1. Criminals Table:

Pitfall Analysis:

a. Redundancy: No evident redundancy based on the provided schema.

b. Update Anomalies: Updating the criminal's personal details (e.g., first name, last name) may not require updates elsewhere, thus avoiding update anomalies.

c. Deletion Anomalies: Deleting a criminal record should not unintentionally remove any other related data.

d. Insertion Anomalies: It's possible to add a new criminal without any dependencies on other tables.

Dependency Identification:

Functional Dependencies: {criminal\_id} -> {first\_name, last\_name, date\_of\_birth, height, weight}

Normalization Application:

Likely already in at least the Third Normal Form (3NF) based on the provided schema. Ensure no multivalued attributes and atomic values in each attribute.

### 2. Crimes Table:

\*\*Pitfalls Analysis\*\*:

- No evident redundancy.

- Updating a crime's details may not require updates elsewhere.

- Deleting a crime record should not unintentionally remove any other related data.

- It's possible to add a new crime without any dependencies on other tables.

\*\*Dependency Identification\*\*:

- Functional Dependencies: {crime\_id} -> {crime\_type, location, date\_committed, criminal\_id}

\*\*Normalization Application\*\*:

- Likely already in at least the Third Normal Form (3NF) based on the provided schema. Ensure no multivalued attributes and atomic values in each attribute.

### 3. Law Enforcement Agencies Table:

\*\*Pitfalls Analysis\*\*:

- No evident redundancy.

- Updating an agency's details may not require updates elsewhere.

- Deleting an agency record should not unintentionally remove any other related data.

- It's possible to add a new agency without any dependencies on other tables.

\*\*Dependency Identification\*\*:

- Functional Dependencies: {agency\_id} -> {agency\_name, location, chief\_name}

\*\*Normalization Application\*\*:

- Likely already in at least the Third Normal Form (3NF) based on the provided schema. Ensure no multivalued attributes and atomic values in each attribute.

### 4. Officers Table:

\*\*Pitfalls Analysis\*\*:

- No evident redundancy.

- Updating an officer's details may not require updates elsewhere.

- Deleting an officer record should not unintentionally remove any other related data.

- It's possible to add a new officer without any dependencies on other tables.

\*\*Dependency Identification\*\*:

- Functional Dependencies: {officer\_id} -> {first\_name, last\_name, badge\_number, agency\_id}

\*\*Normalization Application\*\*:

- Likely already in at least the Third Normal Form (3NF) based on the provided schema. Ensure no multivalued attributes and atomic values in each attribute.

### 5. Evidence Table:

\*\*Pitfalls Analysis\*\*:

- No evident redundancy.

- Updating evidence details may not require updates elsewhere.

- Deleting an evidence record should not unintentionally remove any other related data.

- It's possible to add new evidence without any dependencies on other tables.

\*\*Dependency Identification\*\*:

- Functional Dependencies: {evidence\_id} -> {description, location\_found, crime\_id}

\*\*Normalization Application\*\*:

- Likely already in at least the Third Normal Form (3NF) based on the provided schema. Ensure no multivalued attributes and atomic values in each attribute.

### 6. Witnesses Table:

\*\*Pitfalls Analysis\*\*:

- No evident redundancy.

- Updating a witness's details may not require updates elsewhere.

- Deleting a witness record should not unintentionally remove any other related data.

- It's possible to add new witnesses without any dependencies on other tables.

\*\*Dependency Identification\*\*:

- Functional Dependencies: {witness\_id} -> {first\_name, last\_name, statement, crime\_id}

\*\*Normalization Application\*\*:

- Likely already in at least the Third Normal Form (3NF) based on the provided schema. Ensure no multivalued attributes and atomic values in each attribute.

### 7. Victims Table:

\*\*Pitfalls Analysis\*\*:

- No evident redundancy.

- Updating a victim's details may not require updates elsewhere.

- Deleting a victim record should not unintentionally remove any other related data.

- It's possible to add new victims without any dependencies on other tables.

\*\*Dependency Identification\*\*:

- Functional Dependencies: {victim\_id} -> {first\_name, last\_name, contact\_number, crime\_id}

\*\*Normalization Application\*\*:

- Likely already in at least the Third Normal Form (3NF) based on the provided schema. Ensure no multivalued attributes and atomic values in each attribute.

### 8. Investigations Table:

\*\*Pitfalls Analysis\*\*:

- No evident redundancy.

- Updating an investigation's details may not require updates elsewhere.

- Deleting an investigation record should not unintentionally remove any other related data.

- It's possible to add new investigations without any dependencies on other tables.

\*\*Dependency Identification\*\*:

- Functional Dependencies: {investigation\_id} -> {investigator\_name, start\_date, end\_date, crime\_id}

\*\*Normalization Application\*\*:

- Likely already in at least the Third Normal Form (3NF) based on the provided schema. Ensure no multivalued attributes and atomic values in each attribute.

### 9. Addresses Table:

\*\*Pitfalls Analysis\*\*:

- No evident redundancy.

- Updating an address's details may not require updates elsewhere.

- Deleting an address record should not unintentionally remove any other related data.

- It's possible to add new addresses without any dependencies on other tables.

\*\*Dependency Identification\*\*:

- Functional Dependencies: {address\_id} -> {street\_address, city, state, zip\_code}

\*\*Normalization Application\*\*:

- Likely already in at least the Third Normal Form (3NF) based on the provided schema. Ensure no multivalued attributes and atomic values in each attribute.