Data Types

Bachelor of Information Systems

INTRODUCTION TO
DATABASE AND INFORMATION SYSTEM

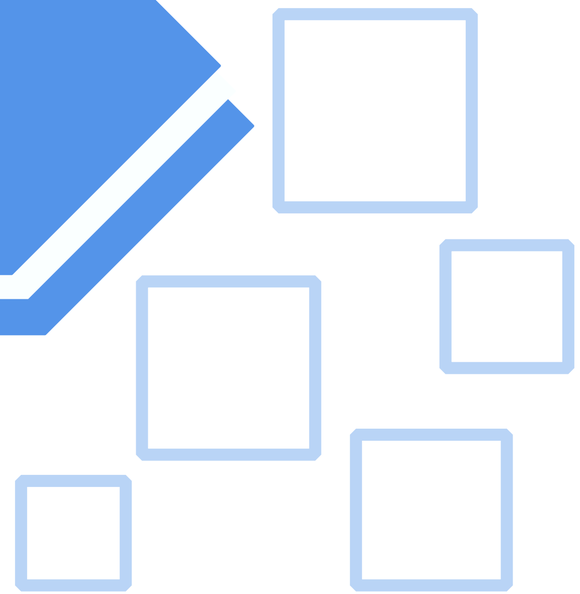
Learning Objective(s)

This material should address the following question(s).

- What is data types?
- What types are available?

Data type

The type that characterizes data along with the definition of its **structure** and the allowed **operations**.



Question

Why data type is important

System Perspectives

- It has a strong relationship with the **storage strategy**.
  - A correct strategy guarantees efficiency and performant database.
  - A careful design decision is crucial.

Different platform different types !

visual programming

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Question

What types are available ?

SQLite

- Advantages:
  - Imbedded management system.
  - Available in most platforms.
  - Light-weight.
  - Compatible with most of the SQL-92 standards.
- Disadvantages:
  - Pervasive system, not distributed.
  - Lack of advanced features.

https://www.sqlite.org/

Storage Strategy

- Apply type affinity approach with generic storage classes:
  - INTEGER;
  - REAL;
  - NUMERIC;
  - TEXT; and
  - BLOB (big-large object).
- https://www.sqlite.org/datatype3.html

Example Typenames From The CREATE TABLE Statement or CAST Expression	Resulting Affinity	Rule Used To Determine Affinity
INT INTEGER TINYINT SMALLINT MEDIUMINT BIGINT UNSIGNED BIG INT INT2 INT8	INTEGER	1
CHARACTER(20) VARCHAR(255) VARYING CHARACTER(255) NCHAR(55) NATIVE CHARACTER(70) NVARCHAR(100) TEXT CLOB	TEXT	2
BLOB *no datatype specified*	BLOB	3
REAL DOUBLE DOUBLE PRECISION FLOAT	REAL	4
NUMERIC DECIMAL(10,5) BOOLEAN DATE DATETIME	NUMERIC	5

Conclusion

- A value is characterized through its type.
- A type describes the structure of the value and its operations.
- SQLite has a handful of types and classes with affinity approach.

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.

Course

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