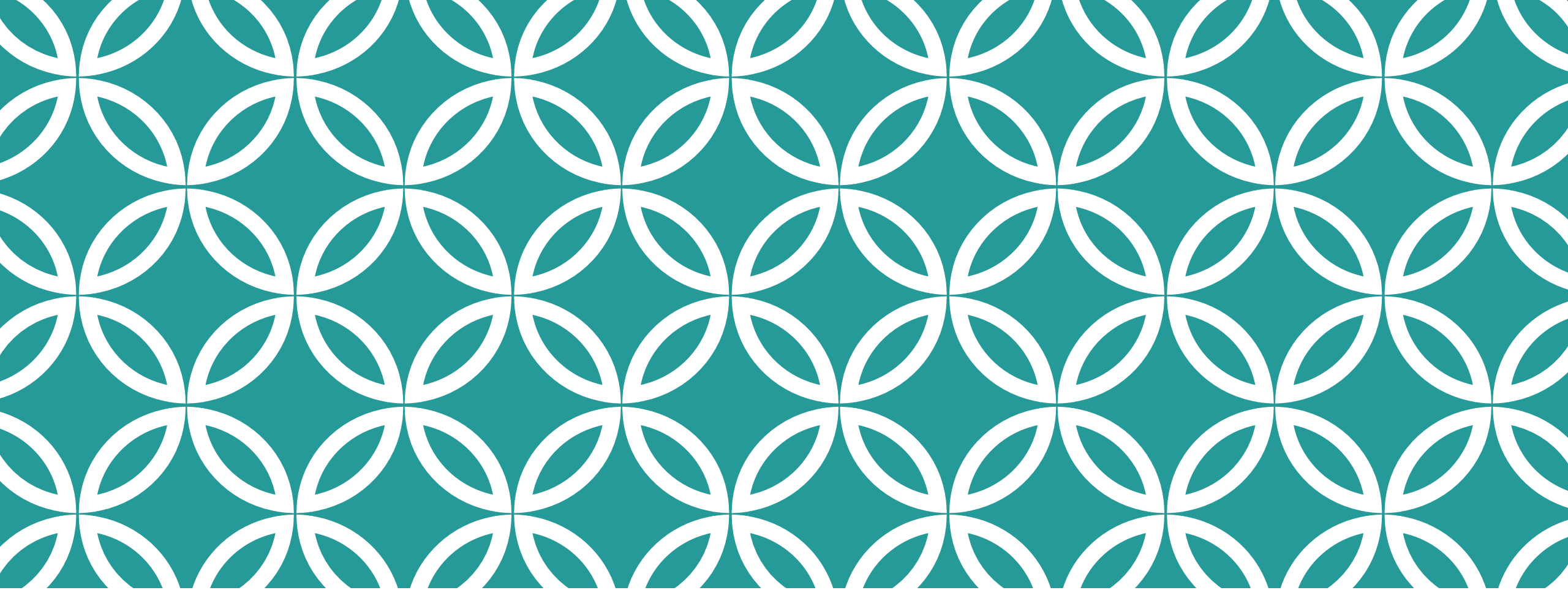
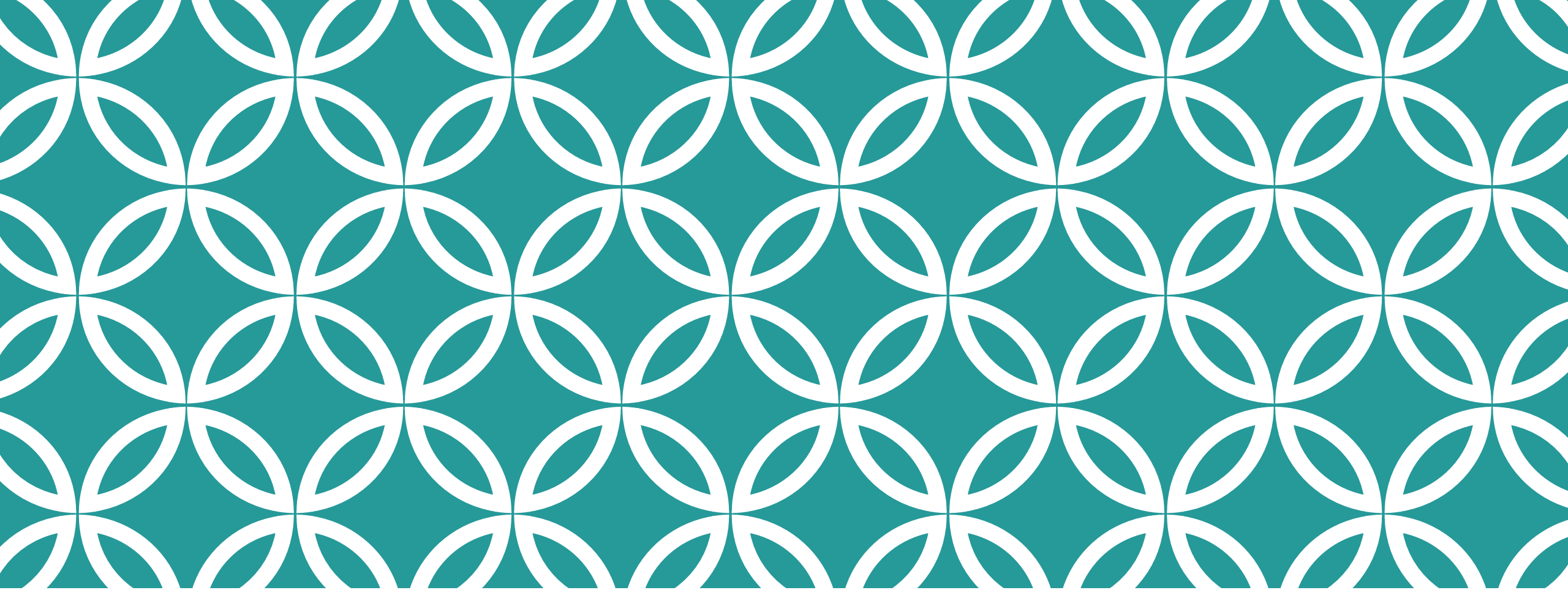


SQL CORE

2023



CHAPTER 1: INTRODUCTION TO SQL

2023

CHAPTER 1: INTRODUCTION TO SQL

Content:

1. Introduction to SQL
2. Introduction to RDMS

WHAT IS SQL?

Structured query language

Is a programming language for storing and processing information in a relational database. A relational database stores information in tabular form, with rows and columns representing different data attributes and the various relationships between the data values.

SQL (Structured Query Language) is a programming language designed to manage data stored in a relational database management system (RDBMS)

INTRODUCTION TO RDBMS

RDBMS -- Relational Database Management system

RDBMS is the basis for all modern database systems such as

- MySQL
- Microsoft SQL Server
- Oracle
- Microsoft Access.

Characteristics of RDBMS:

- Stores data in **tabular** form with *rows* and co*lumns*
- Multiple tables can be accessed at the same time
- Data is stored in tables related to one another

WHAT IS A DATABASE

A collection of data.

It stores collection of tables related to one another.

It is a system that can be used for accessing and manipulating data.

Table

Is the structure inside your database that contains data organized in *columns* and *rows*

In Excel

Column 1	Column 2	Column 3	Column 4
Row 1			
Row 2			

In SQL

Field 1	Field 2	Field 3	Field 4
Record 1			
Record 2			

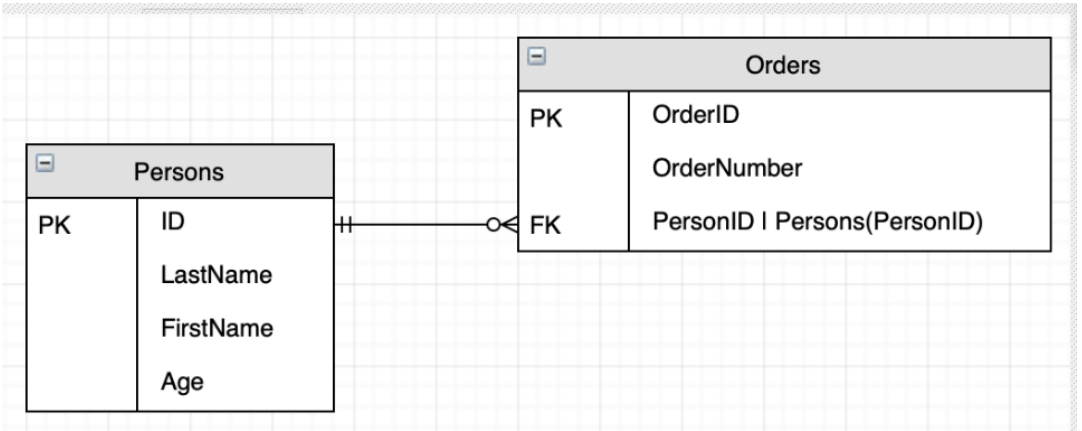
DATABASE TERMINOLOGY

Primary Key - unique and mandatory identifier

Foreign Key - A cross-reference between tables because it references the primary key of another table.

Relationship - created though foreign keys

Data types – Specifies the type of data entered in a field



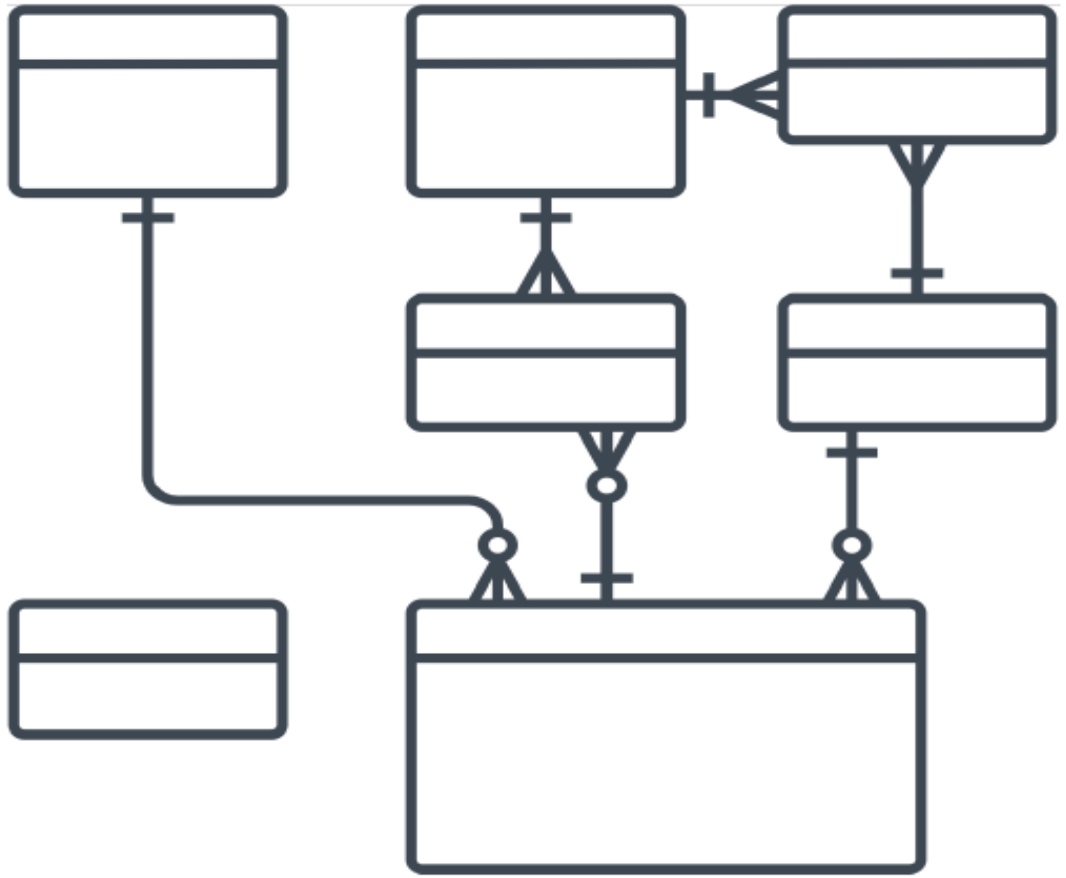
WHY SQL

- SQL is effective at data manipulation.
- Data testing and manipulating is faster on SQL.
- Large amount of data is retrieved quickly and efficiently
- Data retrieval is easier, large number of lines of code is not required. All basic keywords such as SELECT, INSERT INTO, UPDATE, etc. are used and the syntactical rules are not complex in SQL, which makes it very user-friendly language.
- It is a standardized Language, it provides a uniform platform worldwide to all its users.
- Easy to learn and understand, answers to complex queries can be received in seconds.
- SQL can handle large volumes of data.

WHAT IS A SCHEMA (DATABASE)

a logical collection of database objects

A representation of all the structures such as tables columns and relationships in your database is called a schema



TYPES OF SQL STATEMENTS

SQL | DML DDL DCL

SQL Comprises of 3 major sub-languages:

DML – Data Manipulation Language

DDL – Data Definition Language

DCL – Data Control Language

DML(DATA MANIPULATION LANGUAGE)

The SQL commands that deals with the manipulation of data present in the database belong to DML or Data Manipulation Language and this includes most of the SQL statements.

DML statements are used to view, add, modify or delete stored data in your database objects

Examples of DML:

SELECT – is used to view data from existing tables

INSERT – is used to insert data into a table.

UPDATE – is used to update existing data within a table.

DELETE – is used to delete records from a database table.

DDL (DATA DEFINITION LANGUAGE) COMMANDS:

DDL actually consists of the SQL commands that can be used to *define* the database schema.

DDL statements are used to create, modify or delete database objects such as tables, views, schemas, domains, triggers and stored procedures

Create

Drop

Alter

Truncate

DCL(DATA CONTROL LANGUAGE)

DCL includes commands such as GRANT and REVOKE which mainly deals with the rights permissions and other controls of the database system.

DCL statements allow you to control who has access to specific objects in your database. You would also be able to control which users can view a specific set of data, and which users can manipulate that data

Examples of DCL commands:

GRANT-gives users access privileges to database.

REVOKE-withdraw user s access privileges given by using the GRANT command

CASES USED TO NAME DB OBJECTS

Two common ways of formatting table / Column names

- CamelCase
- snake_case

COMMENT OUT SECTION

MySQL

```
# This comment continues to the end of line
-- This comment continues to the end of line (double-dash-space)
/* this is an in-line comment */
/* this is a multiple-line
        comment */
```

SQL Server

```
-- This comment continues to the end of line (no space needed at the end)
```

COMMENTING

Single Line Comments

Single line comments start with --.

Any text between -- and the end of the line will be ignored (will not be executed).

```
--Select all:
SELECT * FROM Customers;
```

```
SELECT * FROM Customers --
WHERE City= Berlin ;
```

Multi-line Comments

Multi-line comments start with /* and end with */.

Any text between /* and */ will be ignored.

```
/*Select all the columns
of all the records
in the Customers table:*/
SELECT * FROM Customers;
```

COMMENTING

Once we start working in MySQL workbench or SQL Server Management studio, we'll use comments to indicate the question numbers that we'll be working with:

```
1      -- 1 Show all the information from table Training
2 ●    Select * from tblTraining;
3
4      -- 2 Show only the TSR name and SalesAmount from table Sales
5 ●    Select TSR_name, amount from tblSales;
```