The library may have multiple **copies** of a **book**. or

- A **book** is printed into a number of **copies** and stored in the library.

Is it possible to have a **book** without any **copies**?

Entity Existence

- The library may have multiple **copies** of a **book**. or

- A **book** is printed into a number of **copies** and stored in the library.

Is it possible to have a **book** without its **copies**?

A book is a conceptual object.
Its existence is fully independent from its copies.

The book entity is a **strong** entity.

Entity Existence

- The library may have multiple **copies** of a **book**. or

- A **book** is printed into a number of **copies** and stored in the library.

Is it possible to have a **copy** without the **book**?

Entity Existence

- The library may have multiple **copies** of a **book**. or

- A **book** is printed into a number of **copies** and stored in the library.

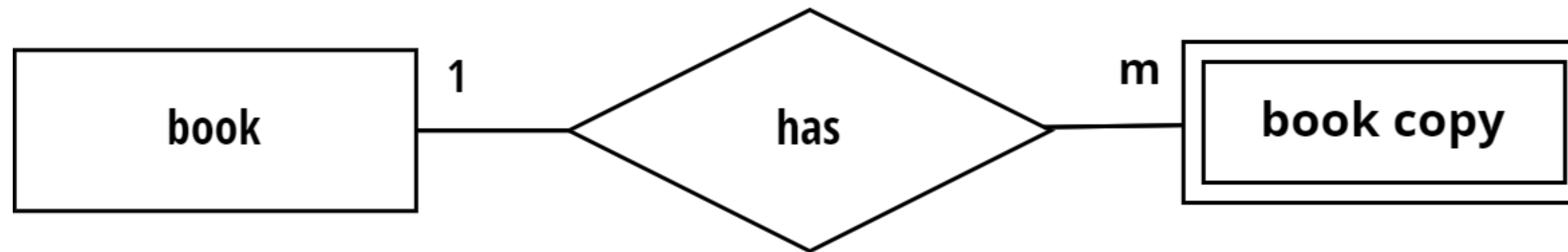Is it possible to have a **copy** without the **book**?

A copy is a physical construct of a book. Its existence is **dependent** to the book.

The book copy is a **weak** entity.

Book - Book Copy Relationship

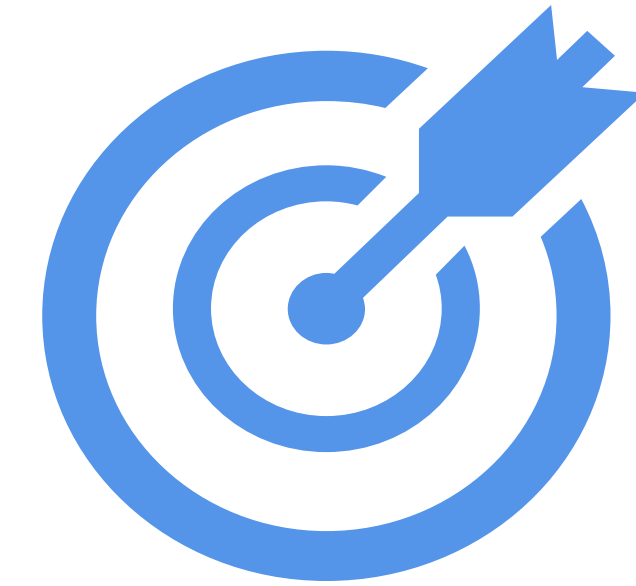A strong entity is denoted with a single line box.
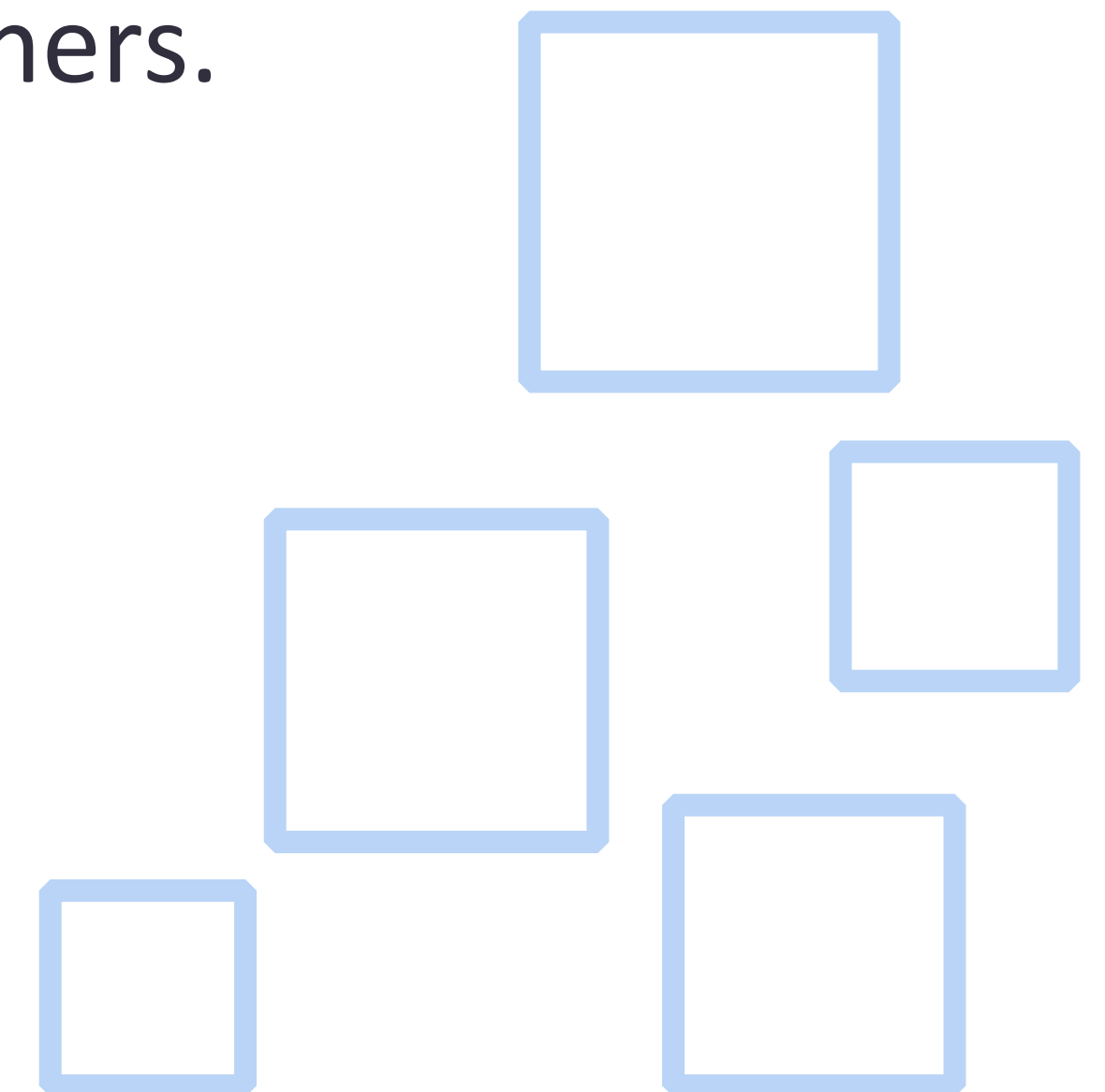
A weak entity is denoted with a double line box.

book — 1 — has — m — book copy

The existence of a book is fully independent from its copies.

Conclusion

✅ An entity represents an object or a thing in the real world.

✅ An entity existence may dependent or independent from others.

References

- R, Elmasri, et. al., Fundamentals of Database Systems.
- A. Silberschatz, et. al., Database System Concepts.
- R. K. Rainer, et. al., Introduction to Information Systems.
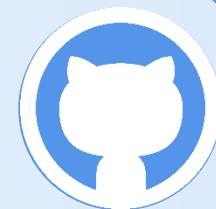- G. M. Marakas et. al., Introduction to Information Systems: Essentials for The e-Business Enterprise.

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