Faculty of Engineering and Technology
Computer Science Department

Data Base Management Systems
COMP 333

Phase 2
ER Diagram

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Instructor: Dr. Bassem Sayrafi

Section: 1
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Idea: [Dental Clinic data base management system]

Groupe Number: [#19]

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- **Project idea:**

Dr. Ala', faces the challenge of efficiently managing patient information, appointments, and communication as his clinic expands. To address this, we propose the development of a tailored Dental Clinic Database Management System (DCDMS) that will streamline these processes, ensuring personalized care through a custom patient information management framework. This solution will not only facilitate a more efficient workflow for Dr. Ala' and his team but also enhance patient satisfaction through automated messaging features, reducing administrative burdens and allowing the clinic to focus on delivering exceptional dental care.

- **Data requirements:**

Introduction

Dr. Ala' has encountered challenges in managing patient information, appointments, and communications as his clinic grows. To help solve these problems, we will design a custom Dental Clinic Database Management System (DCDMS). We will therefore design a database aimed at developing a schema that supports effective patient information management, appointment scheduling, and communication.

Entities:

patient

Each patient visiting Dr. Ala's clinic has a unique patient ID, a name, a date of birth, an address, Email, and a contact number.

- It is often possible for several patients to share the same address, but each has a unique contact number.

appointment

Every appointment made at the clinic must be tracked. Each appointment has a unique appointment ID, a date, a time, and the purpose of the visit (e.g., checkup, cleaning, surgery).

- A patient can have multiple appointments.
- An appointment must have 1 patient no more no less.

service

Dr. Ala' uses several dental services to cater to patient needs, such as dental cleaning, tooth extraction, braces installation, etc. Each service provided in the clinic has a unique service ID, a name, and a description.

- A patient must have more than zero services
- A service can be shared by more than one patient

visit

The Visit entity within the Dental Clinic Database Management System encompasses attributes such as VisitID, Date, and Time.

- This entity establishes a many-to-one relationship with the Patient entity, indicating that a patient can undergo multiple visits over time.
- Additionally, the Visit entity engages in a many-to-many relationship with the Service entity, signifying that a single visit can encompass multiple services, and conversely, a service may be performed during various visits.

Treatment Record

The Treatment Record entity in the Dental Clinic Database Management System includes attributes such as RecordID, VisitID (Foreign Key), and ServiceID (Foreign Key).

- It establishes a one-to-one relationship with the Visit entity, indicating that each visit corresponds to a single treatment record capturing the services rendered during that visit.
- Moreover, the Treatment Record entity forms a many-to-many relationship with the Service entity, signifying that a treatment record can encompass multiple services performed during the visit. And one service can be done over one or more records.

Record of communications

The Record of Communications feature within the Dental Clinic Database Management System is intricately linked to other entities within the system, facilitating comprehensive patient engagement tracking. Each communication message is associated with a unique identifier, the message ID, and includes additional details such as the date it was sent, the type of message (e.g., appointment reminder, promotional offer, follow-up), the message is automated or not, and its content.

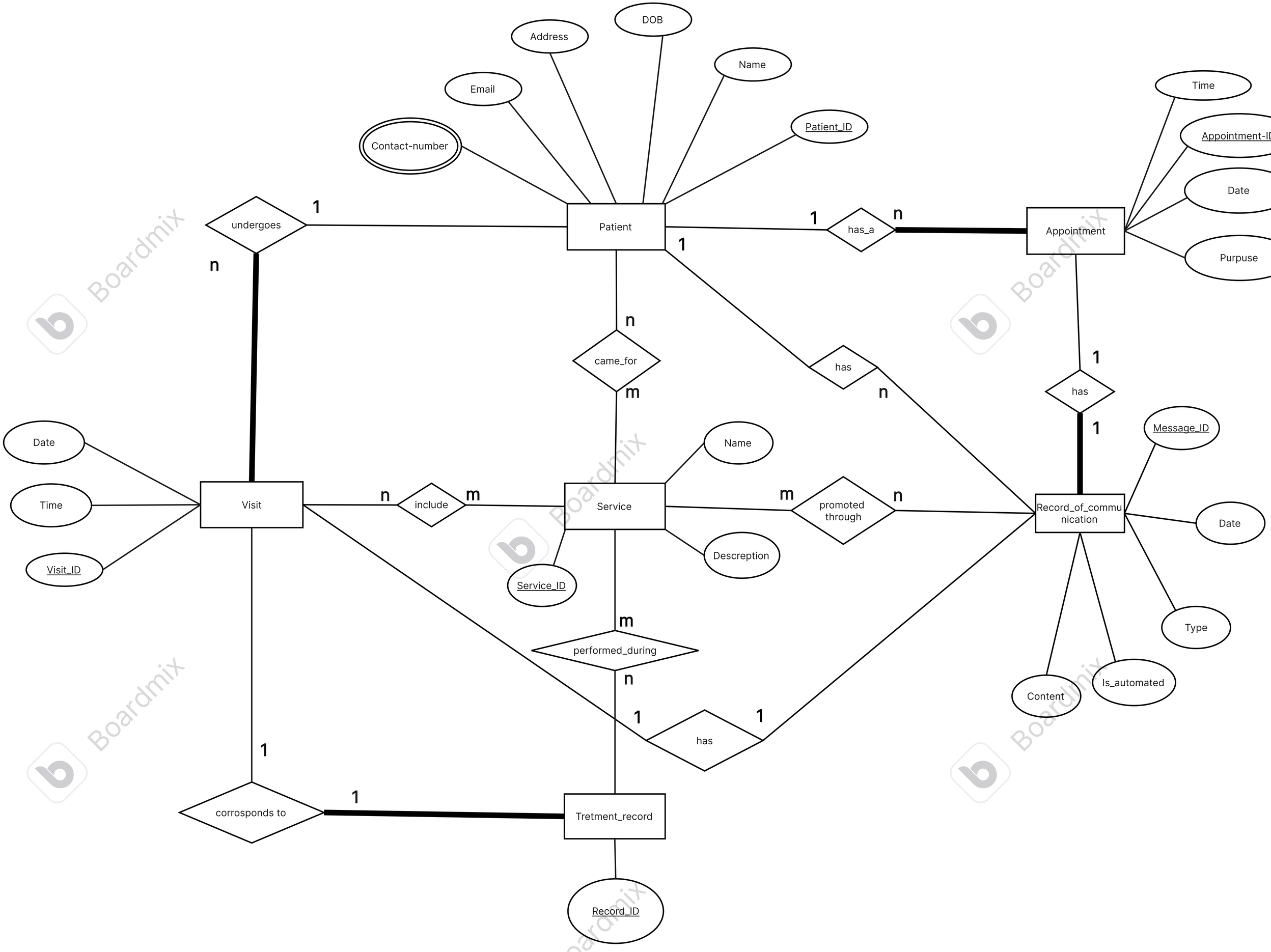
- Each communication message is directed towards a specific patient. The Patient entity serves as the recipient of the communication, establishing a many-to-one relationship, as a patient may receive multiple messages over time.

- Communication messages can include appointment reminders, which are directly related to scheduled appointments. This establishes a one-to-one relationship between the Communication and Appointment entities, as each appointment may have associated reminder messages.

- Promotional messages may be related to specific dental services or offers provided by the clinic. This creates a many-to-many relationship between the Communication and Service entities, as a message may relate to multiple services, and a service may be promoted through various messages.

- Follow-up messages may be sent after patient visits to ensure post-treatment care or gather feedback. This establishes a one-to-one relationship between the Communication and Visit entities, as each visit may have associated follow-up messages.

- **ER Diagram:**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- **technology:**

For the Dental Clinic Database Management System, we'll initially use the following technology:

Hardware: Standard server-grade hardware for hosting and database tasks.

Operating System: Windows for its compatibility and support.

Database System: SQL for managing and storing data.

Programming Languages and Frameworks: Python with Flask and Django for comprehensive backend operations, HTML and CSS for the web interface, JavaScript for interactive elements, and PHP if needed for specific tasks.

It's important to note that as we progress through the development, there may be adjustments to this technology stack. These changes will aim to adapt to emerging needs, enhance system performance, or incorporate new best practices to ensure the system remains efficient, secure, and user-friendly.

- **Contact information:**

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