

CS 425 - Crime Reporting

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December 9, 2023

Introduction & Problem Statement

The goal of this Crime-report Platform is to create an accessible and efficient database for residents and law enforcement to report or respond to crimes. The database will include suspects, crime details, locations, police precincts, and important information for missing persons. This project should help create a more efficient way to store past crime data and assist with ongoing investigations. It will also enable residents to provide immediate information to law enforcement, facilitating a collaborative approach to crime prevention and investigation. For privacy reasons, residents will only be able to view data which they have contributed and/or is publicly available.

ER-Model

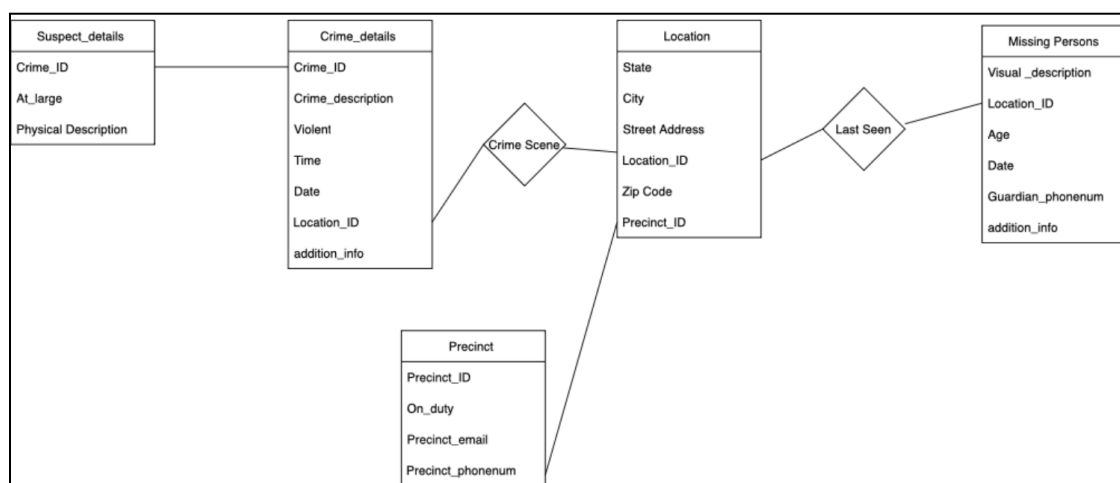


Figure 1

Notes on the ER-Model (Figure 1)

Suspect Details: Includes information about suspects of crimes.

- Crime_ID is a foreign key from Crime_details, which contains all of the information about the incident of the crime.
- At_large is a boolean value. True if the suspect is still 'at large' (not found or not in custody). False otherwise.
- Physical Description is a string which gives details of what the suspect looks like, based on witness accounts.

Crime Details: Includes information about crimes committed.

- Crime_ID is the primary key, unique for each incident.
- Crime_Description includes the formal (legal) identifier for the type of crime committed, and other details about the specific incident.
- Violent is a boolean value. True if the crime is considered violent and false otherwise.
- Time is the hour and minute the crime was committed, may be an estimate.
- Date is the YYYY/MM/DD date that the crime was committed.
- Location_ID is a foreign key from Location, which contains information about where a crime was committed.
- Addition_info is relevant information which may not be covered by the other categories.

Location: Information about where a crime was committed.

- State is the two letter state-code for where the crime was committed.
- City is the name of the city where the crime was committed.

- Street Address is the address where the crime was committed if applicable.
- Location_ID is the primary key for location, which is unique for each crime/missing-person.
- Zip Code is the 5-digit zip code where the crime was committed.
- Precinct_ID is a foreign key from Precinct, which contains information about the precinct that oversees the area where the crime was committed.

Precinct: Contains information about the precinct that oversees the area that the crime was committed in.

- Precinct_ID is the primary key, which is unique for each precinct.
- On_Duty is a list of the officers who are stationed in the precinct.
- Precinct_email is the official email address of the precinct.
- Precinct_phonenum is the official phone number for the precinct.

Missing Persons: Contains information about people who were reported missing to the police.

- Visual_description is the reported description of important physical features of the missing person.
- Location_ID is a foreign key of location, which is the last place this person was seen.
- Date is the YYYY/MM/DD date that the missing persons report was filed.
- Guardian_phonenum is the phone number of the parent or legal guardian of the missing person.
- Addition_info contains relevant information about the missing persons case that may not be included elsewhere.

Implementation of ER-Model

```
1  -- Location Table
2  CREATE TABLE Location (
3      Location_ID INT PRIMARY KEY,
4      State VARCHAR(255) NOT NULL,
5      City VARCHAR(255) NOT NULL,
6      StreetAddress VARCHAR(255),
7      ZipCode VARCHAR(10),
8      Precinct_ID INT
9  );
```

Figure 2

```
11 -- Precinct Table
12 CREATE TABLE Precinct (
13     Precinct_ID INT PRIMARY KEY,
14     On_duty BOOLEAN NOT NULL,
15     Precinct_email VARCHAR(255) NOT NULL,
16     Precinct_phonenum VARCHAR(15) NOT NULL
17 );
```

Figure 3

```
19 -- Crime_details Table
20 CREATE TABLE Crime_details (
21     Crime_ID INT PRIMARY KEY,
22     Crime_description VARCHAR(255) NOT NULL,
23     Violent BOOLEAN NOT NULL,
24     Time TIME NOT NULL,
25     Date DATE NOT NULL,
26     Location_ID INT,
27     addition_info TEXT,
28     FOREIGN KEY (Location_ID) REFERENCES Location(Location_ID)
29 );
```

Figure 4

```

31  -- Suspect_details Table
32  CREATE TABLE Suspect_details (
33      Crime_ID INT,
34      At_large BOOLEAN NOT NULL,
35      PhysicalDescription TEXT,
36      PRIMARY KEY (Crime_ID),
37      FOREIGN KEY (Crime_ID) REFERENCES Crime_details(Crime_ID)
38  );

```

Figure 5

```

40  -- MissingPersons Table
41  CREATE TABLE MissingPersons (
42      Visual_description TEXT NOT NULL,
43      Location_ID INT,
44      Age INT NOT NULL,
45      Date DATE NOT NULL,
46      Guardian_phonenum VARCHAR(15) NOT NULL,
47      addition_info TEXT,
48      FOREIGN KEY (Location_ID) REFERENCES Location(Location_ID)
49  );

```

Figure 6

The above figures (2-6) are the SQL prompts to create the tables for the database, which are outlined in the ER-Model Section.

There are also pre-written prompts which can be used to perform commonly used actions as listed below:

- Enter Name
- Enter Address
- Missing Person T/F
- Violent Crime T/F
- Crimes in Zip

Tools Used

GitHub: Used to share and update work between group members.

Draw.io: Used to make the ER-Model Diagram.

Flask: Used to create the back-end implementation of the database and interface.

HTML: Used to create a front-end interface for the database.

Design Approach and Challenges

The main approach was to design the database back-end functional, and then connect the functionality with a front-end HTML web application. Separately, the progress on the back-end and front-end went mostly smoothly. The main challenges were connecting the back-end functionality with the web app interface without any errors. One challenge specifically was a “page not found” error, which we fixed by altering some of our libraries.

Since the web app is designed for anyone to use, accessibility and ease of use were important considerations for the progress. Because of this, the web app has relatively simple aesthetics, and makes use of labels, buttons and checkboxes. Furthermore, the web app requires as little knowledge as possible of how databases work in order to report a crime or missing person. It is also reasonable to assume that most law officials with access to the web app and need to access data will not have database knowledge, so the process of accessing commonly referenced information is as streamlined as possible.

Future Scope of Project

The main ways to expand this project is to implement ways to store and interact with data for a wider range of crime-related areas. A few examples of this are:

- Method to report malicious websites, and store data about them.
- View ‘hotspots’ for crimes, i.e. places where a particular crime is committed with heightened frequency relative to other areas.
- View recent trends in crimes, i.e. what crimes are currently increasing in frequency, or have high frequency.
- Data storage for victims of crimes, including individuals, businesses, and organizations.

There can also be some quality-of-life updates to the front-end interface, which will make it more accessible to a wider variety of users.

References and Bibliography

Team Contributions

Amani Chikh-Touhami: Front-end web app

Aryaj Panday: Back-end functionality

Ezekiel Oldham: Written explanations

Stewart Nelson: Front-end web app