**TABA – Introduction to Databases**

The link can be used to access this document as well:

<https://github.com/sergio-oliveira-br/Database>

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Lecture: Hicham Rifai

**1. Conceptual design (ER Diagram) into a Relational**

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**2. Database LMS**

\* data by Mockaroo

Table – Borrowed Books

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Table – Book

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Table – Member

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Table – Publisher

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**3. DML**

**3. i) Insert new record for book table**

**INSERT INTO `LMS`.`Book`**

**(`ISBN`, `Book ID`, `Author`, `Title`, `Price`, `Availability`)**

**VALUES ('12-345-6789', '98-765-4321', 'Hicham Rifai', 'Introduction to Databases', '25.00', 'available');**

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**3. ii) Increase the price 20%**

**DML:**

**UPDATE LMS.Book**

**SET PRICE = PRICE \* 1.2**

**WHERE Author = "Hicham Rifai";**

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**3. iii) Books greater than €20. (Display the Title)**

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**3. iv) Members that joined on last week. (In my case is the last week of 2023)**

**(Display them)**

**DML:**

**SELECT member\_Name**

**FROM LMS.Member**

**WHERE mem\_join\_date > '23.03.2023';**

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**3. v) List the Author, Title, Publisher name where the Book ISBN matches “1292061189”.**

**4. ID:23170981 🡪 E-commerce, Social**

We know that in general, the advantages of unrelated databases can be summarized in speed, flexibility and scalability, and on the other hand, the disadvantages are represented by the lack of standards, high cost and lack of resources and tools available.

Applying this concept in e-commerce, we identified that due to the highly connected environment of the internet, the high availability of this model proves to be a great ally.

In addition, given the need of the market to obtain a quick response, the reading and writing of data are linked to the advantages of the proposal.

On the other hand, we identified an obstacle in data management, requiring greater complexity and consequently a higher maintenance cost.

It is also worth mentioning that data security can be a concern due to the lack of restrictions.

Now considering the proposal for social media, we can highlight the agility and flexibility in development. Because we know that these two factors are fundamental in today’s times, due to constant and rapid changes, the model allows a quick response in the integration of new features and functionality. Moreover, given the increasing amount of user data, the ease of scalability proves to be a great partner.

However, as in e-commerce, the lack of standards, resource limitations and high cost represent the challenges in applying the concept of a non-relational database.

**5. Talking about the security of the database.**

The most important asset of a business is data, which has an incalculable value.

Database Security (DBS) is a set of practices and techniques used to protect information stored in relational databases.

Through it, we can ensure data confidentiality, integrity and availability, as well as comply with data security regulations and standards.

Therefore, it is crucial to protect against it:

•Theft and fraud

•Loss of confidentiality

•Loss of privacy

•Loss of integrity

•Loss of availability

To protect against these threats, database security can be improved by employing methods such as encryption, user authentication, auditing, and access restrictions.

I will explore 256-bit encryption.

The process of encoding database data involves converting it into plain text format with the help of an appropriate algorithm, making it possible to encrypt and decrypt data at the column level, line or page, depending on the database security requirements.

To encrypt data, the AES algorithm uses cyphers and mathematical formulas to create an unreadable format.

The use of 256-bit encryption is a powerful tool for securing data in relational database systems. Encryption implementation done correctly can help protect data from unauthorized access and security breaches.