

DATABASE MANAGEMENT AND DATABASE DESIGN PROJECT – DAMG 6210

P3-FINAL ERD IMPLEMENTATION.

GOOGLE DRIVE LINK:

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    erDiagram
        PATIENT ||--o{ SESSION : schedules
        PATIENT ||--o{ MEDICAL_HISTORY : provides
        PATIENT ||--o{ FEEDBACK : gives
        PATIENT ||--o{ BILL : pays
        THERAPIST ||--o{ SESSION : handled
        THERAPIST ||--o{ MEDICAL_HISTORY : provides
        THERAPIST ||--o{ FEEDBACK : gives
        THERAPIST ||--o{ NOTE : generates
        THERAPIST ||--o{ MEDICATION : generates
        SESSION ||--o{ MEDICAL_HISTORY : accessed
        SESSION ||--o{ FEEDBACK : has
        SESSION ||--o{ APPOINTMENT_DETAILS : generates
        SESSION ||--o{ PROGRESS : generates
        SESSION ||--o{ MEDICATION : generates
        MEDICAL_HISTORY ||--o{ FEEDBACK : accessed
        FEEDBACK ||--o{ SESSION : has
        APPOINTMENT_DETAILS ||--o{ TREATMENT_PLAN : generates
        TREATMENT_PLAN ||--o{ BILL : generates
        NOTE ||--o{ PROGRESS : generates
        NOTE ||--o{ MEDICATION : generates
  
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The diagram illustrates the following entities and their attributes:

- PATIENT**: Patient ID (PK), PatientName, PatientPhone, PatientGender, PatientDOB, PatientAddress.
- THERAPIST**: Therapist ID (PK), TherapistName, TherapistPhone, LicenseDetails, Speciality.
- SESSION**: Session ID (PK), Patient ID (FK1), Therapist ID (FK2), SessionDate, SessionTime, SessionDuration, SessionNotes.
- MEDICAL HISTORY**: MedHistory ID (PK), Therapist ID (FK1), Patient ID (FK2), Referred by, History, Allergies, Medications, Emergency Contact.
- FEEDBACK**: Feedback ID (PK), Session ID (FK1), Rating, Comments.
- APPOINTMENT_DETAILS**: Appointment ID (PK), Session ID (FK), Sender, Recipient, Subject, Content, DateSent.
- TREATMENT_PLAN**: Treatment ID (PK), Session ID (FK), Milestones, Interventions, diagnosis.
- BILL**: Bill ID (PK), Session ID (FK), Fees, BillingDate, PaymentStatus.
- NOTE**: Note ID (PK), Session ID (FK), DateCreated, Pointers.
- PROGRESS**: Note ID (PK), Session ID (FK), Content, DateCreated, ProgressUpdate.
- MEDICATION**: Medication ID (PK), Session ID (FK), MedicineName, PrescriptionReason, Dosage.

Relationships and cardinalities:

- PATIENT** to **SESSION**: schedules (1:M)
- PATIENT** to **MEDICAL HISTORY**: provides (1:M)
- PATIENT** to **FEEDBACK**: gives (1:M)
- PATIENT** to **BILL**: pays (1:M)
- THERAPIST** to **SESSION**: handled (1:M)
- THERAPIST** to **MEDICAL HISTORY**: provides (1:M)
- THERAPIST** to **FEEDBACK**: gives (1:M)
- THERAPIST** to **NOTE**: generates (1:M)
- THERAPIST** to **MEDICATION**: generates (1:M)
- SESSION** to **MEDICAL HISTORY**: accessed (1:M)
- SESSION** to **FEEDBACK**: has (1:M)
- SESSION** to **APPOINTMENT_DETAILS**: generates (1:M)
- SESSION** to **PROGRESS**: generates (1:M)
- SESSION** to **MEDICATION**: generates (1:M)
- MEDICAL HISTORY** to **FEEDBACK**: accessed (1:M)
- FEEDBACK** to **SESSION**: has (1:M)
- APPOINTMENT_DETAILS** to **TREATMENT_PLAN**: generates (1:M)
- TREATMENT_PLAN** to **BILL**: generates (1:M)
- NOTE** to **PROGRESS**: generates (1:M)
- NOTE** to **MEDICATION**: generates (1:M)

BUSINESS PROBLEM:

The business problem of a Remote Counseling Management System is to develop a database system that schedules appointments for patients virtually. The system needs to manage different aspects of online counseling, including appointment booking, appointment history, billing, patient medication. To accomplish this, the system requires a database that can store and organize all relevant data and allow easy access to it when needed.

Our primary requirement is to provide patients with a platform where they can virtually connect with a therapist and get professional help based on their medical history. There will be Therapist and Patient entities. After every appointment and reschedule, the patient will be notified through SMS. All sessions and appointments will be tracked and the information will be stored for future references. Payment and billing will be separately recorded. There will be a medical history field to keep track of who has referred the patient, previous medical condition, current medications.

Patients are divided into different categories based on parameters like: Age, Profession (Employee, Student) and along with patient medical history details. Based on the primary issue the patient is having, a therapist is assigned to the patient. A Communication is sent by or to the Patient and Therapist for updates like reschedule or cancellation of appointment. The system will check for the availability of the therapist. This needs to have a relationship between Slot Availability and Session details.

In summary, Virtual Counseling Management System must include the following entities: **Patient, Therapist, Session, Appointment Details Note, Slot Availability, Treatment Plan, Progress, Medication, Billing, Feedback, Medical History.** All these entities will be connected with one-one, one-many, many-one and many-many relationships. The main decision is to select suitable data types for all entities and relationships, determining the cardinality of each relationship with entities.

LIST OF ENTITIES:

- **Patient:** This entity represents the Patient's information such as ID, Name, Phone, Gender, DOB, and Address.
- **Therapist:** This Entity represents Therapist information including the attributes such as ID, Name, Phone, License Details and specialty.
- **Session:** This entity will include the details regarding the appointment including the Date, Time, Duration, Session notes (Notes/Descriptions)
- **Slot Availability:** This entity will provide the confirmation regarding the availability, and details about slot date, time and slot ID.
- **Note:** This entity provides details of when the note has been created and shows what pointers regarding the session has been added.
- **Treatment Plan:** This Entity represents the milestones, interventions and diagnosis achieved, uniquely identified by a Treatment ID.
- **Progress:** This entity will provide details of contents that has been discussed in the session, along with attributes like Note ID, Date created and progress.
- **Medication:** This entity will provide details of medication prescribed, reason for prescription and dosage. It is uniquely identified by a Medication ID.
- **Medical History:** This entity will include the information of the previous appointment which includes information such Referred by, History, Medications, Emergency Contact, allergies etc. by considering the TherapistID and PatientID.
- **Bill:** This Entity includes the payment history which includes BillingID, TherapistID, PatientID along with the fees, Billing date, Fees and Payment Status.
- **Feedback:** This entity comes after all the process is done which includes FeedbackID, Ratings and comments by referring PatientID and TherapistID.

KEY DESIGN DECISIONS:

PATIENT:

- Store the Patient Details such as Name, Phone, Gender, DOB, Address.
- Create a relationship with Session to store patient appointment details. Also, create relationships with Feedback, Session, Slot Availability, Bill, Medical History to store and retrieve patient information.

SESSION:

- Stores the fields like Date, Time, Duration, Notes.
- Use Session ID as a Primary Key to retrieve the associated items.
- Create a relationship with Patient, Therapist, Session, Appointment Details Note, Treatment Plan, Progress, Medication, Billing, Feedback.

THERAPIST:

- It stores attributes such as Name, Phone, Specialty, Qualification, License, and available days of doctor.
- Create a relationship with slot availability and Feedback. Also, create relationships with patients through Medical History, Appointment History and Communication to track the relevant information.

BILL:

- Stores Billing Information such as Fees, Billing Date and Payment Status.
- Create Relationships with Patients and Sessions to store relevant information.

APPOINTMENT DETAILS:

- Appointment Details store information like Sender, Recipient, Subject, Content and Date Sent.
- Has direct relationship with Session.

FEEDBACK:

- Store Information about Therapists like Ratings and Comments.
- Create a Direct Relationship with the Patient and Session.

MEDICAL HISTORY:

- Store Information like Medications, Emergency Contacts, History, Referred-By and Allergies.
- Create Relationships with Patient and Therapist to store the relevant information.

NOTE:

- Stores information about session notes.
- Create a relationship with the Session.

TREATMENT PLAN:

- Store Information like Treatment milestones, diagnosis and interventions.
- Create Relationship with Session.

PROGRESS:

- Store Information like Contents discussed during session, Date created and Progress updates.
- Create Relationship with Session.

MEDICATION:

- Store Information like Medicines prescribed, reason and dosage.
- Create Relationship with Session

SLOT AVAILABILITY:

- Store Information like Date, Time, Availability Status.
- Create Relationships with Patient and Therapist to store the relevant information.

RELATIONSHIP AMONG ENTITIES:

1. **Schedules— (patient →session)**
 - One patient can Schedule one or more sessions
 - A session must be scheduled by a single patient.
 - The cardinality is mandatory one to many.
2. **Handled--- (session→therapist)**
 - A session must be handled by a single therapist.
 - A therapist can handle multiple sessions.
 - The cardinality is many to mandatory one.
3. **Gives—(patient→feedback)**
 - A patient may give feedback or feedback is not necessarily given by a patient.
 - Optional one to optional one cardinality.
4. **Supplies—(patient→medicalhistory)**
 - Patient may provide one or more fields about medicalhistory.
 - A medical history is provided by a single patient.
 - One to optional many cardinality.
5. **Checks—(patient→slotavailability)**
 - Patients can browse one or more available slots whereas a slot is allocated for a single patient.
 - Mandatory one to optional many cardinality.
6. **Provides—(therapist→ slotavailability)**
 - A therapist can provide one or more slots whereas a slot as a single therapist.
 - Mandatory one to optional many cardinality.
7. **Accessed---(therapist→medicalhistory)**
 - A therapist can access any number of medical history regarding a patient whereas medicalhistory is accessed by a single therapist.
 - Mandatory one to optional many cardinality.
8. **Pays---(Patient→bill)**
 - A patient pays one or more bills.
 - A bill is paid by a single patient.
 - Mandatory one to optional many cardinality.
9. **Generates—(Session→bill)**

- A session generates one or more bills whereas a bill is associated with a single session.
- Mandatory one to optional many cardinality.

10. **Session → AppointmentDetails relationship.**

- A session can have one or more appointments and an appointment can have only a single session.
- Mandatory one to optional many cardinality.

11. **Session → Treatmentplan**

- Every Session has a treatmentplan and a treatmentplan is linked to a single Session.
- Mandatory one to Mandatory one.

12. **Session → Progress**

- A session may have progress and progress is related to a single session.
- Mandatory one to optional one cardinality.

13. **Session → Note**

- A session can have one or more notes given by therapist whereas a note is for a single session.
- Mandatory one to optional many cardinality.

14. **Session → Medication**

- A session has a single medication plan and medication is based on a single session.
- Mandatory one to Mandatory one cardinality.

15. **Has (Feedback → Session)**

- A session may have multiple feedbacks
- A feedback is for a single session.
- Optional many to mandatory one cardinality.