



Sillah Phase 4

CS340: Introduction to Databases Systems

Section: 1629

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Table of Contents

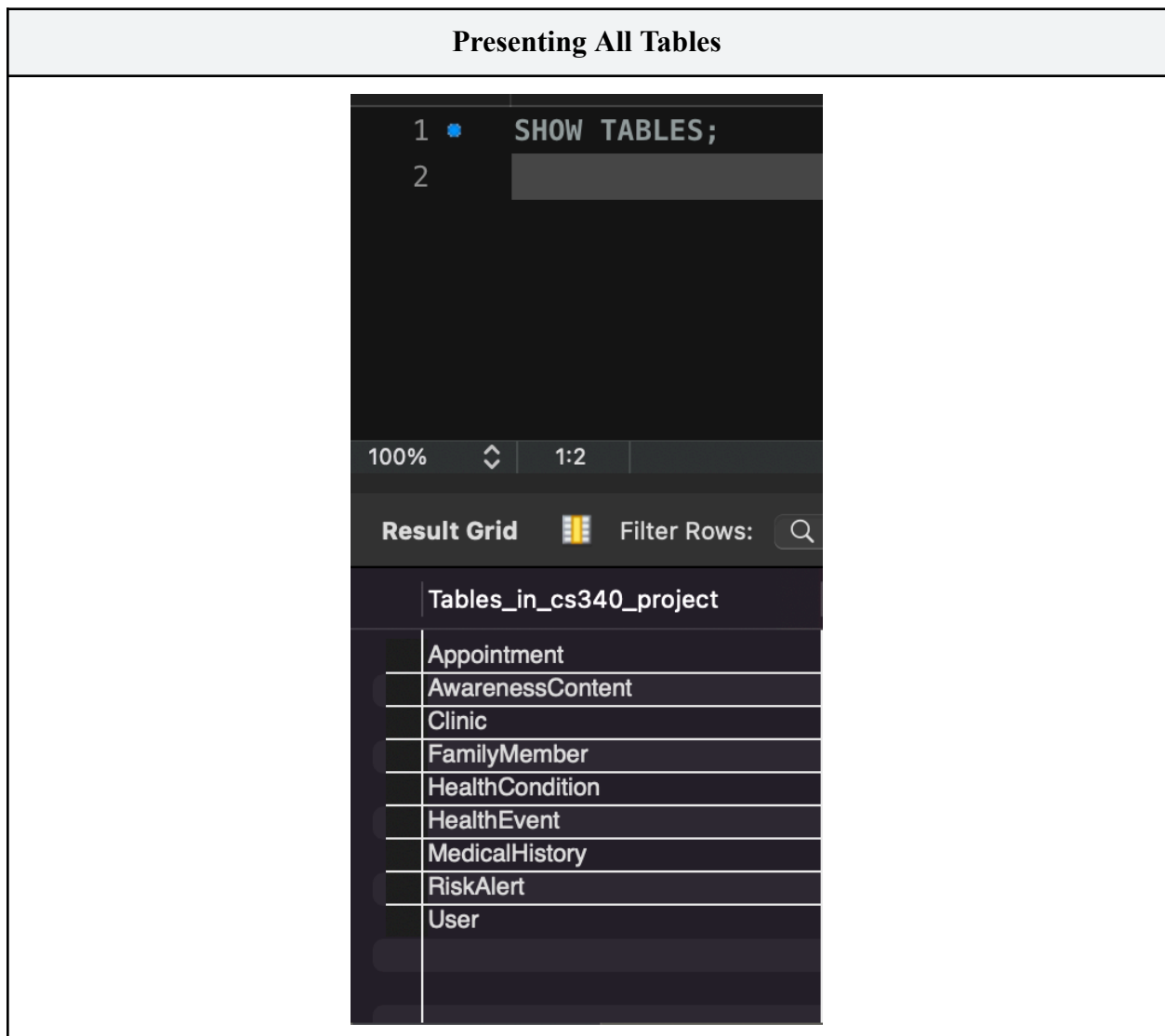
1. Database Implementation.....	3
1.1 Database Creation and Tables.....	3
Presenting All Tables.....	3
1.2 Table Structure Verification.....	4
User Table.....	4
FamilyMember Table.....	5
MedicalHistory Table.....	6
1.3 Foreign Key Constraints and Referential Integrity.....	7
FamilyMember Foreign Key.....	7
MedicalHistory Foreign Keys.....	8
1.4 Data Population Verification.....	8
Row Count.....	9
Conclusion.....	9

1. Database Implementation

1.1 Database Creation and Tables

The database cs340_project was successfully created and initialized.

To verify the schema structure, the SHOW TABLES; command was executed.



The following tables were created:

- Appointment
- AwarenessContent
- Clinic

- FamilyMember
- HealthEvent
- RiskAlert
- HealthCondition
- MedicalHistory
- User

This confirms that all required entities were implemented in the relational schema.

1.2 Table Structure Verification

The structure of core tables was verified using the DESCRIBE command to confirm:

- Primary keys
- Null constraints
- Auto-increment properties
- Data types
- Default values

User Table						
<pre>1 • DESCRIBE User;</pre>						
<div>100% 15:1</div> <div>Result Grid Filter Rows: Search Export:</div>						
Field	Type	Null	Key	Default	Extra	
user_id	int	NO	PRI	NONE	auto_increment	
first_name	varchar(50)	YES		NONE		
last_name	varchar(50)	YES		NONE		
email	varchar(100)	YES	UNI	NONE		
password_hash	varchar(255)	YES		NONE		
phone_number	varchar(20)	YES		NONE		
created_at	datetime	YES		CURRENT_TIMESTAMP	DEFAULT_GENERATED	

The User table includes:

- Primary Key: user_id

- Unique constraint on email
- Automatic timestamp generation for created_at

FamilyMember Table																																																																																										
<pre>1 DESCRIBE FamilyMember;</pre>																																																																																										
<div> <div>100%</div> <div>1:2</div> </div> <div> <div>Result Grid</div> <div>Filter Rows: <input type="text" value="Search"/></div> <div>Export: </div> </div> <table> <tr> <th></th><th>Field</th><th>Type</th><th>Null</th><th>Key</th><th>Default</th><th>Extra</th></tr> <tr> <td></td><td>member_id</td><td>int</td><td>NO</td><td>PRI</td><td>NULL</td><td>auto_increment</td></tr> <tr> <td></td><td>user_id</td><td>int</td><td>NO</td><td>MUL</td><td>NULL</td><td></td></tr> <tr> <td></td><td>first_name</td><td>varchar(50)</td><td>NO</td><td></td><td>NULL</td><td></td></tr> <tr> <td></td><td>last_name</td><td>varchar(50)</td><td>NO</td><td></td><td>NULL</td><td></td></tr> <tr> <td></td><td>date_of_birth</td><td>date</td><td>NO</td><td></td><td>NULL</td><td></td></tr> <tr> <td></td><td>relationship</td><td>varchar(50)</td><td>YES</td><td></td><td>NULL</td><td></td></tr> <tr> <td></td><td>contact_phone</td><td>varchar(20)</td><td>YES</td><td></td><td>NULL</td><td></td></tr> <tr> <td></td><td>medical_history</td><td>text</td><td>YES</td><td></td><td>NULL</td><td></td></tr> <tr> <td></td><td>blood_type</td><td>enum('A+', 'A-', 'B+', 'B-', 'AB+', 'AB-', 'O+', 'O-')</td><td>YES</td><td></td><td>NULL</td><td></td></tr> <tr> <td></td><td>gender</td><td>enum('Male', 'Female')</td><td>YES</td><td></td><td>NULL</td><td></td></tr> <tr> <td></td><td>status</td><td>varchar(30)</td><td>YES</td><td></td><td>NULL</td><td></td></tr> </table>								Field	Type	Null	Key	Default	Extra		member_id	int	NO	PRI	NULL	auto_increment		user_id	int	NO	MUL	NULL			first_name	varchar(50)	NO		NULL			last_name	varchar(50)	NO		NULL			date_of_birth	date	NO		NULL			relationship	varchar(50)	YES		NULL			contact_phone	varchar(20)	YES		NULL			medical_history	text	YES		NULL			blood_type	enum('A+', 'A-', 'B+', 'B-', 'AB+', 'AB-', 'O+', 'O-')	YES		NULL			gender	enum('Male', 'Female')	YES		NULL			status	varchar(30)	YES		NULL	
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	status	varchar(30)	YES		NULL																																																																																					

The FamilyMember table includes:

- Primary Key: member_id
- Foreign key reference to User
- Enum constraints for blood_type and gender
- Proper nullability rules for optional attributes

MedicalHistory Table

```
1 DESCRIBE MedicalHistory;
```

100% 25:1

Result Grid



Filter Rows:



Search

Export:



	Field	Type	Null	Key	Default	Extra
	event_id	int	NO	PRI	NULL	auto_increment
	member_id	int	NO	MUL	NULL	
	condition_id	int	NO	MUL	NULL	
	event_date	date	NO		NULL	
	event_type	varchar(50)	YES		NULL	
	diagnosis	text	YES		NULL	
	severity	enum('Low','Medium','High')	YES		NULL	
	symptoms	text	YES		NULL	
	treatment	text	YES		NULL	
	outcome	text	YES		NULL	

The MedicalHistory table includes:

- Primary Key: event_id
- Foreign key references to:
 - FamilyMember
 - HealthCondition
- Enum constraint for severity
- Proper indexing on foreign keys

1.3 Foreign Key Constraints and Referential Integrity

Foreign key relationships were verified using the SHOW CREATE TABLE command.

This ensures referential integrity is enforced at the database level.

FamilyMember Foreign Key

```
1 SHOW CREATE TABLE FamilyMember;
2
```

100% 1:2

Result Grid

Filter Rows: Search

Export:

Table	Create Table
FamilyMember	CREATE TABLE `FamilyMember` (`member_i...

```
1 SHOW CREATE TABLE FamilyMember;
```

100% 32:1

Form Editor

Navigate: 1/1

Table: FamilyMember

Create Table: CREATE TABLE `FamilyMember` (
 `member_id` int NOT NULL AUTO_INCREMENT,
 `user_id` int NOT NULL,
 `first_name` varchar(50) NOT NULL,
 `last_name` varchar(50) NOT NULL,
 `date_of_birth` date NOT NULL,
 `relationship` varchar(50) DEFAULT NULL,
 `contact_phone` varchar(20) DEFAULT NULL,
 `medical_history` text,
 `blood_type` enum('A+', 'A-', 'B+', 'B-', 'AB+', 'AB-', 'O+', 'O-') DEFAULT NULL,
 `gender` enum('Male', 'Female') DEFAULT NULL,
 `status` varchar(30) DEFAULT NULL,
 PRIMARY KEY (`member_id`),
 KEY `fk_family_user` (`user_id`),

This confirms:

- FamilyMember.user_id references User.user_id
- Cascade rules are correctly applied

7

MedicalHistory Foreign Keys

1 • SHOW CREATE TABLE MedicalHistory;

100% 34:1

Result Grid Filter Rows: Search Export:

Table	Create Table
MedicalHistory	CREATE TABLE `MedicalHistory` (`event_id` i...

1 • SHOW CREATE TABLE MedicalHistory;

100% 34:1

Form Editor Navigate: 1/1

Table: MedicalHistory

Create Table: CREATE TABLE `MedicalHistory` (
`event_id` int NOT NULL AUTO_INCREMENT,
`member_id` int NOT NULL,
`condition_id` int NOT NULL,
`event_date` date NOT NULL,
`event_type` varchar(50) DEFAULT NULL,
`diagnosis` text,
`severity` enum('Low','Medium','High') DEFAULT NULL,
`symptoms` text,
`treatment` text,
`outcome` text,
PRIMARY KEY (`event_id`),
KEY `fk_history_member` (`member_id`),
KEY `fk_history_condition` (`condition_id`),

This confirms:

- MedicalHistory.member_id references FamilyMember.member_id
- MedicalHistory.condition_id references HealthCondition.condition_id
- Referential integrity is enforced through foreign key constraints

1.4 Data Population Verification

After table creation, sample data was inserted into all tables.

To verify successful data insertion, row counts were retrieved using aggregate queries.

Row Count

```
1  •  SELECT
2      (SELECT COUNT(*) FROM User) AS Users,
3      (SELECT COUNT(*) FROM FamilyMember) AS FamilyMembers,
4      (SELECT COUNT(*) FROM HealthCondition) AS HealthConditions,
5      (SELECT COUNT(*) FROM MedicalHistory) AS MedicalHistory,
6      (SELECT COUNT(*) FROM RiskAlert) AS RiskAlerts,
7      (SELECT COUNT(*) FROM Clinic) AS Clinics,
8      (SELECT COUNT(*) FROM Appointment) AS Appointments,
9      (SELECT COUNT(*) FROM AwarenessContent) AS AwarenessContent,
10     (SELECT COUNT(*) FROM HealthEvent) AS HealthEvents;
11
```

100% 1:11

Result Grid Filter Rows: Search Export:

	Users	FamilyMembers	HealthConditio...	MedicalHisto...	RiskAlerts	Clinics	Appointmen...	AwarenessContent	HealthEvents
	10	20	10	10	10	20	10	10	10

Row count summary:

- Users: 10
- FamilyMembers: 20
- HealthConditions: 10
- MedicalHistory: 10
- RiskAlerts: 10
- Clinics: 20
- Appointments: 10
- AwarenessContent: 10
- HealthEvents: 10

This confirms that all tables are populated and operational.

Conclusion

The database implementation satisfies the project requirements:

- All required entities were created.

- Primary and foreign key constraints were correctly implemented.
- Referential integrity is enforced.
- Appropriate data types and constraints are applied.
- The database is populated with consistent sample data.

The system is fully functional at the relational database level.