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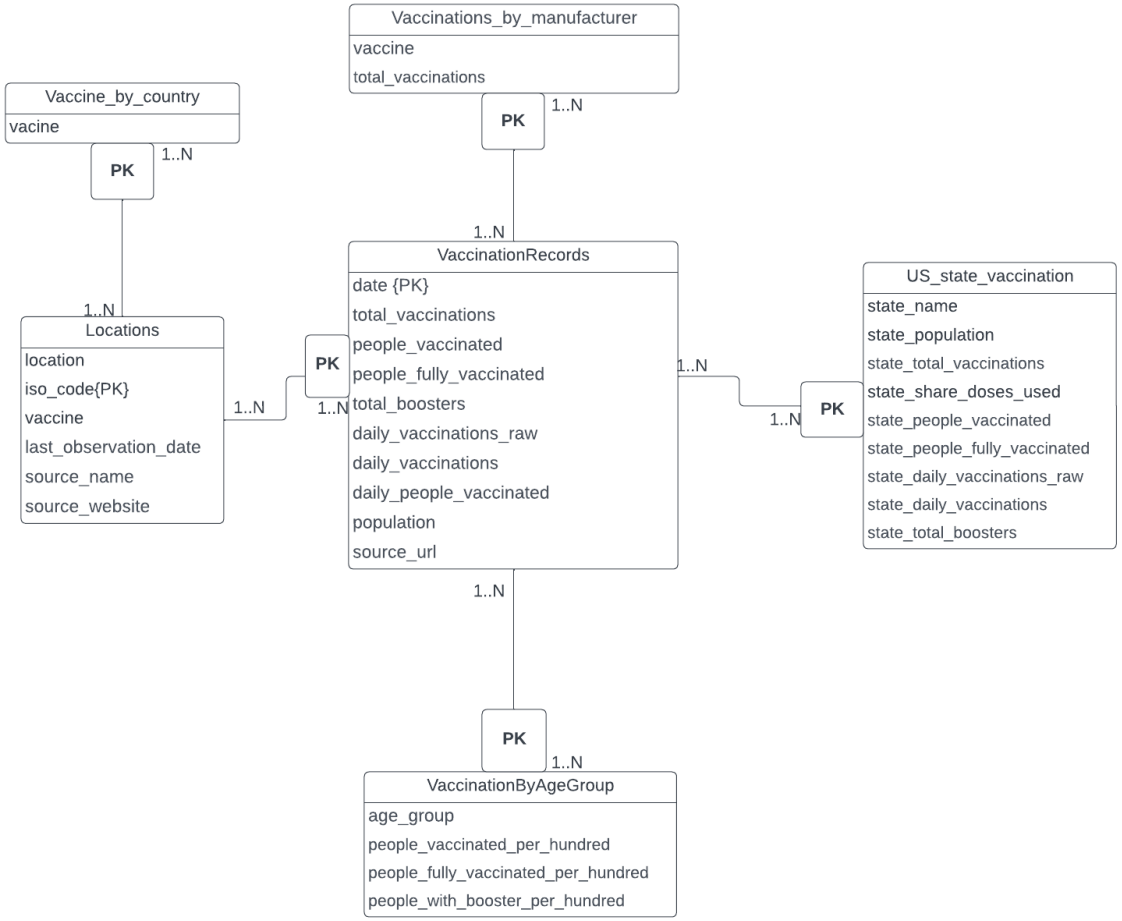
Course	Database Concepts (ISYS1055)

Part B:

1.



2.

In the original model, there were several challenges that prevented it from satisfying the requirements of a normal database. In order to correct these challenges, the following steps were made.

Firstly, the four tables “Australia”, “United_States”, “England”, and “New_Zealand” were merged. Using the individual countries’ “iso_code”, I was able to store their information in the “VaccinationRecords” table.

Secondly, I had to calculate the population of individual countries using their “total_people_fully_vaccinated” and their “people_fully_vaccinated_per_hundred”. The population is then used to calculate the “per_hundred” and “per_million” statistics using SQL functions. This is done so that these statistics do not have to be stored in the database, thus, increasing its efficiency.

Next, a new table called “Vaccine_by_country” is created. This table contains the vaccines’ names and the “iso_code” of the countries that use them. The “iso_code” serves as a foreign key so that information about each vaccine type can be retrieved easily.

The “location” field is only stored in the “locations” table. All the other tables use “iso_code” to determine location. Using the “iso_code” foreign key makes it easy to retrieve information from the “locations” table. Thus, avoiding repetition.

Finally, the most challenging table to design into the database is the “US_state_vaccination” table. This table has fields that are named the same as other tables such as “location”, “total_vaccinations”, and “people_vaccinated”. However, these fields do not mean the same thing as their counterparts in other tables such as “VaccinationRecords”. Thus, they had to be renamed. For example, “location” was changed to “state_name”, “total_vaccinations” was changed to “state_total_vaccination”, and “people_vaccinated” was changed to “state_people_vaccinated”. Another issue with this table is one that is similar to the “VaccinationRecords” table, it has too many fields to record. Therefore, I employed the same method that was used with the “VaccinationRecords” table, calculating the “state_population” so that less attributes have to be recorded.

3.
Relational database schema:
Location (iso_code*, location, last_observation_date, source_name, source_website)

Vaccine_by_country(iso_code*, vaccine)

VaccinationRecords(iso_code*,date, total_vaccinations, people_vaccinated, people_fully_vaccinated, total_boosters, daily_vaccination_raw, daily_vaccinations, daily_people_vaccinated)

US_state_vaccination(iso_code*, date, state_name, state_population, state_total_vaccinations, state_shared_doses_used, state_people_vaccinated, state_fully_vaccinated, state_daily_vaccinations_raw, state_daily_vaccinations, state_total_boosters)

VaccinationByAgeGroup(iso_code*, date*, age_group, people_vaccinated_per_hundred, people_fully_vaccinated_per_hundred, people_with_booster_per_hundred)

Vaccination_by_manufacturer(iso_code*,date, vaccine, total_vaccinations)