Sillah Phase 2

CS340: Introduction to Databases Systems

Section: 1629

Instructor: Maram Alajlan

Prepared by:

Yara Albugami - 223410190

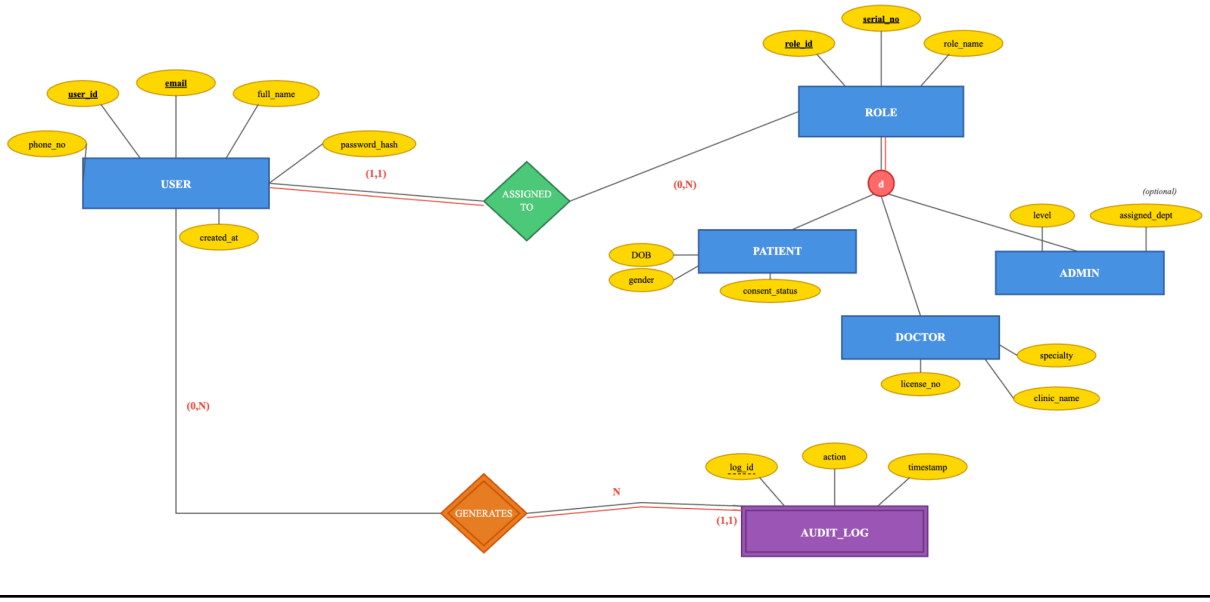
Rose Alrakan - 223410382

Shoug Alomran - 223410392

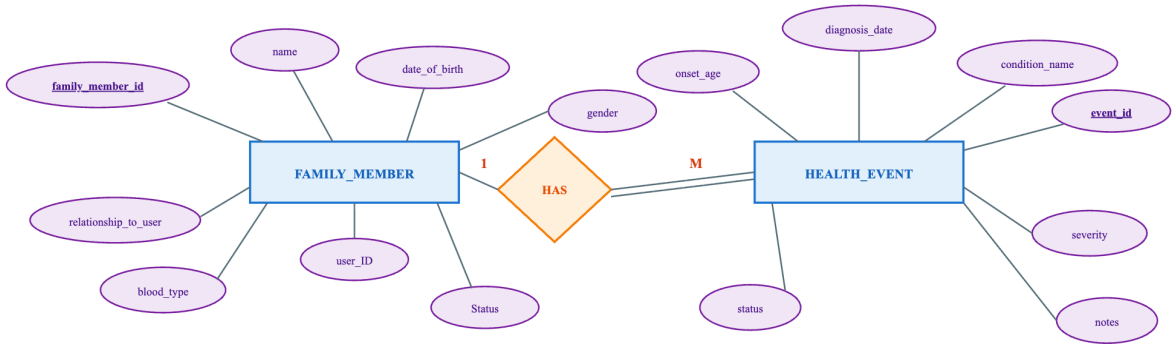
Raghad Abdulaziz - 222511358

Table of Contents

1. EER diagram



User & Access Control



Constraints

1. Primary Keys:

- FAMILY_MEMBER: family_member_id (PK)
- HEALTH_EVENT: event_id (PK)

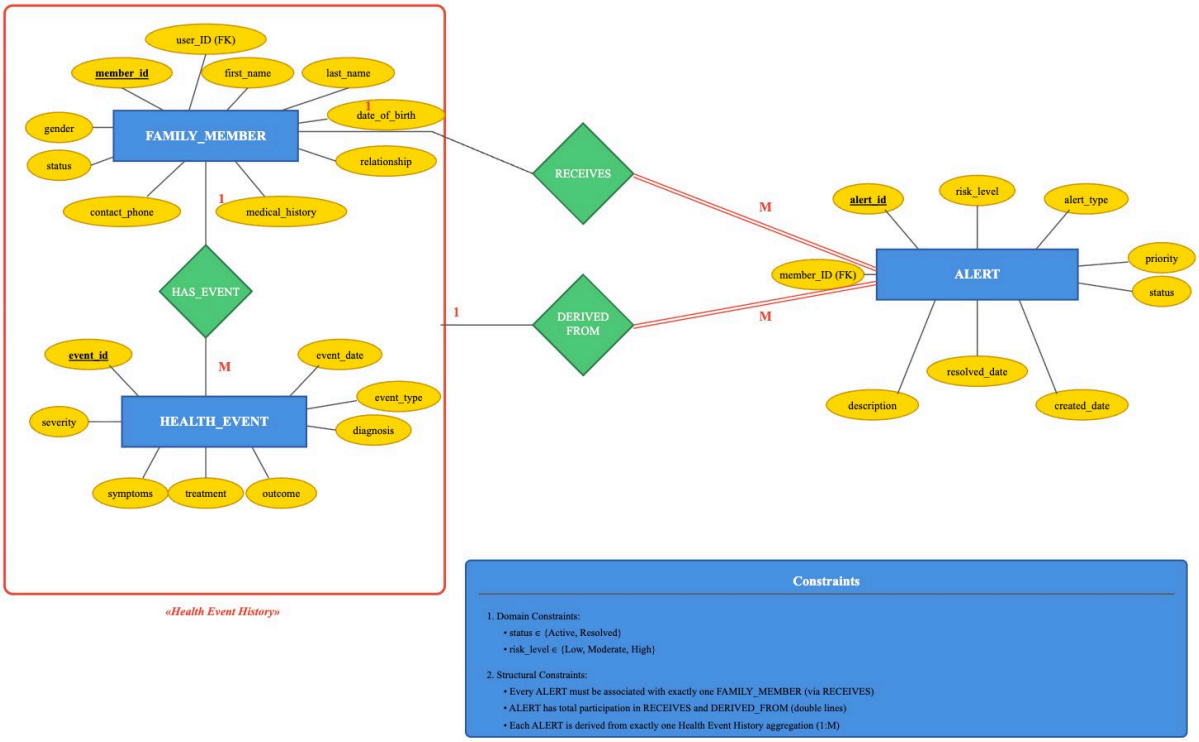
2. Cardinality and Participation:

- One FAMILY_MEMBER can have many (M) HEALTH_EVENTs
- Every HEALTH_EVENT must belong to exactly one (1) FAMILY_MEMBER
- HEALTH_EVENT has total participation (double line)

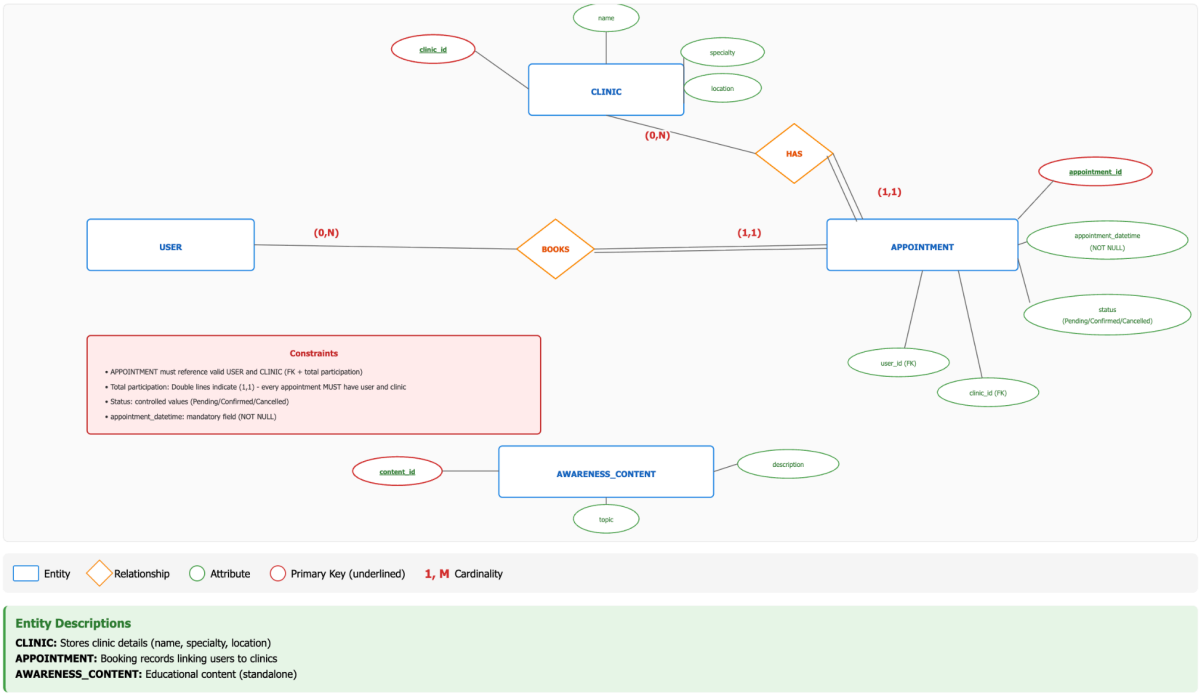
3. Domain Constraints:

- onset_age: Must be a non-negative integer (≥ 0)
- severity: Controlled values {Low, Medium, High}

Family & Medical History



Risk Alerts & Analysis



Appointments, Clinics & Awareness

2. **Entities, attributes, and relationships**

User		
Attribute Name	**Description**	**Key Type**
user_id	Unique identifier for user	**Primary Key**
first_name	User's first name	
last_name	User's last name	
email	User email (must be unique)	Unique
password_hash	Encrypted password	
phone_number	Contact number	
created_at	Account creation date	

FamilyMember		
Attribute Name	**Description**	**Key Type**
member_id	Unique family member ID	**Primary Key**
user_id	Owner of this family member	**Foreign Key → User(user_id)**
first_name	First name	
last_name	Last name	
date_of_birth	Date of birth	
relationship	Relationship to user (father, mother, sibling, etc.)	
contact_phone	Contact number	
medical_history	General notes	
Blood_type	Family members blood type	

FamilyMember		
Gender	Male or Female	
Status	Family members' overall condition (Stable, Alive, etc.)	

MedicalHistory		
Attribute Name	**Description**	**Key Type**
event_id	Unique medical history record ID	**Primary Key**
member_id	Related family member	**Foreign Key → FamilyMember(member_id)**
condition_id	Referenced health condition	**Foreign Key → HealthCondition(condition_id)**
event_date	Date of diagnosis	
event_type	Type of event	
diagnosis	Diagnosis details	
severity	Severity level	
symptoms	Reported symptoms	
treatment	Treatment information	
outcome	Result of treatment	

HealthCondition		
Attribute Name	**Description**	**Key Type**
condition_id	Unique condition ID	**Primary Key**
condition_name	Name of disease/condition	

HealthCondition		
category	Disease category (cardiac, diabetes, cancer, etc.)	
description	Condition description	

RiskAlert		
Attribute Name	**Description**	**Key Type**
alert_id	Unique alert ID	**Primary Key**
member_id	Related family member	**Foreign Key → FamilyMember(member_id)**
alert_type	Type of alert	
risk_level	Low / Medium / High	
priority	Alert priority	
status	New / Viewed / Resolved	
notes	medical notes on alert	
description	Alert explanation	
created_date	Date generated	
resolved_date	Date resolved	

Appointment		
Attribute Name	**Description**	**Key Type**
appointment_id	Unique appointment ID	**Primary Key**
user_id	User who scheduled appointment	**Foreign Key → User(user_id)**
clinic_id	Associated clinic	**Foreign Key → Clinic(clinic_id)**
appointment_date	Date	

Appointment		
appointment_time	Time	
reason	Appointment reason	
status	Scheduled / Completed / Cancelled	

Clinic		
Attribute Name	**Description**	**Key Type**
clinic_id	Unique clinic ID	**Primary Key**
clinic_name	Clinic name	
city	Clinic city	
address	Clinic address	
phone	Contact phone	

AwarenessContent		
Attribute Name	**Description**	**Key Type**
content_id	Unique content ID	**Primary Key**
title	Content title	
topic	Health topic	
content_type	Article / Video / Infographic	
content_body	Main content	
created_at	Date created	

HealthEvent		
Attribute Name	**Description**	**Key Type**
event_id	Unique content ID	**Primary Key**
event_date	event time	
severity	level of severance for a given event	
symptoms	events symptoms	
condition_name	Medical name for condition	
treatment	Cure or treatment for an event	
outcome	event result	
event_type	events categories	
diagnosis	overall findings from event	
diagnosis_date	date of diagnosis	
notes	health event medical notes	
onset_age	family member age during event	
status	Family members' condition (Stable, Alive, etc.)	

Kindly note that HealthEvent history is a minor part of alert hence why not all attributes are present unlike the actual family member.

Relationships		
Relationship	**Cardinality**	**Description**
User – FamilyMember	1 : N	A user manages one or more family members
FamilyMember – MedicalHistory	1 : N	A family member can have multiple medical records
HealthCondition – MedicalHistory	1 : N	A condition can appear in many medical records

Relationships		
FamilyMember – RiskAlert	1 : N	A family member can generate multiple alerts
User – Appointment	1 : N	A user can schedule multiple appointments
Clinic – Appointment	1 : N	A clinic can have multiple appointments
AwarenessContent	Independent	Accessible to all users

3. **Constraints (cardinality, participation, keys)**

Key Constraints	
Entity	**Primary Key**
User	user_id
FamilyMember	member_id
MedicalHistory	event_id
HealthCondition	condition_id
RiskAlert	alert_id
Appointment	appointment_id
Clinic	clinic_id
AwarenessContent	content_id

Cardinality & Participation Constraints		
Relationship	**Cardinality**	**Participation**
User – FamilyMember	1:N	Total on FamilyMember side
FamilyMember – MedicalHistory	1:N	Total on MedicalHistory side

Cardinality & Participation Constraints		
HealthCondition – MedicalHistory	1:N	Total on MedicalHistory side
User – Appointment	1:N	Total on Appointment side
Clinic – Appointment	1:N	Total on Appointment side
FamilyMember – RiskAlert	1:N	Partial

4. **Explanation of how the data model supports application functionality**

The data model supports the application by:

- Allowing users to register and manage their family members.
- Storing structured medical history for each family member.
- Linking medical history to specific health conditions.
- Generating automated risk alerts based on stored medical patterns.
- Allowing users to schedule appointments with clinics.
- Providing accessible awareness content independently from user records.

The separation of entities ensures data integrity and reduces redundancy. Foreign keys maintain referential integrity across all related records.

5. **Individual contribution description**

Team Member	Contribution
Yara Albugami	Defined user requirements and helped design User & Appointment module. Helped review peers work before final submission.

Raghad Abdulaziz	Designed FamilyMember and MedicalHistory entities and relationships Helped review peers work before final submission.
Shoug Alomran	Designed RiskAlert logic, constraints, and overall architecture Helped review peers work before final submission.
Rose Alrakan	Designed HealthCondition, Clinic, and AwarenessContent entities and reviewed consistency Helped review peers work before final submission.