Report

Data Project #1: Building knowledgebase on Covid-19.

   A. *Relationship Model*

   In the attachment COVID-19_Image.png, various entities and attributes are linked with the help of Relationship. Entities are Country, City, Province, Routes, Hospital, COVID-19 Patient, Emergency Services, Doctor, COVID-19 Center, and COVID-19 Financial Assistance

- Country has many provinces so they are connected with one-to-many relationship, where Province is again linked with cities, one-to-many relationship.
- Due to COVID-19, the routes in the city are affected to avoid public gathering but not mandatory. So, city and Routes are having 0 to many relationship.
- City might also contain many COVID-19 Centers in several areas of the city in order to diagnose and wait for report. So there is many to one relation from COVID-19 Center and City.
- Different Hospital hire doctors of different specialty, one doctor can work in many Centers and Hospitals and one hospital has many doctors. Therefore, relationship between Doctor and Hospital is many-to-many where as one-to-many from Doctor to Patient.
- Financial Assistance and Emergency Services are provided by the city during outbreak of pandemic. However, we have one-to-one relationship for one city and one and COVID-19 Financial Assistance at a time. But many-to-many in case of Emergency Services as any city can avail emergency service from any other city if not available in their own homeland.

In the attachment, COVID-19_Normalised_Image.png, the entire ER Diagram is normalized. The following changes after normalization are as follows:

- Hospital table is separated in parts. External Medical Sources are third party organization providing surgical equipment and medical services to hospitals. Blood Bank is in contract with hospital to procure the needs when required.
- Hospital also consists of many buildings which belongs to a particular Owner. One Owner has many buildings but they can exist independently. So, we have one-to-many non-identifying relationship between Owner and Building.
- Patient books an Appointment in the building and Doctor accepts/rejects the appointment. Patient receives Medical Records after the treatment.
- City may establish many Plasma Collection Center only after the authorization of the government officials. So, City has 0 to many, non-identifying relationship from City to Plasma Collection Center.
- Doctor and Patient address is multi valued. However, the doctor can have experience in many departments. So, one-to-many relationship exist between Doctor and Specialty.