**CS434 – Data Base Theory and Design**

**Project #3**

**Team Database Application (TDA): Part 3 – Schema Creation and Testing**

**Team**

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The domain I would like to manage with the TDA is **Washington DC Crime Datasets 2024** by the District of Columbia Metropolitan Police Department (MPD).

**General Nature of application**

The main goal of an Entity Relationship Diagram (ER Diagram) is to explain the relationship between entities; it is a structural design of the database. Through the help of specialized symbols, it helps to define the relationship between entities. It is based on three main principles entities, attributes and relationships, these help to design the database that would be required before implementing the database. It is a systematic process to design a database as it would require analyzing all requirements.

**About Data**

Washington, D.C. has been facing significant challenges in ensuring public safety due to the varying and growing crime rates in different neighborhoods and time periods. It is important for law enforcement agencies to understand when and where crimes occur so that it can respond efficiently and allocate limited resources wisely. Imagine a robust database system that is designed to handle this task effectively, because without a data-driven approach and structured database, policing efforts may remain reactive, which would result in delays or gaps in coverage in high-risk areas. This database includes various entities, each representing a key component of crime data management.

A diagram of a crime investigation

AI-generated content may be incorrect.

**Tables:**

1. **Offense**
   1. **Command to Create Table**

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* 1. **Describing relation schemas**

**A screen shot of a computer

AI-generated content may be incorrect.**

* 1. **Inserting few records**

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AI-generated content may be incorrect.**

* 1. **Listing the contents**

**A screenshot of a computer

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1. **Method**
   1. **Command to Create Table**

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* 1. **Describing relation schemas**

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* 1. **Inserting few records**

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* 1. **Listing the contents**

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1. **Location**
   1. **Command to Create Table**

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* 1. **Describing relation schemas**

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* 1. **Inserting few records**

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* 1. **Listing the contents**

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1. **Block Group**
   1. **Command to Create Table**

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* 1. **Describing relation schemas**

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* 1. **Inserting few records**

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* 1. **Listing the contents**

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1. **Crime\_Incident**
   1. **Command to Create Table**

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* 1. **Describing the relation schemas**

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* 1. **Inserting few records**

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1. **Crime\_Location**
   1. **Command to Create Table**

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* 1. **Describing the relational schemas**

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* 1. **Inserting few records**

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* 1. **Listing the contents**

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1. **Schemas From PostgreSQL**

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1. **Relationships**

* crime\_incident → offense: Many-to-One (many incidents can be of the same offense type).
* crime\_incident → method: Many-to-One (many incidents may use the same method).
* crime\_incident → crime\_location: One-to-Many (an incident can happen in multiple locations).
* crime\_location → location: Many-to-One (multiple crime locations can belong to one location).
* location → block\_group: One-to-One (each location has one block group with coordinates).