Homework 1

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1 ER Modelling

- Users(user_id, uname, addr)
- Rentals(show_id, user_id, rentdate)
- Reviews(user_id, show_id, shrating, comment, revdate)
- Genreinterest(user_id, genre_id)
- Genres(genre_id)
- Show(show_id, shname, prodcomp, shsyn, crating, rentprice, pname)
- Showgenre(show_id, genre_id)
- Person(pname, citizenship)
- Movies(show_id)
- Sequel(show_id, show_id)
- TVseries(show_id)
- Season(show_id, seanum)
- Episodes(show_id, epname, epsyn, pname)

2 Testing your ER decoding skills.

2.1

2.1.1 (A)

Disagree. A release must be associated with exactly one software. It is a weak entity.

2.1.2 (B)

Agree. A software can be not released yet.

2.1.3 (C)

Agree. Version and platform are partial keys (individually) so one version can have multiple releases on different platforms so different dates.

2.1.4 (D)

Disagree. There can be many unreleased software.

2.2

2.2.1 (A)

Agree. They would have different visit IDs and diagnosis for each, different doctors associated with them, and the same visit date which is okay as other things distinguish them as mentioned before.

2.2.2 (B)

Agree. Once again, the visit ID being the primary key allows to easily differentiate between any number of visits even on the same day or doctor and having a different diagnosis for each.

2.2.3 (C)

Disagree. Only one doctor can be recorded per visit, and there cannot be multiple records of the same visit (since visit ID is the primary key).

2.2.4 (D)

Agree. It does not change whichever one as each unique visit is made exactly once, and a visit requires a patient to make it (participation and key constraint)

3 Relational Algebra

3.1 1.

$\Pi_{name,city,addr}\left(\sigma_{city='Montreal'}(Drivers)\right)$

3.2 2.

$\Pi_{reportid}\left(\sigma_{dlnum='L1234-567890-11',claim>200}(Accidentinfo)\right)$

3.3 3.

$\Pi_{license}\left(\sigma_{name='BillyJoe'}(Drivers) \bowtie_{Drivers.dlnum=Regdrivers.dlnum} Regdrivers\right)$

3.4 4.

$\Pi_{license}\left(\sigma_{city='Montreal',expdate<'2018-01-01'}\left(Drivers \bowtie_{Drivers.dlnum=Regdrivers.dlnum} Regdrivers\right)\right)$

3.5 5.

$\Pi_{license}\,(\sigma_{type=car\ \vee\ type=truck}\,(Regdrivers\ \bowtie_{Regdrivers.license\ =\ Automobiles.license}\ Automobiles))$

3.6 6.

$(\Pi_{dlnum}\,(\sigma_{type=truck}(Automobiles \bowtie Regdrivers))) - (\Pi_{dlnum}\,(\sigma_{type=car}(Automobiles \bowtie Regdrivers)))$

3.7 7.

$Accidentinfo \bowtie \rho\,(Accidentinfotemp(dlnum, license, reportid, claim), Accidentinfo(dlnum, license, reportid$