Team NNCW Project Stage 2: Conceptual and Logical Database Design

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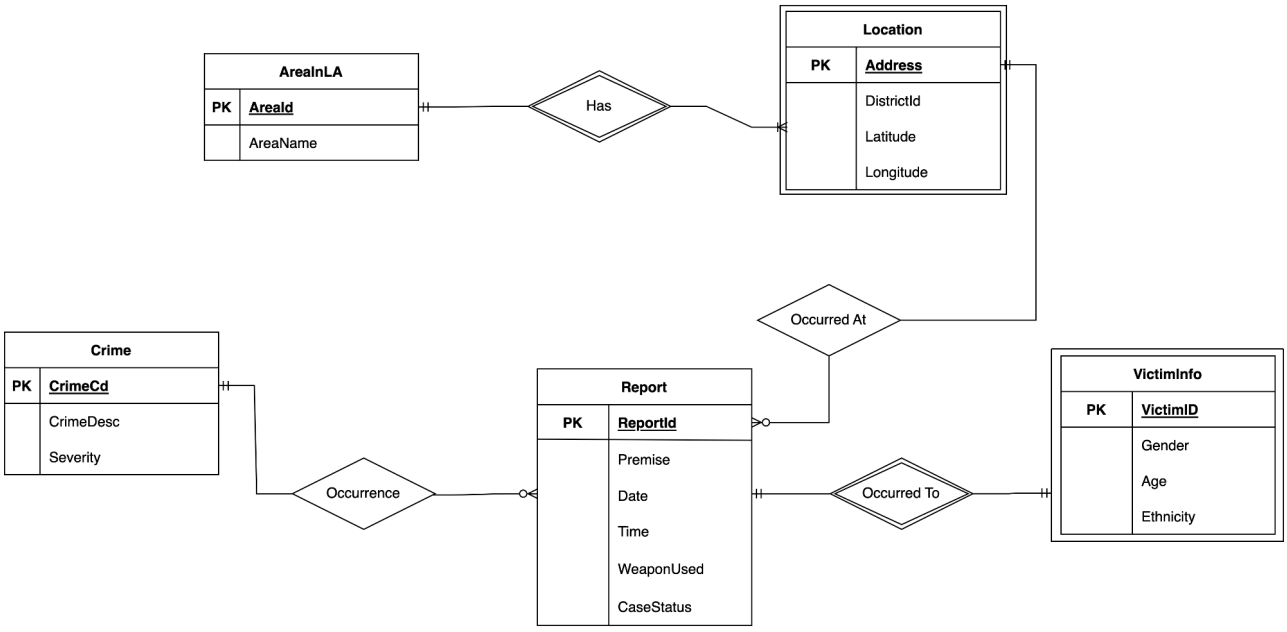
Project: SafeLA

1. ER Diagram

a. [411 proj er.drawio]



2. Assumptions

a. One area should have at least one location but each location only belongs to one area.

b. Location should be a weak entity because it depends on the area it belongs to.

c. One area or one location may have 0 to many crime reports, and we assume each crime only occurs at one location in one area based on our data.

d. Based on our data, each report only contains one crime, but a crime may appear in 0 to many reports.

e. VictimInfo should be a weak entity because we assume there is no victim if there is no crime reported (although sometimes a crime may not be reported in daily life, we will not take into account this scenario here). Since the data do not provide the victim name or ID to distinguish the duplicates, we will assume that each victim is unique. So, each victim will only appear in one report, and we assume each crime only occurs to one victim based on our data.

3. **Relational Schema**
    a. Crime(CrimeCd: INT [PK], CrimeDesc: VARCHAR(255), Severity: VARCHAR(255))
    b. AreaInLA(AreaId: INT [PK], AreaName: VARCHAR(255))
    c. Location(Address: VARCHAR(255) [PK], DistrictId: INT, Latitude: REAL, Longitude: REAL, AreaId: INT[PK] [FK to AreaInLA.AreaId])
    d. Report(ReportId: INT [PK], CrimeCd: INT [FK to Crime.CrimeCd], Address: VARCHAR(255) [FK to Location.Address], Premise: VARCHAR(255), Date: DATETIME, Time: VARCHAR(255), WeaponUsed: VARCHAR(255), CaseStatus: VARCHAR(255))
    e. VictimInfo(VictimId: INT [PK], ReportId: INT [PK], [FK to Report.ReportId], Gender: VARCHAR(255), Age: INT, Ethnicity: VARCHAR(255))

Changes to Part 2 Since Regrading:

In order to make our database design more realistic and match up better with the needs of the project, we made the following changes. One of the issues our TA found with our database design was that the VictimInfo table solely contained attributes of the Report Table because the primary keys were all also foreign keys. To solve this issue, we created a unique victimId for each unique victim in the table and stored that in the table as a primary key. This allows us to connect each victim to the crime that occurred to them through the report that was made about that crime. The reason victim and report information are stored in 2 separate tables are to store the information about the people, and the logistical information about the crime while keeping the DB organized.

To fix the issue with the primary keys in the Location database, we made the foreign key in the table the primary key of the AreaInLA table, rather than just an attribute. Finally, to make the Crime table have more purpose within the dataset, we added another attribute in the table to represent Severity. Severity will range on a scale from 1-4 where 1 represents a crime of low severity and 4 represents a crime of high severity. Though we tried to find real life datasets that stored information about the severity of different types of crimes, this was hard to accomplish. So, we will be using auto generated data for this attribute for now. In a real life setting, we would compile this information through more hands-on research. We changed the ER diagram in this document to showcase our changes.