

## **DENTAL CLINIC:**

### **INTRODUCTION:**

This project involves the development of a basic system to manage a dental clinic in a more organized and efficient way. The idea is to simplify tasks such as keeping track of patients, scheduling appointments, handling payments, and keeping everything well-organized in a database. Additionally, it includes tools for dentists to view their schedules and for the staff to manage the materials used on a daily basis. In short, we aim to make the clinic's operations simpler, faster, and more digital.

### **ENTITIES:**

- Patients
- Clinicians
- Treatments
- Appointments
- Materials
- Suppliers

### **USER STORIES:**

1. As a **patient**, I want to be able to modify an appointment online so I change the appointment if i cannot assist
2. As a **patient**, I want to be able to create an appointment online so I chose book the appointment I need
3. As a **patient**, I want to be able to create an account, so I can be a user in the application
4. As a **patient**, I want to be able to login and logout of my account, so i can have access to it
5. As a **patient**, I want to be able to modify my personal information in the account, so I can update it
6. As a **patient**, I want to see the available services online so I know the treatments offered by a specific clinician before scheduling an appointment.
7. As a **patient**, I want to be able to delete my account, so that if I do not want to be part of the clinic anymore I can delete my profile
8. As a **patient**, I want to be able to choose my clinician by checking its availability, so I can feel more comfortable in my sessions
9. As a **patient**, I want to be able to see my appointments of the day, so i know when to go
10. As a **clinician**, I want to be able to see my appointments of the day, so i can manage my personal schedule
11. As a **clinician**, I want to be able to modify an appointment so I can adapt it to my schedule
12. As a **clinician**, I want to be able to login and logout of my account, so i can have access to it
13. As a **clinician**, I want to be able to create an appointment online, so I can book the appointment a patient would need
14. As a **clinician**, I want to be able to create and have an account, so I can manage my profile and data

15. As a **clinician**, I want to be able to create Treatments, so I can then apply them on my patients when needed
16. As a **clinician**, I want to be able to modify treatments, so if there is a mistake i can solve them
17. As a **clinician**, I want to be able to modify my personal information in the account, so I can update it
18. As a **clinician**, I want to be able to delete my account, so that if I do not want to be part of the clinic anymore I can delete my profile
19. As a **supplier**, I want to be able to supply materials to the clinic, so the clinicians can work with it
20. As a **supplier**, I want to be able to modify my personal information in the account, so I can update it
21. As a **supplier**, I want to be able to modify materials, so I can update it to a correct order
22. As a **supplier**, I want to be able to delete my account, so that if I do not want to be part of the clinic anymore I can delete my profile
23. As a **supplier**, I want to be able to create and have an account, so I can manage my profile and data
24. As a **supplier**, I want to be able to login and logout of my account, so i can have access to it
25. As a **clinician**, I want to cancel an appointment, so if it is no longer needed I can free the space on the agenda
26. As a **clinician**, I want to delete a treatment, so if it is no longer needed it does not create confusion.
27. As a **patient** I want to cancel an appointment, so if it is no longer needed I can free the space on the agenda
28. As a **supplier**, I want to delete a material, so if it is no longer needed it does not create confusion
29. As a **supplier**, I want to be able to see the list of materials, so I know which ones I have already created
30. As a **clinician**, I want to be able to see a list of materials, so I know which to add to my treatment
31. As a **clinician**, I want to be able to choose a patient for an appointment, so i can decide who i want to treat
32. As a **patient**, I want to be able to choose a treatment when doing an appointment, so the clinician knows what i expect from them
33. As a **clinician**, I want to be able to choose a treatment when doing an appointment, so the patients knows what i expect from them

### **USE CASES:**

1 - 11)

Title: Modify an appointment

Actor: Patient/Clinician

Preconditions:

1. Having an account and already logged in
2. Appointment exists

Postconditions: The appointments is updated

Scenarios:

1. Click on modify appointment
2. Show list of available appointments
3. Modify the info of the appointment, like date or comment
4. Save

2 - 13)

Title: Create a new appointment

Actor: Patient/Clinician

Preconditions:

1. Having an account and already logged in.
2. Appointment does not exist

Postconditions: A new appointment exists now

Scenarios:

1. Select to create a new appointment
2. Introduce new info appointment
3. New data saved

25 - 27)

Title: Delete an appointment

Actor: Clinician/Patient

Preconditions:

1. Have already logged in.
2. Appointment exists

Postconditions: The appointment does not exist any more.

Scenarios:

1. Select delete appointment
2. Introduce necessary data to delete appointment
3. Appointment deleted, data saved.

9 - 10)

Title: See list of appointments

Actor: Clinician/Patient

Preconditions:

1. Having an account and already logged in
2. Appointments scheduled (if not, no appointments will appear)

Postconditions: Future appointments seen.

Scenarios:

1. Select to see list of appointments

3 - 14 - 23)

Title: Create account

Actor: Patient/Clinician/Supplier

Preconditions: 1. Not have an account already

2. Not repeat existing username

Postconditions: The account exists now

Scenarios: 1. Open app/ open link

2. Introduce NEW username and password
3. Click on save

5 - 17 - 20)

Title: Modify account information

Actor: Patient/Clinician/Supplier

Preconditions: 1. Have already logged in  
2. Have existing profile

Postconditions: The account information is updated

Scenarios: 1. Click on view profile information  
2. Click on modify where they need to change something

7 - 18 - 22)

Title: Delete an account

Actor: Patient/Clinician/Supplier

Preconditions: 1. Have an account

Postconditions: The account does no longer exist

Scenarios: 1. Open app/ open link  
2. Click on edit profile  
3. Delete profile

4 - 12 - 24)

Title: Log in to account

Actor: Patient/Clinician/Supplier

Preconditions: 1. AlrUser is logged in

Scenarios: 1. Open app/ open link  
2. Introduce username and password

4 - 12 - 24)

Title: Log out to account

Actor: Patient/Clinician/Supplier

Preconditions: 1. AlrUser is logged in

Scenarios: 1. Click on log out

15)

Title: Create new treatment

Actor: Clinician

Preconditions: 1. Have already logged in  
2. Treatment doesn't exist

Postconditions: The treatment exists now

Scenarios: 1. Click on create treatment  
2. Introduce the info of the treatment  
3. Click on save

16)

Title: Modify a Treatment

Actor: Clinician

Preconditions: 1. Have already logged in

2. Treatment exists

Postconditions: The treatment is updated

Scenarios: 1. Click on modify treatment  
2. Show list of available treatments  
3. Modify the info of the treatment  
4. Click on save

26)

Title: Delete a treatment

Actor: Clinician

Preconditions: 1. Have already logged in  
2. Treatment exists

Postconditions: The treatment is canceled

Scenarios: 1. Click on delete treatment  
4. Click on save

6)

Title: See list of treatments offered by the clinician

Actor: Patient

Preconditions:

1. Have already logged in
2. Choose to create a new appointment
3. Choose a specific clinician

Postconditions: The list of treatments have been shown

Scenarios: 1. Click on view treatments

19)

Title: Create materials

Actor: Supplier

Preconditions:

1. Have already logged in

Postconditions: The supplies are needed

Scenarios:

1. Click on add material info
2. Introduce materials that want to be ordered
3. Click save

21)

Title: Modify material

Actor: Supplier

Preconditions: 1. Have already logged in  
2. Material exists

Postconditions: The material is updated

Scenarios: 1. Click on modify material  
2. Show list of available materials  
3. Modify the info of the material  
4. Click on save

28)

Title: Delete a material

Actor: Supplier

Preconditions: 1. Have already logged in  
2. Material exists

Postconditions: The material is deleted

Scenarios: 1. Click on delete material  
4. Click on save

29 - 30)

Title: See list of materials offered by the supplier

Actor: Supplier / Clinician

Preconditions:

4. Have already logged in
5. Have materials created

Postconditions: The list of materials have been shown

Scenarios: 1. Click on view materials  
// For the case of the clinician it will be shown when creating a treatment

31)

Title: Choosing patient

Actor: Clinician

Preconditions:

1. Have already logged in
2. The patient must exist

Postconditions: The clinician has chosen their patient

Scenarios:  
1. Click on create appointment  
2. When asked for patient, introduce the patient id

8)

Title: Choosing clinician according to availability

Actor: Patient

Preconditions:

3. Have already logged in
4. The clinician must be available

Postconditions: The patient has chosen their clinician

Scenarios:  
3. Click on show clinicians  
4. Introduce the info of the clinician (Description, speciality)  
5. Click on save

31-32)

Title: Choose treatment

Actor: Clinician/Patient

Preconditions:

1. Have already logged in
2. Appointment exists

Postconditions: The treatment has been chosen

Scenarios:

4. Select create appointment
5. Introduce necessary data asked for
6. When asked for treatment id, select the one that wants to be chosen

### **FUNCTIONAL REQUIREMENTS:**

1. The system must allow users to create an account by providing personal information
2. The password for each user must be encrypted
3. The system must validate uniqueness of usernames
4. The system must allow users to log in and out securely
5. The system must allow users to update personal information
6. The system must allow users to delete their accounts
7. The system must differentiate the roles of the user with specific permission for accessing or modifying data (patient, clinician or supplier)
8. The system must allow patients and clinicians to create new appointments
9. The system must allow patients and clinicians to modify existing appointments
10. The system must allow patients and clinicians to cancel appointments
11. The system must store appointment details
12. The system must allow patients and clinicians to view their scheduled appointments
13. The system must allow patients to choose clinicians based on their availability
14. The system must allow clinicians to create new treatments
15. The system must allow clinicians to modify existing treatments
16. The system must allow clinicians to delete treatments
17. The system must allow patients to view available treatments
18. The system must allow clinicians to assign treatments to appointments
19. The system must allow suppliers to create and manage material orders
20. The system must allow suppliers to modify existing material orders
21. The system must allow suppliers to delete material orders
22. The system must allow users who need them to see material orders
23. The system must allow users to choose their respective clinician or patient depending on their role when creating an appointment

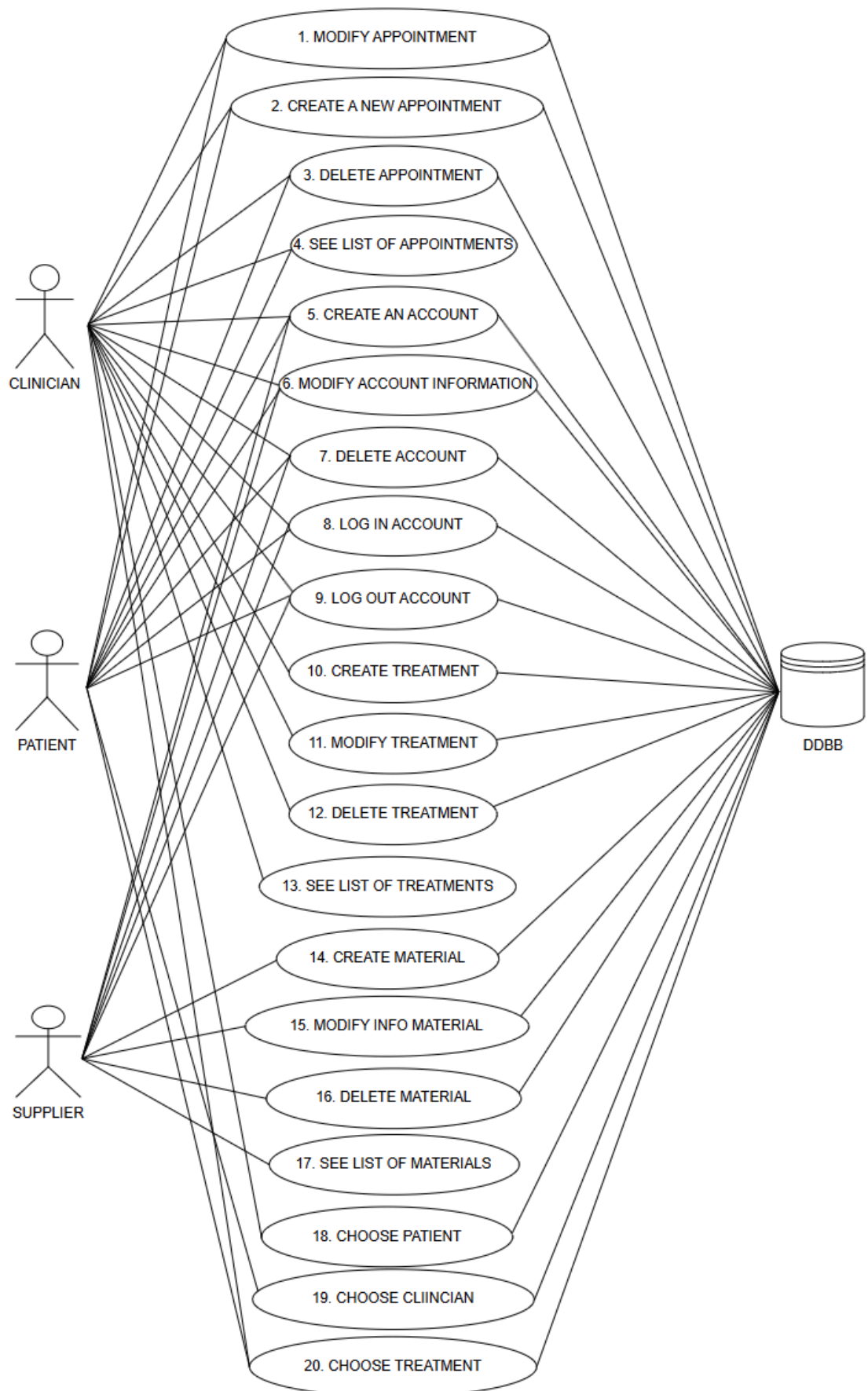
### **TRACEABILITY MATRIX:**

[illegible]

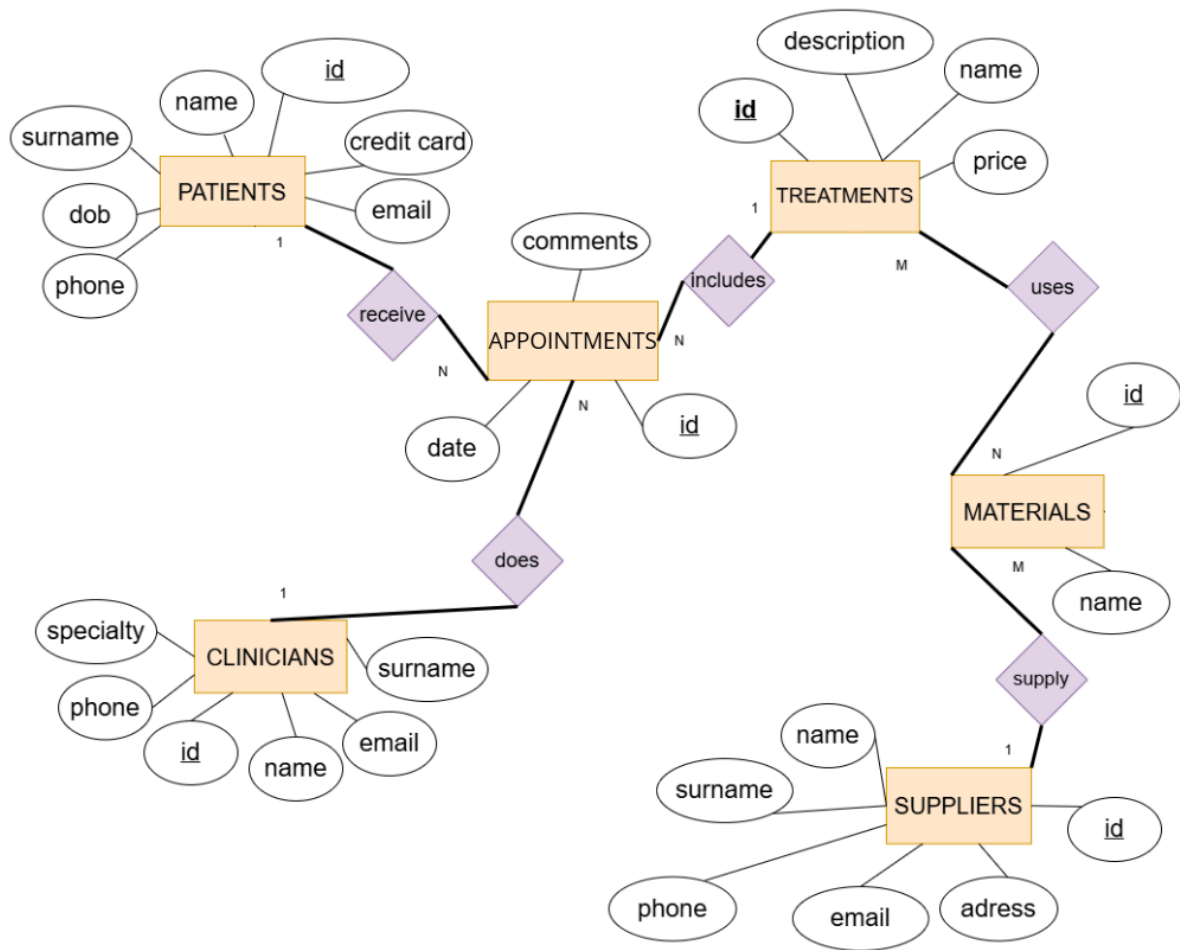


2 2																						
2 3																						
2 4																						
2 5																						
2 6																						
2 7																						
2 8																						
2 9																						
3 0																						
3 1																						
3 2																						

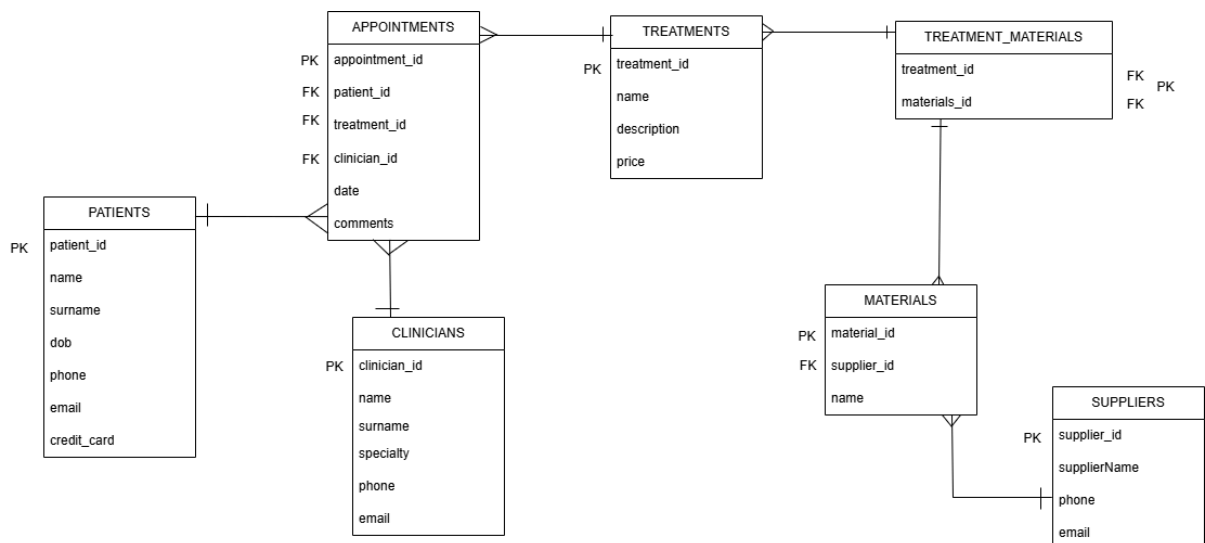
## USE CASES DIAGRAM:



## E-R DIAGRAM:



## TABLES:



### **DDL SQL code: (CREATE TABLE)**

```
CREATE TABLE "Patients" (  
    "patient_id" INTEGER PRIMARY KEY AUTOINCREMENT,  
    "name" TEXT,  
    "surname" TEXT,  
    "dob" DATE,  
    "phone" INTEGER,  
    "email" TEXT UNIQUE NOT NULL,  
    "credit_card" INTEGER  
);
```

```
CREATE TABLE "Clinicians" (  
    "clinician_id" INTEGER PRIMARY KEY AUTOINCREMENT,  
    "name" TEXT,  
    "surname" TEXT,  
    "specialty" TEXT,  
    "phone" INTEGER,  
    "email" TEXT UNIQUE NOT NULL  
);
```

```
CREATE TABLE "Suppliers" (  
    "supplier_id" INTEGER PRIMARY KEY AUTOINCREMENT,  
    "supplierName" TEXT,  
    "phone" INTEGER,  
    "email" TEXT UNIQUE NOT NULL  
);
```

```
CREATE TABLE "Materials" (  
    "materials_id" INTEGER PRIMARY KEY AUTOINCREMENT,  
    "supplier_id" INTEGER NOT NULL,  
    "name" TEXT,  
    FOREIGN KEY ("supplier_id") REFERENCES Suppliers("supplier_id") ON DELETE  
    CASCADE  
);
```

```
CREATE TABLE "Treatments" (  
    "treatment_id" INTEGER PRIMARY KEY AUTOINCREMENT,  
    "name" TEXT,  
    "description" TEXT,  
    "price" NUMERIC  
);
```

```
CREATE TABLE "Appointments" (  
    "appointment_id" INTEGER PRIMARY KEY AUTOINCREMENT,  
    "patient_id" INTEGER,  
    "treatment_id" INTEGER,
```

```

        "clinician_id" INTEGER,
        "date" DATE,
        "comments" TEXT,
        FOREIGN KEY ("patient_id") REFERENCES Patients("patient_id") ON DELETE
        CASCADE,
        FOREIGN KEY ("treatment_id") REFERENCES Treatments("treatment_id") ON
        DELETE CASCADE,
        FOREIGN KEY ("clinician_id") REFERENCES Clinicians("clinician_id") ON DELETE
        CASCADE
    );

CREATE TABLE "Treatment_materials" (
    "treatment_id" INTEGER,
    "materials_id" INTEGER,
    PRIMARY KEY ("treatment_id", "materials_id"),
    FOREIGN KEY ("treatment_id") REFERENCES Treatments("treatment_id") ON
    DELETE CASCADE,
    FOREIGN KEY ("materials_id") REFERENCES Materials("materials_id") ON
    DELETE CASCADE
);

```

### **DML SQL code: (INSERT, UPDATE, DELETE)**

```

INSERT INTO patient(patient_id, name, surname, dob, phone, email, credit_card) VALUES(
2341, "Jorge", "Gonzalez", 23/06/1992, 684027863, "jorgegonzalez@gmail.com",
123456789);

```

```

INSERT INTO clinician(clinician_id, name, surname, specialty, phone, email) VALUES(
7823, "Julia", "Velazquez", 692438522, "juliavelazquezez@gmail.com");

```

```

INSERT INTO treatment(treatment_id, name, description, price) VALUES( 2003,
"Fenestration", "Palate surgery", 200);

```

```

INSERT INTO treatment_materials(treatment_id, materials_id) VALUES( 2003, 5053);

```

```

INSERT INTO supplier(supplier_id, name, phone, email) VALUES( 8963, "Roberto" , 623
985 233, "robertohernandezez@gmail.com");

```

```

INSERT INTO materials(materials_id, name, supplier_id) VALUES( 4421, "Dental mirror",
160);

```

SELECT :

\*\*\*\*\* SHOW ALL PATIENTS \*\*\*\*\*

```

SELECT * FROM patients

```

\*\*\*\*\* SEE ALL APPOINTMENTS WITH NAME AND CLINICIAN \*\*\*\*\*

```
SELECT a.id, p.name AS paciente, c.name AS odontologo, a.date, a.time, a.reason
FROM appointments a
JOIN patients p ON a.patient_id = p.id
JOIN clinicians c ON a.clinician_id = c.id;
```

\*\*\*\*\* CHANGE NAME OF PATIENT \*\*\*\*\*

```
UPDATE patients
SET name= 'Sofia'
WHERE id = 1;
```

\*\*\*\*\* UPDATE MATERIAL NAME \*\*\*\*\*

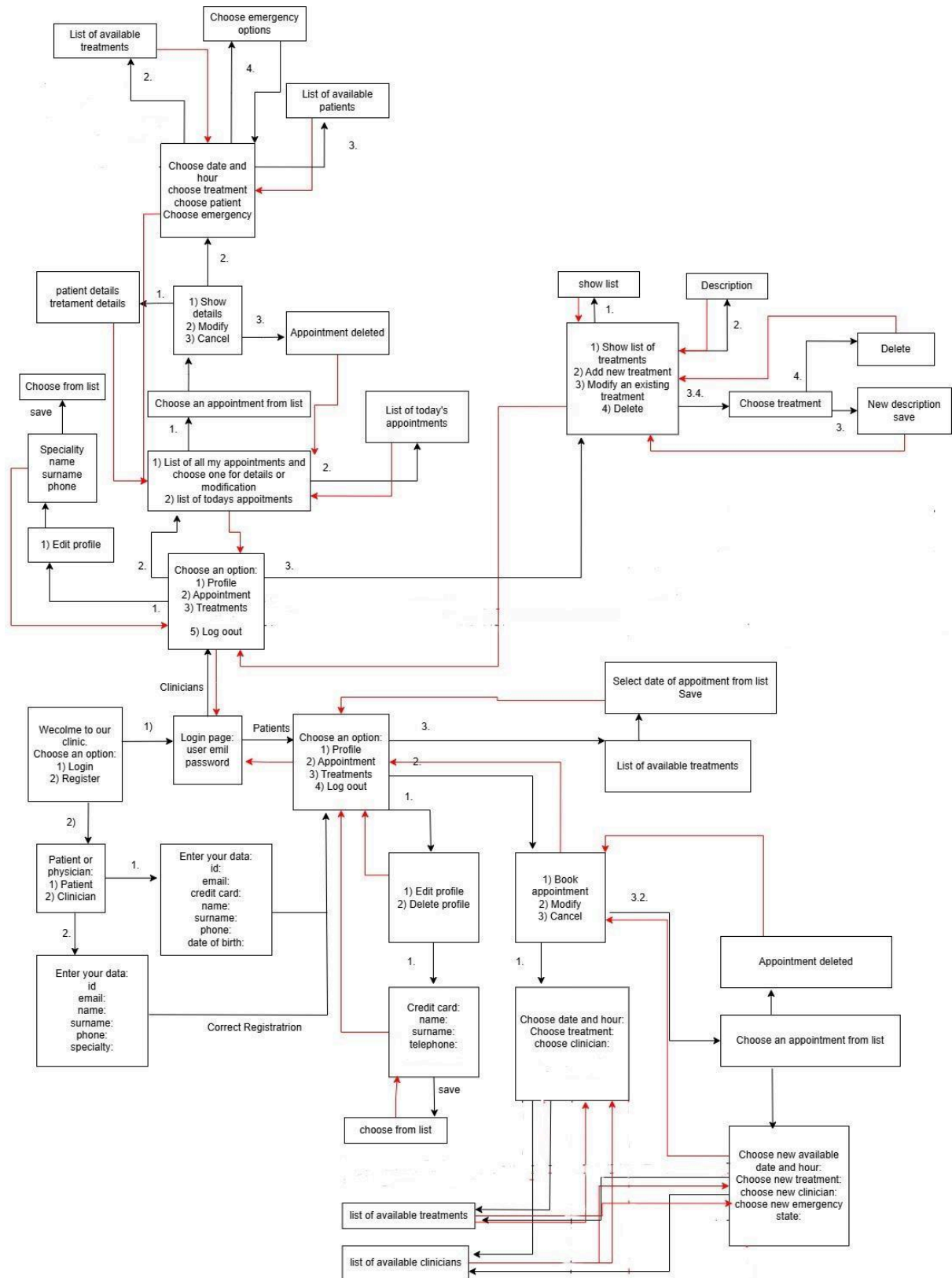
```
UPDATE materials
SET name = 'toothbrush'
WHERE name = 'Guaantes';
```

DELETE :

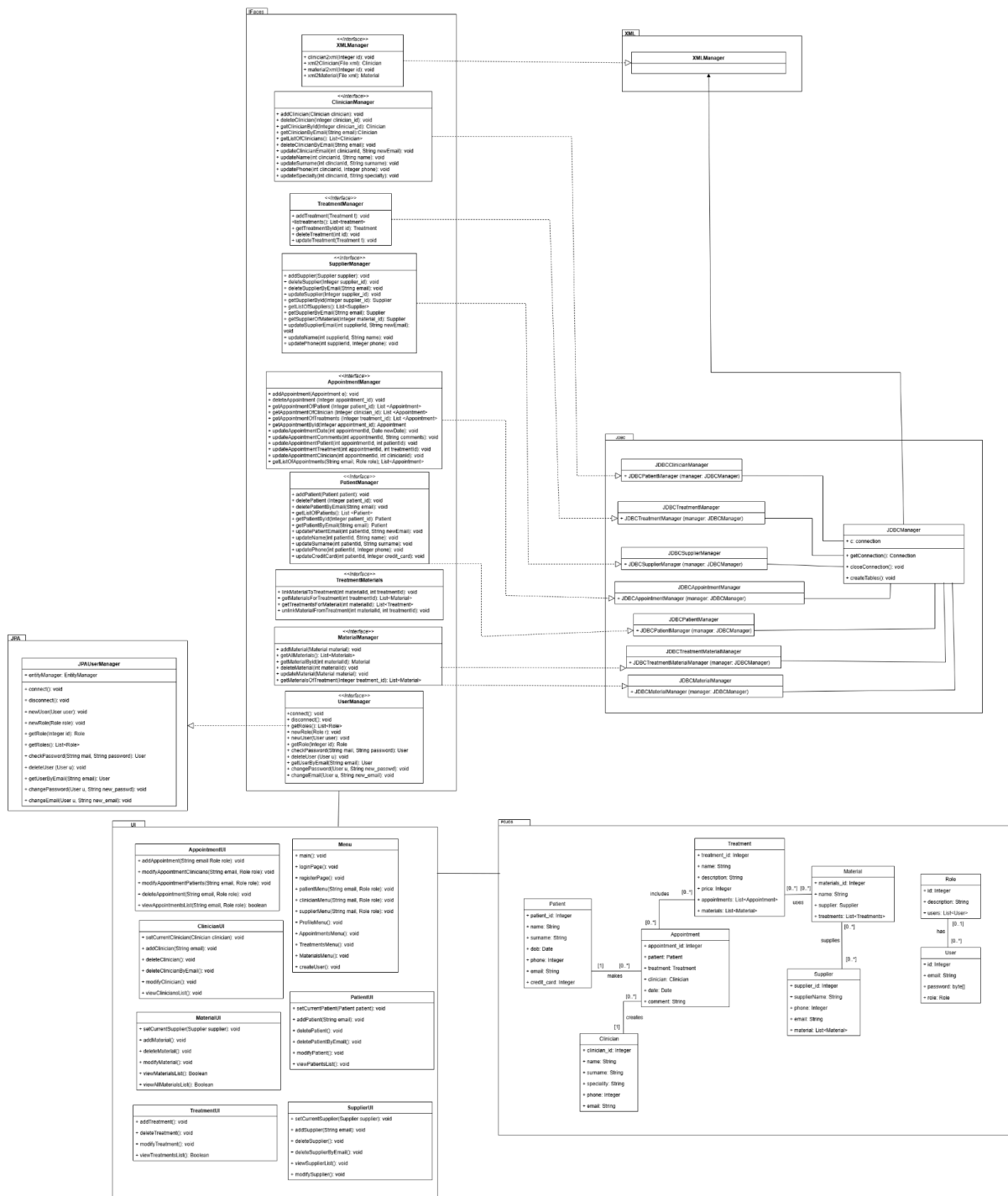
\*\*\*\*\* DELETE APPOINTMENTS \*\*\*\*\*

```
DELETE FROM appointments
WHERE id = 2;
```

### MOCK UP:



**UML:**





**EXCELL:**

CLINICIANS		PATIENTS		TREATMENT-MATERIALS	
Clinician_id	1	Patient_id	1	treatment_id	11
Name	Paco	Name	Flora	materials_id	5
Surname	Gomez	Surname	Garcia		
Speciality	general	Telephone	554232554		
Telephone	658395064	email	<a href="mailto:flora@gmail.com">flora@gmail.com</a>		
email	<a href="mailto:paco@gmail.com">paco@gmail.com</a>	password	123		
password	pw	Credit_card	123456781		
TREATMENTS		SUPPLIERS		ROLES	
Treatment_id	8	Supplier_id	3		2 Clinician
Name	Dental hygiene course	Name	Gonzalo		
Description	Learning basics	Telephone	645374653		
Price	50	email	<a href="mailto:gonzalo@gmail.com">gonzalo@gmail.com</a>		
		password	gn		
MATERIALS		APPOINTMENT		USERS	
material_id	7	appointment	1	id	51
name	xray machine	date	12/06/2025	email	<a href="mailto:paco@gmail.com">paco@gmail.com</a>
supplier_id	3	comment	dental filling	password	
		patient	Flora	role_id	2
		treatment_id	8		
		clinician_id	1		