NoSQL Databases

PRACTICAL ASSIGNMENT

2023/2024

Objectives

Through the completion of this practical assignment, the aim is to equip students enrolled in the NoSQL Databases course with the necessary skills to understand and utilize various database paradigms. This includes their practical application in system design and implementation.

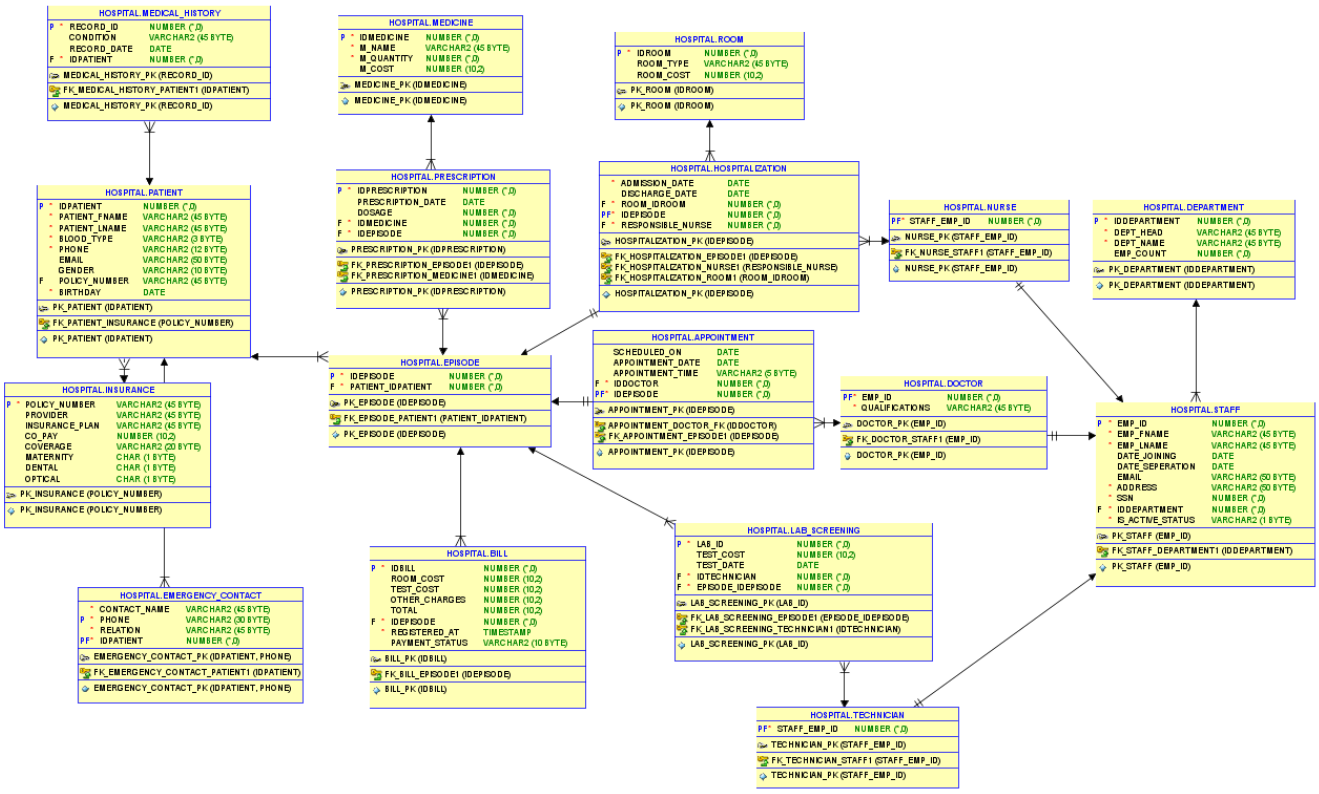
The Practical Work

It is intended that each group of students carry out a work of analysis, planning, implementation of a relational and two non-relational DBMS. To do so, they must use the ***Hospital Management System relational database***, whose customized script will be made available on the elearning platform, with the designation **hospital.sql**.

The supplied Oracle database represents a fictitious hospital and includes various database objects, such as tables, *views*, sequences, indexes, *triggers,* and procedures.

The databases provided include the following tables (see figure):

Episode: Represents the episodes of a particular patient. Episodes of hospitalization and consultation are considered.
Patient: Stores information about patients.
Department: Maintains details about the hospital's departments.
Staff: Records data of hospital staff.
Doctor: Stores information specific to the hospital's doctors.
Nurse: Contains details about the nurses at the hospital.
Technician: Contains details about the hospital's technicians.
Emergency_Contact (Emergency Contact): Records a patient's emergency contacts.
Lab_Screening (Lab Screening): Contains information about lab tests.
Insurance: Maintains details about patients' insurance.
Medicine: Stores information about medications.
Prescription: Records medical prescriptions.
Medical_History (Medical History): Maintains the medical history of patients.
Appointment: Contains details about appointments.
Hospitalization: Contains details about hospitalizations.
Room: Stores information about hospital rooms.
Bill: Records information about invoices.



To do the work, the students must use one relational model and two non-relational databases: one must be document-oriented (MongoDB) and the other graph-oriented (Neo4j).

After familiarizing each of the database models, it is intended that each group performs the following tasks:

1. According to the provided relational schema, define and explain the processes required to migrate the provided data to the new non-relational systems in order to maximize each of the paradigms.
2. Define and implement a set of *queries* that allow you to demonstrate the operability of the implemented systems.
3. Make a critical analysis of the work done, comparing, whenever possible, the models and functionalities now implemented with those made available in the relational system provided.

Work Report

At the end of the work, each working group should prepare a technical report, succinct and clear, which presents in a clear and detailed way the work carried out, presenting in a complete way the SBD that it has implemented, as well as the different development strategies adopted throughout its development process.

Submission and Presentation of the Work

The final report of the practical work, as well as all the material involved in its realization, must be sent submitted in zip format in the group's file exchange on elearning, until 24 hours on June 3, 2024.

The zip file should be named: TP_[GROUPX].zip

The presentation of the work will be made to the professors of the discipline and will consist of a presentation of the work carried out and a demonstration of the implemented databases, as well as the *queries* defined and created. All members of the group must be present during the presentation of the work.

Teachers

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