# UE22CS351A

# Database Management System

## DBMS Mini Project Report

Forensics Database

Team Details:

| | |
|---|---|
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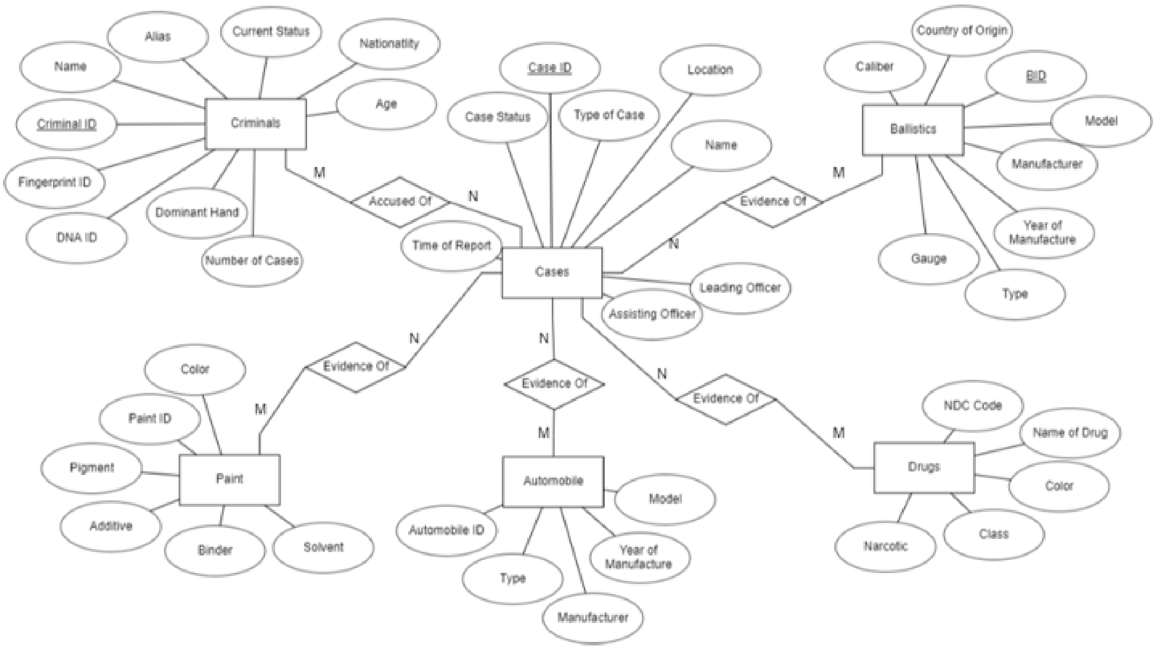
# Description and Scope

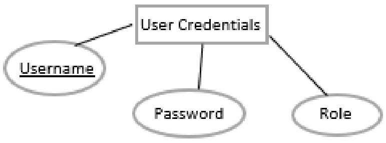
A forensic database system can be used to keep track of incoming evidence instances and their results. Forensic scientists can enter the obtained results from the evidence after analysing the samples. These results can then be viewed by police officers and other officials working on the case.

This project allows forensic scientist and police officers to view and also add new evidence. It supports all CRUD operations. Users can also run SQL queries of their own (only ‘select’ queries) as well as see the results of predefined queries.

# ER Diagram

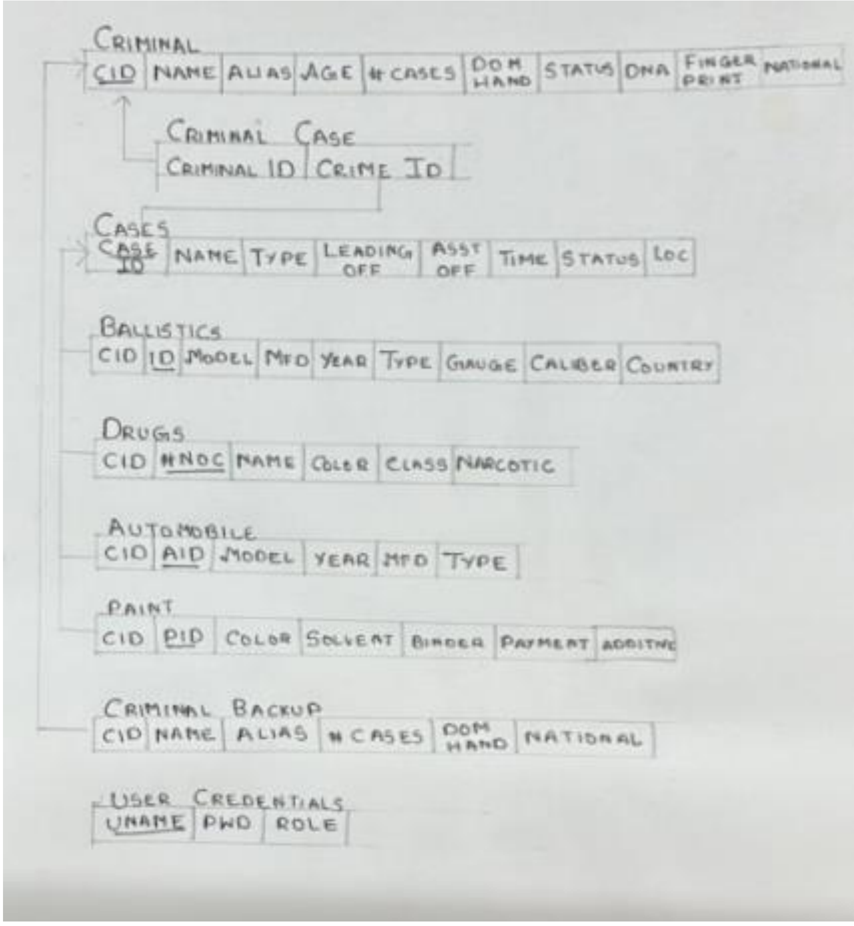


Alias
Current Status
Nationality
Name
Age
Criminal ID
Criminals
Fingerprint ID
Dominant Hand
DNA ID
Number of Cases
M
Accused Of
N
Case ID
Location
Case Status
Type of Case
Name
Time of Report
Cases
Leading Officer
Assisting Officer
N
Evidence Of
M
Caliber
Country of Origin
BID
Ballistics
Model
Manufacturer
Year of Manufacture
Gauge
Type
N
Evidence Of
M
Color
Paint ID
Pigment
Paint
Additive
Binder
Solvent
N
Evidence Of
M
Automobile
Automobile ID
Model
Type
Year of Manufacture
Manufacturer
N
Evidence Of
M
NDC Code
Name of Drug
Drugs
Color
Class
Narcotic



User Credentials
Username
Password
Role

## Relational Schema



CRIMINAL

| CID | NAME | ALIAS | AGE | # CASES | DOM HAND | STATUS | DNA | FINGER PRINT | NATIONAL |
|---|---|---|---|---|---|---|---|---|---|

CRIMINAL CASE

| CRIMINAL ID | CRIME ID |
|---|---|

CASES

| CASE ID | NAME | TYPE | LEADING OFF | ASST OFF | TIME | STATUS | LOC |
|---|---|---|---|---|---|---|---|

BALLISTICS

| CID | ID | MODEL | MFD | YEAR | TYPE | GAUGE | CALIBER | COUNTRY |
|---|---|---|---|---|---|---|---|---|

DRUGS

| CID | #NDC | NAME | COLER | CLASS | NARCOTIC |
|---|---|---|---|---|---|

AUTOMOBILE

| CID | AID | MODEL | YEAR | MFD | TYPE |
|---|---|---|---|---|---|

PAINT

| CID | PID | COLOR | SOLVENT | BINDER | PAYMENT | ADDITIVE |
|---|---|---|---|---|---|---|

CRIMINAL BACKUP

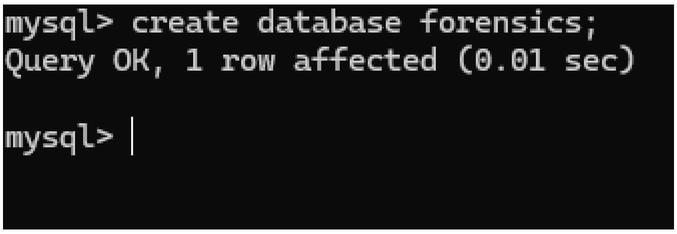
| CID | NAME | ALIAS | # CASES | DOM HAND | NATIONAL |
|---|---|---|---|---|---|

USER CREDENTIALS

| UNAME | PWD | ROLE |
|---|---|---|

## Building the Database – DDL

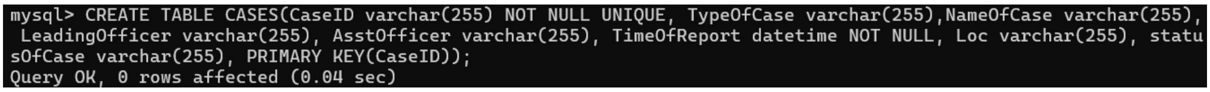
### Creating the forensic database



```
mysql> create database forensics;
Query OK, 1 row affected (0.01 sec)

mysql> |
```

### Creating the Cases Table

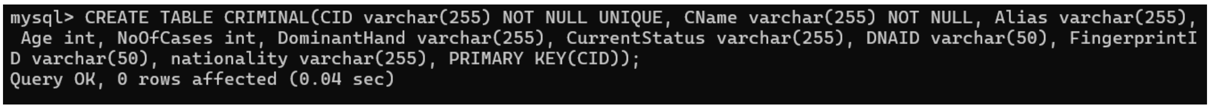
```
CREATE TABLE CASES(CaseID varchar(255) NOT NULL UNIQUE, TypeOfCase
varchar(255),NameOfCase varchar(255), LeadingOfficer varchar(255),
AsstOfficer varchar(255), TimeOfReport datetime NOT NULL, Loc varchar(255),
statusOfCase varchar(255), PRIMARY KEY(CaseID));
```



```
mysql> CREATE TABLE CASES(CaseID varchar(255) NOT NULL UNIQUE, TypeOfCase varchar(255),NameOfCase varchar(255),
 LeadingOfficer varchar(255), AsstOfficer varchar(255), TimeOfReport datetime NOT NULL, Loc varchar(255), statu
sOfCase varchar(255), PRIMARY KEY(CaseID));
Query OK, 0 rows affected (0.04 sec)
```

## Creating the Criminal Table

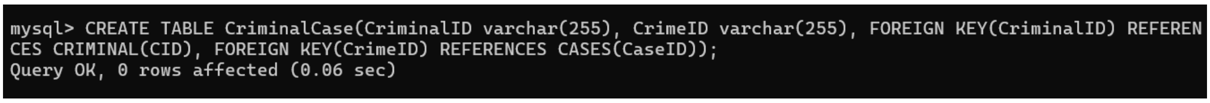
```
CREATE TABLE CRIMINAL(CID varchar(255) NOT NULL UNIQUE, CName varchar(255)
NOT NULL, Alias varchar(255), Age int, NoOfCases int, DominantHand
varchar(255), CurrentStatus varchar(255), DNAID varchar(50), FingerprintID
varchar(50), nationality varchar(255), PRIMARY KEY(CID));
```



```
mysql> CREATE TABLE CRIMINAL(CID varchar(255) NOT NULL UNIQUE, CName varchar(255) NOT NULL, Alias varchar(255),
 Age int, NoOfCases int, DominantHand varchar(255), CurrentStatus varchar(255), DNAID varchar(50), FingerprintI
D varchar(50), nationality varchar(255), PRIMARY KEY(CID));
Query OK, 0 rows affected (0.04 sec)
```

## Creating the Criminal-Case Table

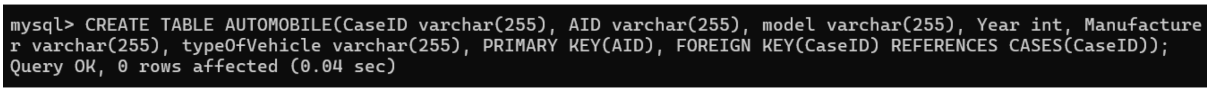
```
CREATE TABLE CriminalCase(CriminalID varchar(255), CrimeID varchar(255),
FOREIGN KEY(CriminalID) REFERENCES CRIMINAL(CID), FOREIGN KEY(CrimeID)
REFERENCES CASES(CaseID));
```



```
mysql> CREATE TABLE CriminalCase(CriminalID varchar(255), CrimeID varchar(255), FOREIGN KEY(CriminalID) REFEREN
CES CRIMINAL(CID), FOREIGN KEY(CrimeID) REFERENCES CASES(CaseID));
Query OK, 0 rows affected (0.06 sec)
```

## Creating Automobile Table

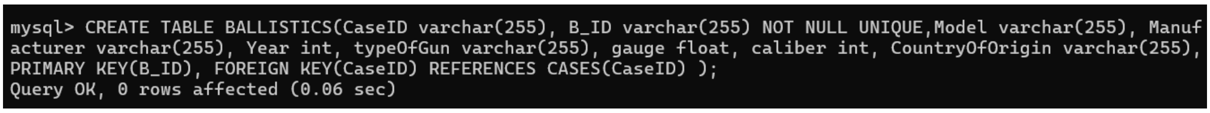
```
CREATE TABLE AUTOMOBILE(CaseID varchar(255), AID varchar(255), model
varchar(255), Year int, Manufacturer varchar(255), typeOfVehicle
varchar(255), PRIMARY KEY(AID), FOREIGN KEY(CaseID) REFERENCES
CASES(CaseID));
```



```
mysql> CREATE TABLE AUTOMOBILE(CaseID varchar(255), AID varchar(255), model varchar(255), Year int, Manufacture
r varchar(255), typeOfVehicle varchar(255), PRIMARY KEY(AID), FOREIGN KEY(CaseID) REFERENCES CASES(CaseID));
Query OK, 0 rows affected (0.04 sec)
```

## Creating Ballistics Table

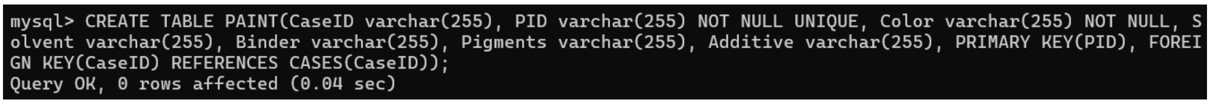
```
CREATE TABLE BALLISTICS(CaseID varchar(255), B_ID varchar(255) NOT NULL
UNIQUE,Model varchar(255), Manufacturer varchar(255), Year int, typeOfGun
varchar(255), gauge float, caliber int, CountryOfOrigin
varchar(255),PRIMARY KEY(B_ID), FOREIGN KEY(CaseID) REFERENCES
CASES(CaseID) );
```



```
mysql> CREATE TABLE BALLISTICS(CaseID varchar(255), B_ID varchar(255) NOT NULL UNIQUE,Model varchar(255), Manuf
acturer varchar(255), Year int, typeOfGun varchar(255), gauge float, caliber int, CountryOfOrigin varchar(255),
PRIMARY KEY(B_ID), FOREIGN KEY(CaseID) REFERENCES CASES(CaseID) );
Query OK, 0 rows affected (0.06 sec)
```

## Creating Paint Table

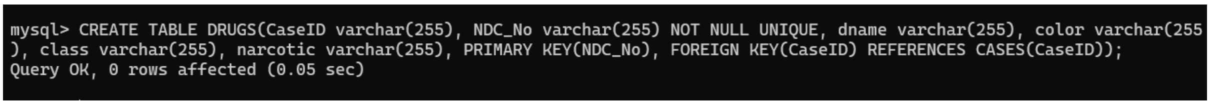
```
CREATE TABLE PAINT(CaseID varchar(255), PID varchar(255) NOT NULL UNIQUE,
Color varchar(255) NOT NULL, Solvent varchar(255), Binder varchar(255),
Pigments varchar(255), Additive varchar(255), PRIMARY KEY(PID), FOREIGN
KEY(CaseID) REFERENCES CASES(CaseID));
```



```
mysql> CREATE TABLE PAINT(CaseID varchar(255), PID varchar(255) NOT NULL UNIQUE, Color varchar(255) NOT NULL, S
olvent varchar(255), Binder varchar(255), Pigments varchar(255), Additive varchar(255), PRIMARY KEY(PID), FOREI
GN KEY(CaseID) REFERENCES CASES(CaseID));
Query OK, 0 rows affected (0.04 sec)
```

## Creating Drugs Table

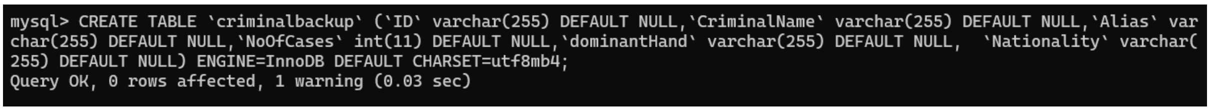
```
CREATE TABLE DRUGS(CaseID varchar(255), NDC_No varchar(255) NOT NULL
UNIQUE, dname varchar(255), color varchar(255), class varchar(255),
narcotic varchar(255), PRIMARY KEY(NDC_No), FOREIGN KEY(CaseID) REFERENCES
CASES(CaseID));
```



```
mysql> CREATE TABLE DRUGS(CaseID varchar(255), NDC_No varchar(255) NOT NULL UNIQUE, dname varchar(255), color varchar(255
), class varchar(255), narcotic varchar(255), PRIMARY KEY(NDC_No), FOREIGN KEY(CaseID) REFERENCES CASES(CaseID));
Query OK, 0 rows affected (0.05 sec)
```

## Creating Criminalbackup Table

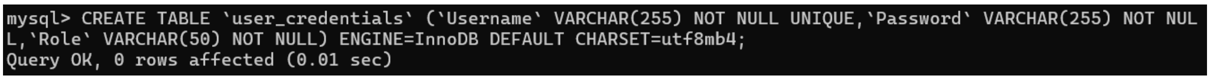
```
CREATE TABLE `criminalbackup` (`ID` varchar(255) DEFAULT
NULL,`CriminalName` varchar(255) DEFAULT NULL,`Alias` varchar(255) DEFAULT
NULL,`NoOfCases` int(11) DEFAULT NULL,`dominantHand` varchar(255) DEFAULT
NULL,  `Nationality` varchar(255) DEFAULT NULL) ENGINE=InnoDB DEFAULT
CHARSET=utf8mb4;
```



```
mysql> CREATE TABLE `criminalbackup` (`ID` varchar(255) DEFAULT NULL,`CriminalName` varchar(255) DEFAULT NULL,`Alias` var
char(255) DEFAULT NULL,`NoOfCases` int(11) DEFAULT NULL,`dominantHand` varchar(255) DEFAULT NULL,  `Nationality` varchar(
255) DEFAULT NULL) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
Query OK, 0 rows affected, 1 warning (0.03 sec)
```

## Creating User Credentials table:

CREATE TABLE `user_credentials` (`Username` VARCHAR(255) NOT NULL UNIQUE,`Password` VARCHAR(255) NOT NULL,`Role` VARCHAR(50) NOT NULL) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

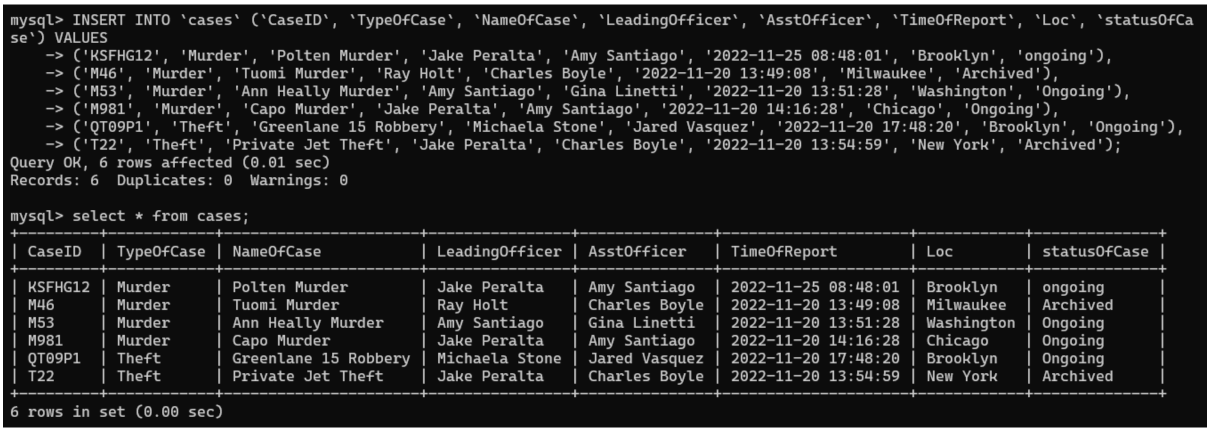


```
mysql> CREATE TABLE `user_credentials` (`Username` VARCHAR(255) NOT NULL UNIQUE,`Password` VARCHAR(255) NOT NUL
L,`Role` VARCHAR(50) NOT NULL) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
Query OK, 0 rows affected (0.01 sec)
```

# Populating the database

## Inserting values into Cases using insert command

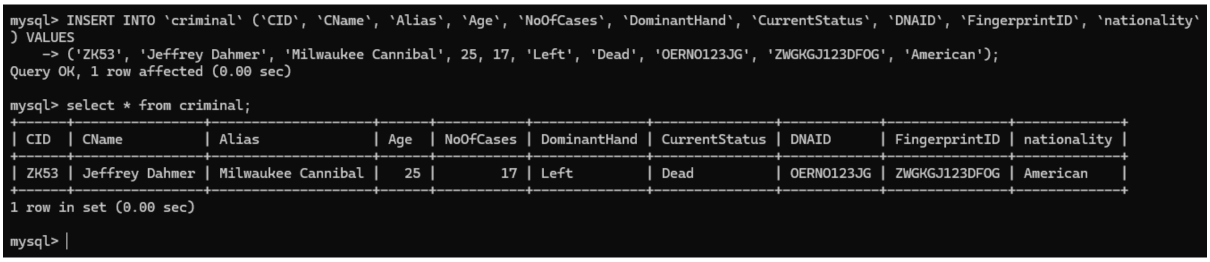
```
INSERT INTO `cases` (`CaseID`, `TypeOfCase`, `NameOfCase`,
`LeadingOfficer`, `AsstOfficer`, `TimeOfReport`, `Loc`, `statusOfCase`)
VALUES

('KSFHG12', 'Murder', 'Polten Murder', 'Jake Peralta', 'Amy Santiago',
'2022-11-25 08:48:01', 'Brooklyn', 'ongoing'),
('M46', 'Murder', 'Tuomi Murder', 'Ray Holt', 'Charles Boyle', '2022-11-20
13:49:08', 'Milwaukee', 'Archived'),

('M53', 'Murder', 'Ann Heally Murder', 'Amy Santiago', 'Gina Linetti',
'2022-11-20 13:51:28', 'Washington', 'Ongoing'),

('M981', 'Murder', 'Capo Murder', 'Jake Peralta', 'Amy Santiago', '2022-11-
20 14:16:28', 'Chicago', 'Ongoing'),

('QT09P1', 'Theft', 'Greenlane 15 Robbery', 'Michaela Stone', 'Jared
Vasquez', '2022-11-20 17:48:20', 'Brooklyn', 'Ongoing'),

('T22', 'Theft', 'Private Jet Theft', 'Jake Peralta', 'Charles Boyle',
'2022-11-20 13:54:59', 'New York', 'Archived');
```



```
mysql> INSERT INTO `cases` (`CaseID`, `TypeOfCase`, `NameOfCase`, `LeadingOfficer`, `AsstOfficer`, `TimeOfReport`, `Loc`, `statusOfCa
se`) VALUES
    -> ('KSFHG12', 'Murder', 'Polten Murder', 'Jake Peralta', 'Amy Santiago', '2022-11-25 08:48:01', 'Brooklyn', 'ongoing'),
    -> ('M46', 'Murder', 'Tuomi Murder', 'Ray Holt', 'Charles Boyle', '2022-11-20 13:49:08', 'Milwaukee', 'Archived'),
    -> ('M53', 'Murder', 'Ann Heally Murder', 'Amy Santiago', 'Gina Linetti', '2022-11-20 13:51:28', 'Washington', 'Ongoing'),
    -> ('M981', 'Murder', 'Capo Murder', 'Jake Peralta', 'Amy Santiago', '2022-11-20 14:16:28', 'Chicago', 'Ongoing'),
    -> ('QT09P1', 'Theft', 'Greenlane 15 Robbery', 'Michaela Stone', 'Jared Vasquez', '2022-11-20 17:48:20', 'Brooklyn', 'Ongoing'),
    -> ('T22', 'Theft', 'Private Jet Theft', 'Jake Peralta', 'Charles Boyle', '2022-11-20 13:54:59', 'New York', 'Archived');
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> select * from cases;
+---------+------------+----------------------+----------------+---------------+---------------------+------------+--------------+
| CaseID  | TypeOfCase | NameOfCase           | LeadingOfficer | AsstOfficer   | TimeOfReport        | Loc        | statusOfCase |
+---------+------------+----------------------+----------------+---------------+---------------------+------------+--------------+
| KSFHG12 | Murder     | Polten Murder        | Jake Peralta   | Amy Santiago  | 2022-11-25 08:48:01 | Brooklyn   | ongoing      |
| M46     | Murder     | Tuomi Murder         | Ray Holt       | Charles Boyle | 2022-11-20 13:49:08 | Milwaukee  | Archived     |
| M53     | Murder     | Ann Heally Murder    | Amy Santiago   | Gina Linetti  | 2022-11-20 13:51:28 | Washington | Ongoing      |
| M981    | Murder     | Capo Murder          | Jake Peralta   | Amy Santiago  | 2022-11-20 14:16:28 | Chicago    | Ongoing      |
| QT09P1  | Theft      | Greenlane 15 Robbery | Michaela Stone | Jared Vasquez | 2022-11-20 17:48:20 | Brooklyn   | Ongoing      |
| T22     | Theft      | Private Jet Theft    | Jake Peralta   | Charles Boyle | 2022-11-20 13:54:59 | New York   | Archived     |
+---------+------------+----------------------+----------------+---------------+---------------------+------------+--------------+
6 rows in set (0.00 sec)
```

## Inserting values into Criminal Table using insert command

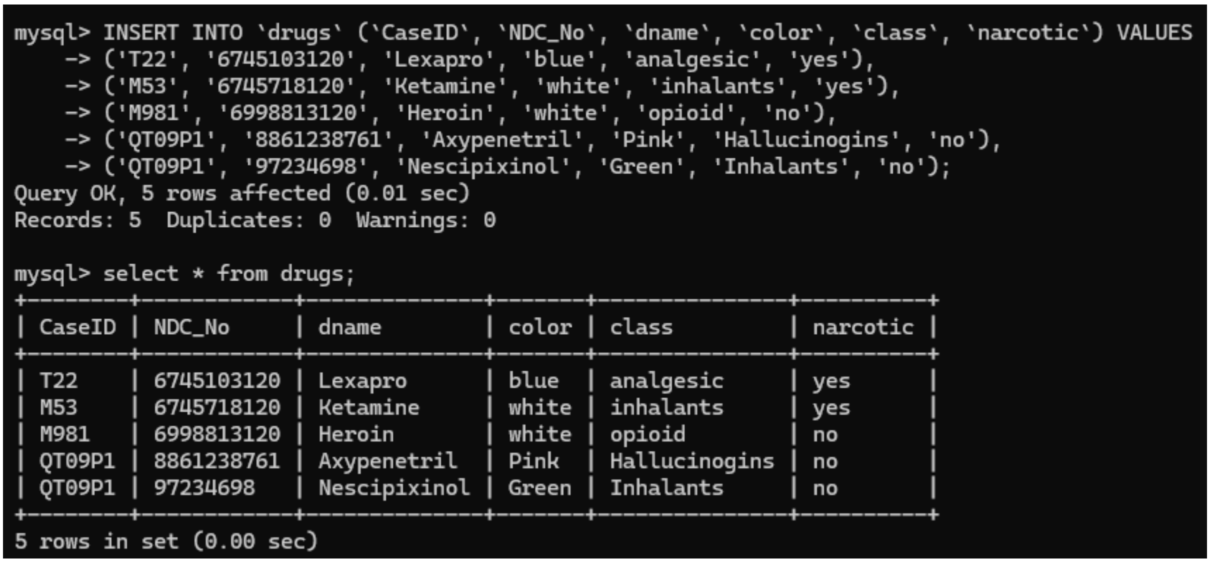
```
INSERT INTO `criminal` (`CID`, `CName`, `Alias`, `Age`, `NoOfCases`,
`DominantHand`, `CurrentStatus`, `DNAID`, `FingerprintID`, `nationality`)
VALUES

('ZK53', 'Jeffrey Dahmer', 'Milwaukee Cannibal', 25, 17, 'Left', 'Dead',
'OERNO123JG', 'ZWGKGJ123DFOG', 'American');
```



```
mysql> INSERT INTO `criminal` (`CID`, `CName`, `Alias`, `Age`, `NoOfCases`, `DominantHand`, `CurrentStatus`, `DNAID`, `FingerprintID`, `nationality`
) VALUES
    -> ('ZK53', 'Jeffrey Dahmer', 'Milwaukee Cannibal', 25, 17, 'Left', 'Dead', 'OERNO123JG', 'ZWGKGJ123DFOG', 'American');
Query OK, 1 row affected (0.00 sec)

mysql> select * from criminal;
+------+----------------+--------------------+------+-----------+--------------+---------------+------------+---------------+-------------+
| CID  | CName          | Alias              | Age  | NoOfCases | DominantHand | CurrentStatus | DNAID      | FingerprintID | nationality |
+------+----------------+--------------------+------+-----------+--------------+---------------+------------+---------------+-------------+
| ZK53 | Jeffrey Dahmer | Milwaukee Cannibal |   25 |        17 | Left         | Dead          | OERNO123JG | ZWGKGJ123DFOG | American    |
+------+----------------+--------------------+------+-----------+--------------+---------------+------------+---------------+-------------+
1 row in set (0.00 sec)

mysql> |
```

## Inserting values into drugs table using insert Command

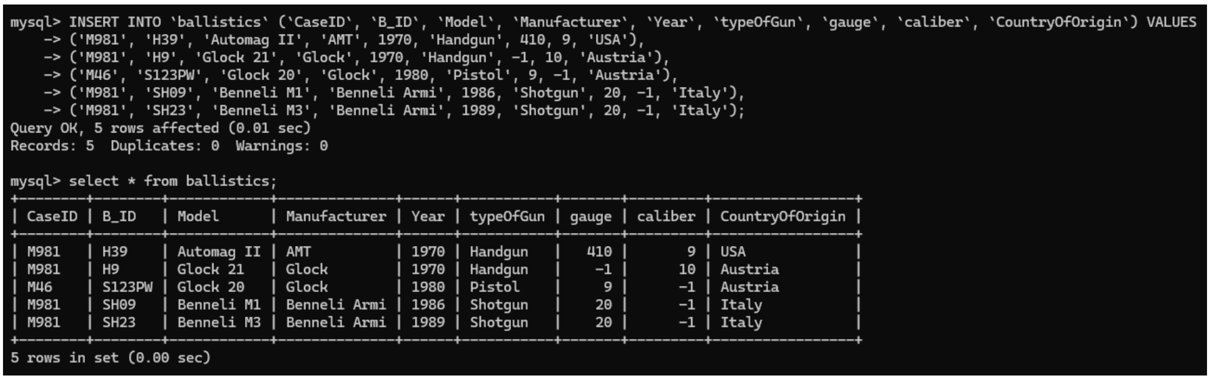
```
INSERT INTO `drugs` (`CaseID`, `NDC_No`, `dname`, `color`, `class`,
`narcotic`) VALUES
('T22', '6745103120', 'Lexapro', 'blue', 'analgesic', 'yes'),
('M53', '6745718120', 'Ketamine', 'white', 'inhalants', 'yes'),
('M981', '6998813120', 'Heroin', 'white', 'opioid', 'no'),
('QT09P1', '8861238761', 'Axypenetril', 'Pink', 'Hallucinogins', 'no'),
('QT09P1', '97234698', 'Nescipixinol', 'Green', 'Inhalants', 'no');
```



```
mysql> INSERT INTO `drugs` (`CaseID`, `NDC_No`, `dname`, `color`, `class`, `narcotic`) VALUES
    -> ('T22', '6745103120', 'Lexapro', 'blue', 'analgesic', 'yes'),
    -> ('M53', '6745718120', 'Ketamine', 'white', 'inhalants', 'yes'),
    -> ('M981', '6998813120', 'Heroin', 'white', 'opioid', 'no'),
    -> ('QT09P1', '8861238761', 'Axypenetril', 'Pink', 'Hallucinogins', 'no'),
    -> ('QT09P1', '97234698', 'Nescipixinol', 'Green', 'Inhalants', 'no');
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> select * from drugs;
+--------+------------+--------------+-------+---------------+----------+
| CaseID | NDC_No     | dname        | color | class         | narcotic |
+--------+------------+--------------+-------+---------------+----------+
| T22    | 6745103120 | Lexapro      | blue  | analgesic     | yes      |
| M53    | 6745718120 | Ketamine     | white | inhalants     | yes      |
| M981   | 6998813120 | Heroin       | white | opioid        | no       |
| QT09P1 | 8861238761 | Axypenetril  | Pink  | Hallucinogins | no       |
| QT09P1 | 97234698   | Nescipixinol | Green | Inhalants     | no       |
+--------+------------+--------------+-------+---------------+----------+
5 rows in set (0.00 sec)
```

## Inserting values into ballistics table using insert command

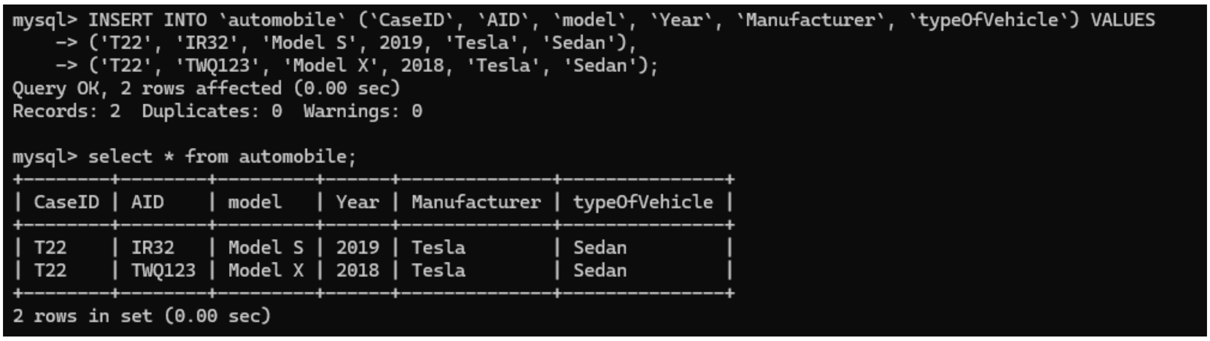
```
INSERT INTO `ballistics` (`CaseID`, `B_ID`, `Model`, `Manufacturer`,
`Year`, `typeOfGun`, `gauge`, `caliber`, `CountryOfOrigin`) VALUES
('M981', 'H39', 'Automag II', 'AMT', 1970, 'Handgun', 410, 9, 'USA'),
('M981', 'H9', 'Glock 21', 'Glock', 1970, 'Handgun', -1, 10, 'Austria'),
('M46', 'S123PW', 'Glock 20', 'Glock', 1980, 'Pistol', 9, -1, 'Austria'),
('M981', 'SH09', 'Benneli M1', 'Benneli Armi', 1986, 'Shotgun', 20, -1,
'Italy'),
('M981', 'SH23', 'Benneli M3', 'Benneli Armi', 1989, 'Shotgun', 20, -1,
'Italy');
```



```
mysql> INSERT INTO `ballistics` (`CaseID`, `B_ID`, `Model`, `Manufacturer`, `Year`, `typeOfGun`, `gauge`, `caliber`, `CountryOfOrigin`) VALUES
    -> ('M981', 'H39', 'Automag II', 'AMT', 1970, 'Handgun', 410, 9, 'USA'),
    -> ('M981', 'H9', 'Glock 21', 'Glock', 1970, 'Handgun', -1, 10, 'Austria'),
    -> ('M46', 'S123PW', 'Glock 20', 'Glock', 1980, 'Pistol', 9, -1, 'Austria'),
    -> ('M981', 'SH09', 'Benneli M1', 'Benneli Armi', 1986, 'Shotgun', 20, -1, 'Italy'),
    -> ('M981', 'SH23', 'Benneli M3', 'Benneli Armi', 1989, 'Shotgun', 20, -1, 'Italy');
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> select * from ballistics;
+--------+--------+------------+--------------+------+-----------+-------+---------+-----------------+
| CaseID | B_ID   | Model      | Manufacturer | Year | typeOfGun | gauge | caliber | CountryOfOrigin |
+--------+--------+------------+--------------+------+-----------+-------+---------+-----------------+
| M981   | H39    | Automag II | AMT          | 1970 | Handgun   |   410 |       9 | USA             |
| M981   | H9     | Glock 21   | Glock        | 1970 | Handgun   |    -1 |      10 | Austria         |
| M46    | S123PW | Glock 20   | Glock        | 1980 | Pistol    |     9 |      -1 | Austria         |
| M981   | SH09   | Benneli M1 | Benneli Armi | 1986 | Shotgun   |    20 |      -1 | Italy           |
| M981   | SH23   | Benneli M3 | Benneli Armi | 1989 | Shotgun   |    20 |      -1 | Italy           |
+--------+--------+------------+--------------+------+-----------+-------+---------+-----------------+
5 rows in set (0.00 sec)
```

## Inserting values into automobile table using insert command

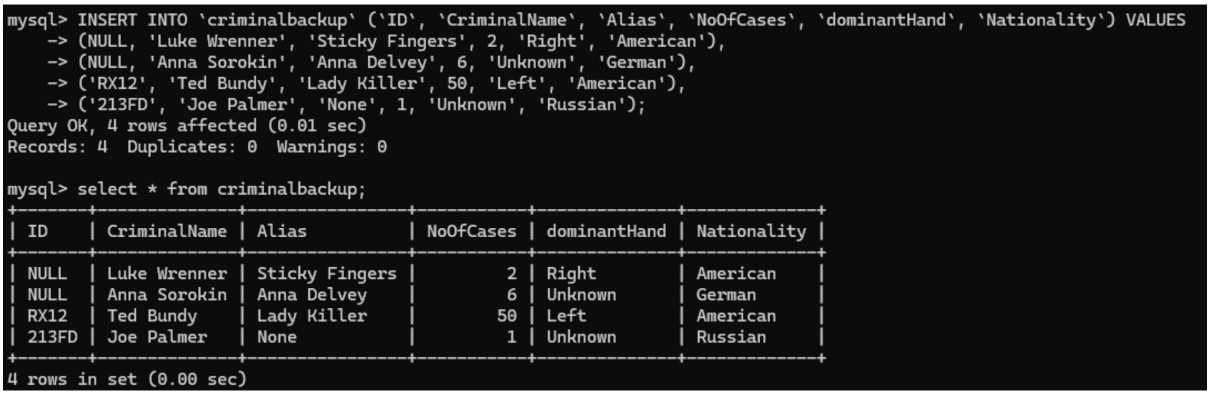
```
INSERT INTO `automobile` (`CaseID`, `AID`, `model`, `Year`, `Manufacturer`,
`typeOfVehicle`) VALUES

('T22', 'IR32', 'Model S', 2019, 'Tesla', 'Sedan'),

('T22', 'TWQ123', 'Model X', 2018, 'Tesla', 'Sedan');
```



```
mysql> INSERT INTO `automobile` (`CaseID`, `AID`, `model`, `Year`, `Manufacturer`, `typeOfVehicle`) VALUES
    -> ('T22', 'IR32', 'Model S', 2019, 'Tesla', 'Sedan'),
    -> ('T22', 'TWQ123', 'Model X', 2018, 'Tesla', 'Sedan');
Query OK, 2 rows affected (0.00 sec)
Records: 2  Duplicates: 0  Warnings: 0

mysql> select * from automobile;
+--------+--------+---------+------+--------------+---------------+
| CaseID | AID    | model   | Year | Manufacturer | typeOfVehicle |
+--------+--------+---------+------+--------------+---------------+
| T22    | IR32   | Model S | 2019 | Tesla        | Sedan         |
| T22    | TWQ123 | Model X | 2018 | Tesla        | Sedan         |
+--------+--------+---------+------+--------------+---------------+
2 rows in set (0.00 sec)
```

## Inserting values into Criminal Backup table using insert command

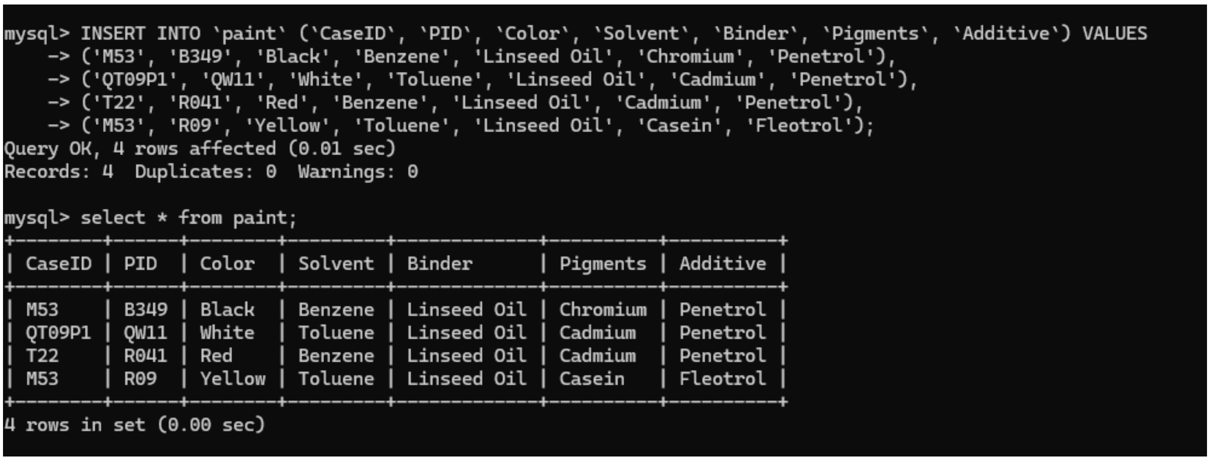
```
INSERT INTO `criminalbackup` (`ID`, `CriminalName`, `Alias`, `NoOfCases`,
`dominantHand`, `Nationality`) VALUES

(NULL, 'Luke Wrenner', 'Sticky Fingers', 2, 'Right', 'American'),

(NULL, 'Anna Sorokin', 'Anna Delvey', 6, 'Unknown', 'German'),

('RX12', 'Ted Bundy', 'Lady Killer', 50, 'Left', 'American'),

('213FD', 'Joe Palmer', 'None', 1, 'Unknown', 'Russian');
```



```
mysql> INSERT INTO `criminalbackup` (`ID`, `CriminalName`, `Alias`, `NoOfCases`, `dominantHand`, `Nationality`) VALUES
    -> (NULL, 'Luke Wrenner', 'Sticky Fingers', 2, 'Right', 'American'),
    -> (NULL, 'Anna Sorokin', 'Anna Delvey', 6, 'Unknown', 'German'),
    -> ('RX12', 'Ted Bundy', 'Lady Killer', 50, 'Left', 'American'),
    -> ('213FD', 'Joe Palmer', 'None', 1, 'Unknown', 'Russian');
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> select * from criminalbackup;
+-------+--------------+----------------+-----------+--------------+-------------+
| ID    | CriminalName | Alias          | NoOfCases | dominantHand | Nationality |
+-------+--------------+----------------+-----------+--------------+-------------+
| NULL  | Luke Wrenner | Sticky Fingers |         2 | Right        | American    |
| NULL  | Anna Sorokin | Anna Delvey    |         6 | Unknown      | German      |
| RX12  | Ted Bundy    | Lady Killer    |        50 | Left         | American    |
| 213FD | Joe Palmer   | None           |         1 | Unknown      | Russian     |
+-------+--------------+----------------+-----------+--------------+-------------+
4 rows in set (0.00 sec)
```

## Inserting values into Paint table using insert command

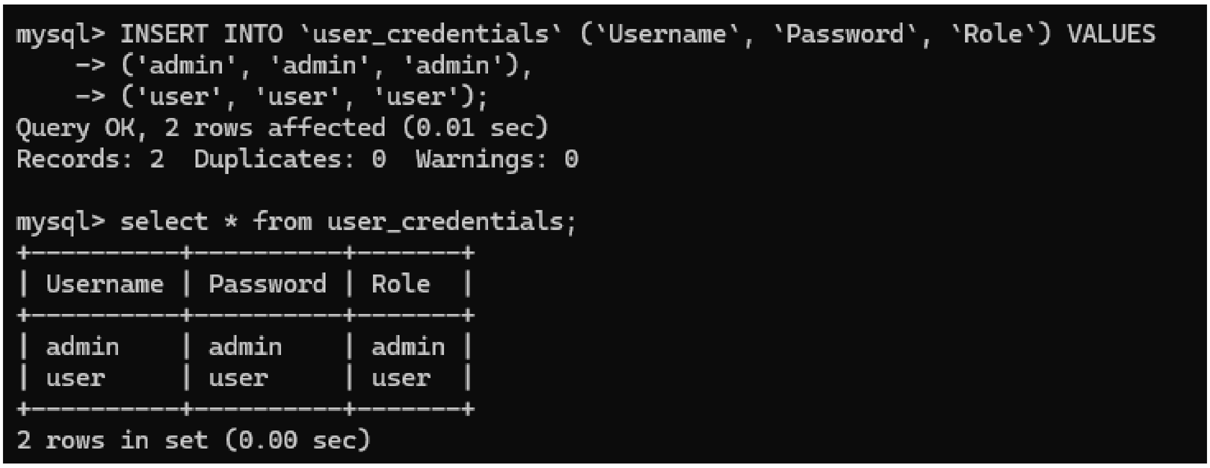
```
INSERT INTO `paint` (`CaseID`, `PID`, `Color`, `Solvent`, `Binder`,
`Pigments`, `Additive`) VALUES

('M53', 'B349', 'Black', 'Benzene', 'Linseed Oil', 'Chromium', 'Penetrol'),

('QT09P1', 'QW11', 'White', 'Toluene', 'Linseed Oil', 'Cadmium',
'Penetrol'),

('T22', 'R041', 'Red', 'Benzene', 'Linseed Oil', 'Cadmium', 'Penetrol'),

('M53', 'R09', 'Yellow', 'Toluene', 'Linseed Oil', 'Casein', 'Fleotrol');
```



```
mysql> INSERT INTO `paint` (`CaseID`, `PID`, `Color`, `Solvent`, `Binder`, `Pigments`, `Additive`) VALUES
    -> ('M53', 'B349', 'Black', 'Benzene', 'Linseed Oil', 'Chromium', 'Penetrol'),
    -> ('QT09P1', 'QW11', 'White', 'Toluene', 'Linseed Oil', 'Cadmium', 'Penetrol'),
    -> ('T22', 'R041', 'Red', 'Benzene', 'Linseed Oil', 'Cadmium', 'Penetrol'),
    -> ('M53', 'R09', 'Yellow', 'Toluene', 'Linseed Oil', 'Casein', 'Fleotrol');
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> select * from paint;
+--------+------+--------+---------+-------------+----------+----------+
| CaseID | PID  | Color  | Solvent | Binder      | Pigments | Additive |
+--------+------+--------+---------+-------------+----------+----------+
| M53    | B349 | Black  | Benzene | Linseed Oil | Chromium | Penetrol |
| QT09P1 | QW11 | White  | Toluene | Linseed Oil | Cadmium  | Penetrol |
| T22    | R041 | Red    | Benzene | Linseed Oil | Cadmium  | Penetrol |
| M53    | R09  | Yellow | Toluene | Linseed Oil | Casein   | Fleotrol |
+--------+------+--------+---------+-------------+----------+----------+
4 rows in set (0.00 sec)
```

## Inserting values into User Credential table using insert command

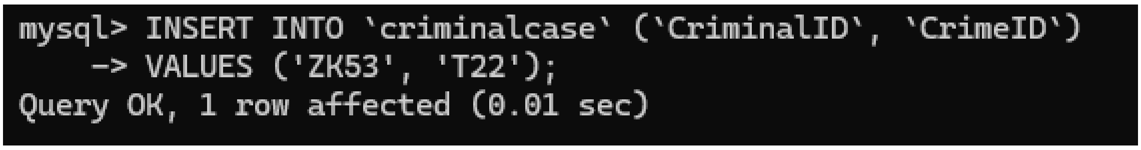
```
INSERT INTO `user_credentials` (`Username`, `Password`, `Role`) VALUES

('admin', 'admin', 'admin'),

('user', 'user', 'user');
```



```
mysql> INSERT INTO `user_credentials` (`Username`, `Password`, `Role`) VALUES
    -> ('admin', 'admin', 'admin'),
    -> ('user', 'user', 'user');
Query OK, 2 rows affected (0.01 sec)
Records: 2  Duplicates: 0  Warnings: 0

mysql> select * from user_credentials;
+----------+----------+-------+
| Username | Password | Role  |
+----------+----------+-------+
| admin    | admin    | admin |
| user     | user     | user  |
+----------+----------+-------+
2 rows in set (0.00 sec)
```

## Inserting values into Criminal Case table using insert command

```
INSERT INTO `criminalcase` (`CriminalID`, `CrimeID`)

VALUES ('ZK53', 'T22');
```

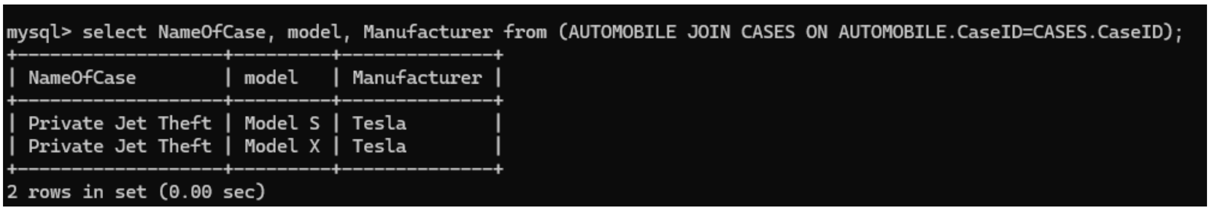


```
mysql> INSERT INTO ‘criminalcase‘ (‘CriminalID‘, ‘CrimeID‘)
    -> VALUES ('ZK53', 'T22');
Query OK, 1 row affected (0.01 sec)
```

# Join Queries

## Cars associated with cases

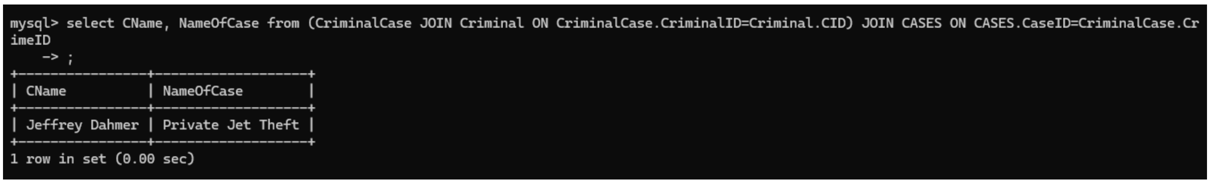
```
select NameOfCase, model, Manufacturer from (AUTOMOBILE JOIN CASES ON
AUTOMOBILE.CaseID=CASES.CaseID);
```



```
mysql> select NameOfCase, model, Manufacturer from (AUTOMOBILE JOIN CASES ON AUTOMOBILE.CaseID=CASES.CaseID);
+-------------------+---------+--------------+
| NameOfCase        | model   | Manufacturer |
+-------------------+---------+--------------+
| Private Jet Theft | Model S | Tesla        |
| Private Jet Theft | Model X | Tesla        |
+-------------------+---------+--------------+
2 rows in set (0.00 sec)
```

## Criminals and the Cases they’ve been accused of

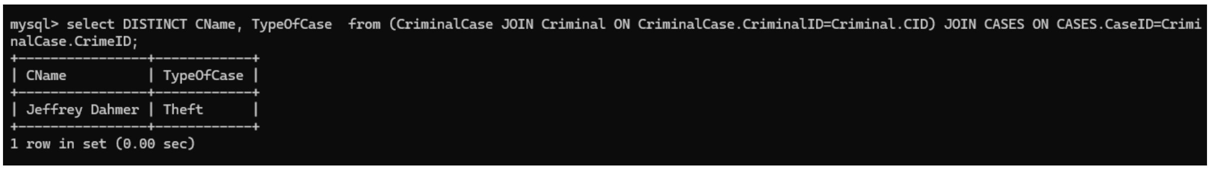
```
select CName, NameOfCase from (CriminalCase JOIN Criminal ON
CriminalCase.CriminalID=Criminal.CID) JOIN CASES ON
CASES.CaseID=CriminalCase.CrimeID;
```



```
mysql> select CName, NameOfCase from (CriminalCase JOIN Criminal ON CriminalCase.CriminalID=Criminal.CID) JOIN CASES ON CASES.CaseID=CriminalCase.Cr
imeID
    -> ;
+----------------+-------------------+
| CName          | NameOfCase        |
+----------------+-------------------+
| Jeffrey Dahmer | Private Jet Theft |
+----------------+-------------------+
1 row in set (0.00 sec)
```

## Criminals and the type of Cases they’ve been accused of

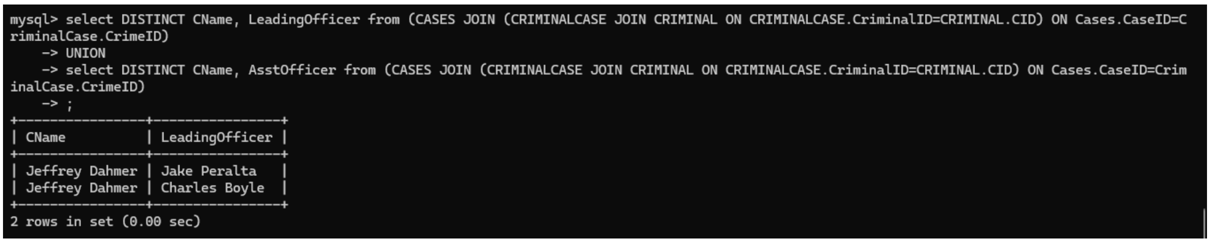
```
select DISTINCT CName, TypeOfCase  from (CriminalCase JOIN Criminal ON
CriminalCase.CriminalID=Criminal.CID) JOIN CASES ON
CASES.CaseID=CriminalCase.CrimeID;
```



```
mysql> select DISTINCT CName, TypeOfCase  from (CriminalCase JOIN Criminal ON CriminalCase.CriminalID=Criminal.CID) JOIN CASES ON CASES.CaseID=Crimi
nalCase.CrimeID;
+----------------+------------+
| CName          | TypeOfCase |
+----------------+------------+
| Jeffrey Dahmer | Theft      |
+----------------+------------+
1 row in set (0.00 sec)
```

### Criminals and the officers investigating them

```
select DISTINCT CName, LeadingOfficer from (CASES JOIN (CRIMINALCASE JOIN
CRIMINAL ON CRIMINALCASE.CriminalID=CRIMINAL.CID) ON
Cases.CaseID=CriminalCase.CrimeID)

UNION

select DISTINCT CName, AsstOfficer from (CASES JOIN (CRIMINALCASE JOIN
CRIMINAL ON CRIMINALCASE.CriminalID=CRIMINAL.CID) ON
Cases.CaseID=CriminalCase.CrimeID)
```

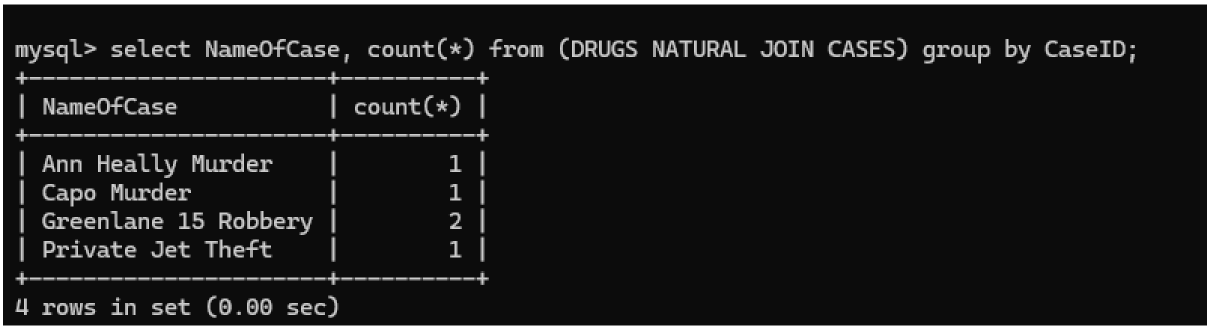


```
mysql> select DISTINCT CName, LeadingOfficer from (CASES JOIN (CRIMINALCASE JOIN CRIMINAL ON CRIMINALCASE.CriminalID=CRIMINAL.CID) ON Cases.CaseID=C
riminalCase.CrimeID)
    -> UNION
    -> select DISTINCT CName, AsstOfficer from (CASES JOIN (CRIMINALCASE JOIN CRIMINAL ON CRIMINALCASE.CriminalID=CRIMINAL.CID) ON Cases.CaseID=Crim
inalCase.CrimeID)
    -> ;
+----------------+----------------+
| CName          | LeadingOfficer |
+----------------+----------------+
| Jeffrey Dahmer | Jake Peralta   |
| Jeffrey Dahmer | Charles Boyle  |
+----------------+----------------+
2 rows in set (0.00 sec)
```

## Aggregate Functions

### Cases with drug evidence and number of drug evidence instances for each

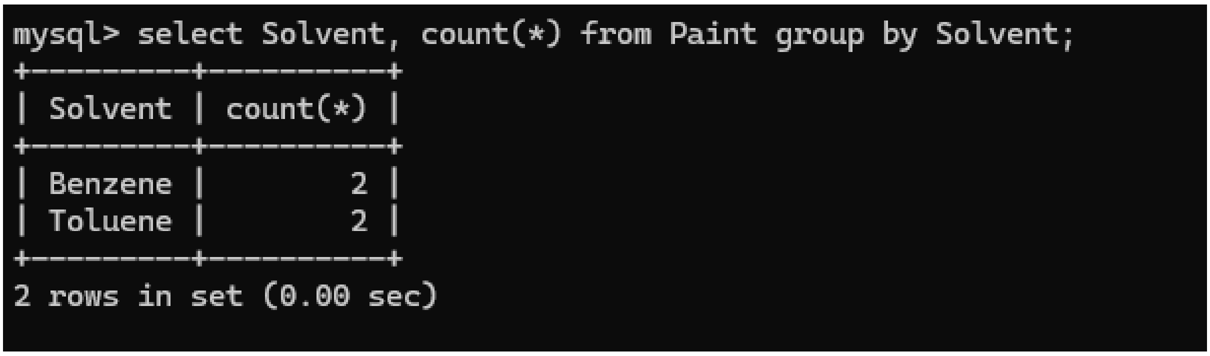
```
select NameOfCase, count(*) from (DRUGS NATURAL JOIN CASES) group by
CaseID;
```



```
mysql> select NameOfCase, count(*) from (DRUGS NATURAL JOIN CASES) group by CaseID;
+----------------------+----------+
| NameOfCase           | count(*) |
+----------------------+----------+
| Ann Heally Murder    |        1 |
| Capo Murder          |        1 |
| Greenlane 15 Robbery |        2 |
| Private Jet Theft    |        1 |
+----------------------+----------+
4 rows in set (0.00 sec)
```

## Paints grouped by solvent

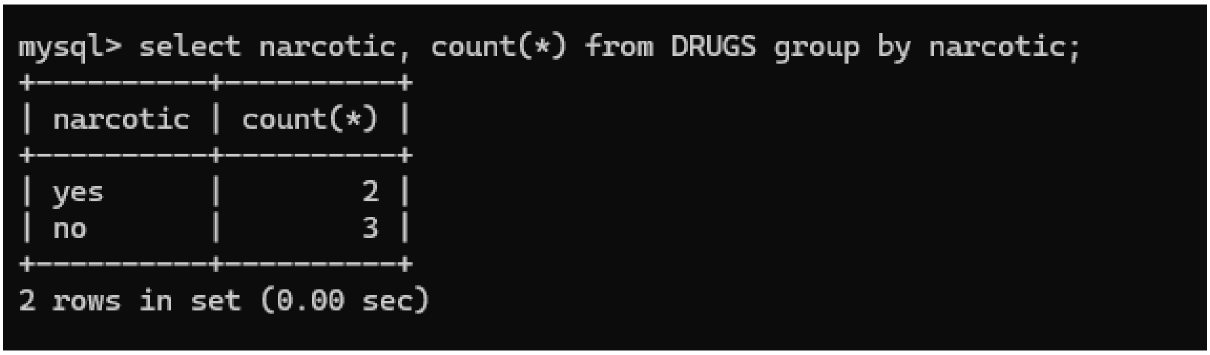
```
select Solvent, count(*) from Paint group by Solvent;
```



```
mysql> select Solvent, count(*) from Paint group by Solvent;
+---------+----------+
| Solvent | count(*) |
+---------+----------+
| Benzene |        2 |
| Toluene |        2 |
+---------+----------+
2 rows in set (0.00 sec)
```

## Number of Non-Narcotic and Narcotic drugs

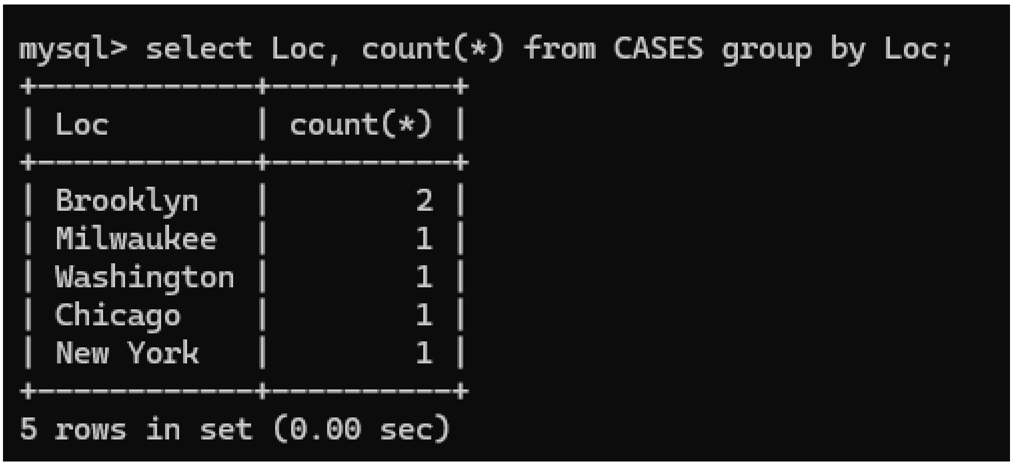
```
select narcotic, count(*) from DRUGS group by narcotic;
```



```
mysql> select narcotic, count(*) from DRUGS group by narcotic;
+----------+----------+
| narcotic | count(*) |
+----------+----------+
| yes      |        2 |
| no       |        3 |
+----------+----------+
2 rows in set (0.00 sec)
```

## Number of cases for each Location

```
select Loc, count(*) from CASES group by Loc;
```

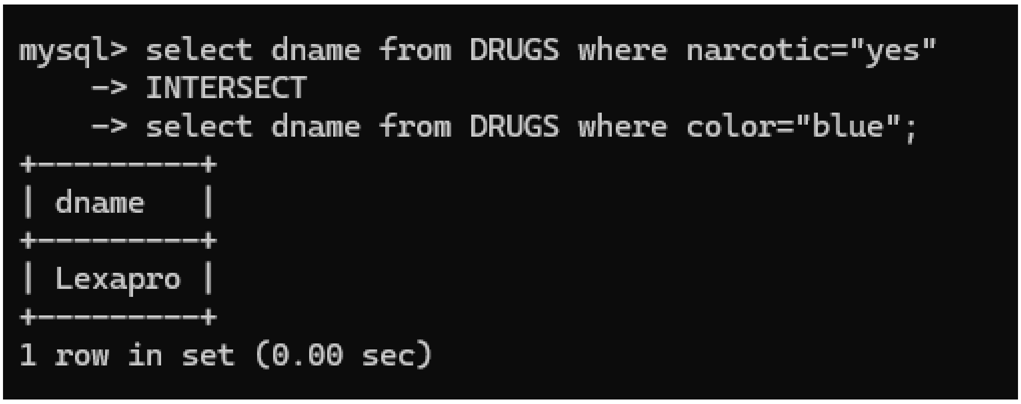


```
mysql> select Loc, count(*) from CASES group by Loc;
+------------+----------+
| Loc        | count(*) |
+------------+----------+
| Brooklyn   |        2 |
| Milwaukee  |        1 |
| Washington |        1 |
| Chicago    |        1 |
| New York   |        1 |
+------------+----------+
5 rows in set (0.00 sec)
```

## Set Operations

### Names of blue narcotic drugs

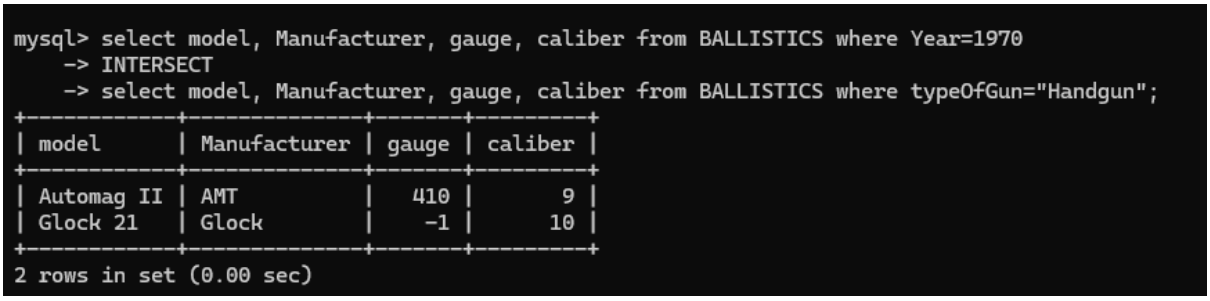
```
select dname from DRUGS where narcotic="yes"
INTERSECT
select dname from DRUGS where color="blue";
```



```
mysql> select dname from DRUGS where narcotic="yes"
    -> INTERSECT
    -> select dname from DRUGS where color="blue";
+---------+
| dname   |
+---------+
| Lexapro |
+---------+
1 row in set (0.00 sec)
```

### Handguns manufactured in 1970

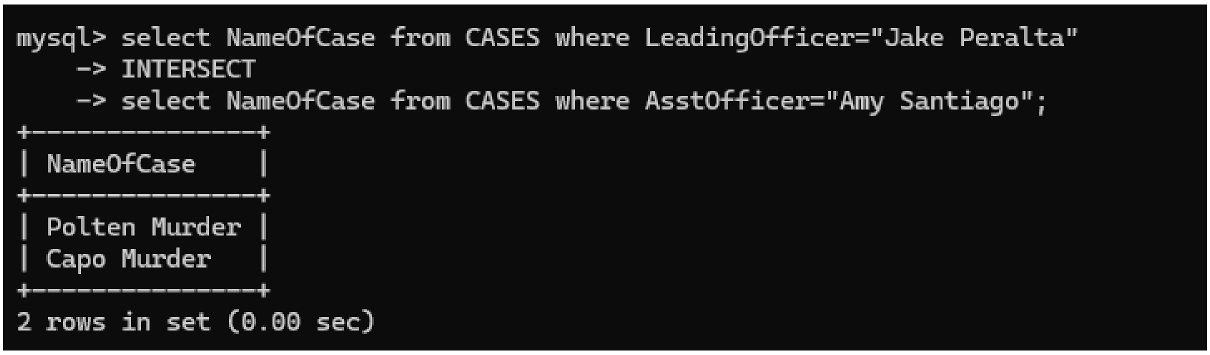
```
select model, Manufacturer, gauge, caliber from BALLISTICS where Year=1970
INTERSECT
select model, Manufacturer, gauge, caliber from BALLISTICS where
typeOfGun="Handgun";
```



```
mysql> select model, Manufacturer, gauge, caliber from BALLISTICS where Year=1970
    -> INTERSECT
    -> select model, Manufacturer, gauge, caliber from BALLISTICS where typeOfGun="Handgun";
+------------+--------------+-------+---------+
| model      | Manufacturer | gauge | caliber |
+------------+--------------+-------+---------+
| Automag II | AMT          |   410 |       9 |
| Glock 21   | Glock        |    -1 |      10 |
+------------+--------------+-------+---------+
2 rows in set (0.00 sec)
```

### Cases lead by Jake Peralta and Assisted by Amy Santiago

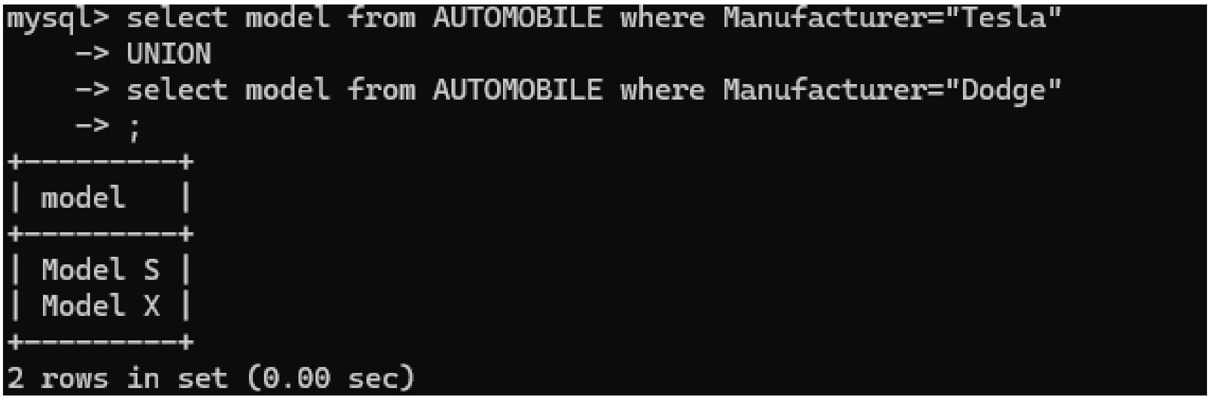
```
select NameOfCase from CASES where LeadingOfficer="Jake Peralta"
INTERSECT
select NameOfCase from CASES where AsstOfficer="Amy Santiago";
```



```
mysql> select NameOfCase from CASES where LeadingOfficer="Jake Peralta"
    -> INTERSECT
    -> select NameOfCase from CASES where AsstOfficer="Amy Santiago";
+---------------+
| NameOfCase    |
+---------------+
| Polten Murder |
| Capo Murder   |
+---------------+
2 rows in set (0.00 sec)
```

## Cars manufactured by Tesla or Dodge

```
select model from AUTOMOBILE where Manufacturer="Tesla"
UNION
select model from AUTOMOBILE where Manufacturer="Dodge"
```

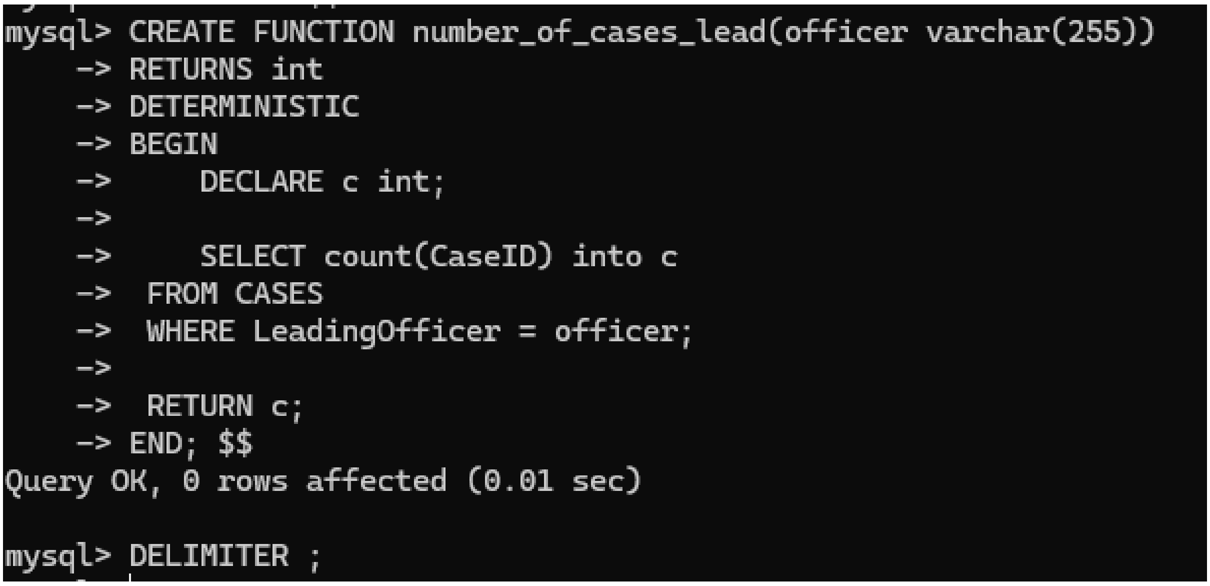


```
mysql> select model from AUTOMOBILE where Manufacturer="Tesla"
    -> UNION
    -> select model from AUTOMOBILE where Manufacturer="Dodge"
    -> ;
+---------+
| model   |
+---------+
| Model S |
| Model X |
+---------+
2 rows in set (0.00 sec)
```

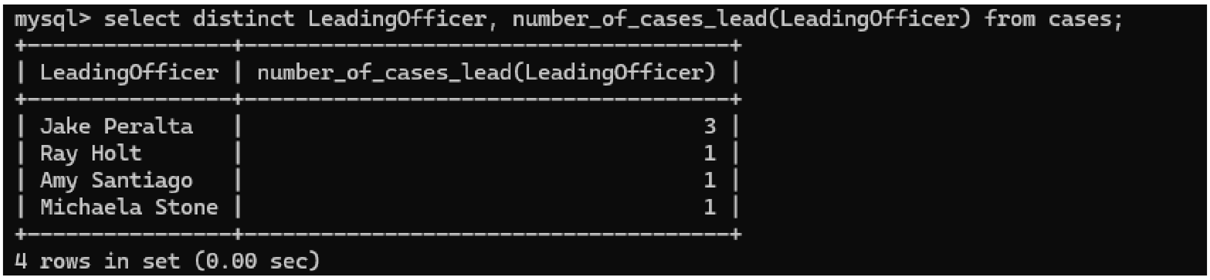
# Functions

## Function to return number of cases lead by an officer

```
DELIMITER $$
CREATE FUNCTION number_of_cases_lead(officer varchar(255))
RETURNS int
DETERMINISTIC
BEGIN
    DECLARE case_count int;

    SELECT count(CaseID) into case_count
      FROM CASES
      WHERE LeadingOfficer = officer;

      RETURN case_count;
END; $$
DELIMITER ;
```



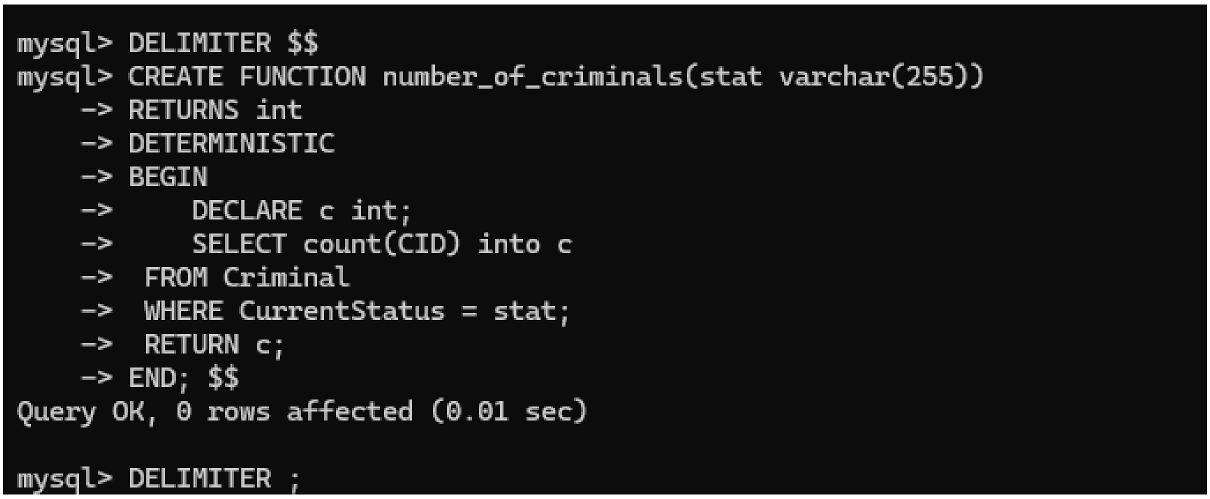
```
mysql> CREATE FUNCTION number_of_cases_lead(officer varchar(255))
    -> RETURNS int
    -> DETERMINISTIC
    -> BEGIN
    ->     DECLARE c int;
    ->
    ->     SELECT count(CaseID) into c
    ->  FROM CASES
    ->  WHERE LeadingOfficer = officer;
    ->
    ->  RETURN c;
    -> END; $$
Query OK, 0 rows affected (0.01 sec)

mysql> DELIMITER ;
```



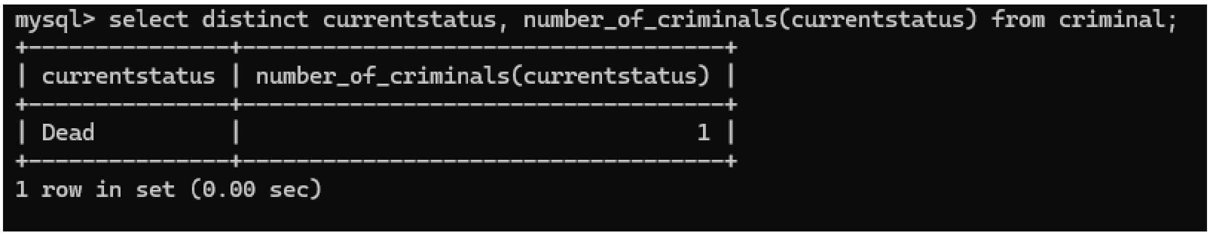
```
mysql> select distinct LeadingOfficer, number_of_cases_lead(LeadingOfficer) from cases;
+----------------+--------------------------------------+
| LeadingOfficer | number_of_cases_lead(LeadingOfficer) |
+----------------+--------------------------------------+
| Jake Peralta   |                                    3 |
| Ray Holt       |                                    1 |
| Amy Santiago   |                                    1 |
| Michaela Stone |                                    1 |
+----------------+--------------------------------------+
4 rows in set (0.00 sec)
```

Function to return number of criminals given status – ie, the function can return no. of prison, active etc.

```
DELIMITER $$
CREATE FUNCTION number_of_criminals(stat varchar(255))
RETURNS int
DETERMINISTIC
BEGIN
    DECLARE c int;

    SELECT count(CID) into c
      FROM Criminal
      WHERE CurrentStatus = stat;

      RETURN c;
END; $$
DELIMITER ;
```



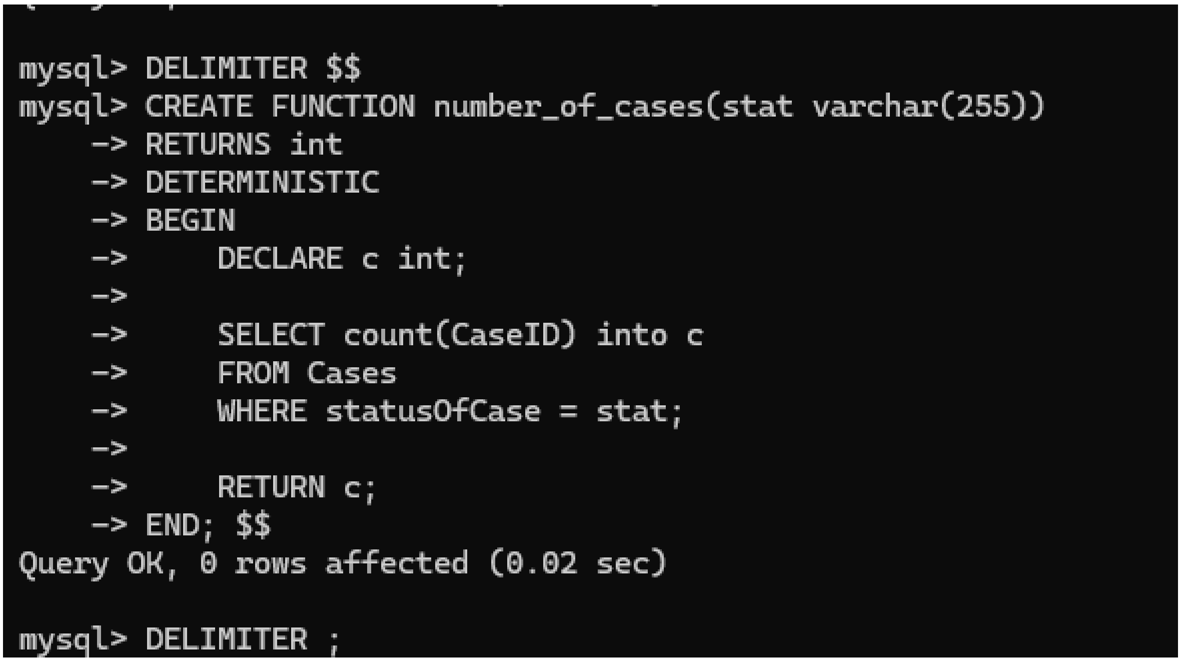
```
mysql> DELIMITER $$
mysql> CREATE FUNCTION number_of_criminals(stat varchar(255))
    -> RETURNS int
    -> DETERMINISTIC
    -> BEGIN
    ->     DECLARE c int;
    ->     SELECT count(CID) into c
    ->  FROM Criminal
    ->  WHERE CurrentStatus = stat;
    ->  RETURN c;
    -> END; $$
Query OK, 0 rows affected (0.01 sec)

mysql> DELIMITER ;
```



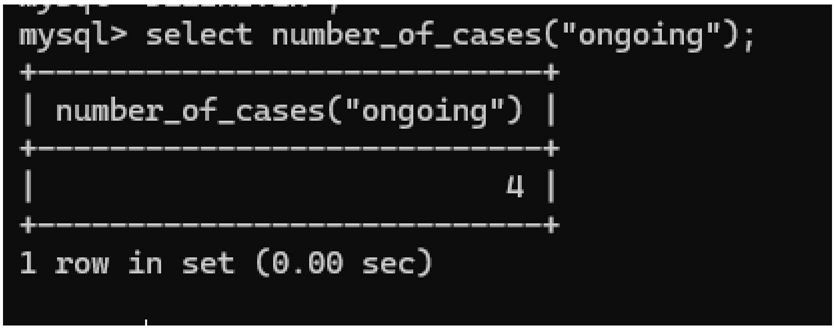
```
mysql> select distinct currentstatus, number_of_criminals(currentstatus) from criminal;
+---------------+------------------------------------+
| currentstatus | number_of_criminals(currentstatus) |
+---------------+------------------------------------+
| Dead          |                                  1 |
+---------------+------------------------------------+
1 row in set (0.00 sec)
```

## Function to find no of cases of a particular status

```
DELIMITER $$

CREATE FUNCTION number_of_cases(stat varchar(255))

RETURNS int

DETERMINISTIC

BEGIN

    DECLARE c int;


    SELECT count(CaseID) into c

    FROM Cases

    WHERE statusOfCase = stat;
    RETURN c;
END; $$
DELIMITER ;
```



```
mysql> DELIMITER $$
mysql> CREATE FUNCTION number_of_cases(stat varchar(255))
    -> RETURNS int
    -> DETERMINISTIC
    -> BEGIN
    ->     DECLARE c int;
    ->
    ->     SELECT count(CaseID) into c
    ->     FROM Cases
    ->     WHERE statusOfCase = stat;
    ->
    ->     RETURN c;
    -> END; $$
Query OK, 0 rows affected (0.02 sec)

mysql> DELIMITER ;
```

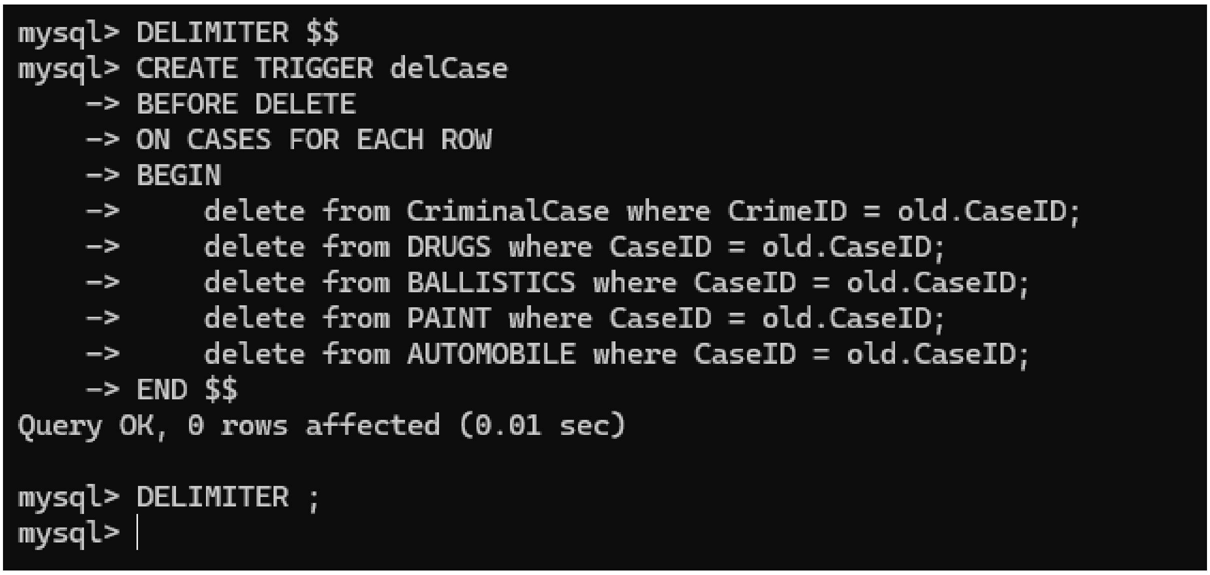


```
mysql> select number_of_cases("ongoing");
+----------------------------+
| number_of_cases("ongoing") |
+----------------------------+
|                          4 |
+----------------------------+
1 row in set (0.00 sec)
```

# Trigger

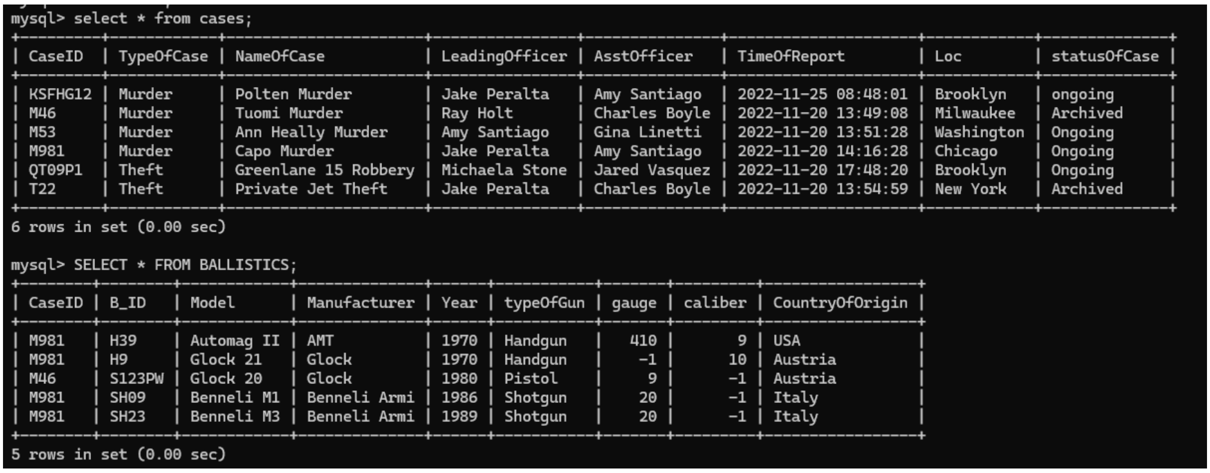
## Trigger to allow case deletion

```
DELIMITER $$
CREATE TRIGGER delCase
BEFORE DELETE
ON CASES FOR EACH ROW
BEGIN
    delete from CriminalCase where CrimeID = old.CaseID;
    delete from DRUGS where CaseID = old.CaseID;
    delete from BALLISTICS where CaseID = old.CaseID;
    delete from PAINT where CaseID = old.CaseID;
    delete from AUTOMOBILE where CaseID = old.CaseID;
END $$
DELIMITER ;
```

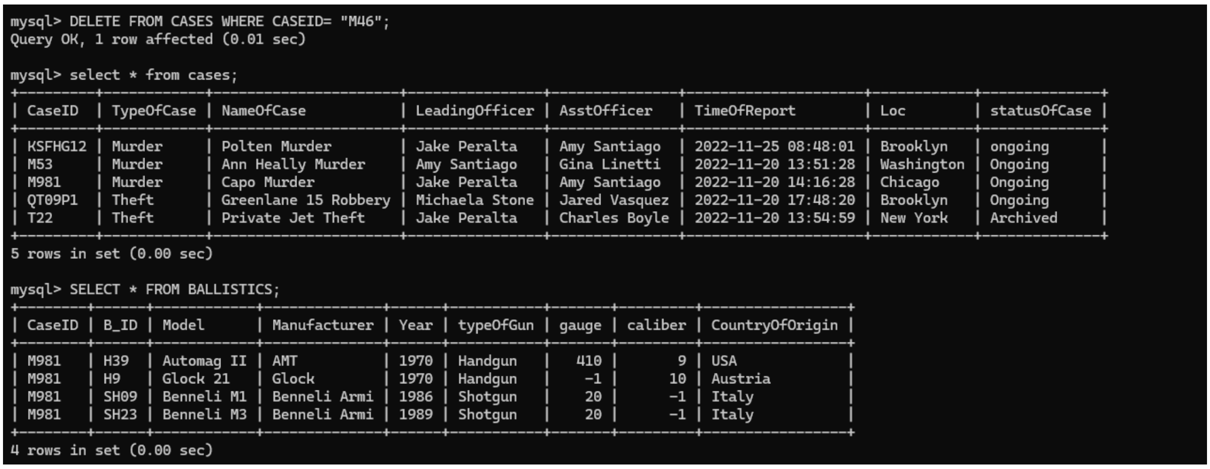


```
mysql> DELIMITER $$
mysql> CREATE TRIGGER delCase
    -> BEFORE DELETE
    -> ON CASES FOR EACH ROW
    -> BEGIN
    ->     delete from CriminalCase where CrimeID = old.CaseID;
    ->     delete from DRUGS where CaseID = old.CaseID;
    ->     delete from BALLISTICS where CaseID = old.CaseID;
    ->     delete from PAINT where CaseID = old.CaseID;
    ->     delete from AUTOMOBILE where CaseID = old.CaseID;
    -> END $$
Query OK, 0 rows affected (0.01 sec)

mysql> DELIMITER ;
mysql>
```

The above trigger allows users to delete case information. Without this trigger it is not possible to delete case information due to foreign key parent constraints. This trigger deals with that by first deleting all evidence related to a case before deleting the case record.



```
mysql> select * from cases;
+---------+------------+----------------------+----------------+---------------+---------------------+------------+--------------+
| CaseID  | TypeOfCase | NameOfCase           | LeadingOfficer | AsstOfficer   | TimeOfReport        | Loc        | statusOfCase |
+---------+------------+----------------------+----------------+---------------+---------------------+------------+--------------+
| KSFHG12 | Murder     | Polten Murder        | Jake Peralta   | Amy Santiago  | 2022-11-25 08:48:01 | Brooklyn   | ongoing      |
| M46     | Murder     | Tuomi Murder         | Ray Holt       | Charles Boyle | 2022-11-20 13:49:08 | Milwaukee  | Archived     |
| M53     | Murder     | Ann Heally Murder    | Amy Santiago   | Gina Linetti  | 2022-11-20 13:51:28 | Washington | Ongoing      |
| M981    | Murder     | Capo Murder          | Jake Peralta   | Amy Santiago  | 2022-11-20 14:16:28 | Chicago    | Ongoing      |
| QT09P1  | Theft      | Greenlane 15 Robbery | Michaela Stone | Jared Vasquez | 2022-11-20 17:48:20 | Brooklyn   | Ongoing      |
| T22     | Theft      | Private Jet Theft    | Jake Peralta   | Charles Boyle | 2022-11-20 13:54:59 | New York   | Archived     |
+---------+------------+----------------------+----------------+---------------+---------------------+------------+--------------+
6 rows in set (0.00 sec)

mysql> SELECT * FROM BALLISTICS;
+--------+--------+------------+--------------+------+-----------+-------+---------+-----------------+
| CaseID | B_ID   | Model      | Manufacturer | Year | typeOfGun | gauge | caliber | CountryOfOrigin |
+--------+--------+------------+--------------+------+-----------+-------+---------+-----------------+
| M981   | H39    | Automag II | AMT          | 1970 | Handgun   |   410 |       9 | USA             |
| M981   | H9     | Glock 21   | Glock        | 1970 | Handgun   |    -1 |      10 | Austria         |
| M46    | S123PW | Glock 20   | Glock        | 1980 | Pistol    |     9 |      -1 | Austria         |
| M981   | SH09   | Benneli M1 | Benneli Armi | 1986 | Shotgun   |    20 |      -1 | Italy           |
| M981   | SH23   | Benneli M3 | Benneli Armi | 1989 | Shotgun   |    20 |      -1 | Italy           |
+--------+--------+------------+--------------+------+-----------+-------+---------+-----------------+
5 rows in set (0.00 sec)
```

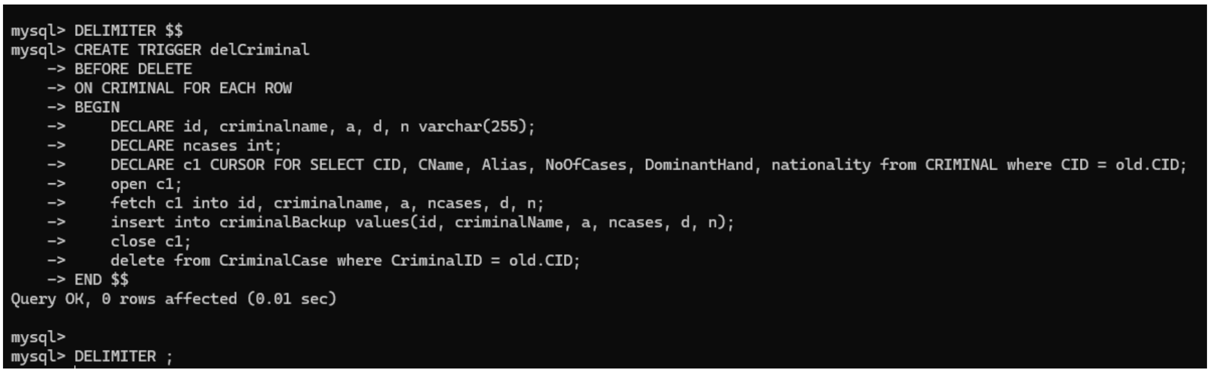


```
mysql> DELETE FROM CASES WHERE CASEID= "M46";
Query OK, 1 row affected (0.01 sec)

mysql> select * from cases;
+---------+------------+----------------------+----------------+---------------+---------------------+------------+--------------+
| CaseID  | TypeOfCase | NameOfCase           | LeadingOfficer | AsstOfficer   | TimeOfReport        | Loc        | statusOfCase |
+---------+------------+----------------------+----------------+---------------+---------------------+------------+--------------+
| KSFHG12 | Murder     | Polten Murder        | Jake Peralta   | Amy Santiago  | 2022-11-25 08:48:01 | Brooklyn   | ongoing      |
| M53     | Murder     | Ann Heally Murder    | Amy Santiago   | Gina Linetti  | 2022-11-20 13:51:28 | Washington | Ongoing      |
| M981    | Murder     | Capo Murder          | Jake Peralta   | Amy Santiago  | 2022-11-20 14:16:28 | Chicago    | Ongoing      |
| QT09P1  | Theft      | Greenlane 15 Robbery | Michaela Stone | Jared Vasquez | 2022-11-20 17:48:20 | Brooklyn   | Ongoing      |
| T22     | Theft      | Private Jet Theft    | Jake Peralta   | Charles Boyle | 2022-11-20 13:54:59 | New York   | Archived     |
+---------+------------+----------------------+----------------+---------------+---------------------+------------+--------------+
5 rows in set (0.00 sec)

mysql> SELECT * FROM BALLISTICS;
+--------+------+------------+--------------+------+-----------+-------+---------+-----------------+
| CaseID | B_ID | Model      | Manufacturer | Year | typeOfGun | gauge | caliber | CountryOfOrigin |
+--------+------+------------+--------------+------+-----------+-------+---------+-----------------+
| M981   | H39  | Automag II | AMT          | 1970 | Handgun   |   410 |       9 | USA             |
| M981   | H9   | Glock 21   | Glock        | 1970 | Handgun   |    -1 |      10 | Austria         |
| M981   | SH09 | Benneli M1 | Benneli Armi | 1986 | Shotgun   |    20 |      -1 | Italy           |
| M981   | SH23 | Benneli M3 | Benneli Armi | 1989 | Shotgun   |    20 |      -1 | Italy           |
+--------+------+------------+--------------+------+-----------+-------+---------+-----------------+
4 rows in set (0.00 sec)
```

The above picture shows the table before and after deleting. As shown above the case “M46” has been successfully deleted. Deletion has happened in both cases and ballistics table.

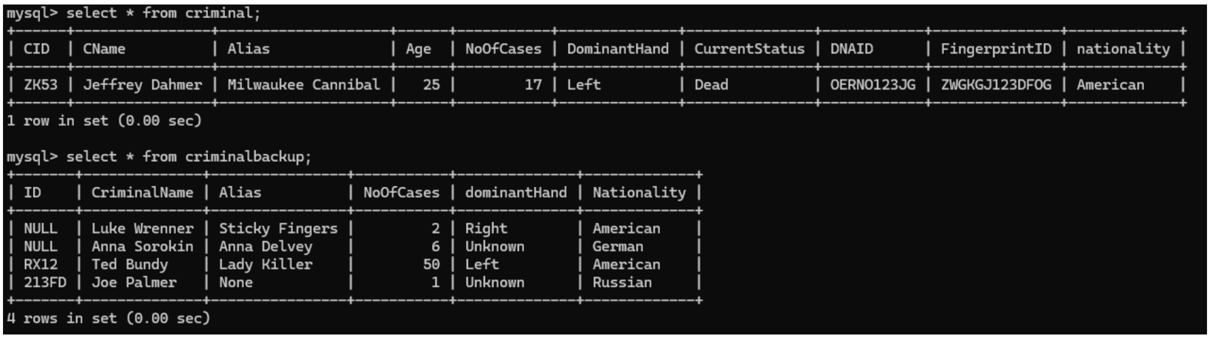
Trigger to delete and backup criminal records

```
DELIMITER $$
CREATE TRIGGER delCriminal
BEFORE DELETE
ON CRIMINAL FOR EACH ROW
BEGIN
    DECLARE id, criminalname, a, d, n varchar(255);
    DECLARE ncases int;
    DECLARE c1 CURSOR FOR SELECT CID, CName, Alias, NoOfCases,
DominantHand, nationality from CRIMINAL where CID = old.CID;
    open c1;
    fetch c1 into id, criminalname, a, ncases, d, n;
    insert into criminalBackup values(id, criminalName, a, ncases, d, n);
    close c1;
    delete from CriminalCase where CriminalID = old.CID;
END $$

DELIMITER ;
```



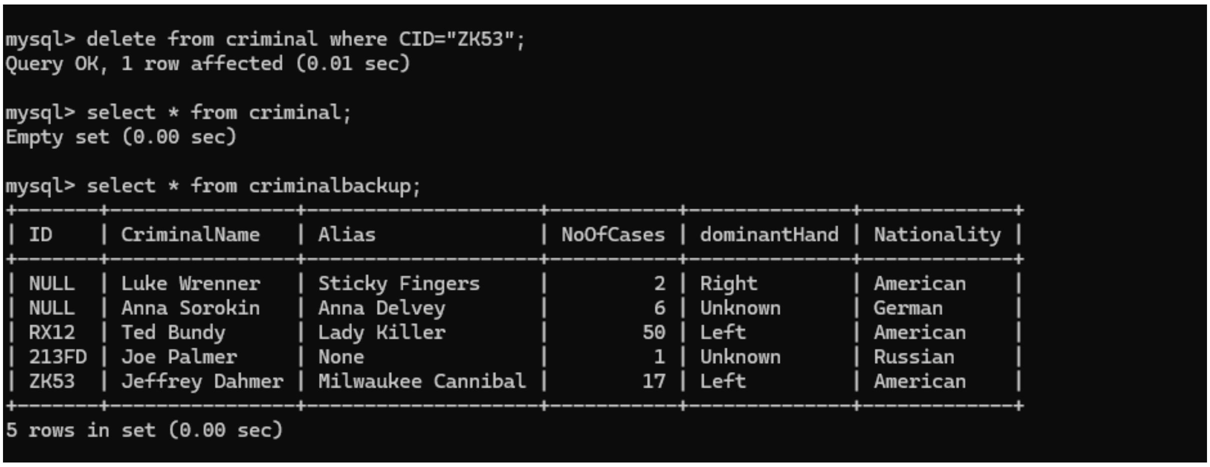
```
mysql> DELIMITER $$
mysql> CREATE TRIGGER delCriminal
    -> BEFORE DELETE
    -> ON CRIMINAL FOR EACH ROW
    -> BEGIN
    ->     DECLARE id, criminalname, a, d, n varchar(255);
    ->     DECLARE ncases int;
    ->     DECLARE c1 CURSOR FOR SELECT CID, CName, Alias, NoOfCases, DominantHand, nationality from CRIMINAL where CID = old.CID;
    ->     open c1;
    ->     fetch c1 into id, criminalname, a, ncases, d, n;
    ->     insert into criminalBackup values(id, criminalName, a, ncases, d, n);
    ->     close c1;
    ->     delete from CriminalCase where CriminalID = old.CID;
    -> END $$
Query OK, 0 rows affected (0.01 sec)

mysql>
mysql> DELIMITER ;
```

The above trigger makes sure that before deleting a criminal information from criminal table the necessary information is stored in criminal backup table.



```
mysql> select * from criminal;
+------+----------------+--------------------+------+-----------+--------------+---------------+------------+---------------+-------------+
| CID  | CName          | Alias              | Age  | NoOfCases | DominantHand | CurrentStatus | DNAID      | FingerprintID | nationality |
+------+----------------+--------------------+------+-----------+--------------+---------------+------------+---------------+-------------+
| ZK53 | Jeffrey Dahmer | Milwaukee Cannibal |   25 |        17 | Left         | Dead          | OERNO123JG | ZWGKGJ123DFOG | American    |
+------+----------------+--------------------+------+-----------+--------------+---------------+------------+---------------+-------------+
1 row in set (0.00 sec)

mysql> select * from criminalbackup;
+-------+--------------+-----------------+-----------+--------------+-------------+
| ID    | CriminalName | Alias           | NoOfCases | dominantHand | Nationality |
+-------+--------------+-----------------+-----------+--------------+-------------+
| NULL  | Luke Wrenner | Sticky Fingers  |         2 | Right        | American    |
| NULL  | Anna Sorokin | Anna Delvey     |         6 | Unknown      | German      |
| RX12  | Ted Bundy    | Lady Killer     |        50 | Left         | American    |
| 213FD | Joe Palmer   | None            |         1 | Unknown      | Russian     |
+-------+--------------+-----------------+-----------+--------------+-------------+
4 rows in set (0.00 sec)
```

Result for above trigger



```
mysql> delete from criminal where CID="ZK53";
Query OK, 1 row affected (0.01 sec)

mysql> select * from criminal;
Empty set (0.00 sec)

mysql> select * from criminalbackup;
+-------+----------------+--------------------+-----------+---------------+-------------+
| ID    | CriminalName   | Alias              | NoOfCases | dominantHand  | Nationality |
+-------+----------------+--------------------+-----------+---------------+-------------+
| NULL  | Luke Wrenner   | Sticky Fingers     |         2 | Right         | American    |
| NULL  | Anna Sorokin   | Anna Delvey        |         6 | Unknown       | German      |
| RX12  | Ted Bundy      | Lady Killer        |        50 | Left          | American    |
| 213FD | Joe Palmer     | None               |         1 | Unknown       | Russian     |
| ZK53  | Jeffrey Dahmer | Milwaukee Cannibal |        17 | Left          | American    |
+-------+----------------+--------------------+-----------+---------------+-------------+
5 rows in set (0.00 sec)
```

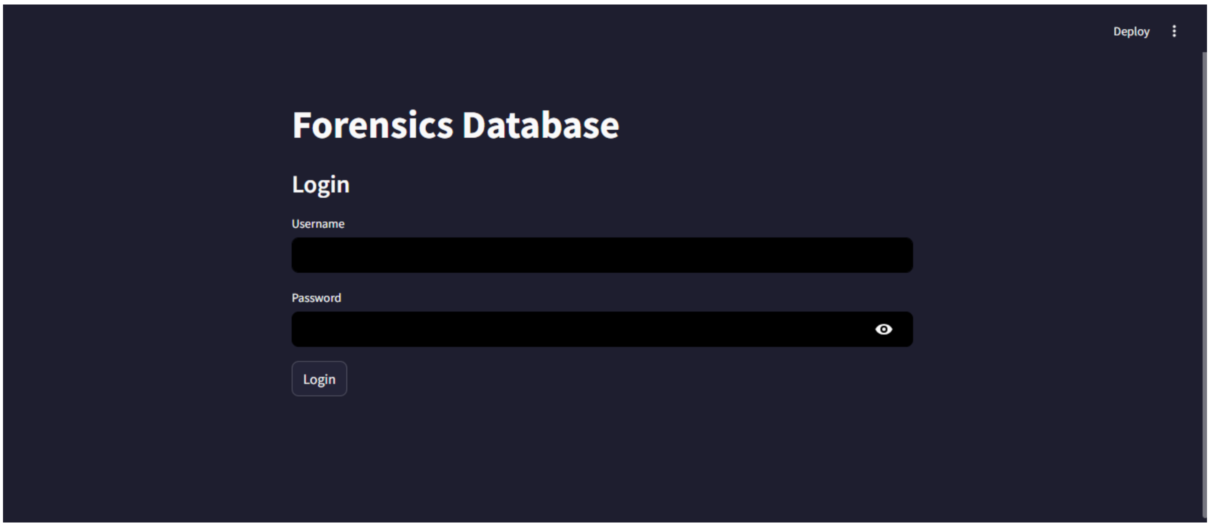
## Frontend –

The application allows users to perform CRUD operations, run predefined queries and also provides a terminal to run custom queries. The user is presented with a sidebar and the main page on opening the website. The sidebar allows the user to choose between, add, view, edit, remove, predefined queries and CMD option. On choosing an option, the user is taken to the respective page for further steps.

## LOGIN Page:

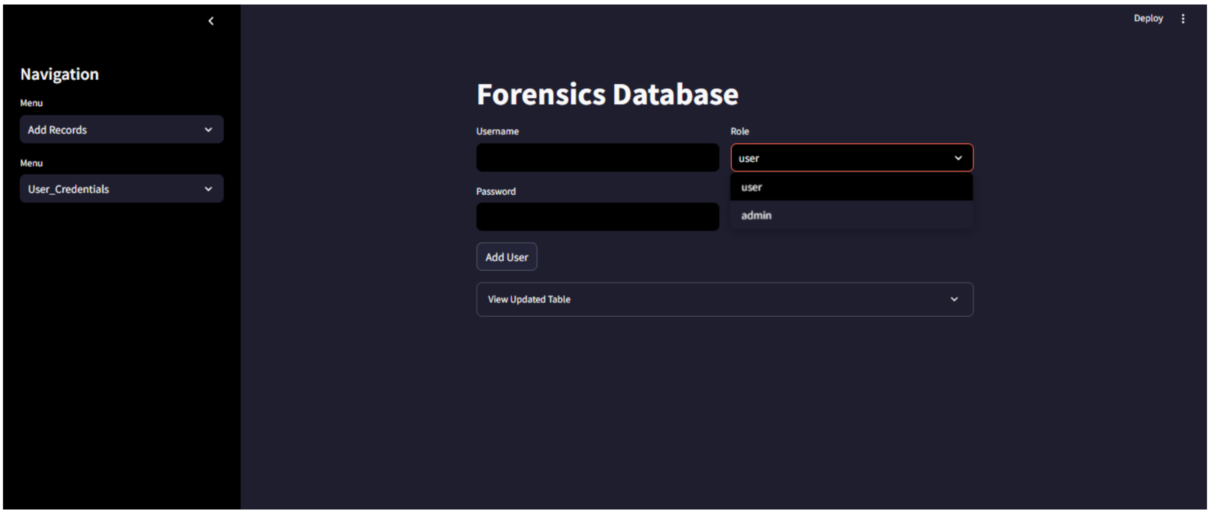
There are two roles available: ***Admin*** and ***User.***

- If you log in as an *Admin*, you have all the privilege.
- If you log in as a *User*, you can only view, run predefined query and CMD option on the database.



Moreover, if you Login as *admin* you can also create login credentials and assign roles to them (either *admin* or *user*)

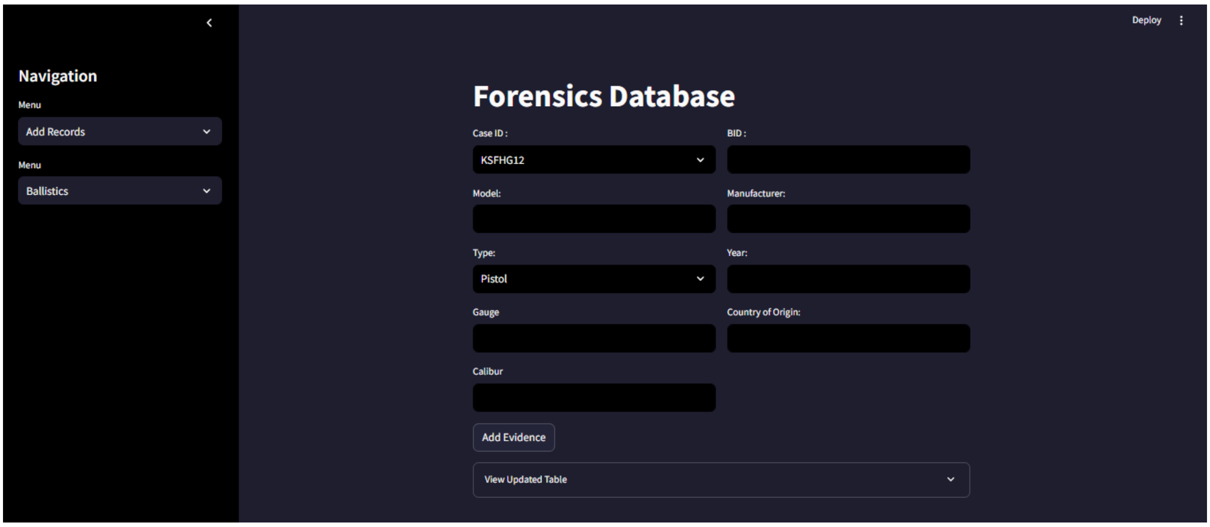
**Note:** All credentials must have unique a username.



UI to create login credentials

## Create Operations

On selecting the add option, the user is presented with a second drop down list to choose a table for which new record is to be added. The user is then provided with the relevant input boxes to add a new record.



Menu: Add Records

Menu: Ballistics

Forensics Database

Case ID : KSFHG12

BID :

Model:

Manufacturer:

Type: Pistol

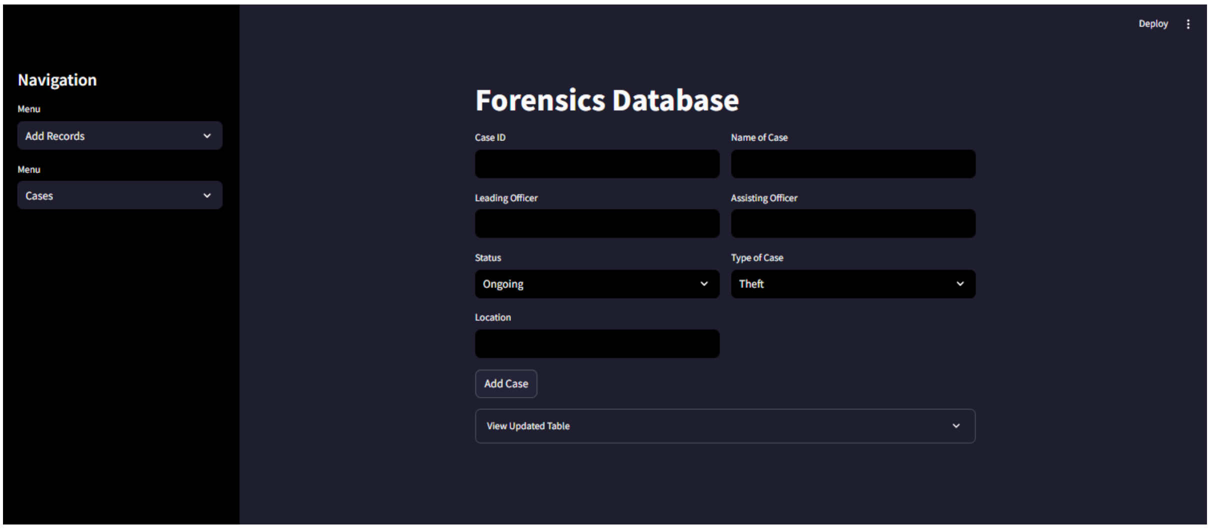
Year:

Gauge

Country of Origin:

Calibur

The above picture shows the UI to insert values in the Ballistics tables



Menu: Add Records

Menu: Cases

Forensics Database

Case ID

Name of Case

Leading Officer

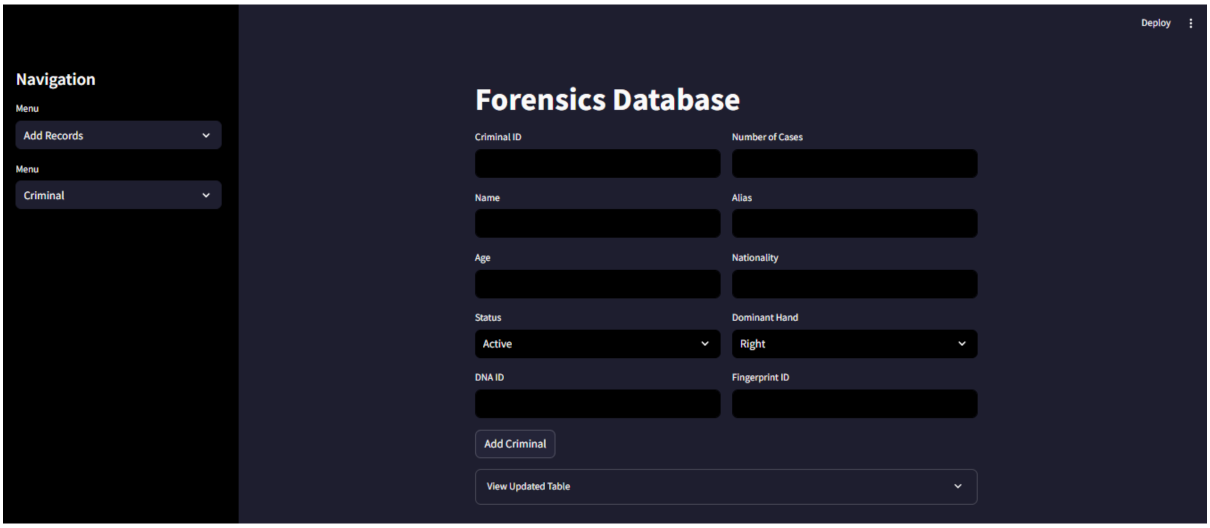
Assisting Officer

Status: Ongoing

Type of Case: Theft

Location

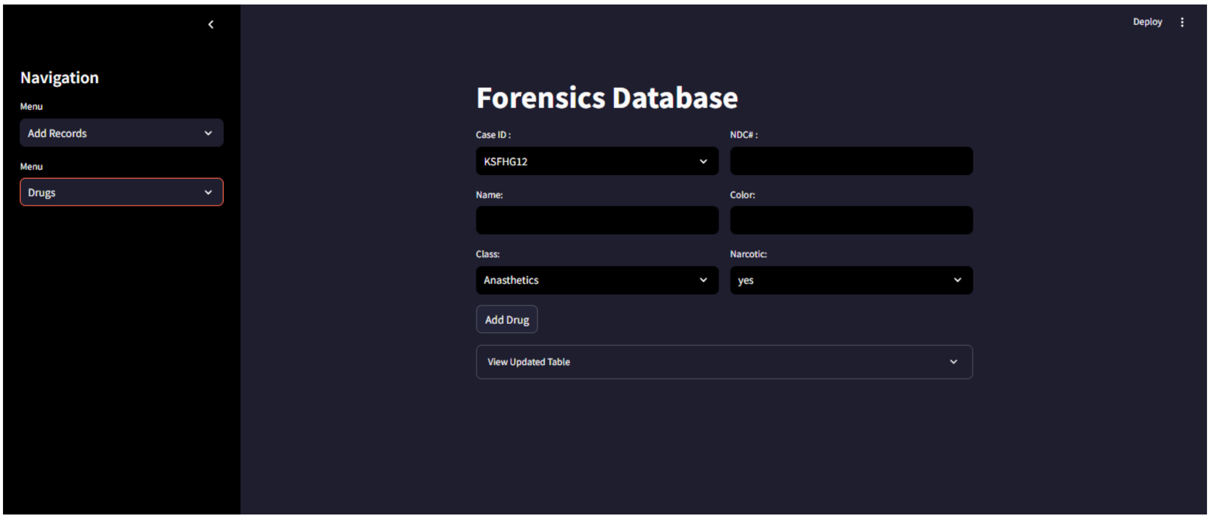
UI to insert a new case



Status: Active

Dominant Hand: Right

UI to insert a new criminal to database

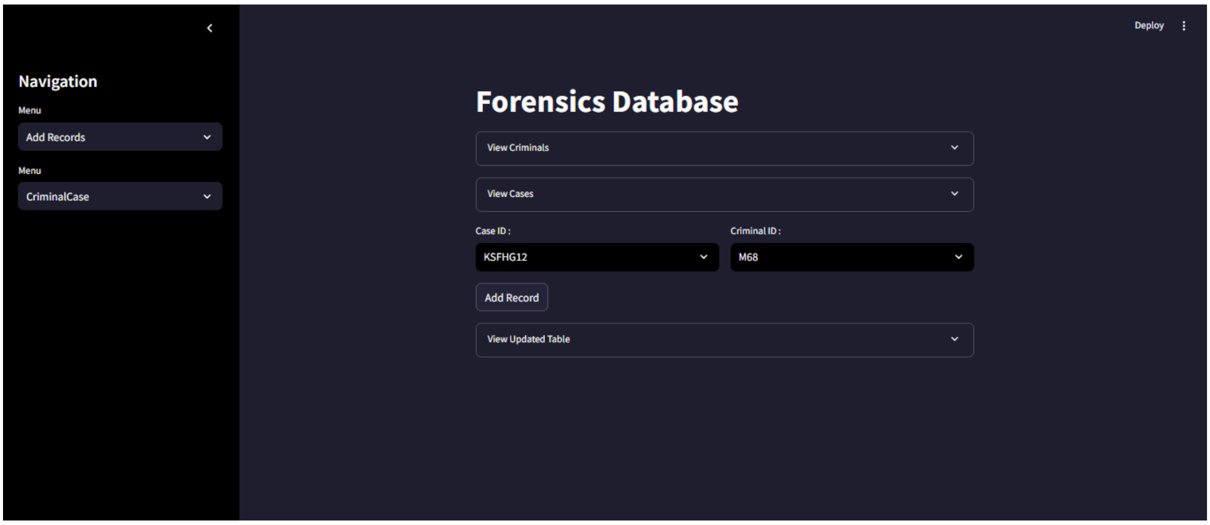


Case ID : KSFHG12

Class: Anasthetics

Narcotic: yes

UI to insert a new drug evidence to database



Forensics Database

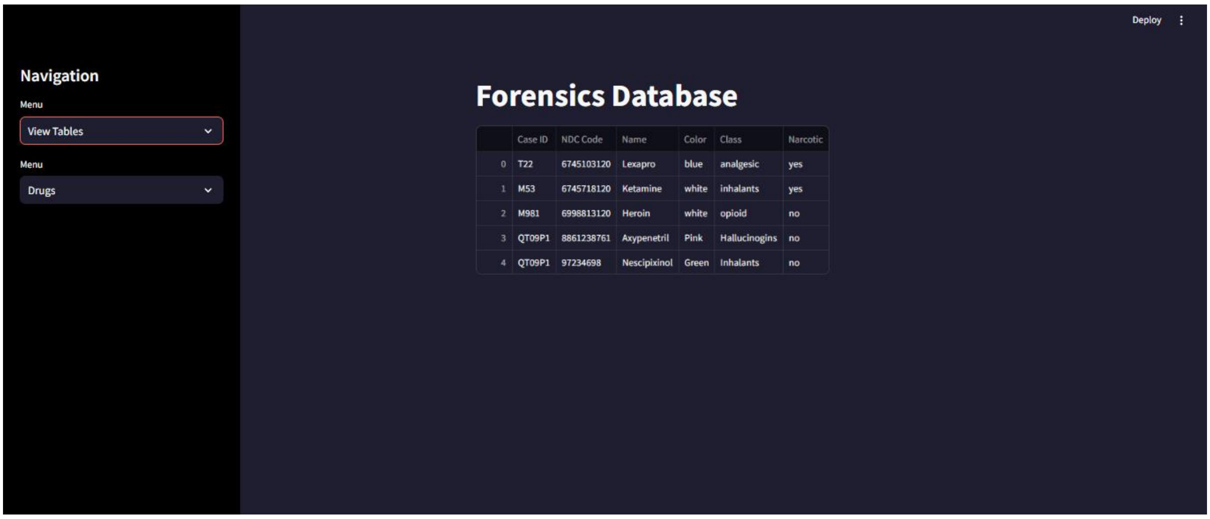
Case ID : KSFHG12

Criminal ID : M68

UI to add a new criminal-case record to database

Read Operation

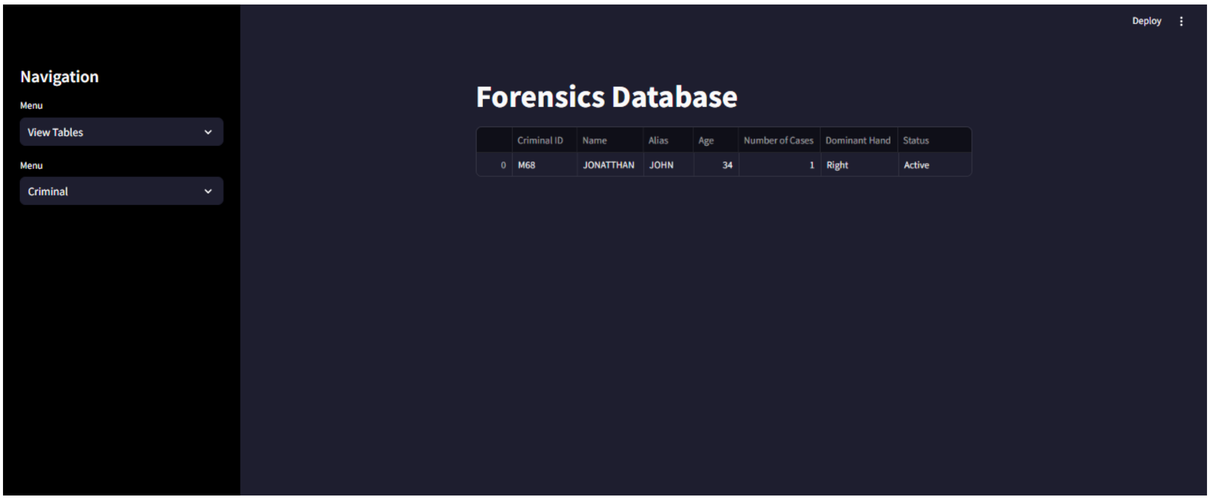
On selecting the view option, the user is once again presented with a new drop-down list to select a table. Once a table is selected the user can see the values in the desired table.



Forensics Database

|  | Case ID | NDC Code | Name | Color | Class | Narcotic |
|---|---|---|---|---|---|---|
| 0 | T22 | 6745103120 | Lexapro | blue | analgesic | yes |
| 1 | M53 | 6745718120 | Ketamine | white | inhalants | yes |
| 2 | M981 | 6998813120 | Heroin | white | opioid | no |
| 3 | QT09P1 | 8861238761 | Axypenetril | Pink | Hallucinogins | no |
| 4 | QT09P1 | 97234698 | Nescipixinol | Green | Inhalants | no |

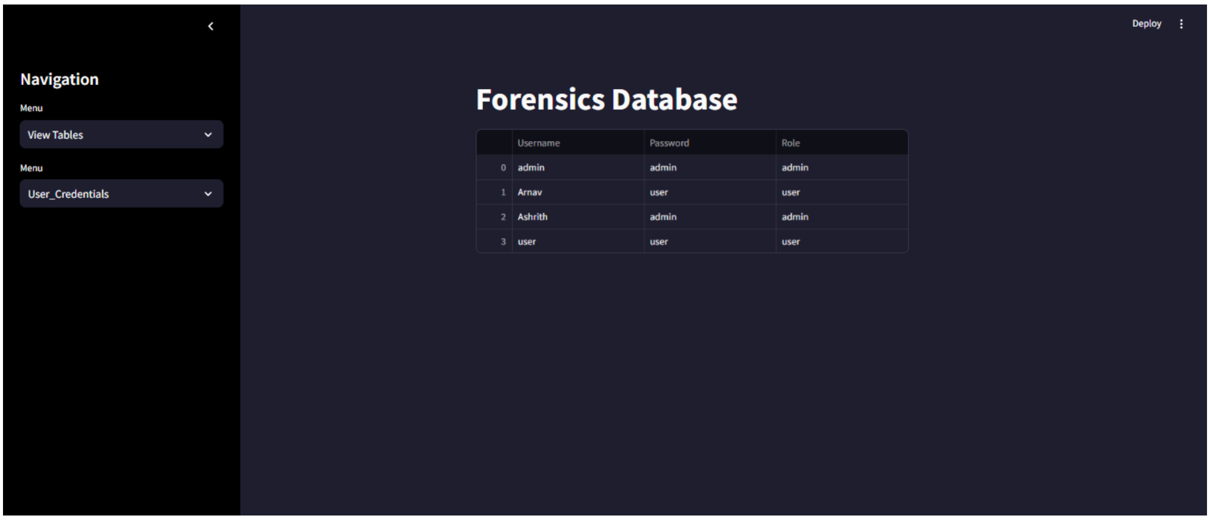
UI to view Drugs table



Forensics Database

|  | Criminal ID | Name | Alias | Age | Number of Cases | Dominant Hand | Status |
|---|---|---|---|---|---|---|---|
| 0 | M68 | JONATTHAN | JOHN | 34 | 1 | Right | Active |

UI to view Criminal table



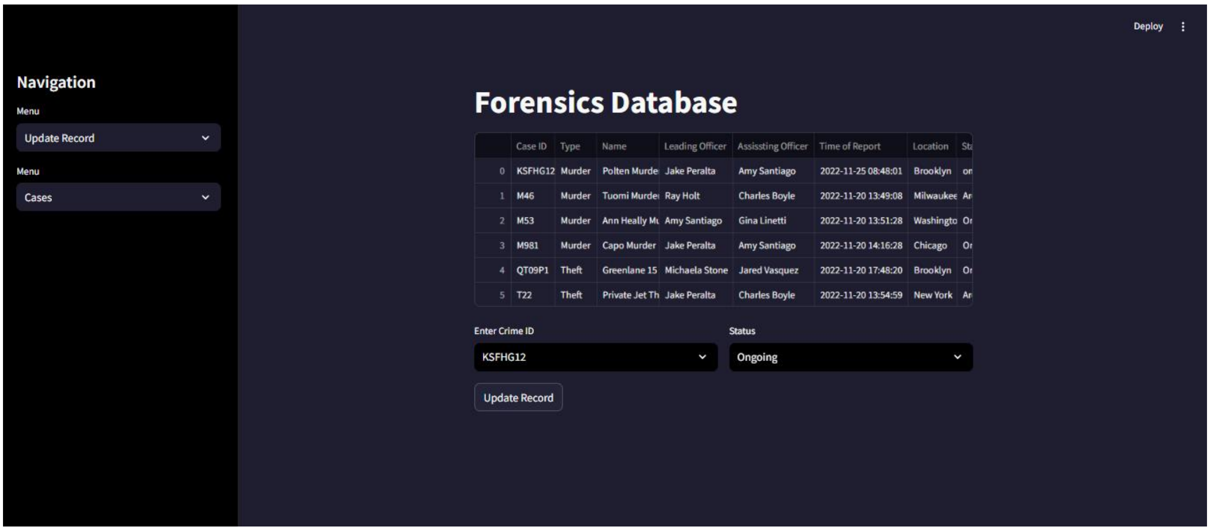
Forensics Database

| | Username | Password | Role |
|---|---|---|---|
| 0 | admin | admin | admin |
| 1 | Arnav | user | user |
| 2 | Ashrith | admin | admin |
| 3 | user | user | user |

UI to view User credential (Can be viewed only with an *admin* account)

Update Option

The UI also allows the user to perform update operations. The user can update the status of a criminal or a crime. The user is made to choose the table from the drop-drown list in the sidebar. Once the table is chosen the user can select the relevant id and status from the respective drop-drown lists.



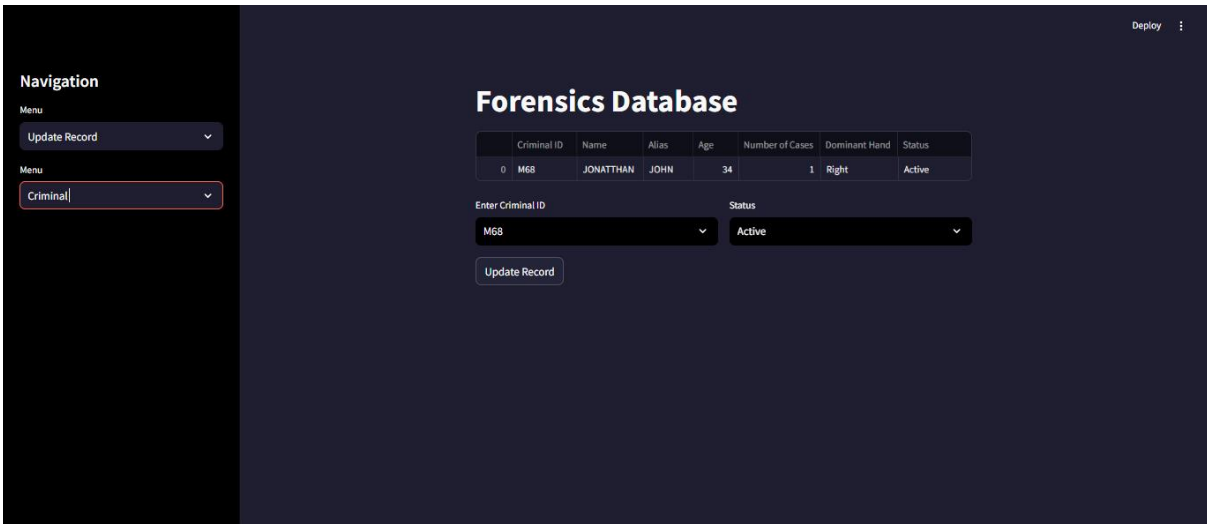
Forensics Database

| | Case ID | Type | Name | Leading Officer | Assissting Officer | Time of Report | Location | Sta |
|---|---|---|---|---|---|---|---|---|
| 0 | KSFHG12 | Murder | Polten Murde | Jake Peralta | Amy Santiago | 2022-11-25 08:48:01 | Brooklyn | on |
| 1 | M46 | Murder | Tuomi Murde | Ray Holt | Charles Boyle | 2022-11-20 13:49:08 | Milwaukee | Ar |
| 2 | M53 | Murder | Ann Heally Mu | Amy Santiago | Gina Linetti | 2022-11-20 13:51:28 | Washingto | Or |
| 3 | M981 | Murder | Capo Murder | Jake Peralta | Amy Santiago | 2022-11-20 14:16:28 | Chicago | Or |
| 4 | QT09P1 | Theft | Greenlane 15 | Michaela Stone | Jared Vasquez | 2022-11-20 17:48:20 | Brooklyn | Or |
| 5 | T22 | Theft | Private Jet Th | Jake Peralta | Charles Boyle | 2022-11-20 13:54:59 | New York | Ar |

Enter Crime ID: KSFHG12

Status: Ongoing

UI to Edit case table



Forensics Database

|  | Criminal ID | Name | Alias | Age | Number of Cases | Dominant Hand | Status |
|---|---|---|---|---|---|---|---|
| 0 | M68 | JONATTHAN | JOHN | 34 | 1 | Right | Active |

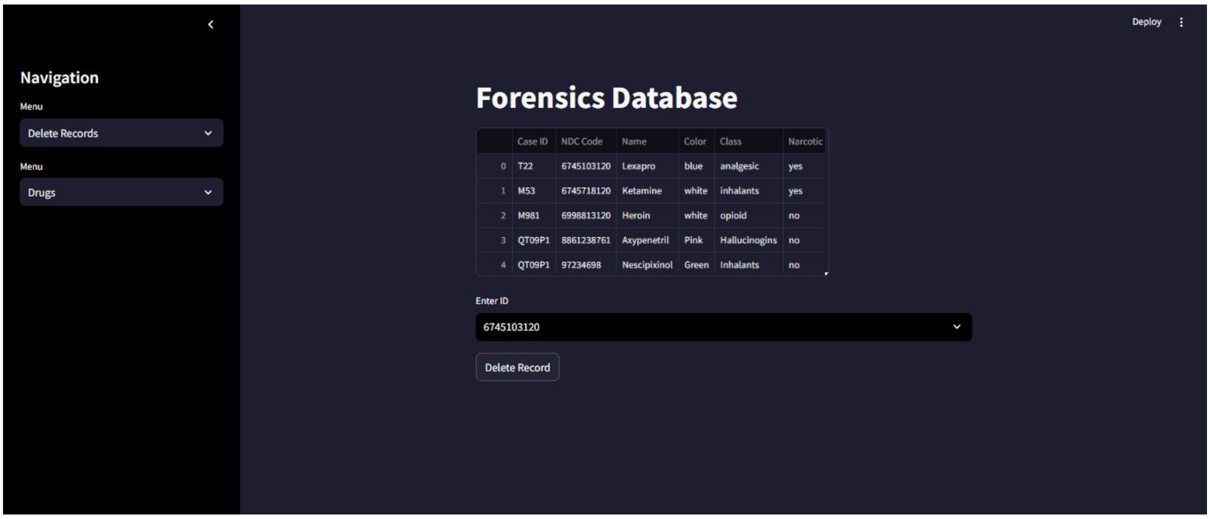
Enter Criminal ID: M68

Status: Active

UI to edit criminal table

Delete Operations

The user also has the option to delete evidence from the database using the UI. The user can navigate between the different tables using the dropdown in the sidebar. The user then selects the id of the record to be deleted from the list. Once the id is selected the record can be deleted by clicking on the delete record button.

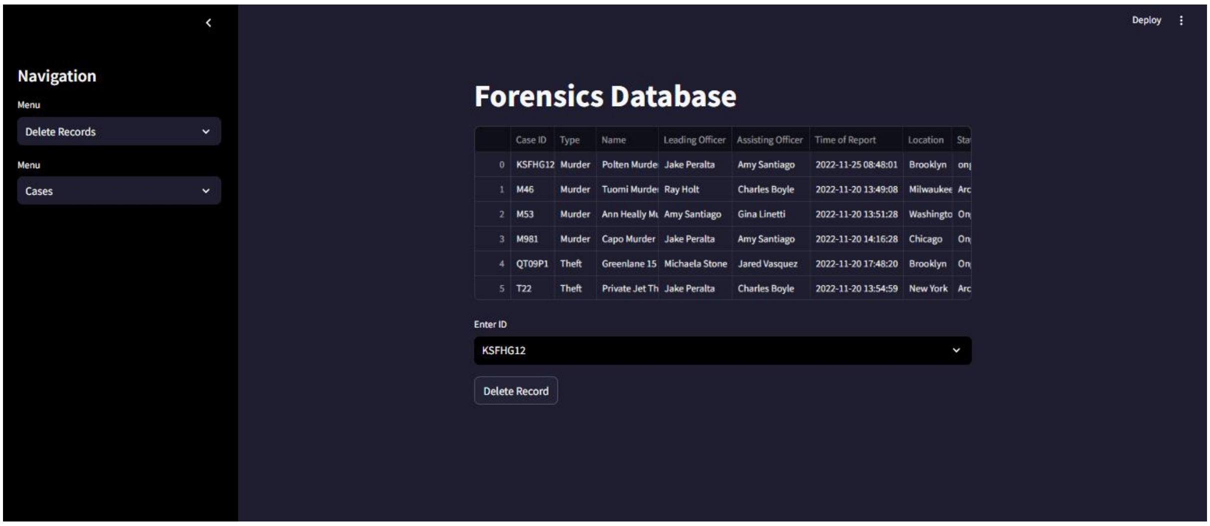


Forensics Database

|  | Case ID | NDC Code | Name | Color | Class | Narcotic |
|---|---|---|---|---|---|---|
| 0 | T22 | 6745103120 | Lexapro | blue | analgesic | yes |
| 1 | M53 | 6745718120 | Ketamine | white | inhalants | yes |
| 2 | M981 | 6998813120 | Heroin | white | opioid | no |
| 3 | QT09P1 | 8861238761 | Axypenetril | Pink | Hallucinogins | no |
| 4 | QT09P1 | 97234698 | Nescipixinol | Green | Inhalants | no |

Enter ID: 6745103120

UI to delete drug evidence instance from the table



Forensics Database

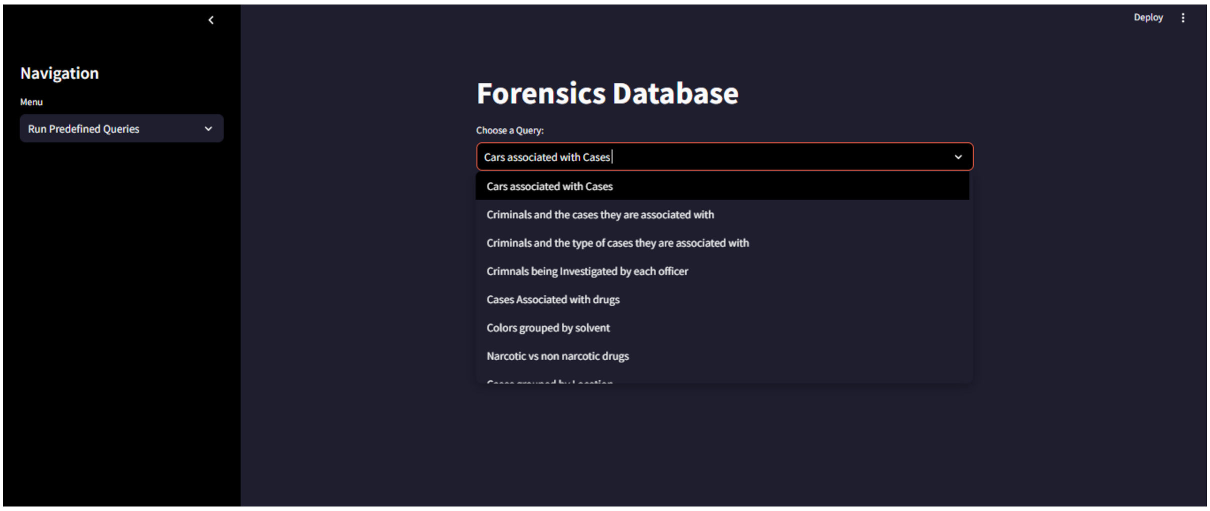
|  | Case ID | Type | Name | Leading Officer | Assisting Officer | Time of Report | Location | Sta |
|---|---|---|---|---|---|---|---|---|
| 0 | KSFHG12 | Murder | Polten Murde | Jake Peralta | Amy Santiago | 2022-11-25 08:48:01 | Brooklyn | on |
| 1 | M46 | Murder | Tuomi Murde | Ray Holt | Charles Boyle | 2022-11-20 13:49:08 | Milwaukee | Arc |
| 2 | M53 | Murder | Ann Heally Mu | Amy Santiago | Gina Linetti | 2022-11-20 13:51:28 | Washingto | On |
| 3 | M981 | Murder | Capo Murder | Jake Peralta | Amy Santiago | 2022-11-20 14:16:28 | Chicago | On |
| 4 | QT09P1 | Theft | Greenlane 15 | Michaela Stone | Jared Vasquez | 2022-11-20 17:48:20 | Brooklyn | On |
| 5 | T22 | Theft | Private Jet Th | Jake Peralta | Charles Boyle | 2022-11-20 13:54:59 | New York | Arc |

Enter ID: KSFHG12

UI to delete case from the table

Run Predefined Queries

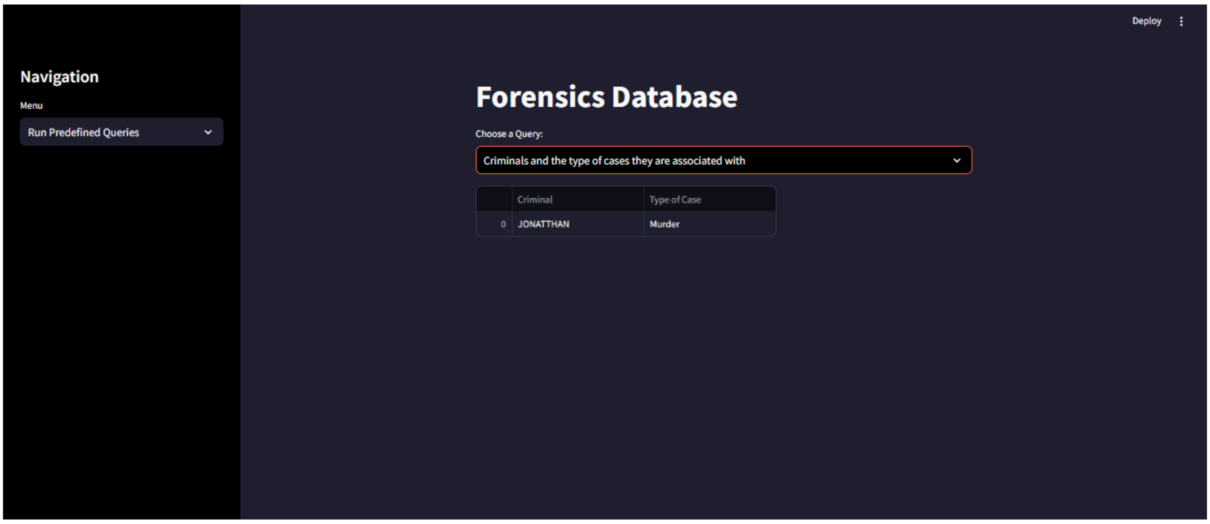
The user can also run queries from a list. These queries include criminals and the name of cases they're accused of, criminal and the types of crimes they've committed, etc.


Deploy
Navigation
Menu
Run Predefined Queries
Cars associated with Cases
Criminals and the cases they are associated with
Criminals and the type of cases they are associated with
Crimnals being Investigated by each officer
Cases Associated with drugs
Colors grouped by solvent
Narcotic vs non narcotic drugs
Cases grouped by Location

Forensics Database

Choose a Query: Cars associated with Cases

UI displaying the queries available

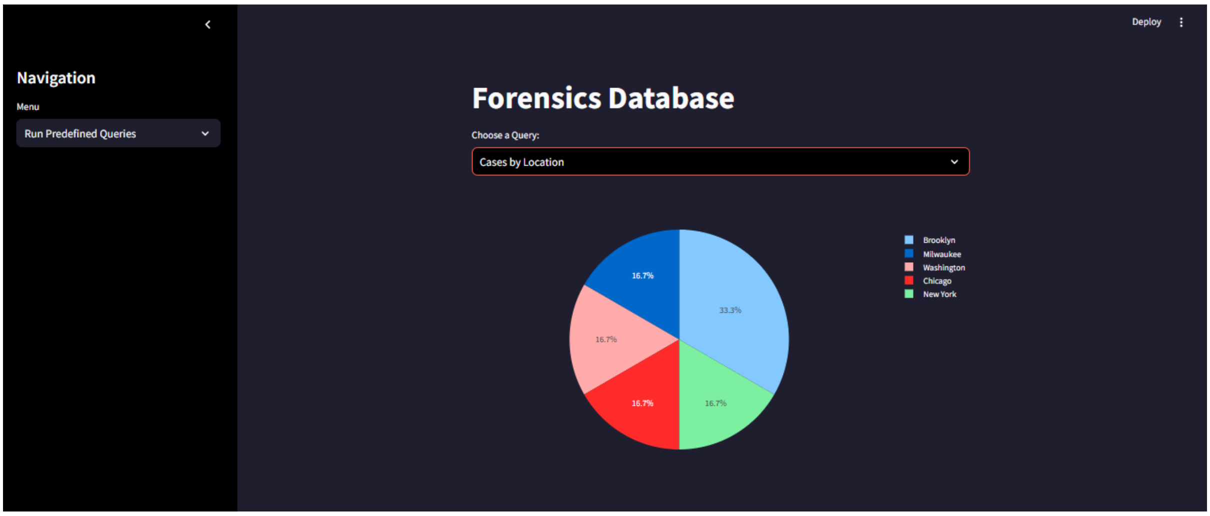


## Forensics Database

Choose a Query: Criminals and the type of cases they are associated with

|   | Criminal | Type of Case |
|---|---|---|
| 0 | JONATTHAN | Murder |

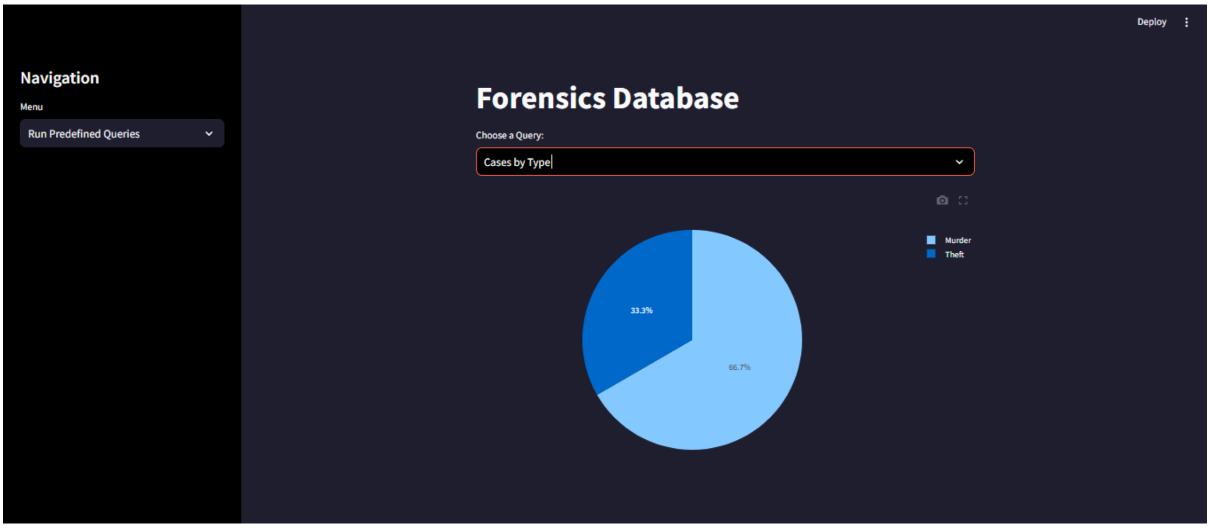
UI displaying the result of a selected query



## Forensics Database

Choose a Query: Cases by Location

Cases grouped by location

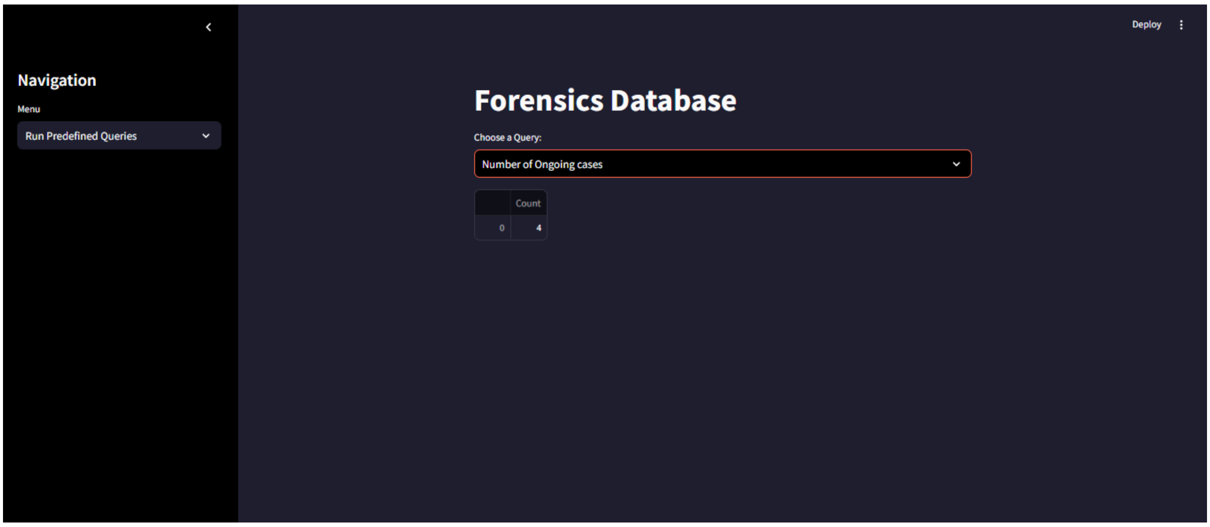


Forensics Database

Choose a Query:

Cases by Type

Cases grouped by type



Forensics Database

Choose a Query:

Number of Ongoing cases

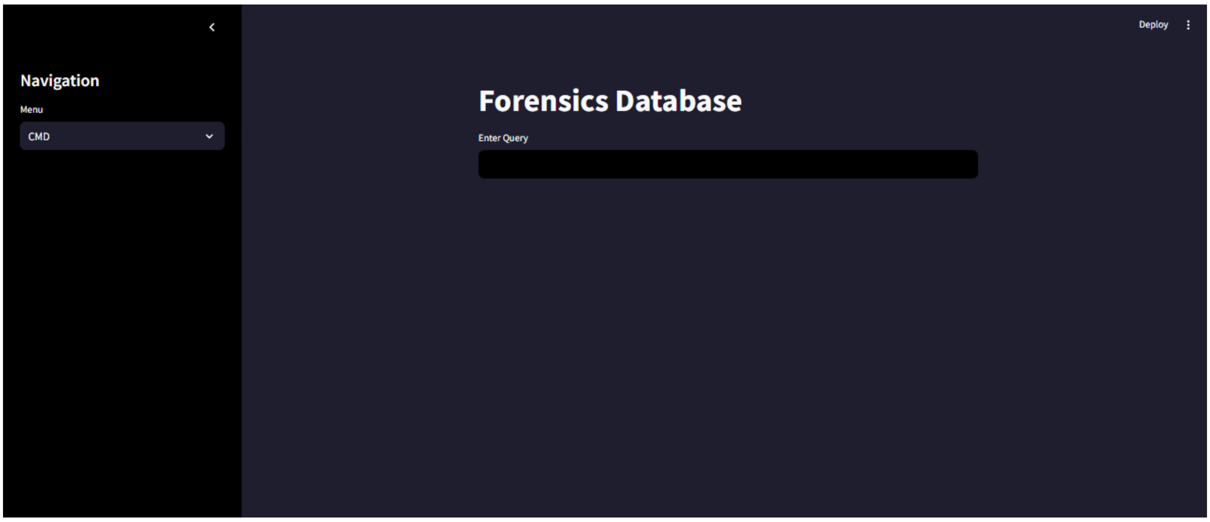
|  | Count |
|---|---|
| 0 | 4 |

Number of ongoing cases

CMD

The user can enter the desired SQL query in the input box and see the results.

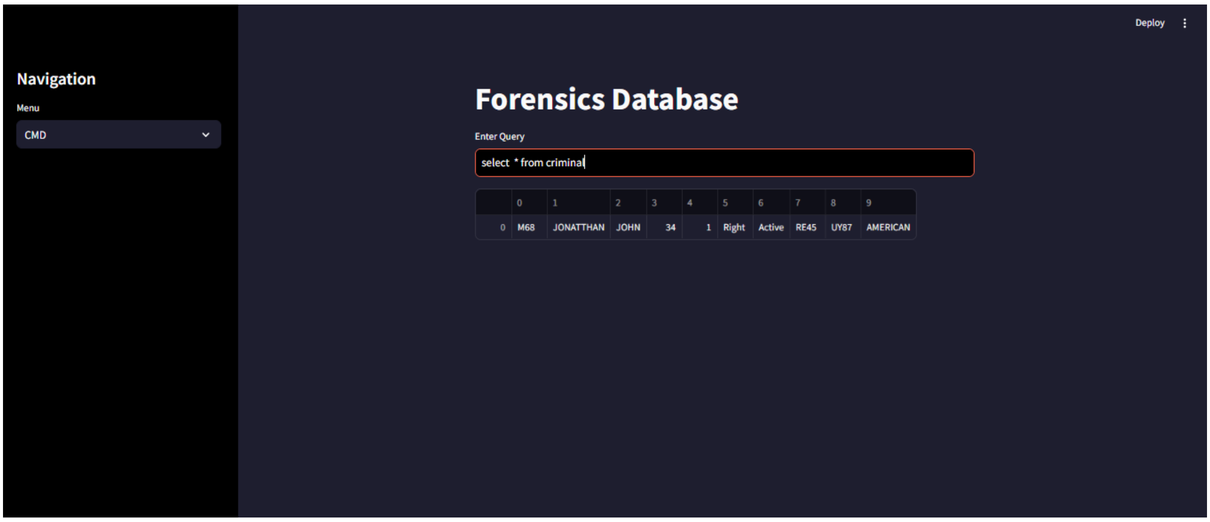
**NOTE:** CMD option can only be used to run Select query. Alter, Update, Delete query will not run here. Moreover ‘criminalbackup’ and ‘user_credential’ table cannot be accessed through CMD.



Forensics Database

Enter Query

UI to input user’s query



Forensics Database

Enter Query

select * from criminal

|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | M68 | JONATTHAN | JOHN | 34 | 1 | Right | Active | RE45 | UY87 | AMERICAN |

UI displaying custom query result