

Project, Part 2: Database Creation

Relational Model:

Some changes needed to be made to the relational model. Some basic errors were corrected like the duplication of attributes that could introduce incoherent data. Essentially, all corrections made were based on the given feedback received from Project 1. Nothing was modified to be made easier.

1. Parent(QcHealthCard, PhoneNumber, Name, BloodType, DateOfBirth, Address, CurrentProfession, Email)

2. BiologicalDad(QcHealthCard, PhoneNumber, Name, BloodType, DateOfBirth, Address, CurrentProfession, Email)

3. BiologicalMom(QcHealthCard, PhoneNumber, Name, BloodType, DateOfBirth, Address, CurrentProfession, Email, TotalNumberOfPreg, CurrentPregNumber)

4. Couple(CoupleID, IsInterestedInProgram, IsInvited, InfoSessionsAttended, ExpectedTimeFrameOfBirth, QcHealthCardMom, QcHealthCardDad, InstName)

QcHealthCardMom foreign key referencing relation BiologicalMom

QcHealthCardDad foreign key referencing relation BiologicalMom

InstName foreign key referencing relation HCInstitution

5. HCInstitution(InstName, PhoneNumber, Email, Address, Website)

6. CommClinic(InstName)

InstName foreign key referencing relation HCInstitute

7. BirthCenter(InstName)

InstName foreign key referencing relation HCInstitute

8. Midwife(PractitionerID, Name, Email, PhoneNumber, InstName)

InstName foreign key referencing relation Institution

9. Backups(PrimaryMidwife, BackupMidwife)

PrimaryMidwife foreign key references relation Midwife

BackupMidwife foreign key references relation Midwife

10. Pregnancy(PregnancyID, PregNum, FinalEstimatedDate, LastMenstruelPDate, UltraSoundDueDate, NumberOfBabies, CoupleID, InstName)

CoupleID foreign key referencing relation Couple

InstName foreign key referencing HCInstitution

LocationOfBirth foreign key referencing BirthCenter (Also the location of birth)

11. Baby(BabyID, Gender, Name, HealthStatus, BloodType, DateOfBirth, TimeOfBirth, PregnancyID)

PregnancyID foreign key referencing relation Pregnancy

12. Supervises(PractitionerID, PregnancyID)

PractitionerID foreign key referencing relation Midwife

PregnancyID foreign key referencing Pregnancy

13. Attends(CoupleID, PractitionerID, Date, Time, HasAttended, IsRegistered)

CoupleID foreign key referencing relation Couple,

(PractitionerID, Date, Time) foreign key referencing OnlineInfoSession

14. OnlineInfoSession(PractitionerID, Date, Time, Language, CouplesAttendance)

PractitionerID foreign key referencing relation Midwife

15. Appointment(AppointmentID, Date, Time, PractitionerID, PregnancyID)

PractitionerID foreign key referencing relation Midwife

PregnancyID foreign key referencing relation Pregnancy

16. Note(AppointmentID, Date, Time, Observation)

AppointmentID foreign key referencing relation Appointment

17. Technician(TechnicianID, Name, PhoneNumber)

18. Lab(LabName, NumberOfTests, LabAddress)

19. MedicalTest(TestID, TestResult, TestType, DateLabWorkWasDone, DateTestWasPrescribed, DateSampleWasTaken, RecipientOfTest, TechnicianID, LabName, PractitionerID, BabyID, PregnancyID)

TechnicianID foreign key referencing relation Technician

LabName foreign key referencing relation Lab

PractitionerID foreign key referencing relation Midwife

BabyID foreign key referencing relation Baby

PregnancyID foreign key referencing relation Pregnancy

Pending Constraints:

Unborn babies will have a date of birth assigned to them that is equal to their expected date of birth. The time of birth will be set to 00:00:00.

Many data fields with VARCHAR are left intentionally short. This was to avoid having a lot of clutter when making queries, but in a more real setting, they would need to allow for much more text.

In my current database model, there is no attribute which allows us to see where an appointment will take place. Instead, all appointments take place at where the primary midwife works.

An OnlineInfoSession may have 0 people registered for it, but should not go ahead if 0 attend it, it should be cancelled or moved to a later date.

A Couple can have a maximum of two midwives. The participation constraint was put in place, while the limiting constraint was not. We could have simply put a CHECK condition for this.

A Couple can only attend an OnlineInfoSession if they are registered for it.

In Pregnancy, the FinalEstimatedDate should be decided by the LastMenstrualDate and UltraSoundDueDate. The Midwife and BiologicalMom are the only ones that can set the FinalEstimatedDate attribute.

SQL Queries:

a)

```
SELECT DISTINCT Appointment.Date, Appointment.Time, BiologicalMom.QcHealthCard,
BiologicalMom.Name, BiologicalMom.PhoneNumber
```

```
FROM Midwife, Appointment, Pregnancy, BiologicalMom, Couple
```

```
WHERE (Midwife.name = 'Marion Girard' and Midwife.PractitionerID = Appointment.PractitionerID
and Date BETWEEN '2022-03-21' AND '2022-03-25')
```

```
AND Appointment.PregnancyID = Pregnancy.PregnancyID AND Pregnancy.CoupleID =
Couple.CoupleID AND Couple.QcHealthCardMom = BiologicalMom.QcHealthCard
```

```
;
```

```
Database Connection Information
Database server      = DB2/LINUX8664 11.5.4.0
SQL authorization ID = MMAGR11
Local database alias = C5421

db2 => SELECT DISTINCT Appointment.Date, Appointment.Time, BiologicalMom.QcHealthCard, BiologicalMom.Name, BiologicalMom.PhoneNumber
FROM Midwife, Appointment, Pregnancy, BiologicalMom, Couple
WHERE (Midwife.name = 'Marion Girard' and Midwife.PractitionerID = Appointment.PractitionerID and Date BETWEEN '2022-03-21' AND '2022-03-25')
AND Appointment.PregnancyID = Pregnancy.PregnancyID AND Pregnancy.CoupleID = Couple.CoupleID AND Couple.QcHealthCardMom = BiologicalMom.QcHealthCard
;
db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) =>
DATE          TIME          QCHEALTHCARD NAME          PHONENUMBER
-----
03/21/2022 09:00:00 SAR75678778 Nora Sarin 4189009889
03/24/2022 11:00:00 GUTV18001000 Victoria Gutierrez 4183204567
03/22/2022 15:30:00 MCCJ45612334 Jessie McCollough 5143760022

3 record(s) selected.

db2 =>
```

b)

```
SELECT DISTINCT MedicalTests.DateLabWorkWasDone, MedicalTests.TestResult
FROM BiologicalMom, MedicalTests, Pregnancy, Couple
WHERE BiologicalMom.Name = 'Victoria Gutierrez' AND BiologicalMom.QcHealthCard =
Couple.QcHealthCardMom AND Couple.CoupleID = Pregnancy.CoupleID AND Pregnancy.PregNum =
2
AND Pregnancy.PregnancyID = MedicalTests.PregnancyID AND MedicalTests.TestType = 'Blood Iron'
;
```

```
db2 => SELECT DISTINCT MedicalTests.DateLabWorkWasDone, MedicalTests.TestResult
FROM BiologicalMom, MedicalTests, Pregnancy, Couple
WHERE BiologicalMom.Name = 'Victoria Gutierrez' AND BiologicalMom.QcHealthCard = Couple.QcHealthCardMom AND Couple.CoupleID = Pregnancy.CoupleID AND Pregnancy.PregNum = 2
AND Pregnancy.PregnancyID = MedicalTests.PregnancyID AND MedicalTests.TestType = 'Blood Iron'
[.db2 (cont.) => db2 (cont.) => db2 (cont.) =>]

DATELABWORKWASDONE  TESTRESULT
-----
09/20/2021          Normal.
12/23/2021          Abnormal.
05/27/2022          Better.

  3 record(s) selected.

db2 => █
```

c)

```
SELECT HCInstitution.InstName, COUNT (DISTINCT Pregnancy.PregnancyID) as
Pregnancies_In_July
FROM HCInstitution, Midwife, Pregnancy, Couple
WHERE HCInstitution.InstName = Midwife.InstName AND Midwife.InstName = Pregnancy.InstName
AND Pregnancy.CoupleID = Couple.CoupleID AND (Pregnancy.FinalEstimatedDate BETWEEN '2022-
07-01' AND
'2022-07-31' OR Couple.ExpectedTimeFrameOfBirth BETWEEN '2022-07-01' AND '2022-07-31' )
GROUP BY (HCInstitution.InstName)
```

[illegible]

d)

```
SELECT BiologicalMom.QcHealthCard, BiologicalMom.Name, BiologicalMom.PhoneNumber
FROM BiologicalMom, Midwife, Couple, Pregnancy, Supervises
WHERE (Pregnancy.FinalEstimatedDate BETWEEN '2022-02-24' AND '2022-12-31' OR
Couple.ExpectedTimeFrameOfBirth BETWEEN '2022-02-24' AND '2022-12-31' )
AND Pregnancy.PregnancyID = Supervises.PregnancyID AND Midwife.InstName = 'Lac-Saint-Louis'
AND Midwife.PractitionerID = Supervises.PractitionerID
AND Couple.CoupleID = Pregnancy.CoupleID AND BiologicalMom.QcHealthCard =
Couple.QcHealthCardMom
;
```

```
db2 => SELECT BiologicalMom.QcHealthCard, BiologicalMom.Name, BiologicalMom.PhoneNumber
FROM BiologicalMom, Midwife, Couple, Pregnancy, Supervises
WHERE (Pregnancy.FinalEstimatedDate BETWEEN '2022-02-24' AND '2022-12-31' OR Couple.ExpectedTimeFrameOfBirth BETWEEN '2022-02-24' AND '2022-12-31' )
AND Pregnancy.PregnancyID = Supervises.PregnancyID AND Midwife.InstName = 'Lac-Saint-Louis' AND Midwife.PractitionerID = Supervises.PractitionerID
AND Couple.CoupleID = Pregnancy.CoupleID AND BiologicalMom.QcHealthCard = Couple.QcHealthCardMom
db2 (cont.) => ;db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) =>

QCHEALTHCARD NAME                                PHONENUMBER
-----
LALJ12345678 Jeanne Lalonde                        4503762205
PITA45677654 Alli Pitlick                          5148679167
GUTV10001000 Victoria Gutierrez                   4183204567

3 record(s) selected.

db2 =>
```

e)

```
SELECT DISTINCT BiologicalMom.QcHealthCard, BiologicalMom.Name
FROM BiologicalMom, Couple, Pregnancy
WHERE Pregnancy.NumberOfBabies >= 2 AND Pregnancy.CoupleID = Couple.CoupleID AND
BiologicalMom.QcHealthCard = Couple.QcHealthCardMom
;
```

```
db2 => SELECT DISTINCT BiologicalMom.QcHealthCard, BiologicalMom.Name
FROM BiologicalMom, Couple, Pregnancy
WHERE Pregnancy.NumberOfBabies >= 2 AND Pregnancy.CoupleID = Couple.CoupleID AND BiologicalMom.QcHealthCard = Couple.QcHealthCardMom
db2 (cont.) => db2 (cont.) => db2 (cont.) =>

QCHEALTHCARD NAME
-----
LALJ12345678 Jeanne Lalonde
PITA45677654 Alli Pitlick
GUTV10001000 Victoria Gutierrez

3 record(s) selected.

db2 =>
```

Midwife Information:

a)

```
CREATE VIEW midwifeinfo (PractitionerID, Name, PhoneNumber, Email, InstName, Address) AS  
SELECT Midwife.PractitionerID, Midwife.Name, Midwife.PhoneNumber, Midwife.Email,  
Midwife.InstName, HCInstitution.Address  
FROM Midwife, HCInstitution  
WHERE Midwife.InstName = HCInstitution.InstName  
;
```

b)

```
db2 => CREATE VIEW midwifeinfo (PractitionerID, Name, PhoneNumber, Email, InstName, Address) AS  
SELECT Midwife.PractitionerID, Midwife.Name, Midwife.PhoneNumber, Midwife.Email, Midwife.InstName, HCInstitution.Address  
FROM Midwife, HCInstitution  
WHERE Midwife.InstName = HCInstitution.InstName  
;  
db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => DB200001 The SQL command completed successfully.  
db2 =>
```

c)

```
SELECT *  
FROM midwifeinfo  
LIMIT 5  
;
```

```
db2 => SELECT *  
FROM midwifeinfo  
LIMIT 5  
[:db2 (cont.) => db2 (cont.) => db2 (cont.) =>]  
PRACTITIONERID NAME PHONENUMBER EMAIL INSTNAME ADDRESS  
-----  
0 Jeannette LaBrune 5149898989 jlb@hotmail.ca Hôpital Maisonneuve Rosemont boulevard Assomption Mon  
tréal QC H1T 2M4  
4 Florence Dussault 5140907656 flduss@gmail.ca Hôpital Maisonneuve Rosemont boulevard Assomption Mon  
tréal QC H1T 2M4  
2 Betty Draper 5141234537 bettydraps@hotmail.ca Hôtel-Dieu de Québec 11 Côte du Palais  
1 Greg Focker 4503764545 gregfo@gmail.com Clinique Médicale Tardif 400 Bd Jean-Lesage  
3 Carmella Soprano 4183451234 carmsop@hotmail.com Clinique Medicale St-Andre 8448 Bld St-Michel  
  
5 record(s) selected.  
db2 =>
```

d)

```
SELECT *  
FROM midwifeinfo  
WHERE midwifeinfo.InstName = 'Lac-Saint-Louis'  
LIMIT 5  
;
```

```
db2 => SELECT *  
FROM midwifeinfo  
WHERE midwifeinfo.InstName = 'Lac-Saint-Louis'  
LIMIT 5  
[;db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => ]  


| PRACTITIONERID | NAME               | PHONENUMBER | EMAIL              | INSTNAME        | ADDRESS                  |
|----------------|--------------------|-------------|--------------------|-----------------|--------------------------|
| 9              | Christine Sinclair | 4588889999  | thegoat@hotmail.ca | Lac-Saint-Louis | 1250 Boulevard Saint-Lou |
| 10             | Marion Girard      | 4582233456  | mgirard@hotmail.ca | Lac-Saint-Louis | 1250 Boulevard Saint-Lou |

  
2 record(s) selected.  
db2 =>
```

e)

```
INSERT INTO midwifeinfo (PractitionerID, Name, Email, PhoneNumber, InstName, Address) VALUES  
(13, 'Jess McDonald', 'jmc@hotmail.ca', '5149494929', 'Hôpital Maisonneuve Rosemont', 'boulevard  
Assomption Montréal QC H1T 2M4')  
;
```

```
db2 => INSERT INTO midwifeinfo (PractitionerID, Name, Email, PhoneNumber, InstName, Address) VALUES  
(13, 'Jess McDonald', 'jmc@hotmail.ca', '5149494929', 'Hôpital Maisonneuve Rosemont', 'boulevard Assomption Montréal QC H1T 2M4')  
[;db2 (cont.) => db2 (cont.) => ]  
DB21034E The command was processed as an SQL statement because it was not a  
valid Command Line Processor command. During SQL processing it returned:  
SQL0150N The target fullselect, view, typed table, materialized query table,  
range-clustered table, or staging table in the INSERT, DELETE, UPDATE, MERGE,  
or TRUNCATE statement is a target for which the requested operation is not  
permitted. SQLSTATE=42807  
db2 =>
```

We can't add data to a view simply because a view is not a table. A view is simply a recollection of data, a snapshot of it. Views are used to store definitions rather than tuples, therefore, adding or removing information would not make sense given that added data should always be added to a table where tuples are modifiable.

Check Constraints:

Adding Constraint:

```
ALTER TABLE MedicalTests  
ADD CONSTRAINT LabDateNotAfterTestPrescription  
CHECK (DateLabWorkWasDone > DateTestWasPrescribed)  
;
```

```
permitted. SQLSTATE=12007  
db2 => ALTER TABLE MedicalTests  
ADD CONSTRAINT LabDateNotAfterTestPrescription  
CHECK (DateLabWorkWasDone > DateTestWasPrescribed)  
;  
db2 (cont.) => db2 (cont.) => db2 (cont.) => DB20000I The SQL command completed successfully.  
db2 => █
```

Making sure the constraint works:

```
INSERT INTO MedicalTests (TestID, TestResult, TestType, DateLabWorkWasDone,  
DateTestWasPrescribed, DateSampleWasTaken, TechnicianID, LabName, PractitionerID, BabyID,  
PregnancyID) VALUES
```

```
(15, 'Success.', 'Ultrasound', '2021-03-13', '2021-03-14', '2021-03-03', 0, 'Institut de Médecine de  
Montréal', 0, 0, 0)
```

```
;
```

```
DB21034E The command was processed as an SQL statement because it was not a  
valid Command Line Processor command. During SQL processing it returned:  
SQL0545N The requested operation is not allowed because a row does not  
satisfy the check constraint  
"MMAGRI1.MEDICALTESTS.LABDATENOTAFTERTESTPRESCRIPTION". SQLSTATE=23513  
db2 => █
```