



**Kampus
Merdeka**
INDONESIA JAYA



Structured Query Language (SQL)

Bachelor of Information Systems

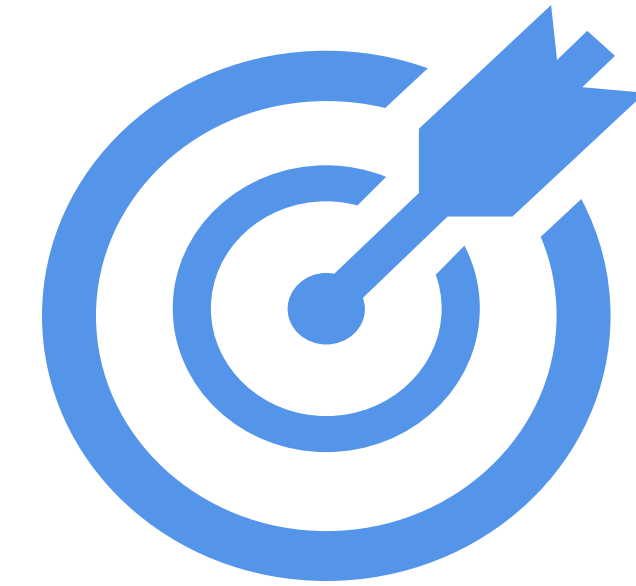


INTRODUCTION TO
DATABASE AND INFORMATION SYSTEM



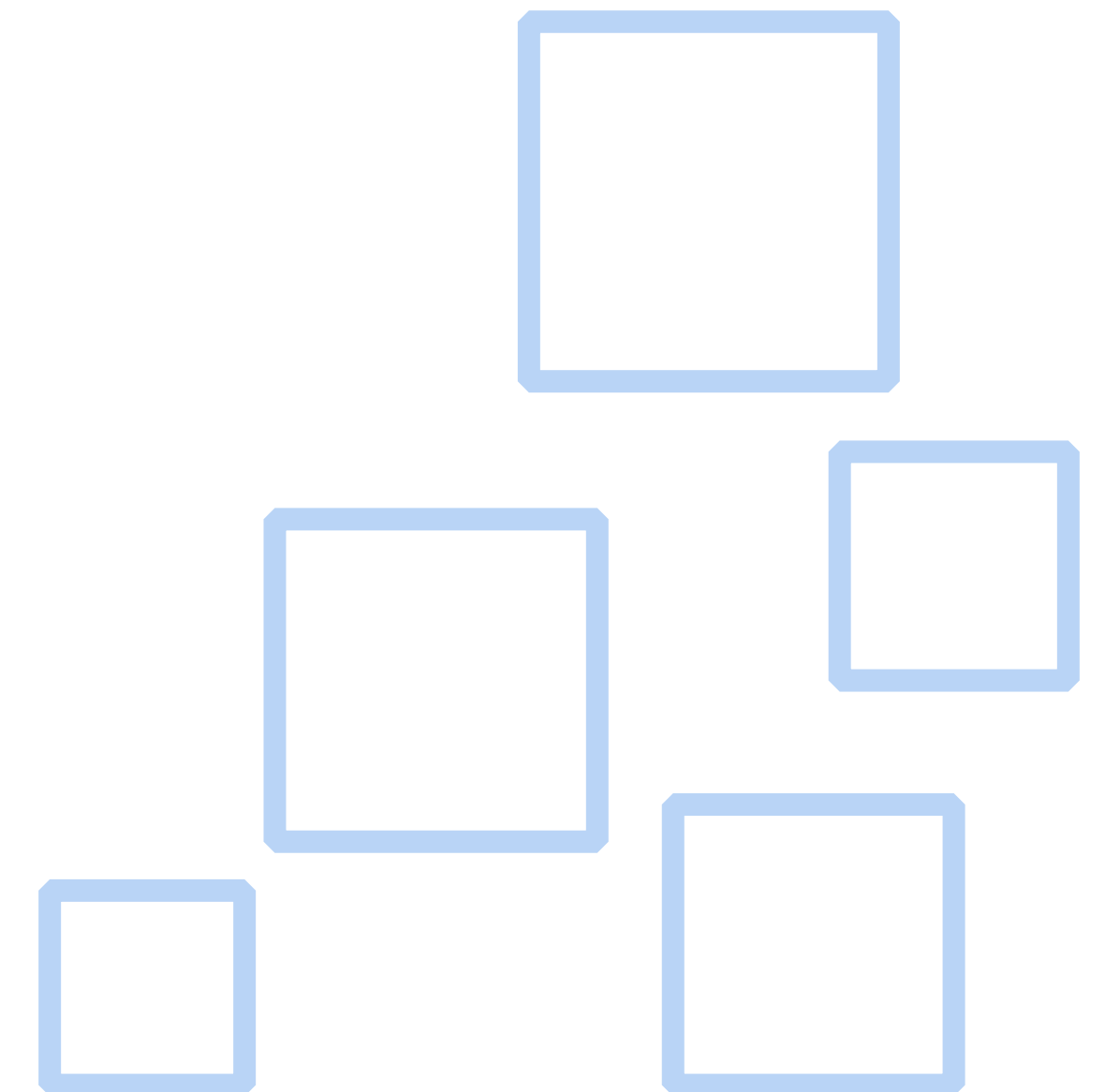
Learning Objective(s)

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This material should address the following question(s).

- ? How do we communicate with relational databases?
- ? What are the SQL language elements?
- ? What are the SQL statements categories?
- ? What are the SQL syntax rules?



Question



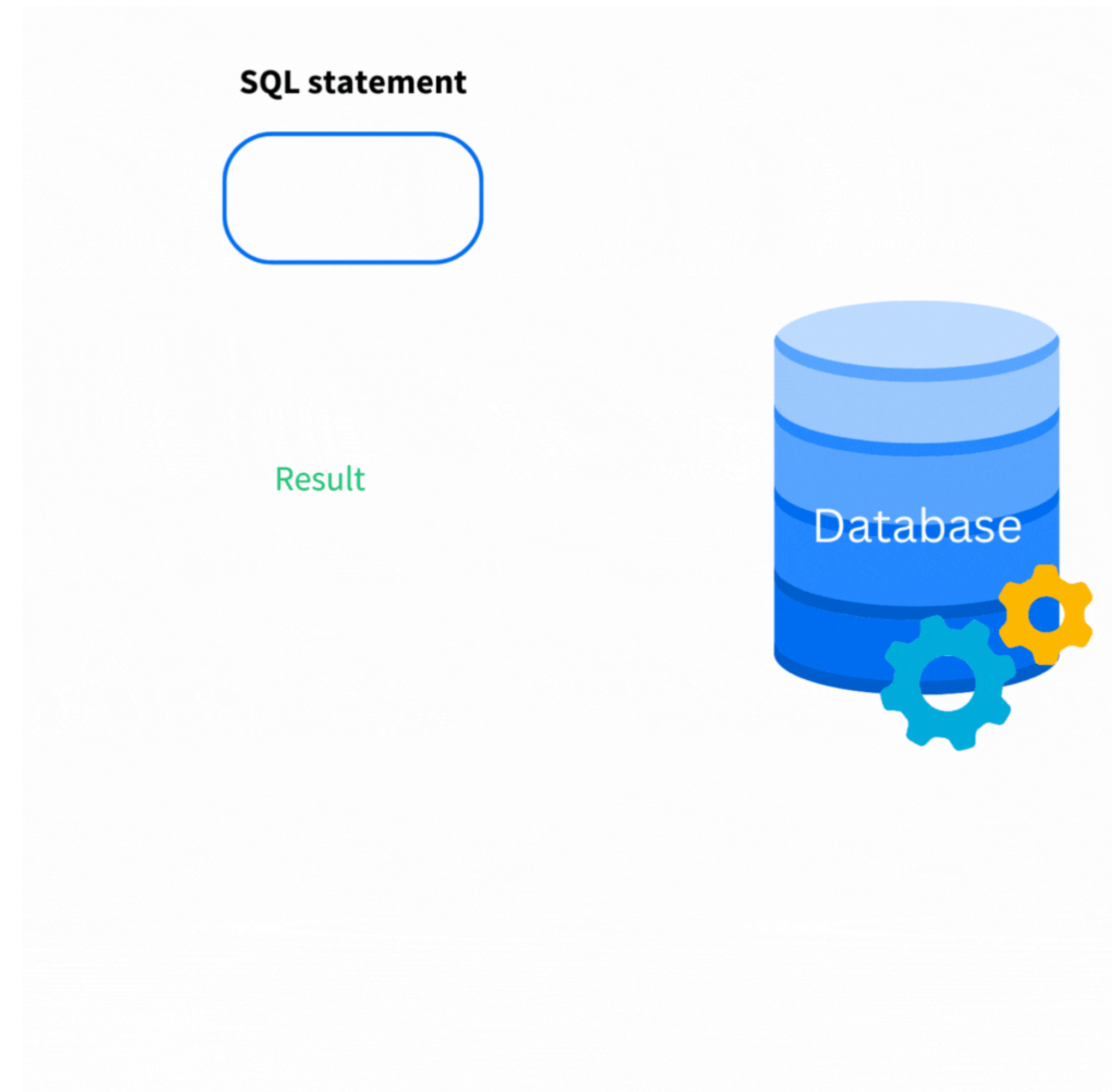
How do we **communicates** with relational databases?

First thing first

Query languages provide a standardized way for users to communicate their information needs to the database system.

SQL

- **S**tructured **Q**uery **L**anguage (**SQL**) is a standard programming language for accessing, manipulating, and controlling data stored in a relational database.
- SQL became a standard of the ANSI in 1986, and of the ISO in 1987.



Question



What are the SQL language elements?

Language Elements

- SQL is a **declarative language**.
- SQL **key elements**:
 - statement, query, keywords, identifiers, clauses, predicates, and expressions.
- In essence, **all queries are statements**, but **not all statements are queries**.

- Server may modify popular use, such as changing data, UPDATE, DELETE, WHERE, and/or FROM the database structure.

The diagram illustrates the components of a query. It features three main elements: a blue dashed box labeled "STATEMENT (QUERY)", a purple dashed box labeled "KEYWORD", and an orange dashed box labeled "IDENTIFIER".

```
SELECT title, published_year
FROM book
WHERE published_year = 2000;
```

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Question



What are the SQL statements categories?

SQL

- SQL statements are generally considered to be either **Data Manipulation Language** (DML) statements or **Data Definition Language** (DDL) statements

DDL	DML
It is used to define the database conceptual schema.	It is used used for specifying database retrievals and updates.
The keywords: CREATE, ALTER, DROP, etc.	The keywords: SELECT, INSERT, UPDATE, DELETE, MERGE, etc.

Question



What are the SQL **syntax** rules?

SQL Syntax Rules

(1/4)

- SQL statements always start with the keywords.
- SQL keywords must be written in uppercase.
- SQL statements must end with a semicolon (;).
- Numeric values should not be enclosed in quotes.

Example:

```
SELECT title, published_year  
FROM book  
WHERE published_year = 2000;
```

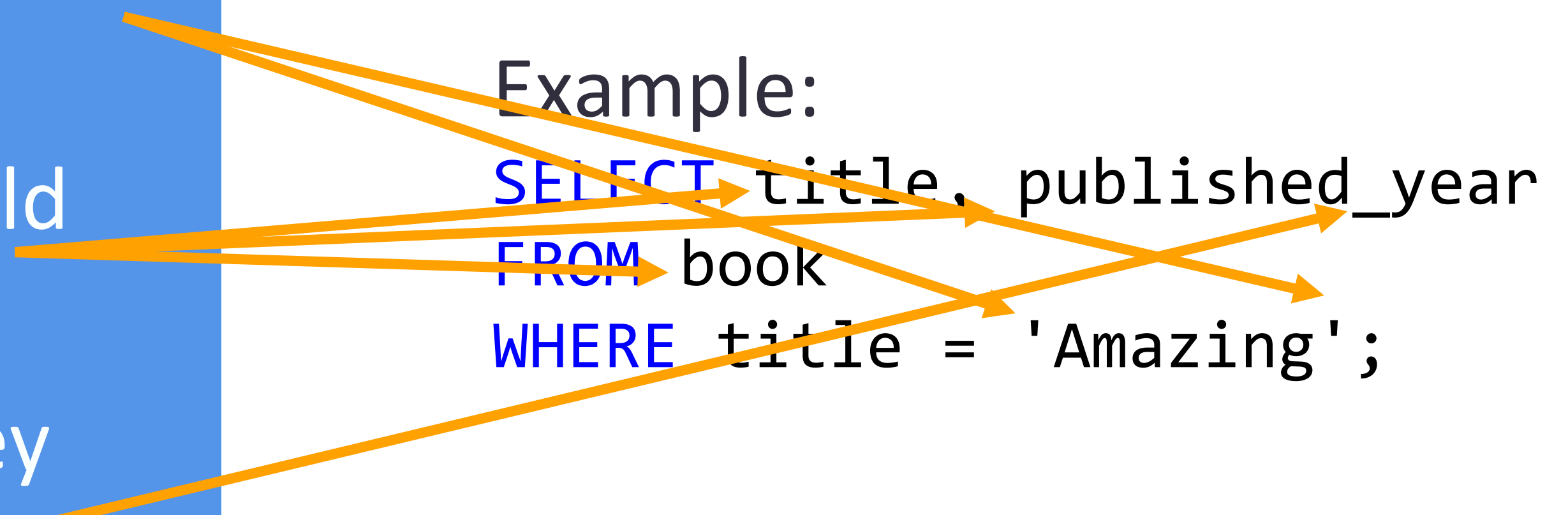
SQL Syntax Rules

(2/4)

- String values must be enclosed in single quotes (' ').
- Table and column names should be written in lowercase.
- If multiple words are used, they should be separated by an underscore (_) or camelCase.
- SQL is not case-sensitive, which means the **select keyword** is the same as the **SELECT**.

Example:

```
SELECT title, published_year  
FROM book  
WHERE title = 'Amazing';
```



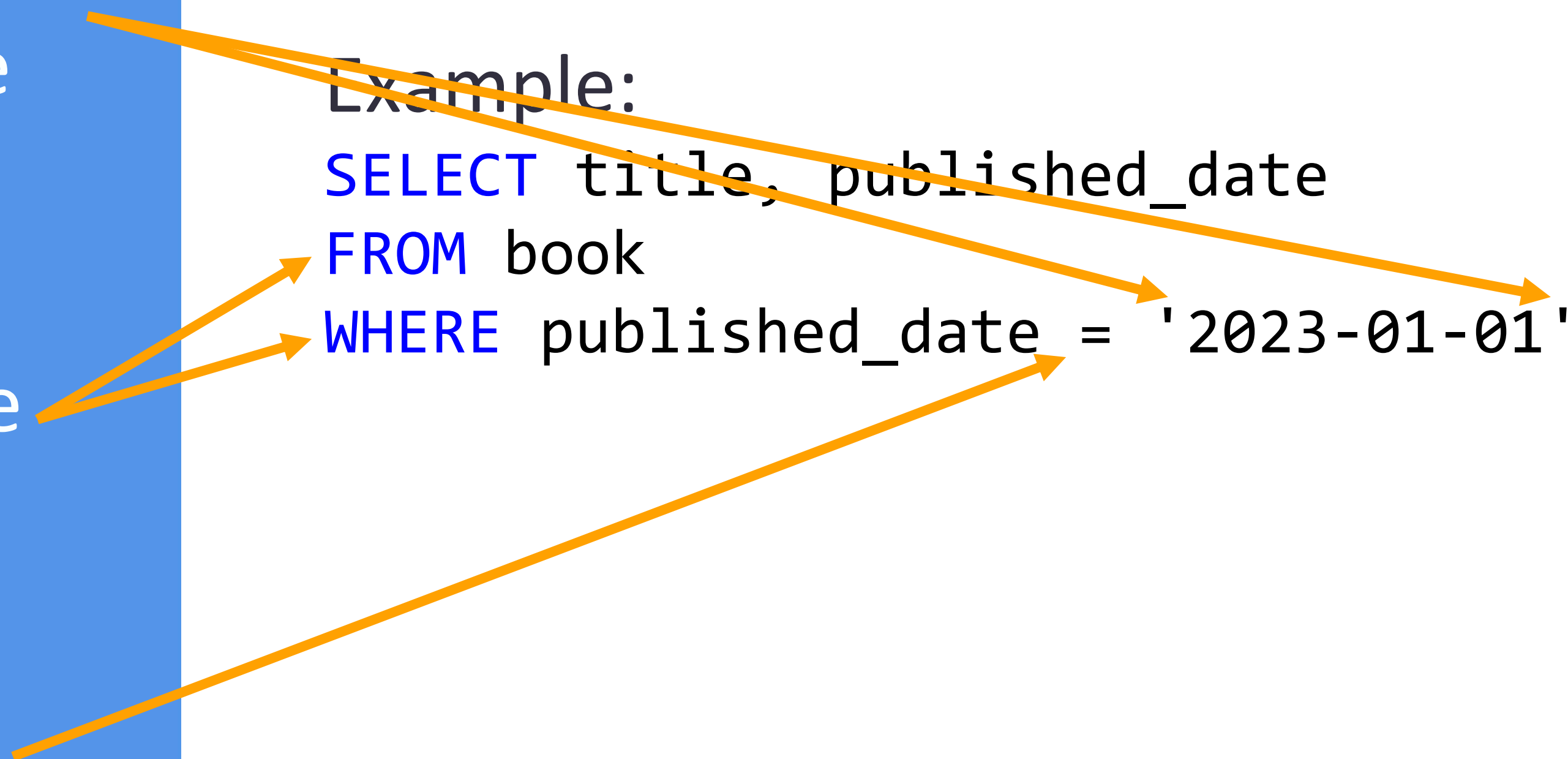
SQL Syntax Rules

(3/4)

- Date values must be enclosed in single quotes (' ') and should be in the format 'YYYY-MM-DD'.
- Each clause in a SQL statement should be written on a separate line for better readability.
- When using the WHERE clause, the operator must be placed between the column name and the value being compared.

Example:

```
SELECT title, published_date  
FROM book  
WHERE published_date = '2023-01-01';
```

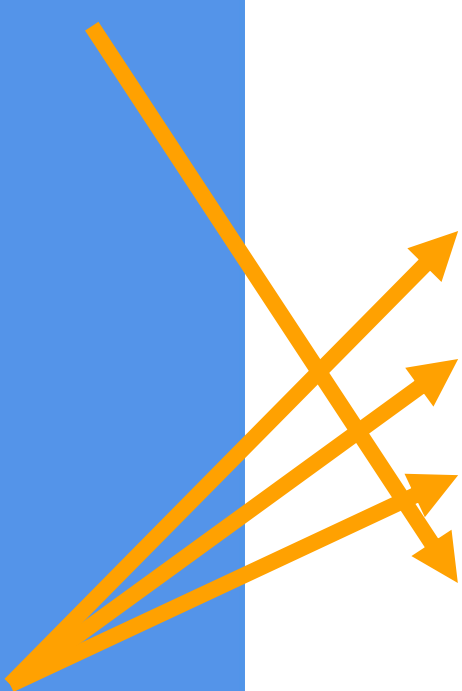


SQL Syntax Rules

(4/4)

- When joining tables, the ON clause should specify the relationship between the columns of the two tables.
- The SELECT clause must come first in a SELECT statement, followed by the FROM clause and other clauses such as WHERE, JOIN, GROUP BY, and ORDER BY.

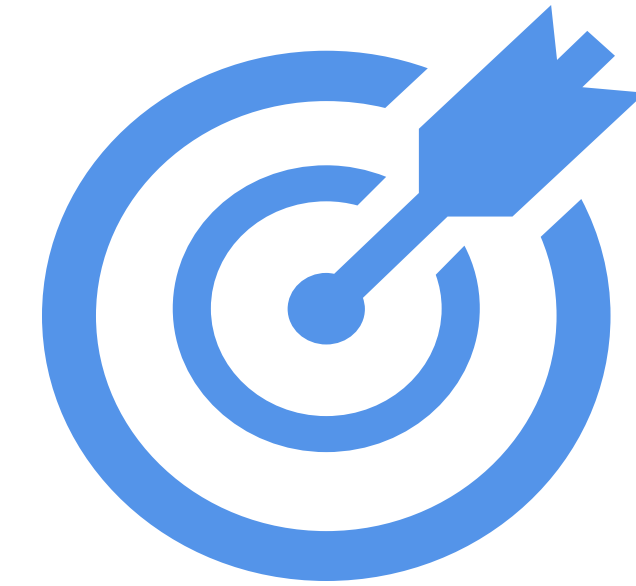
Example:



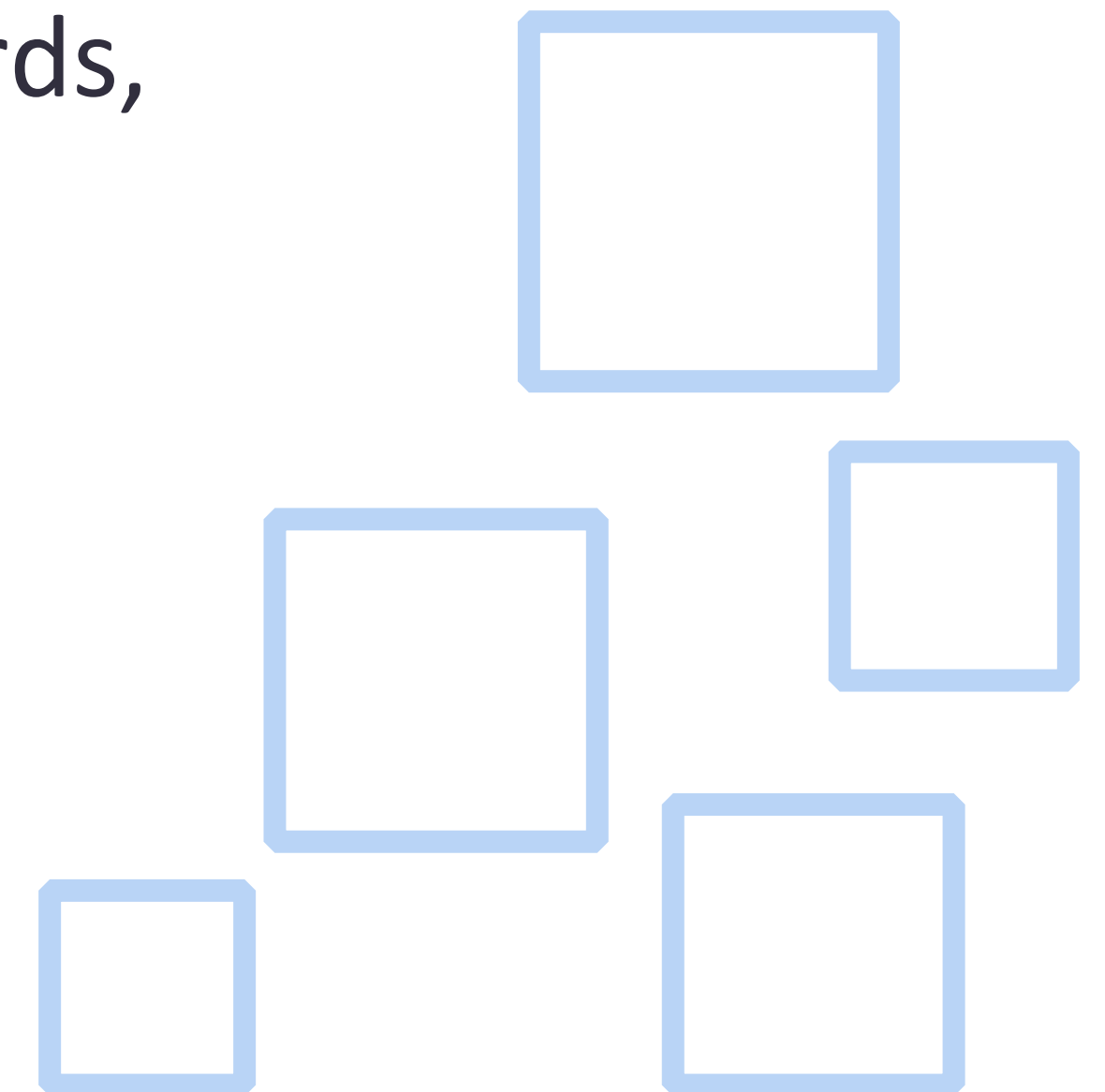
```
SELECT book.title, book_copy.location  
FROM book  
JOIN book_copy  
ON book.call_id = book_copy.call_id;
```


Conclusion

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- ✓ The Structured Query Language (SQL) is a standard programming language used to communicate with relational databases.
- ✓ The language elements of SQL are statement, query, keywords, identifiers, clauses, predicates, and expressions.
- ✓ SQL statements are generally considered to be either DML statements or DDL statements.
- ✓ There are some of the most important rules to keep in mind when writing SQL statements.

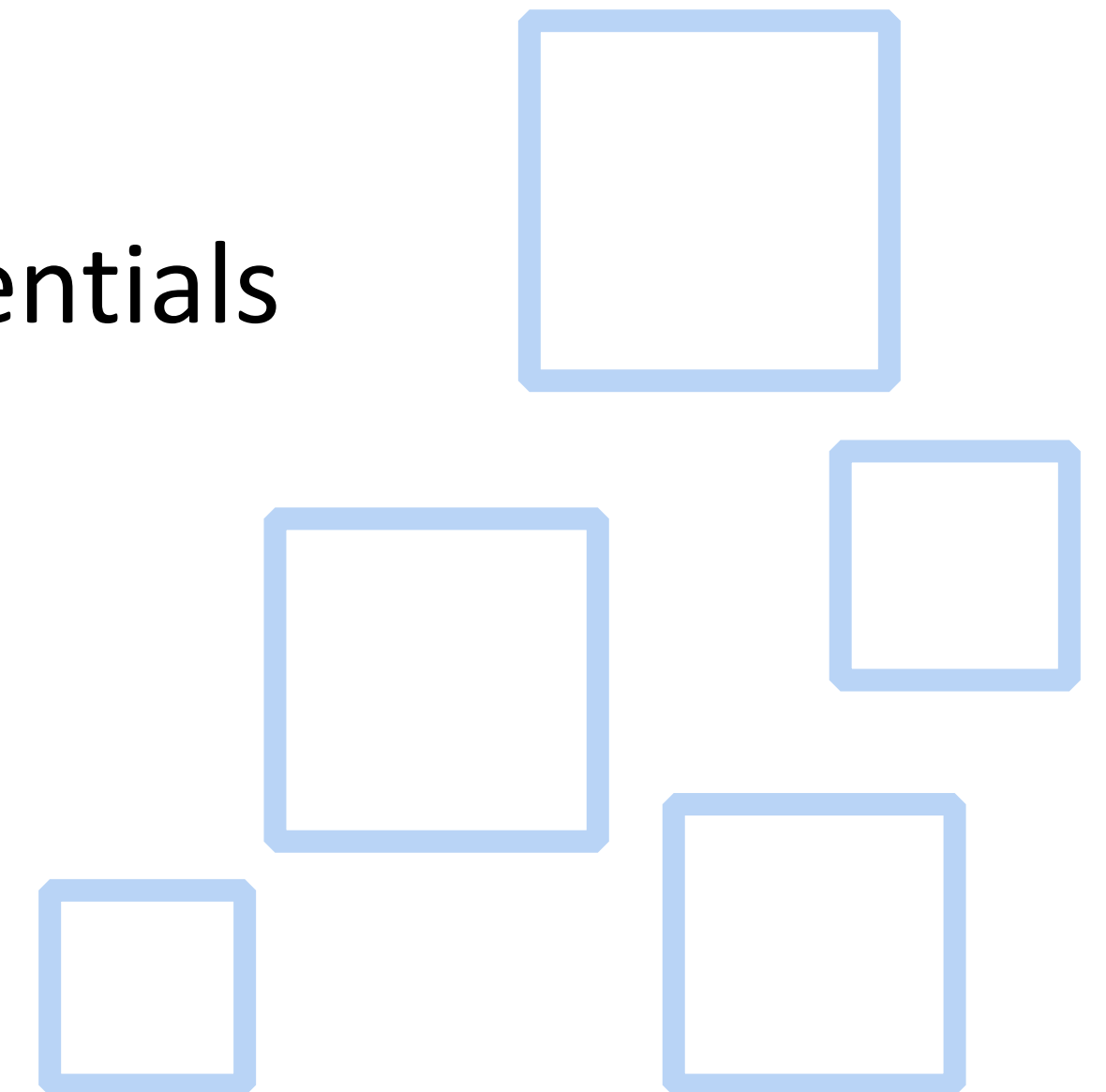


References

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Course



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