**Project #2 Description**

In this project, you will design and implement a database for keeping track of

Covid-19 vaccination program that is currently undergoing at federal, state

and local level in USA. The database should be designed to show number of

shots procured by federal government and distributed to all states. States, in

turn distribute the same to various local bodies such as

- health care centers such as hospitals or long-term care facilities,

- city run covid vaccination camps

- private labs and pharmacy outlets such as Walgreens, CVS, Walmart

etc.

The system also should be capable of showing what *types of vaccines* has

been procured from which manufacturers and distributed to which unit

(state/local etc.).

The system should be designed to keeps track of following regarding

progress -

- Manufacturers

- Number of doses procured by manufacturer, by types

- Number of doses distributed by unit (state/local/independent) by

manufacturer, by types

- Date-wise doses administered by unit (state/local/independent)

- Doses administered should be identifiable if it is the first dose or

second dose for the individual

- People who are getting administered, their name, address, contact,

age, medical conditions, any kinds of allergy, *vaccination phase* they

fall

- How many doses shipped by federal body (CDC)

- How many distributed

The system should be capable of generating reports about the vaccination

progress –

- Daily progress per million population

- Cumulative progress

You can assume the following for –

*Vaccination phases for population groups/phases*

- 1A (Healthcare – Tier1)

- 1A – Healthcase (Tier2)

- 1A – long tern care – assisted living residents

- 1A – long-term care – nursing home residents

- 1B – 16-64 any medical condition

- 1B – population over 65

- 1C - Education and child care personnel

- 2 – people 16 years and older

The *vaccine types* can be-

- Whole virus - Covaxin

- Protein subunit - Novavax

- Viral vector – Johnson and Johnson, CanSino, AstraZeneca

- Nucleic acid or mRNA based – Pfizer-BioNTech & Moderna

You will first design ER/EER schema diagram based upon the COVIDVACCINE

database requirements specified above and create the schema

diagram and documentation report describing your design choices. As part of

this assignment, you should identify any missing or incomplete requirements,

and explicitly state them in your documentation. You should also explicitly

state any assumptions you made that were not part of the requirements

listed above.

The second part of the assignment will be to map the ER/EER schema design

to a relational database schema, and create the tables corresponding to the

relational schema using the ORACLE DBMS (or MySQL). You will add to your

report a listing of the CREATE TABLE statements. Specify as many

constraints (key, referential integrity) as you can in the relational schema.

You should state the choices you made during the EER-to-relational mapping,

and the reasons for your choices.

The third part of the project is to load some data into the database and apply

certain update transactions and retrieval queries. You will create your own

data. Include at least 100 persons, couple of states, couple of vaccine types,

10 providers/local bodies (counties/hospitals/pharmacy outlets etc), a week

of progress.

The following are the tasks for the third part of the project:

1. Load some initial data (as discussed above) into the database tables that

you created in Part 2 of the assignment. You can either write a loading

program, or use SQL/PLUS (insert command), or use SQL/FORMS. Your

data should be kept in files so that it can easily be reloaded during

debugging. The data format should be designed by you. (Note: You can

also use the transactions created by you in item 3 below to load some of

the data).

2. Write queries to retrieve and print all the data you entered. Try to print

the data so that it is easy to understand (for example, print appropriate

headings, such as: Date, Vaccine Manufacturer, doses administered etc.).

3. Write a query that will prepare a report for daily progress by state, county

etc.

4. Write the following database update transactions using JAVA/JDBC or PHP

or some other programming/scripting language.

4.1 The 1st transaction is to procure x number of doses of one type of

vaccine

4.2 The 2nd transaction is to distribute certain amount to a state.

4.3 The 3rd transaction is to distribute certain amount to to a local body

4.4 The 4th transaction is to add information about a new dose

administered, patient details, 1st or 2nd dose etc.

4.5 The 5th transaction is to report an adverse reaction for a patient after

administration

5. Write a trigger –

5.1 To notify the CDC if one individua is administered who should be in

phase 2, assuming the current phase running is 1B.

6. Each transaction should have a user friendly interface to enter the

information needed by the transaction. This can either be a Web-based

interface, a command line interface, or a forms interface.

Submission:

This should include for Part 1

the EER diagrams for your designs as well as documentation describing

any assumptions you made, and the reasons for your design choices.

Draw the EER diagrams using the notation in the textbook. You can

also use UML class diagrams notation. You can use any drawing tool

for drawing your diagrams. For part 2, what you turn in should include

your relational schema diagram design and your CREATE table

statements, and documentation describing your EER-to-relational

mapping choices.

Part 3

This will include an online demo

demonstrating that your implementation works, as well as

demonstrating your transactions to the grader. Source code of all your

transactions should be submitted, as well as the data files. A demo

schedule will be determined.