INFS7901 Project Proposal

PROJECT: Interactive map to see and trace the spread of pandemics

The domain of the project is human movement and the consequent spread of pandemics. The system will focus on patient information, their condition, popular areas they visited and potential patients that had close contact with a confirmed case. By modelling patients and where they have travelled, it is possible to track down contagious clusters. It is expected that this will provide important insight on dangerous areas and potentially infected patients.

The application will record information on patients who have contracted a popular disease. Attributes for this entity include name, address, nationality and any underlying conditions they have.

The virus they contracted will be modelled as another entity. The name, year discovered, and typical symptoms will be recorded for this entity. Furthermore, the relationship between the patient and the virus will be modelled as a many-to-many relationship. The estimated contract date will be recorded as an attribute for this relationship.

High risk contacts (people that had contact with recorded patients) will be modelled as a weak entity dependent on patients. The medical ID (Medicare number and appropriate substitutes for other nationalities), name and address will be recorded for each record. High risk contacts are in total participation for this relationship.

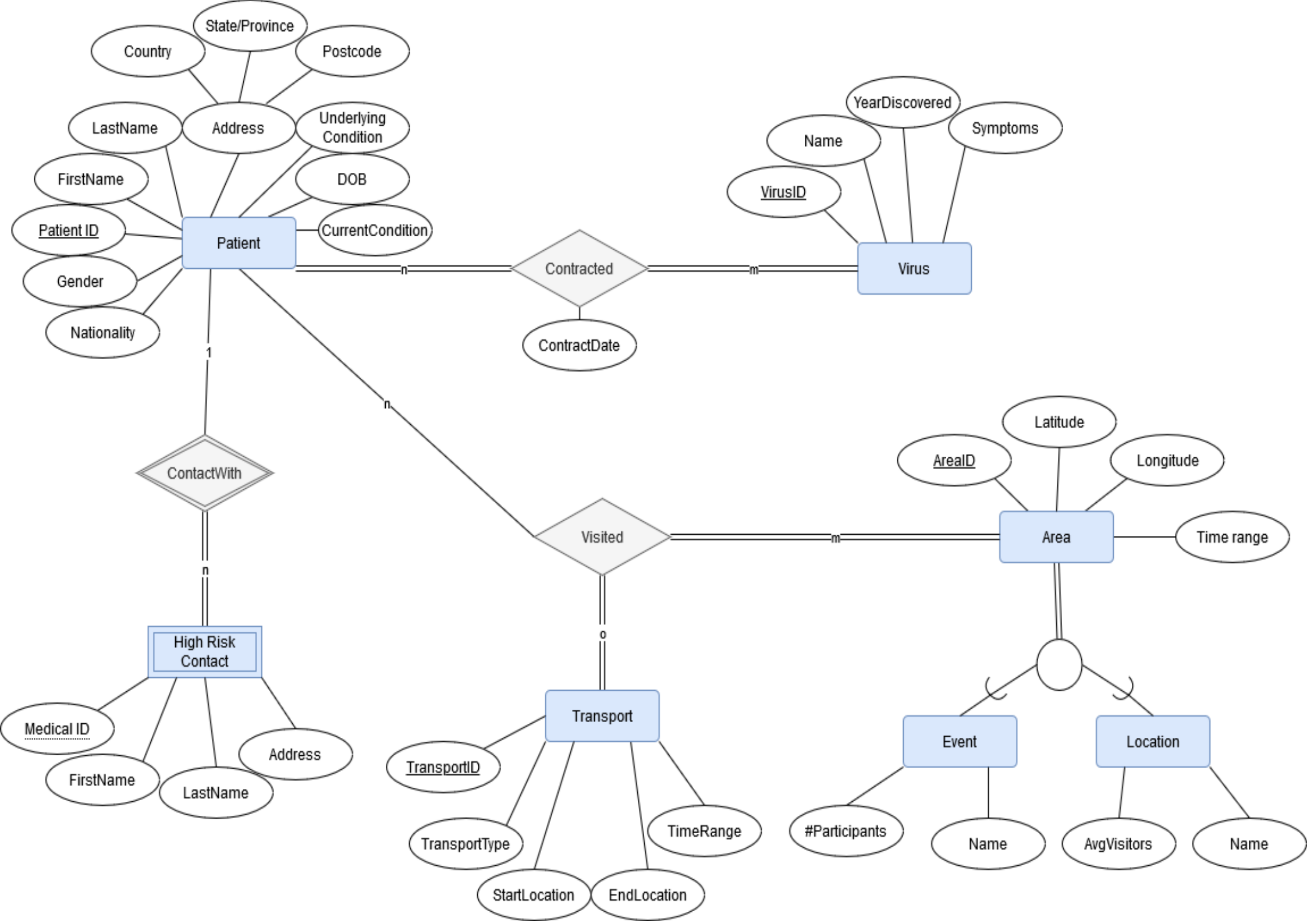
Major events and landmarks that the patient visited prior to being diagnosed will be recorded as well. This “Area” entity will have an AreaID, latitude, longitude and the time range where the patient was present. This entity will be further divided into two subclasses – event and location. Each entity records the name and the estimated amount of people present during the time when the patient was present.

The relationship between area and patient will be trinary. The transport that the patient took will be recorded as an entity as well. The transport type, start/end location and the time range where the patient was using the transport will be recorded as well.

Python and MySQL will be used to build the project.

The tentative ER diagram for this project is shown on the next page. The entities, primary key and candidate keys are listed below.

Entity	Primary Key	Candidate Keys
Patient	Patient ID	
HighRiskContact	Ssn, Patient ID	
Virus	VirusID	
Area	AreaID	Latitude, Longitude
Transport	TransportID	


State/Province
Country
Postcode
LastName
Address
Underlying Condition
FirstName
DOB
Patient ID
Patient
CurrentCondition
Gender
Nationality
n
Contracted
m
ContractDate
YearDiscovered
Name
Symptoms
VirusID
Virus
1
n
ContactWith
Visited
Latitude
AreaID
Longitude
Area
Time range
n
o
m
High Risk Contact
Transport
Event
Location
Medical ID
Address
FirstName
LastName
TransportID
TransportType
TimeRange
StartLocation
EndLocation
#Participants
Name
AvgVisitors
Name