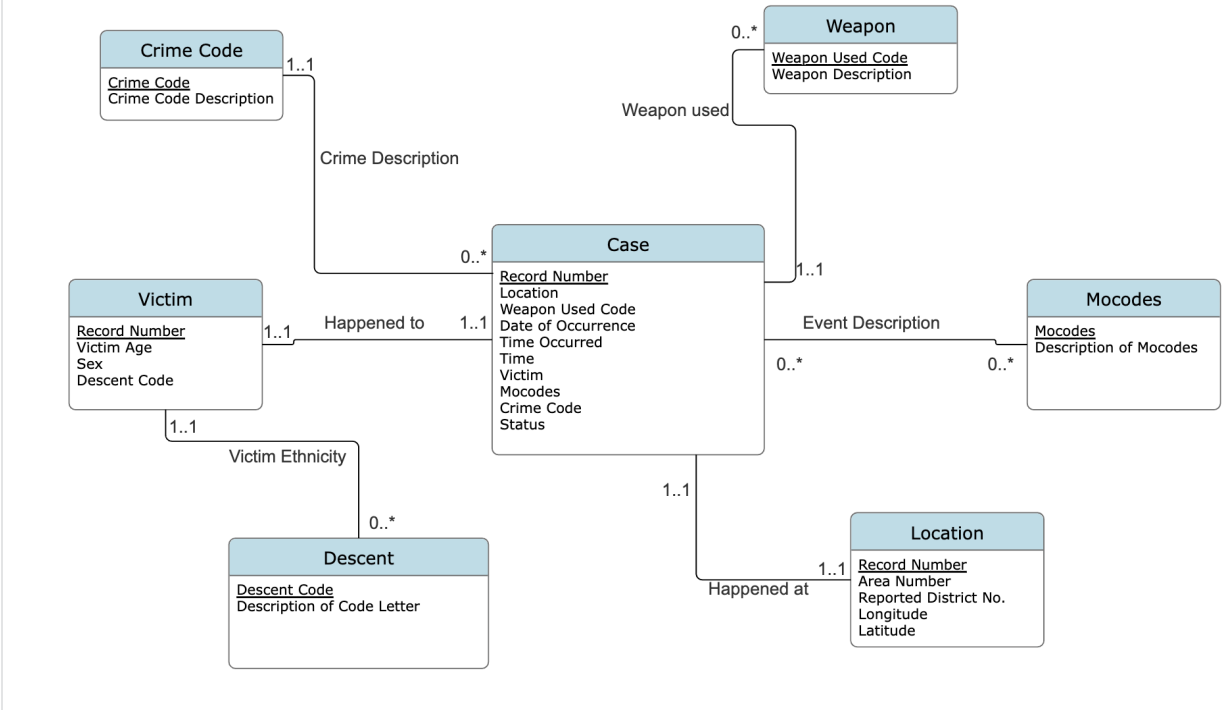

Assumptions

- We assume that a crime can have multiple mo-codes (codes referring to the activities surrounding the suspect). But a mo-code can apply to various crimes and crime types.
- We assume one primary weapon is used for each crime: the one that is documented.
- We assume that each victim can only be identified by one descent.
- We assume each case has one primary crime code defined by the most severe crime from that report.
- We assume each case has one location, but many crimes could have happened at each location.

Normalization / 3NF

Case:
Functional Dependencies:
(Record Number → Record Number, Weapon Used, Date of Occurrence, Time Occurred, Victim, Mocodes, Crime Code, Status)

- There are no partial dependencies because each non-key attribute depends on the primary key.
- There are no transitive dependencies because no non-key attributes depend on other non-key attributes.

Therefore, the Case Relation is in 3NF.

Crime Code:
Functional Dependencies:
(Crime Code 1 → Crime Code Description)

- There are no partial dependencies because each non-key attribute depends on the primary key.
- There are no transitive dependencies because no non-key attributes depend on other non-key attributes.

Therefore, the Crime Code Relation is in 3NF.

Victim:
Functional Dependencies:
(Record Number →Victim Age, Sex, Descent)

- There are no partial dependencies because each non-key attribute depends on the primary key.
- There are no transitive dependencies because no non-key attributes depend on other non-key attributes.

Therefore, the Victim Relation is in 3NF.

Descent:
Functional Dependencies:
(VictimDescent →VictimDescentDesc)

- The relation contains no partial or transitive dependencies.
- Therefore, the Descent Relation is in 3NF.

Weapon:
Functional Dependencies:
(WeaponUsedCode → Weapon Description)

- The relation contains no partial or transitive dependencies.

- Therefore, the Weapon Relation is in 3NF.

Mocodes:
Functional Dependencies:
(Mocode → MocodeDesc)

- The relation contains no partial or transitive dependencies.
- Therefore, the Mocodes Relation is in 3NF.

Location:
Functional Dependencies:
(RecordNumber →AreaName, ReportedDistrict, Longitude, Latitude)

- There are no partial dependencies because each non-key attribute depends on the primary key.
- There are no transitive dependencies because no non-key attributes depend on other non-key attributes.

Therefore, the Location Relation is in 3NF.

Relational Schema

```
Case (
        RecordNumber INT [PK],
        Location VARCHAR(255),
        WeaponUsedCode INT,
        DateofOccurrence VARCHAR(22),
        TimeOccurred INT,
        Time INT,
        Mocode INT [FK to Mocodes.Mocode],
        CrimeCode INT [FK to CrimeCodes.CrimeCode],
        Status VARCHAR(2)
)

CrimeCode (
        CrimeCode [PK],
        CrimeCodeDescription VARCHAR(255)
)

Victim (
        RecordNumber INT [PK] [FK to Case.RecordNumber],
        VictimAge INT,
```

```
        VictimSex VARCHAR(1),
        DescentCode VARCHAR(1) [FK to Descent.VictimDescent]
)

Descent (
        DescentCode VARCHAR(1) [PK],
        DescCodeLetter VARCHAR(255)
)

Weapon (
        WeaponUsedCode INT [PK],
        WeaponDesc VARCHAR(255)
)

Mocodes (
        Mocodes VARCHAR(255) [PK],
        DescMocodes VARCHAR(255)
)

Location (
        RecordNumber [PK] [FK to Case.RecordNumber]
        AreaName VARCHAR(255),
        ReportedDistrictNo INT,
        Longitude DEC,
        Latitude DEC
)
```