COMP 421 Project Deliverable 2

Usman Hameed Ullah
260925886

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1 Relational Translation

Midwife(practitionerID, name, email, phone number, institutionemail)

- institutionemail foreign key referencing relation “Employs” with Birthing Institution

BirthingInstitution(institutionemail, name, phonenumber, address, website)

- Birthing Institution ISA is covering
- Birthing Institution entity only exists in one of the sub-classes

BirthingCentre(institutionemail)

CommunityClinic(institutionemail)

Pregnancy(pregnancyID, pregnancynumber, menstrualduedate, datingultrasoundduedate, finalduedate, expectedbirth, practitionerID, practitionerID, parentsID, institutionemail)

- First practionerID foreign key referencing relation “Primary for” with Midwife
- Second practionerID foreign key referencing relation “Secondary for” with Midwife
- ParentsID foreign key referencing relation “Have” with Baby’s Parents
- Institutionemail foreign key referencing relation “Birthed at” with Birthing Institution (optional)

Parents(parentsID, patientID, fatherID)

- PatientID foreign key referencing relation “In” with Mother
- FatherID foreign key referencing relation “In” with Father

Patient(patientID, bloodtype)

- Patient ISA is covering
- Patient entity only exists is one of the sub-classes

Baby(patientID, name, gender, dateofbirth, timeofbirth)

Mother(patientID, name, address, phonenumber, QChealthcardID, email, dateofbirth)

- Mother has a participation constraint for the “In” relation with Baby’s Parents

Father(fatherID, name, blood type, address, email, phonenumber, QChealthcardID, dateofbirth)

Appointment(appointmentID, date, time, pregnancyID)

- PregnancyID foreign key referencing relation “Related” with Pregnancy

AppoinmentSchedules(practitionerID, appointmentID)

- PractitionerID foreign key referencing relation “Schedules” with Midwife
- AppointmentID foreign key referencing relation “Schedules” with Appointment
- Appointment has a participation constraint for the “Schedules” relation with Midwife

Note(noteID, appointmentID, date, time)

- AppointmentID foreign key referencing relation “Written during” with Appointment

Test(testID, dateprescribed, datesampletaken, datelabworkdone, type, result, practitionerID)

- PractitionerID foreign key referencing relation “Assigns” with Midwife

CompletedBy(technicianID, testID)

- TechnicianID foreign key referencing relation “Completed by” with Technician
- TestID foreign key referencing relation “Completed by” with Test

For(testID, patientID)

- TestID foreign key referencing relation “For” with patient
- PatientID foreign key referencing relation “For” with Test

Technician(technicianID, name, phonenumber)

InformationSession(sessionID, date, time, language, practitionerID)

- PractitionerID foreign key referencing relation “Hosts” with Midwife

Registered(parentsID, sessionID, attended)

- ParentsID foreign key referencing relation “Registered” with Information Session
- SessionID foreign key referencing relation “Registered” with Baby’s Parents
- Baby’s Parents have a participation constraint for the “Registered” relation with Information Session

BirthedAtBirthingCentre(pregnancyID, institutionemail)

- PregnancyID foreign key referencing relation “Birthed at” with Birthing Centre
- Institutionemail foreign key referencing relation “Birthed At” with Pregnancy

2 SQL Queries

2.1 Question 5, part a

```
WITH Appoints(ID, AppointmentDate, AppointmentTime, PID) AS (

SELECT AppointmentID, Appointment.Date, Appointment.Time,
Appointment.PregnancyID

FROM Appointment, Pregnancy, Midwife

WHERE Appointment.PregnancyID = Pregnancy.PregnancyID

AND Pregnancy.PrimaryMidwifeID = Midwife.PractitionerID

AND Midwife.Name LIKE 'Marion Girard'

AND Appointment.Date BETWEEN '2022-03-21' AND '2022-03-25')


SELECT AppointmentDate, AppointmentTime, Mother.HealthCardNum, Mother.Name,
Mother.PhoneNumber

FROM Appoints, Parents, Mother, Pregnancy

WHERE Appoints.PID = Pregnancy.PregnancyID

AND Pregnancy.ParentsID = Parents.ParentsID

AND Parents.MotherID = Mother.PatientID;
```

```
db2 => WITH Appoints(ID, AppointmentDate, AppointmentTime, PID) AS (
SELECT AppointmentID, Appointment.Date, Appointment.Time, Appointment.PregnancyID
FROM Appointment, Pregnancy, Midwife
WHERE Appointment.PregnancyID = Pregnancy.PregnancyID
AND Pregnancy.PrimaryMidwifeID = Midwife.PractitionerID
AND Midwife.Name LIKE 'Marion Girard'
AND Appointment.Date BETWEEN '2022-03-21' AND '2022-03-25')

SELECT AppointmentDate, AppointmentTime, Mother.HealthCardNum, Mother.Name, Mother.PhoneNumber
FROM Appoints, Parents, Mother, Pregnancydb2 (cont.) =>
WHERE Appoints.PID = Pregnancy.PregnancyID
AND Pregnancy.ParentsID = Parents.ParentsID
AND Parents.MotherID = Mother.PatientID;db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) =>
db2 (cont.) => db2 (cont.) => db2 (cont.) =>

APPOINTMENTDATE APPOINTMENTTIME HEALTHCARDNUM   NAME                                               PHONENUMBER
--------------- --------------- --------------- -------------------------------------------------- ------------------------------------------------
03/21/2022      15:28:00        ODOB 1779 9109  Brynne Odom                                        (554) 422-1285
03/23/2022      18:28:00        GONI 1303 0157  Isabella Gonzales                                  (466) 625-9394

  2 record(s) selected.

db2 =>
```

2.2 Question 5, part b

```
SELECT Test.LabDone AS LabDate, Test.Result

FROM TestCompletedFor, Test, Mother, Pregnancy, Parents

WHERE Test.TestID = TestCompletedFor.TestID

AND Test.Type LIKE 'Blood Iron Test'

AND TestCompletedFor.PatientID = Mother.PatientID

AND Mother.Name = 'Victoria Gutierrez'

AND Mother.PatientID = Parents.MotherID

AND Parents.ParentsID = Pregnancy.ParentsID

AND Pregnancy.PregnancyNumber = '2';
```

2.3 Question 5, part c

```
WITH temp(N, C) AS (

SELECT BirthingInstitution.Name, 0

FROM BirthingInstitutiON LEFT OUTER JOIN Pregnancy

ON Pregnancy.InstitutionEmail = BirthingInstitution.Email GROUP BY Name UNION

SELECT BirthingInstitution.Name, COUNT(*)

FROM Pregnancy, BirthingInstitution

WHERE Pregnancy.InstitutionEmail = BirthingInstitution.Email AND

(CASE WHEN Pregnancy.FinalDue IS NULL THEN Pregnancy.ExpectedBirth =
'2022-07-01'ELSE Pregnancy.FinalDue BETWEEN '2022-07-01' AND '2022-07-31'END)

GROUP BY BirthingInstitution.Name)

SELECT DISTINCT temp.N AS BirthingInstitute, max(temp.C) AS
BirthsDueInJuly2022 FROM temp GROUP BY temp.N;
```

```
db2 => WITH temp(N, C) AS (
SELECT BirthingInstitution.Name, 0
FROM BirthingInstitutiON LEFT OUTER JOIN Pregnancy
ON Pregnancy.InstitutionEmail = BirthingInstitution.Email
GROUP BY Name

UNION

SELECT BirthingInstitution.Name, COUNT(*)
FROM Pregnadb2 (cont.) => ncy, BirthingInstitution
WHERE Pregnancy.InstitutionEmail = BirthingInstitution.Email AND
(CASE
WHEN Pregnancy.FinalDue IS NULL THEN Pregnancy.ExpectedBirth = '2022-07-01'
ELSE Pregnancy.FinalDue BETWEEN '2022-07-01' AND '2022-07-31'
END)
GROUP BY BirthingInstitution.Name)
db2 (cont.) =>
db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => SELECT DISTINCT temp.N AS BirthingInstitute
, max(temp.C) AS BirthsDueInJuly2022
FROM temp
GROUP BY temp.N;db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) ]
=> db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) =>

BIRTHINGINSTITUTE                                  BIRTHSDUEINJULY2022
-------------------------------------------------- -------------------
Aliquet Magna Hospital                                               1
Ferris Mayo Birthing Centre                                          0
Jerry Fischer Clinic                                                 0
Lac-Saint-Louis                                                      1
Mauris Eu Memorial Health Clinic                                     0
Oleg Molina Health                                                   0
Paula Hickman Memorial Hospital                                      0
Ross Midwife Clinic                                                  0
Tellus Birthing Centre                                               0
Turpis Health                                                        0
Viverra Health Centre                                                0

  11 record(s) selected.

db2 =>
```

2.4 Question 5, part d

```
WITH lsl(PID, PRID) AS (

SELECT PregnancyID, ParentsID FROM Pregnancy, BirthingInstitution

WHERE Pregnancy.InstitutionEmail = BirthingInstitution.Email

AND BirthingInstitution.Name LIKE 'Lac-Saint-Louis'

EXCEPT

SELECT PregnancyID, ParentsID FROM Pregnancy

WHERE Pregnancy.PregnancyID IN (SELECT PregnancyID FROM Baby))


SELECT Mother.HealthCardNum, Mother.Name, Mother.PhoneNumber

FROM lsl, Mother, Parents

WHERE lsl.PRID = Parents.ParentsID AND Parents.MotherID = Mother.PatientID;
```

```
db2 => WITH lsl(PID, PRID) AS (
SELECT PregnancyID, ParentsID FROM Pregnancy, BirthingInstitution
WHERE Pregnancy.InstitutionEmail = BirthingInstitution.Email
AND BirthingInstitution.Name LIKE 'Lac-Saint-Louis'
EXCEPT
SELECT PregnancyID, ParentsID FROM Pregnancy
WHERE Pregnancy.PregnancyID IN (SELECT PregnancyID FROM Baby))

SELECT Mother.HealthCardNum, Mother.Name, Mother.PhoneNumber
FROM lsl, Mother, Parents
WHERE lsl.PRID = Parents.ParentsID AND Parents.MotherID = Mother.PatientID;db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.)
=> db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) =>

HEALTHCARDNUM   NAME                                               PHONENUMBER
--------------- -------------------------------------------------- --------------------------------------------------
CHAM 2121 4442  Maria Charles                                      (416) 447-2132
JACN 3312 0090  Natalie Jacobs                                     (514) 444-1112

  2 record(s) selected.

db2 =>
```

2.5 Question 5, part e

```
WITH counts(PID, PRID, Count) AS

(SELECT Pregnancy.PregnancyID, Pregnancy.ParentsID, COUNT(*)

FROM Pregnancy, Baby

WHERE Pregnancy.PregnancyID = Baby.PregnancyID

GROUP BY Pregnancy.PregnancyID, Pregnancy.ParentsID)


SELECT Mother.HealthCardNum, Mother.Name

FROM counts, Mother, Parents

WHERE Count >= 2

AND counts.PRID = Parents.ParentsID

AND Parents.MotherID = Mother.PatientID;
```

```
db2 => WITH counts(PID, PRID, Count) AS
(SELECT Pregnancy.PregnancyID, Pregnancy.ParentsID, COUNT(*)
FROM Pregnancy, Baby
WHERE Pregnancy.PregnancyID = Baby.PregnancyID
GROUP BY Pregnancy.PregnancyID, Pregnancy.ParentsID)

SELECT Mother.HealthCardNum, Mother.Name
FROM counts, Mother, Parents
WHERE Count >= 2
AND counts.PRID = Parents.ParentsID
AND Parents.MotherID = Mother.PatientID;db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) =>
db2 (cont.) => db2 (cont.) =>

HEALTHCARDNUM   NAME
--------------- --------------------------------------------------
GONI 1303 0157  Isabella Gonzales
MARG 3812 0430  Victoria Gutierrez

  2 record(s) selected.
```

3 Midwife Information

3.1 Question 6, part a

```
CREATE VIEW midwifeinfo (PractitionerID, Name, Phone, Email,
BirthingInstitute, InstituteAddress)

AS

SELECT Midwife.PractitionerID, Midwife.Name, Midwife.PhoneNumber,
Midwife.Email, BirthingInstitution.Name, BirthingInstitution.Address

FROM Midwife, BirthingInstitution

WHERE Midwife.InstitutionEmail = BirthingInstitution.Email;
```

3.2 Question 6, part b

```
db2 => CREATE VIEW midwifeinfo (PractitionerID, Name, Phone, Email, BirthingInstitute, InstituteAddress)
AS
SELECT Midwife.PractitionerID, Midwife.Name, Midwife.PhoneNumber, Midwife.Email, BirthingInstitution.Name, BirthingInstitution.Address
FROM Midwife, BirthingInstitution
WHERE Midwife.InstitutionEmail = BirthingInstitution.Email;db2 (cont.) => db2 (cont.) => db2 (cont.) => db2 (cont.) =>
DB20000I  The SQL command completed successfully.
db2 =>
```

3.3 Question 6, part c

```
db2 => SELECT * FROM MIDWIFEINFO LIMIT 5;

PRACTITIONERID NAME                 PHONE            EMAIL                         BIRTHINGINSTITUTE         INSTITUTEADDRESS
-------------- -------------------- ---------------- ----------------------------- ------------------------- --------------------------------
     914583096 Marion Girard        (451) 423-2949   timothyhaynes9548@aol.com     Aliquet Magna Hospital    672-6708 Pharetra. Ave
     942353426 Perry Hamilton       (674) 429-3418   perryhamilton210@yahoo.com    Aliquet Magna Hospital    672-6708 Pharetra. Ave
     443035811 Daniel Bowen         (772) 901-3586   danielbowen2466@aol.com       Aliquet Magna Hospital    672-6708 Pharetra. Ave
     380990189 Xanthus Holloway     (784) 846-5341   xanthusholloway@icloud.ca     Viverra Health Centre     Ap #709-1380 Ridiculus Road
     623477305 Tate Calhoun         (311) 126-1377   tatecalhoun@hotmail.ca        Turpis Health             P.O. Box 354, 2940 Ligula. Avenue

  5 record(s) selected.

db2 =>
```

3.4 Question 6, part d

```
db2 => SELECT * FROM MIDWIFEINFO WHERE BIRTHINGINSTITUTE LIKE 'Lac-Saint-Louis' LIMIT 5;

PRACTITIONERID NAME                 PHONE            EMAIL                         BIRTHINGINSTITUTE         INSTITUTEADDRESS
-------------- -------------------- ---------------- ----------------------------- ------------------------- --------------------------------
     103342223 James Rond           (514) 332-3331   jamesrond@lacsaintlouis.ca    Lac-Saint-Louis           121 Pebble Street
     524211664 Rames Jond           (514) 223-1113   ramesjond@lacsaintlouis.ca    Lac-Saint-Louis           121 Pebble Street

  2 record(s) selected.

db2 =>
```

3.5 Question 6, part e

```
db2 => INSERT INTO midwifeinfo (PractitionerID, Name, Phone, Email, BirthingInstitute, InstituteAddress) VALUES
(1234567,'Charlie Chaplin','(111) 222-3333','c.chaplin@chaplinhealth.ca','Chaplin Health Centre','3500 rue University');
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 =>
```

You cannot insert a record into a view because a view is a virtual table similar to when one uses `SELECT` to obtain data from a given table(s). Furthermore, in my implementation the data stored in the view, `midwifeinfo`, is obtained from two separate tables, `Midwife` and `BirthingInstitution`. This means that `midwifeinfo` is in fact a complex view and you can not insert, update, or delete data from it.

4 Check Constraints

```
db2 => ALTER TABLE TEST ADD CONSTRAINT checkPrescribed CHECK(LabDone >= Prescribed);
DB20000I  The SQL command completed successfully.
db2 => INSERT INTO Test (TestID, Type, Prescribed, SampleTaken, LabDone, Result, PractitionerID)
VALUES (6942011,'Blood Type Test','2021-03-03','2021-03-04','2021-03-02','A+',914583096);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:
SQL0545N  The requested operation is not allowed because a row does not
satisfy the check constraint "UHAMEE1.TEST.CHECKPRESCRIBED".  SQLSTATE=23513
db2 =>
```

5 Pending Constraints

- All tests written for a Patient (Mother or Baby) are related to their Pregnancy although this is not explicitly shown in the ER model.
- If a “Birthed at” relation does not exist between a Pregnancy and a Birthing Clinic, the birth will be/was completed at the Mother’s address. This ER model does not give the option of selecting Home as a birthing location thus it is inferred.
- Midwives can not create appointments unless related to a pregnancy
- Model does not indicate whether pregnancy is still active or not given that the Patients (mother and/or the babies) may still have follow-up appointments after the birth
- We assume that a Midwife will only be creating appointments for pregnancy where the midwife is either a primary or backup midwife. A midwife can create an appointment for a pregnancy that the given midwife is not part of
- We assume that a Midwife will only be assigning tests to patients (mother or baby) that the midwife is involved with. A midwife can assign tests to a patient where the midwife is not the patient’s primary or secondary midwife