COMP 421 P1 - Itai Epstein - 260896705

ER Diagram

Notes

- The relations in the diagram are all one word, there are no spaces in between each word even though it may seem that way.
    - The same applies to attributes where it may look like there are spaces but it is all one word.

Artificial Keys

- apptID - Appointments Entity Set artificial key
- testID - Tests Entity Set artificial key
- pregID - Pregnancy Entity Set artificial key
- coupleID - Couple Entity Set artificial key

Assumptions

1. We were told that we do not have to store any additional information related to the lab technician. Only what is required to connect them to the given requirements. I just wanted to reiterate this.
2. It is assumed that the birth location of the baby whether at home or the birthing clinic is only an address, and thus can be stored as an attribute. I could not think of a way to capture the idea of a consistent “birthed at” relation since there was no home entity.

Restrictions

1. Using taught ER modelling techniques, I was not able to capture the frequency of appointments pertaining to different stages in the pregnancy as presented in the requirements.
2. I was not able to represent the time frame a midwife is assigned to a couple for (throughout the pregnancy and first few months of postpartum).
3. I was not able to represent couples who were not selected by a particular institution.
4. I was not able to find a way to uniquely track the pregnancy number of the couple. Rudimentary calculations need to be done (comparing dates of pregnancies) to figure out which occurred first, second, third, etc.

Relational Translation

Relations

`Midwives(pactID, name, email, phoneNum, workplace)`

- workplace foreign key references HealthcareInstitution

InformationSession(sID, date, time, language)

Parent(hCardID, name, birthDate, address, email, phoneNum, profession, btype)

Mother(hCardID)
- hCardID foreign key references Parent

Father(hcardID)
- hCardID foreign key references Parent

Couples(coupleID, pregNum, mother, father)
- mother foreign key references Mother
- father foreign key references Father

Appointments(apptID, date, time, assocMidwife, assocPreg)
- assocMidiwfe foreign key references Midwives
- assocPreg foreign key references Pregnancy

Notes(apptID, date, time, observation)
- apptID foreign key references Appointments

Pregnancy(pregID, origDueDate, menstrDate, ultrasdDate, fnlDueDate, numBabies, couple)
- couple foreign key references Couples

Babies(pregID, birthTime, birthDate, name, btype, birthLocation)
- pregID foreign key references Pregnancy

HealthcareInstitution(phoneNum, name, address, email, website)

BirthingCenter(phoneNum)
- phoneNum foreign key references HealthcareInstitution

CommunityClinic(phoneNum)
- phoneNum foreign key references HealthcareInstitution

Tests(testID, type, prescribedDate, sampleDate, labWorkDate, result)

LabTechnician(ltID, name, phoneNum)

InformationSessionHosts(sessionID, midwife)
- sessionID foreign key references InformationSession
- midiwfe foreign key references Midwives

Attends(sessionID, couple)
- sessionID foreign key references InformationSession
- couple foreign key references Couples

Assigned(pregnancy, midwife)
- pregnancy foreign key references Pregnancy
- midwife foreign key references midwife

Backups(primaryMidwife, secondaryMidwife)
- primaryMidwife foreign key references Midwives
- secondaryMidwife foreign key references Midwives

UpdatesTests(ltID, testID)
- ltID foreign key references LabTechnician
- testID foreign key references Tests

TestTakenDuring(testID, assocPreg, baby)
- testID foreign key references Test
- assocPreg foreign key references Pregnancy
- baby foreign key references Babies

MotherTests(testID, midwife, mother)
- testID foreign key references Tests
- midwife foreign key references Midwives
- mother foreign key references Mother

Combining Relations

1. In writing my relational translation, I realized that my TakenDuring and AppliesTo relations can be combined into one relation. By adding an attribute that references the associated baby, the two can be combined. For some of the tests, this newly added attribute will be NULL. I think this implementation makes the most sense.
2. I also noticed that I can combine my Takes and Refers relations. They contain the same information, so it will reduce redundancy, and it does not seem like the father has any tests associated with him. Therefore, it

makes sense to consolidate the two relations, only referencing the mother as the person receiving the test. If the associated pregnancy of the test needs to be found, the database can be queried.

Failed to Capture

1. My translation failed to capture the participation aspect of the Attends relationship between the Couples and InformationSession entity sets. As stated in the slides, unless there is a key constraint as well, participation constraints cannot usually be reflected in relational models.