**Databases and SQL for Data Science with Python**

**RDBMS (Relational Database Management System):**

The relational model is the most used data model for databases because this model allows for data independence. Data is stored in a simple data structure such as Tables.

**ERM (Entity Relationship Model):**

An entity relationship data model, or ER data model, is an alternative to a relational data model.

ERD that represents entities called tables and their relationships. In the library example, we have books. A book can be written by one or many authors. The library can have one or many copies of a book. Each copy can be borrowed by only one borrower at a time.

An entity relationship model proposes thinking of a database as a collection of entities rather than being used as a model on its own.

The ER model is used as a tool to design relational databases. In the ER model, entities are objects that exist independently of any other entities in the database.

The building blocks of an ER diagram are entities and attributes. An entity can be a noun: person, place, or thing.

In an ER diagram, an entity is drawn as a **rectangle**.

Entities have attributes which are the data elements that characterize the entity.

**Attributes:**

Attributes tell us more about the entity.

In an ER diagram, attributes are drawn as **ovals**. Using a simplified library as an example, the book is an example of an entity.

Attributes are certain properties or characteristics of an entity and tell us more about the entity.

The entity book has attributes such as book title, the edition of the book, the year the book was written, etc

Attributes are connected to exactly one entity. The entity book becomes a table in the database and the attributes become the columns in a table.

A table is a combination of rows and columns. While mapping, the entity becomes the table.

Having said that, the table has not yet taken the form of rows and columns. The attributes get translated into columns in a table providing the actual table form of rows and columns. Later, we add some data values to each of the columns, which completes the table form.

Each attribute stores data values of different formats, characters, numbers, dates, currency, and many more besides. In the book table example, the title is made up of characters.