DBMS MINI PROJECT:

FORENSIC INVESTIGATION MANAGEMENT SYSTEM:

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ROLL NO : 41

SECTION : K

ABSTRACT:

Database Forensic Investigation (DBFI) involves the identification, collection, preservation, reconstruction, analysis, and reporting of database incidents.

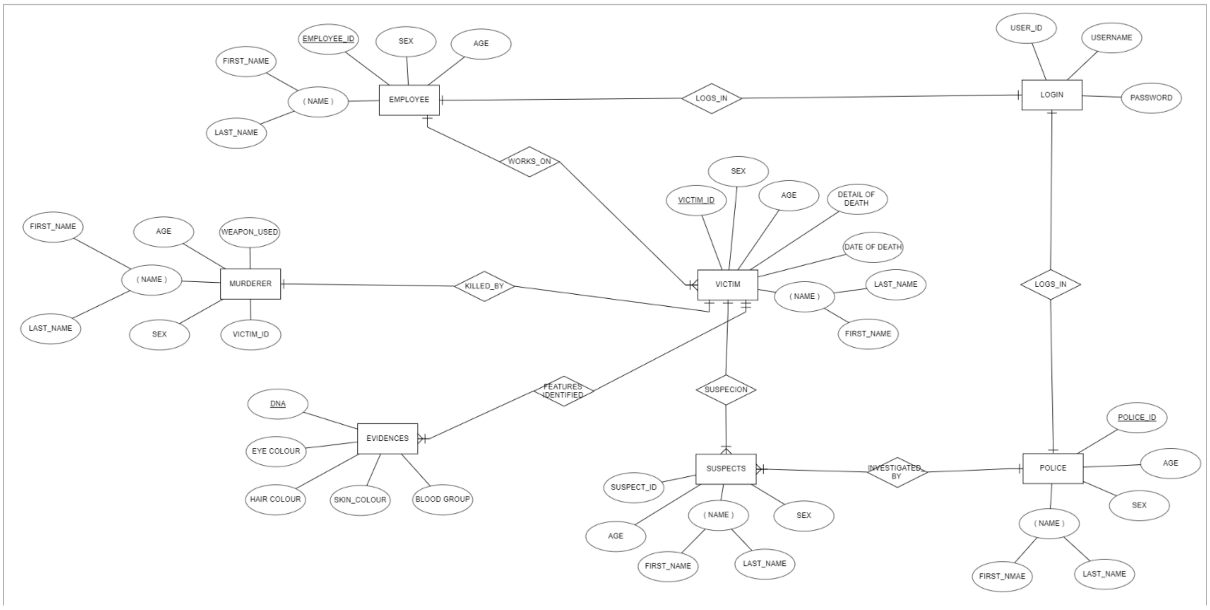
Database Forensic Investigation (DBFI) is a branch of Digital Forensics (DF) that examines database contents [1] to identify, detect, acquire, analyse, and reconstruct database incidents as well as construct a chronological timeline of intruder activities.

IN our case the project contains the details of murders from different times. The essentials of each case along with investigation details is also mentioned.

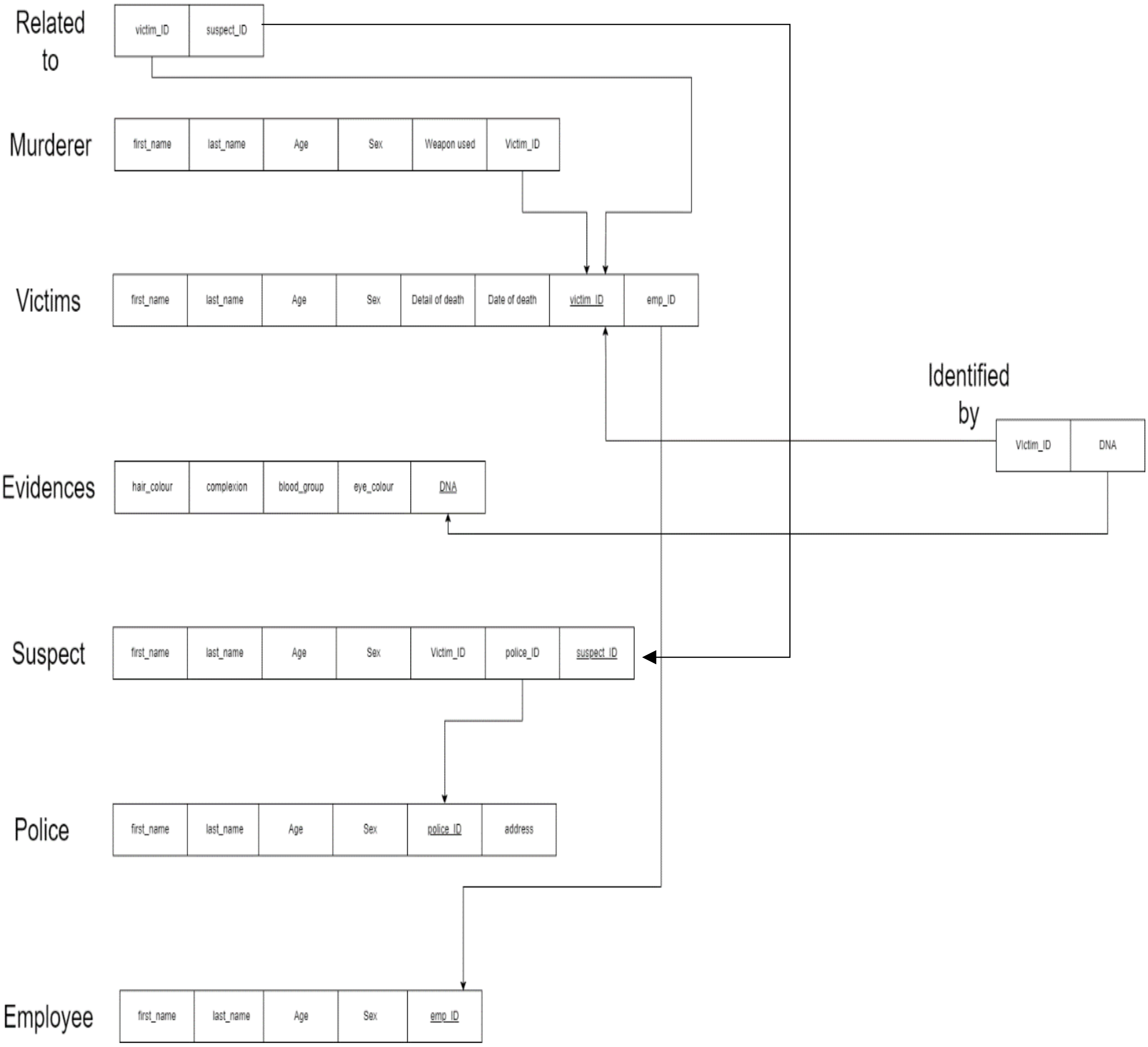
SCOPE OF THE PROJE:

This project can be used by forensic experts for data matching and future references for different cases. It can also be used to identify different features and background of suspects and officers.

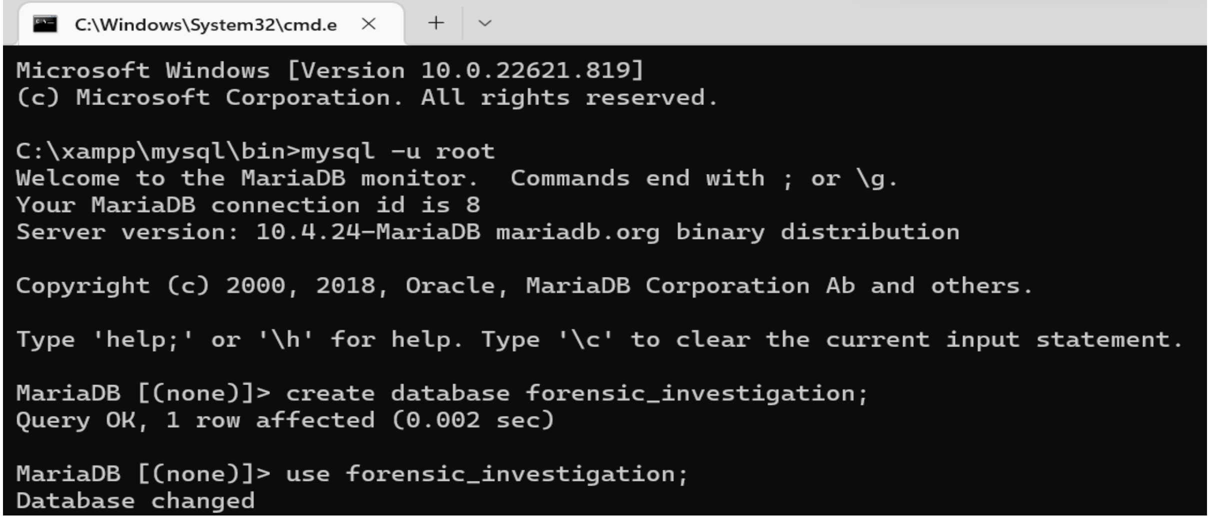
ER Diagram:



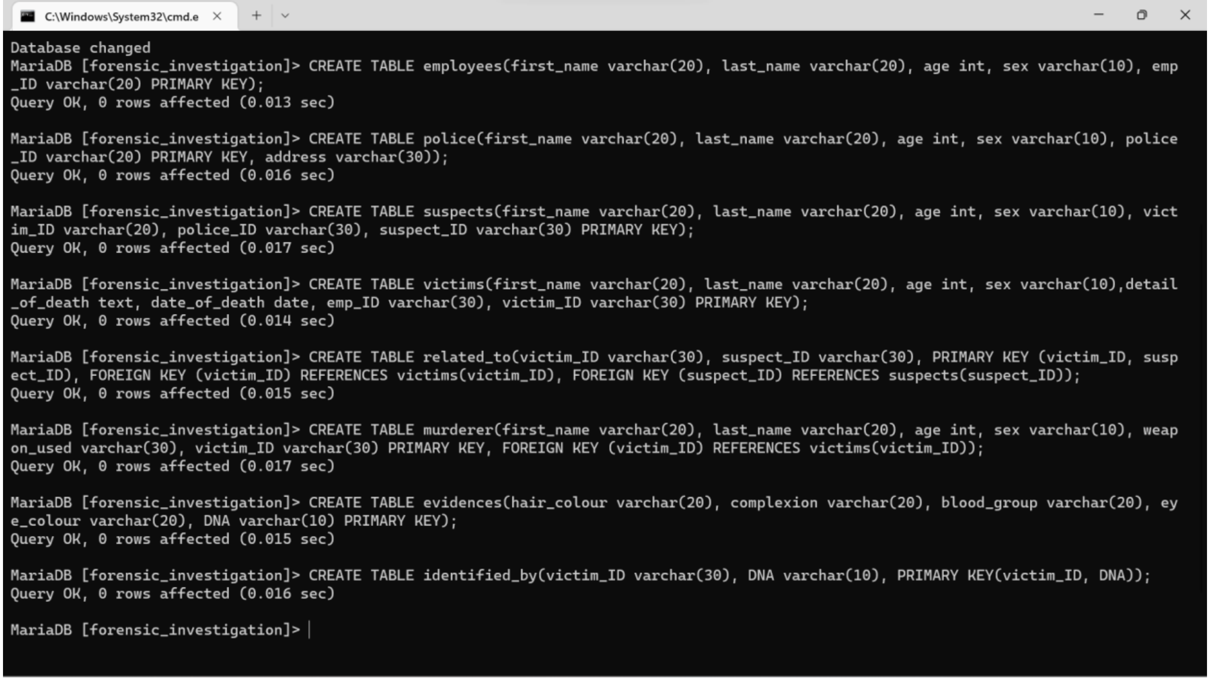
Relational schema:



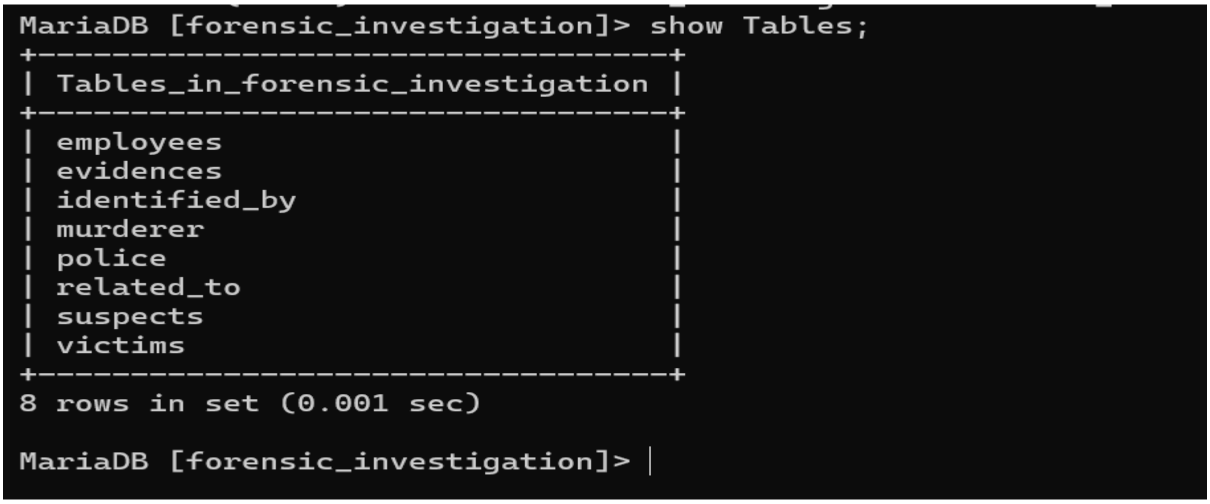
DDL statements - Building the database:



```
Microsoft Windows [Version 10.0.22621.819]
(c) Microsoft Corporation. All rights reserved.

C:\xampp\mysql\bin>mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 8
Server version: 10.4.24-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database forensic_investigation;
Query OK, 1 row affected (0.002 sec)

MariaDB [(none)]> use forensic_investigation;
Database changed
```



```
Database changed
MariaDB [forensic_investigation]> CREATE TABLE employees(first_name varchar(20), last_name varchar(20), age int, sex varchar(10), emp
_ID varchar(20) PRIMARY KEY);
Query OK, 0 rows affected (0.013 sec)

MariaDB [forensic_investigation]> CREATE TABLE police(first_name varchar(20), last_name varchar(20), age int, sex varchar(10), police
_ID varchar(20) PRIMARY KEY, address varchar(30));
Query OK, 0 rows affected (0.016 sec)

MariaDB [forensic_investigation]> CREATE TABLE suspects(first_name varchar(20), last_name varchar(20), age int, sex varchar(10), vict
im_ID varchar(20), police_ID varchar(30), suspect_ID varchar(30) PRIMARY KEY);
Query OK, 0 rows affected (0.017 sec)

MariaDB [forensic_investigation]> CREATE TABLE victims(first_name varchar(20), last_name varchar(20), age int, sex varchar(10),detail
_of_death text, date_of_death date, emp_ID varchar(30), victim_ID varchar(30) PRIMARY KEY);
Query OK, 0 rows affected (0.014 sec)

MariaDB [forensic_investigation]> CREATE TABLE related_to(victim_ID varchar(30), suspect_ID varchar(30), PRIMARY KEY (victim_ID, susp
ect_ID), FOREIGN KEY (victim_ID) REFERENCES victims(victim_ID), FOREIGN KEY (suspect_ID) REFERENCES suspects(suspect_ID));
Query OK, 0 rows affected (0.015 sec)

MariaDB [forensic_investigation]> CREATE TABLE murderer(first_name varchar(20), last_name varchar(20), age int, sex varchar(10), weap
on_used varchar(30), victim_ID varchar(30) PRIMARY KEY, FOREIGN KEY (victim_ID) REFERENCES victims(victim_ID));
Query OK, 0 rows affected (0.017 sec)

MariaDB [forensic_investigation]> CREATE TABLE evidences(hair_colour varchar(20), complexion varchar(20), blood_group varchar(20), ey
e_colour varchar(20), DNA varchar(10) PRIMARY KEY);
Query OK, 0 rows affected (0.015 sec)

MariaDB [forensic_investigation]> CREATE TABLE identified_by(victim_ID varchar(30), DNA varchar(10), PRIMARY KEY(victim_ID, DNA));
Query OK, 0 rows affected (0.016 sec)

MariaDB [forensic_investigation]>
```



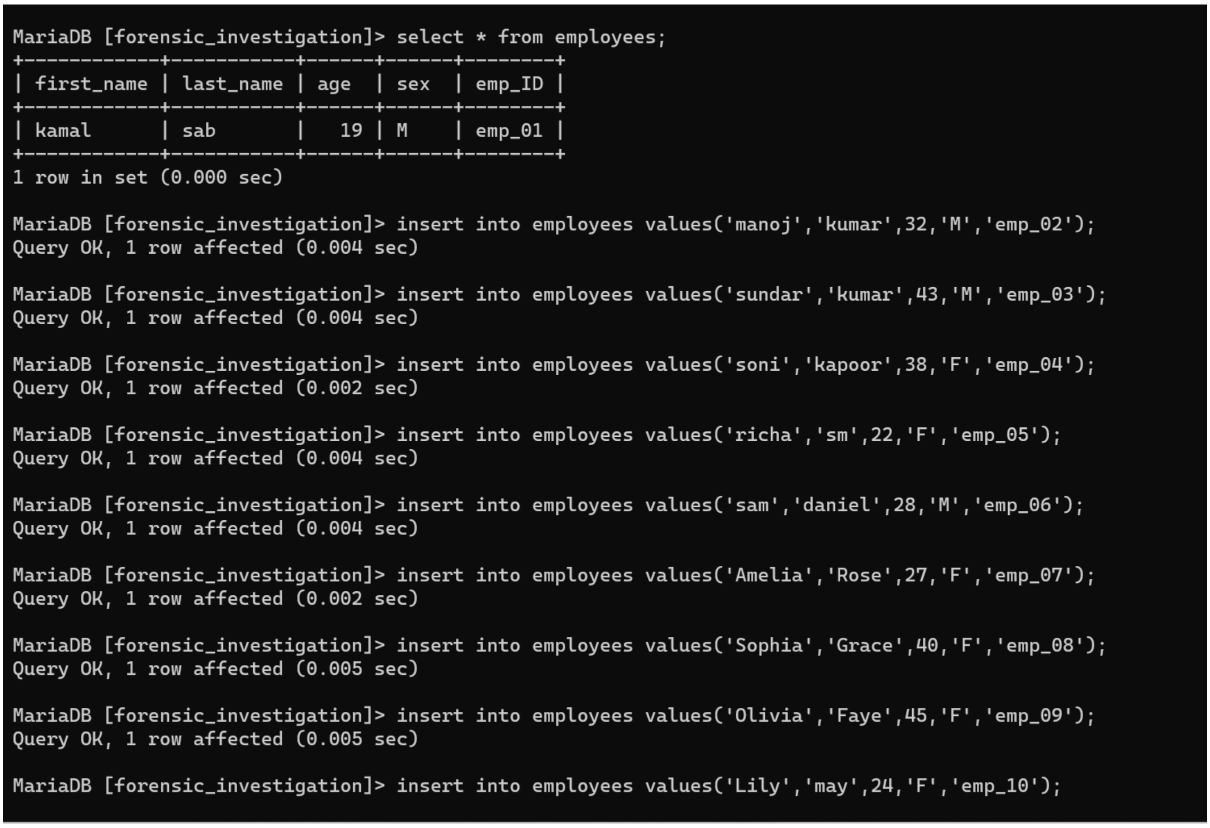
```
MariaDB [forensic_investigation]> show Tables;
+----------------------------------+
| Tables_in_forensic_investigation |
+----------------------------------+
| employees                        |
| evidences                        |
| identified_by                    |
| murderer                         |
| police                           |
| related_to                       |
| suspects                         |
| victims                          |
+----------------------------------+
8 rows in set (0.001 sec)

MariaDB [forensic_investigation]>
```

Populating the Database:

CREATE database forensic_investigation;

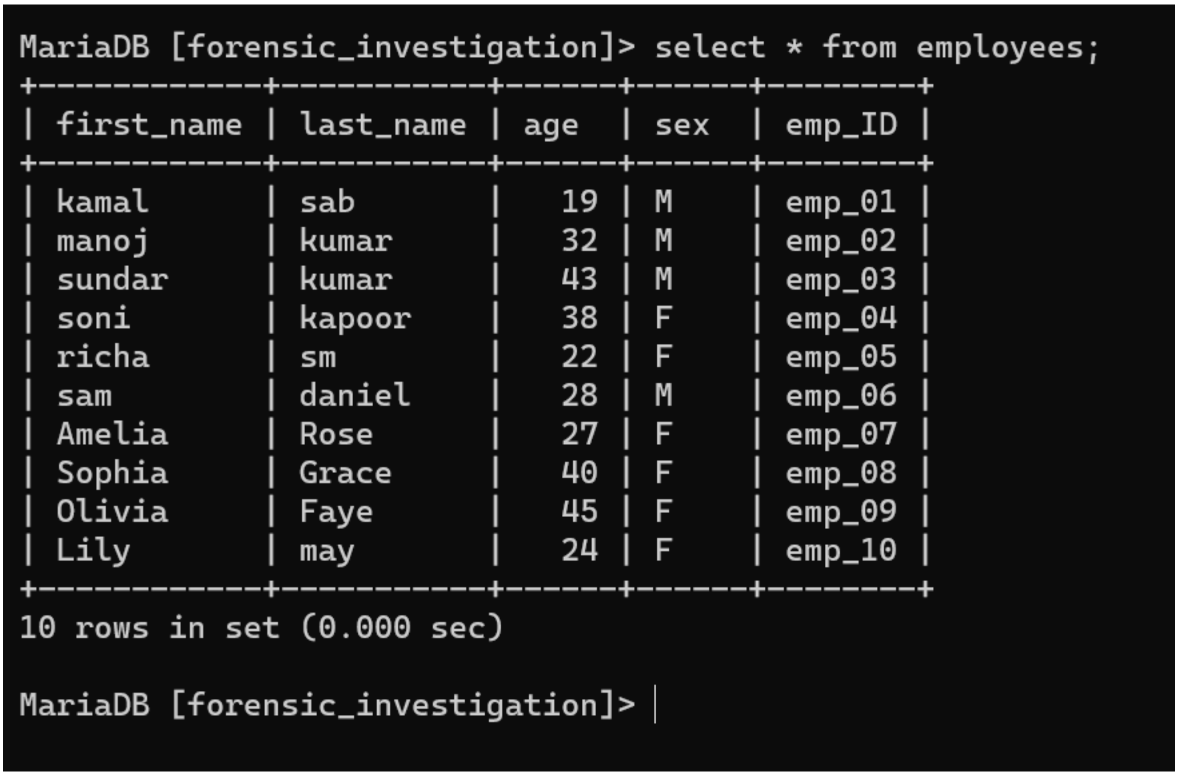
- CREATE TABLE employees(first_name varchar(20), last_name varchar(20), age int, sex varchar(10), emp_ID varchar(20) PRIMARY KEY);
- CREATE TABLE police(first_name varchar(20), last_name varchar(20), age int, sex varchar(10), police_ID varchar(20) PRIMARY KEY, address varchar(30));
- CREATE TABLE suspects(first_name varchar(20), last_name varchar(20), age int, sex varchar(10), victim_ID varchar(20), police_ID varchar(30), suspect_ID varchar(30) PRIMARY KEY);
- CREATE TABLE victims(first_name varchar(20), last_name varchar(20), age int, sex varchar(10),detail_of_death text, date_of_death date, emp_ID varchar(30), victim_ID varchar(30) PRIMARY KEY);
- CREATE TABLE related_to(victim_ID varchar(30), suspect_ID varchar(30), PRIMARY KEY (victim_ID, suspect_ID), FOREIGN KEY (victim_ID) REFERENCES victims(victim_ID), FOREIGN KEY (suspect_ID) REFERENCES suspects(suspect_ID));
- CREATE TABLE murderer(first_name varchar(20), last_name varchar(20), age int, sex varchar(10), weapon_used varchar(30), victim_ID varchar(30) PRIMARY KEY, FOREIGN KEY (victim_ID) REFERENCES victims(victim_ID));
- CREATE TABLE evidences(hair_colour varchar(20), complexion varchar(20), blood_group varchar(20), eye_colour varchar(20), DNA varchar(10) PRIMARY KEY);
- CREATE TABLE identified_by(victim_ID varchar(30), DNA varchar(10), PRIMARY KEY(victim_ID, DNA));

Populating rows into employees table:



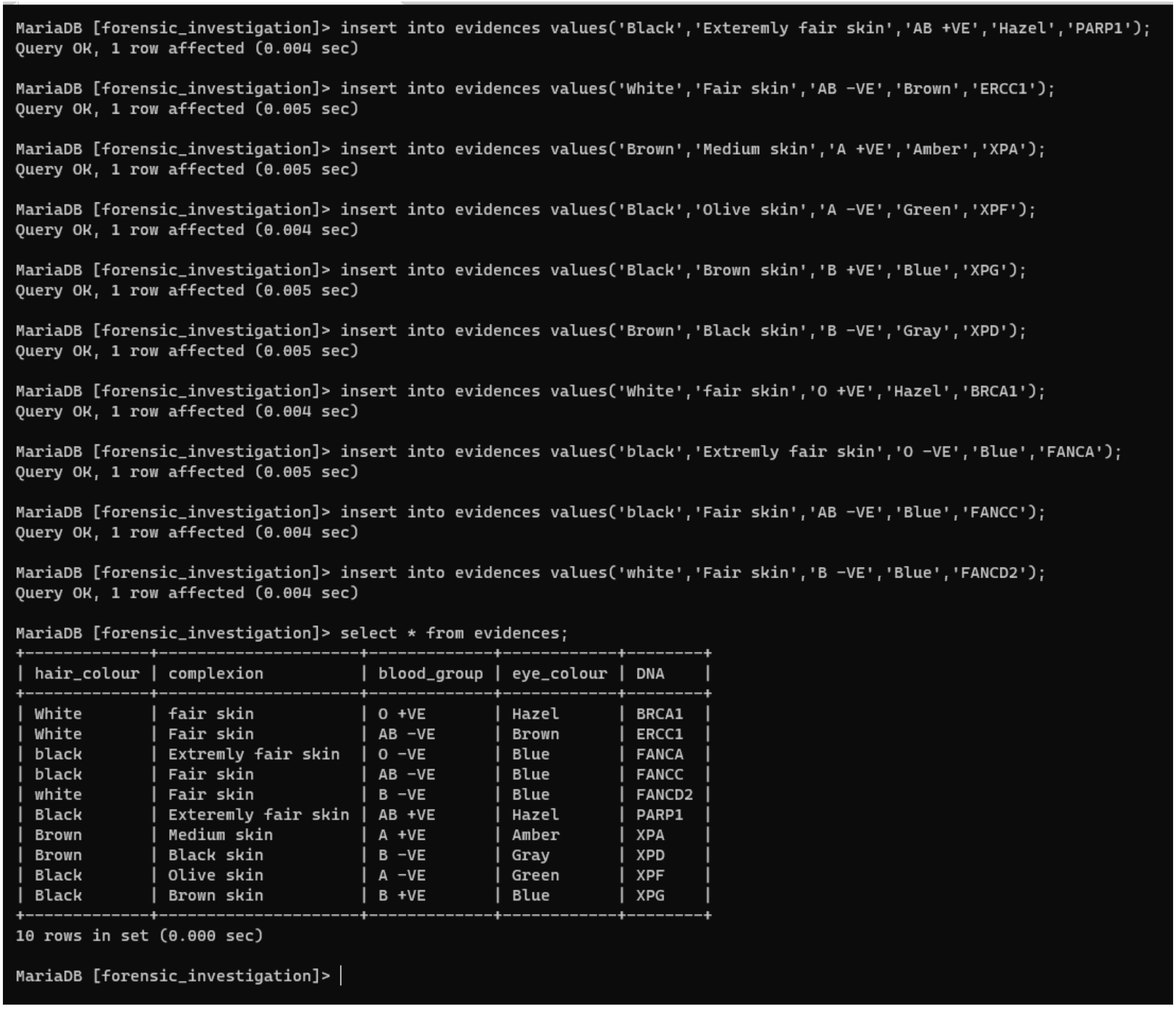
```
MariaDB [forensic_investigation]> select * from employees;
+------------+-----------+------+------+--------+
| first_name | last_name | age  | sex  | emp_ID |
+------------+-----------+------+------+--------+
| kamal      | sab       |   19 | M    | emp_01 |
+------------+-----------+------+------+--------+
1 row in set (0.000 sec)

MariaDB [forensic_investigation]> insert into employees values('manoj','kumar',32,'M','emp_02');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into employees values('sundar','kumar',43,'M','emp_03');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into employees values('soni','kapoor',38,'F','emp_04');
Query OK, 1 row affected (0.002 sec)

MariaDB [forensic_investigation]> insert into employees values('richa','sm',22,'F','emp_05');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into employees values('sam','daniel',28,'M','emp_06');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into employees values('Amelia','Rose',27,'F','emp_07');
Query OK, 1 row affected (0.002 sec)

MariaDB [forensic_investigation]> insert into employees values('Sophia','Grace',40,'F','emp_08');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into employees values('Olivia','Faye',45,'F','emp_09');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into employees values('Lily','may',24,'F','emp_10');
```

view of Table employees:



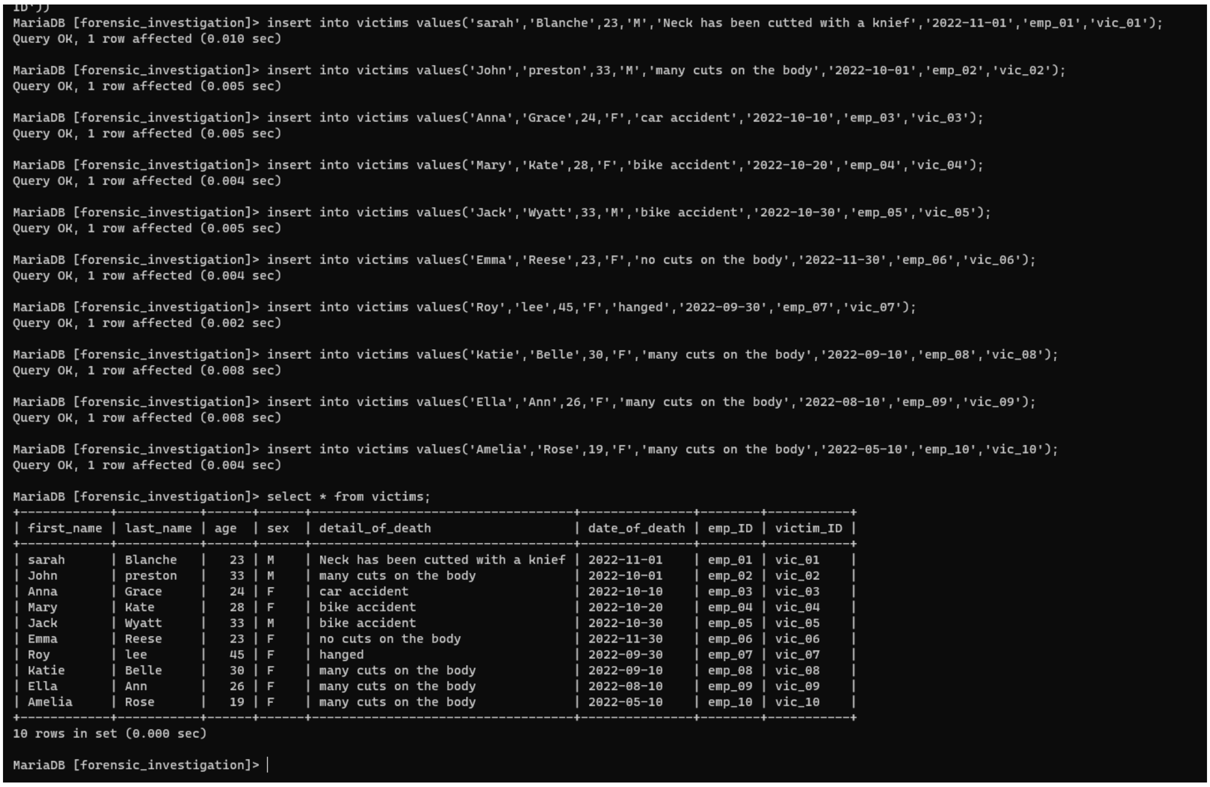
```
MariaDB [forensic_investigation]> select * from employees;
+------------+-----------+------+------+--------+
| first_name | last_name | age  | sex  | emp_ID |
+------------+-----------+------+------+--------+
| kamal      | sab       |   19 | M    | emp_01 |
| manoj      | kumar     |   32 | M    | emp_02 |
| sundar     | kumar     |   43 | M    | emp_03 |
| soni       | kapoor    |   38 | F    | emp_04 |
| richa      | sm        |   22 | F    | emp_05 |
| sam        | daniel    |   28 | M    | emp_06 |
| Amelia     | Rose      |   27 | F    | emp_07 |
| Sophia     | Grace     |   40 | F    | emp_08 |
| Olivia     | Faye      |   45 | F    | emp_09 |
| Lily       | may       |   24 | F    | emp_10 |
+------------+-----------+------+------+--------+
10 rows in set (0.000 sec)

MariaDB [forensic_investigation]>
```

Populating rows into table evidences and view of evidences table:



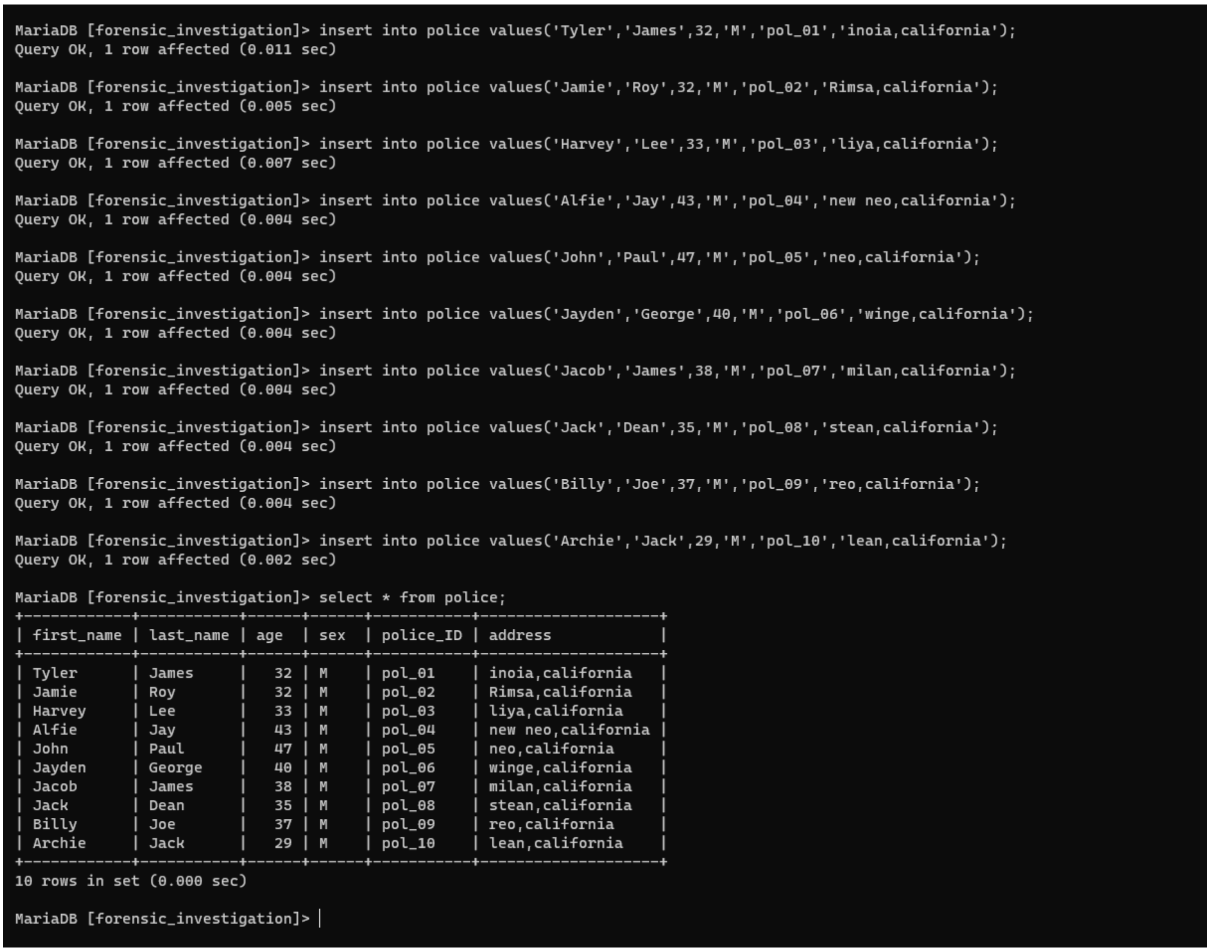
```
MariaDB [forensic_investigation]> insert into evidences values('Black','Exteremly fair skin','AB +VE','Hazel','PARP1');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into evidences values('White','Fair skin','AB -VE','Brown','ERCC1');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into evidences values('Brown','Medium skin','A +VE','Amber','XPA');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into evidences values('Black','Olive skin','A -VE','Green','XPF');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into evidences values('Black','Brown skin','B +VE','Blue','XPG');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into evidences values('Brown','Black skin','B -VE','Gray','XPD');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into evidences values('White','fair skin','O +VE','Hazel','BRCA1');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into evidences values('black','Extremly fair skin','O -VE','Blue','FANCA');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into evidences values('black','Fair skin','AB -VE','Blue','FANCC');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into evidences values('white','Fair skin','B -VE','Blue','FANCD2');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> select * from evidences;
+-------------+---------------------+-------------+------------+--------+
| hair_colour | complexion          | blood_group | eye_colour | DNA    |
+-------------+---------------------+-------------+------------+--------+
| White       | fair skin           | O +VE       | Hazel      | BRCA1  |
| White       | Fair skin           | AB -VE      | Brown      | ERCC1  |
| black       | Extremly fair skin  | O -VE       | Blue       | FANCA  |
| black       | Fair skin           | AB -VE      | Blue       | FANCC  |
| white       | Fair skin           | B -VE       | Blue       | FANCD2 |
| Black       | Exteremly fair skin | AB +VE      | Hazel      | PARP1  |
| Brown       | Medium skin         | A +VE       | Amber      | XPA    |
| Brown       | Black skin          | B -VE       | Gray       | XPD    |
| Black       | Olive skin          | A -VE       | Green      | XPF    |
| Black       | Brown skin          | B +VE       | Blue       | XPG    |
+-------------+---------------------+-------------+------------+--------+
10 rows in set (0.000 sec)

MariaDB [forensic_investigation]> |
```

Populating rows into table victims and the view of victims table:



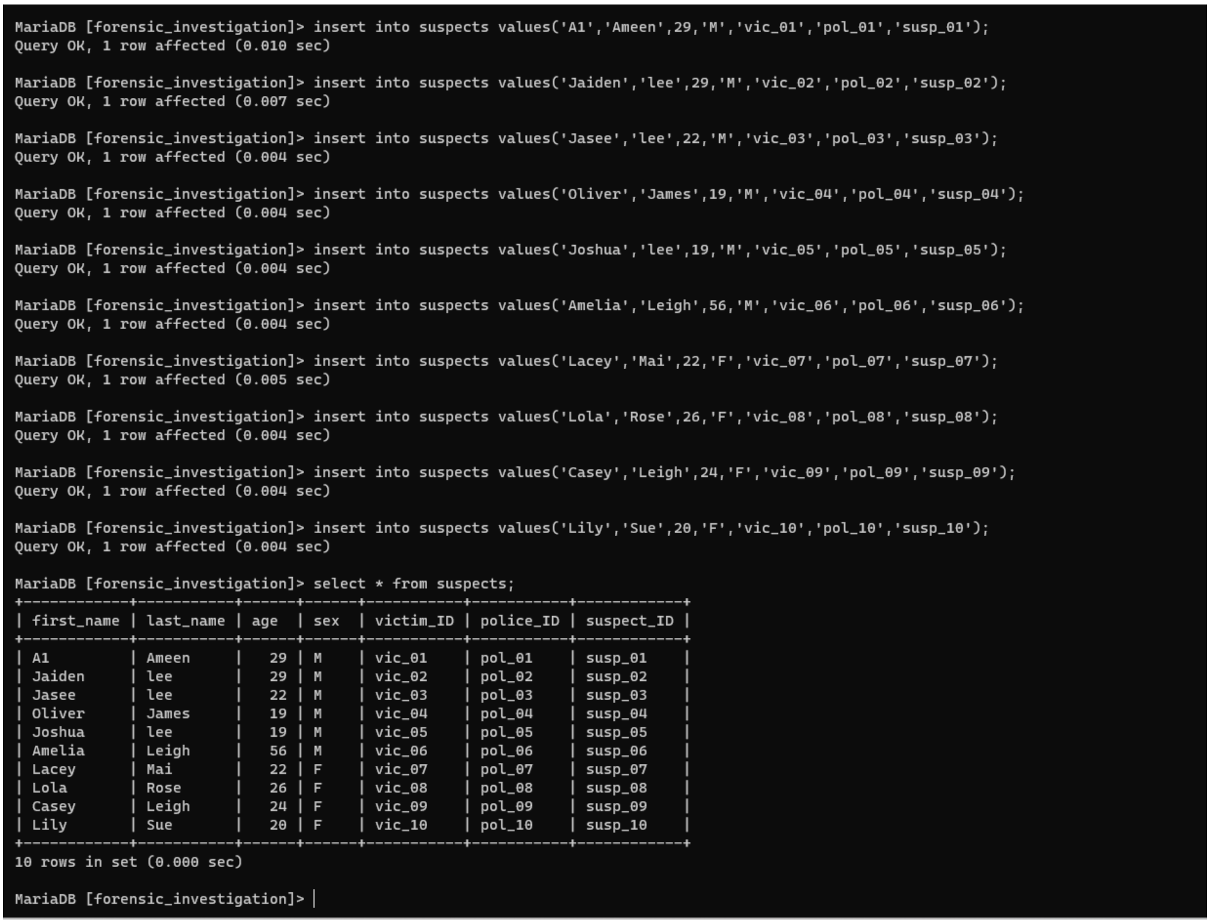
```
ID'))
MariaDB [forensic_investigation]> insert into victims values('sarah','Blanche',23,'M','Neck has been cutted with a knief','2022-11-01','emp_01','vic_01');
Query OK, 1 row affected (0.010 sec)

MariaDB [forensic_investigation]> insert into victims values('John','preston',33,'M','many cuts on the body','2022-10-01','emp_02','vic_02');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into victims values('Anna','Grace',24,'F','car accident','2022-10-10','emp_03','vic_03');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into victims values('Mary','Kate',28,'F','bike accident','2022-10-20','emp_04','vic_04');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into victims values('Jack','Wyatt',33,'M','bike accident','2022-10-30','emp_05','vic_05');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into victims values('Emma','Reese',23,'F','no cuts on the body','2022-11-30','emp_06','vic_06');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into victims values('Roy','lee',45,'F','hanged','2022-09-30','emp_07','vic_07');
Query OK, 1 row affected (0.002 sec)

MariaDB [forensic_investigation]> insert into victims values('Katie','Belle',30,'F','many cuts on the body','2022-09-10','emp_08','vic_08');
Query OK, 1 row affected (0.008 sec)

MariaDB [forensic_investigation]> insert into victims values('Ella','Ann',26,'F','many cuts on the body','2022-08-10','emp_09','vic_09');
Query OK, 1 row affected (0.008 sec)

MariaDB [forensic_investigation]> insert into victims values('Amelia','Rose',19,'F','many cuts on the body','2022-05-10','emp_10','vic_10');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> select * from victims;
+------------+-----------+------+------+-----------------------------------+---------------+--------+-----------+
| first_name | last_name | age  | sex  | detail_of_death                   | date_of_death | emp_ID | victim_ID |
+------------+-----------+------+------+-----------------------------------+---------------+--------+-----------+
| sarah      | Blanche   |   23 | M    | Neck has been cutted with a knief | 2022-11-01    | emp_01 | vic_01    |
| John       | preston   |   33 | M    | many cuts on the body             | 2022-10-01    | emp_02 | vic_02    |
| Anna       | Grace     |   24 | F    | car accident                      | 2022-10-10    | emp_03 | vic_03    |
| Mary       | Kate      |   28 | F    | bike accident                     | 2022-10-20    | emp_04 | vic_04    |
| Jack       | Wyatt     |   33 | M    | bike accident                     | 2022-10-30    | emp_05 | vic_05    |
| Emma       | Reese     |   23 | F    | no cuts on the body               | 2022-11-30    | emp_06 | vic_06    |
| Roy        | lee       |   45 | F    | hanged                            | 2022-09-30    | emp_07 | vic_07    |
| Katie      | Belle     |   30 | F    | many cuts on the body             | 2022-09-10    | emp_08 | vic_08    |
| Ella       | Ann       |   26 | F    | many cuts on the body             | 2022-08-10    | emp_09 | vic_09    |
| Amelia     | Rose      |   19 | F    | many cuts on the body             | 2022-05-10    | emp_10 | vic_10    |
+------------+-----------+------+------+-----------------------------------+---------------+--------+-----------+
10 rows in set (0.000 sec)

MariaDB [forensic_investigation]> |
```

Populating rows into table police and view of table police:



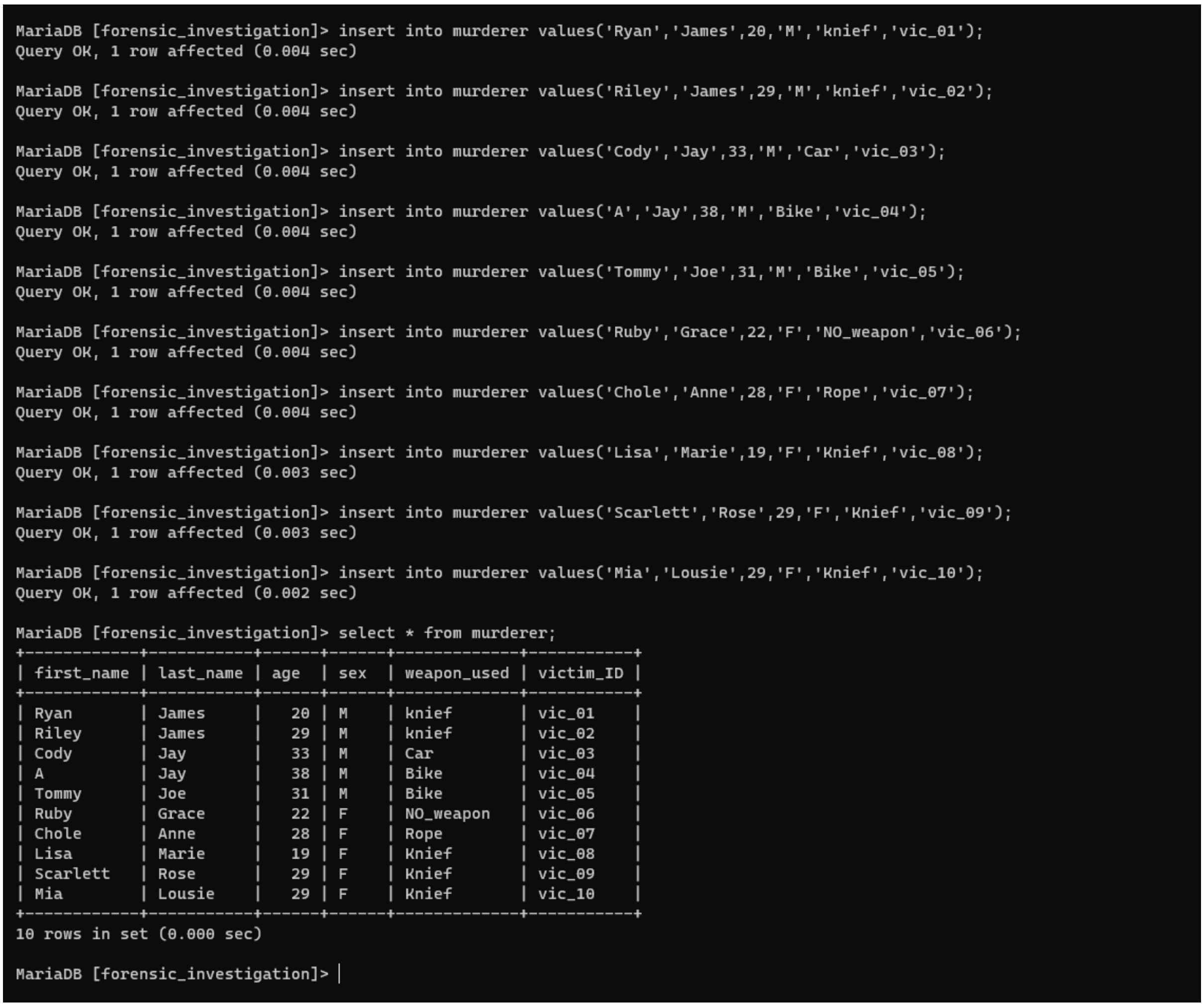
```
MariaDB [forensic_investigation]> insert into police values('Tyler','James',32,'M','pol_01','inoia,california');
Query OK, 1 row affected (0.011 sec)

MariaDB [forensic_investigation]> insert into police values('Jamie','Roy',32,'M','pol_02','Rimsa,california');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into police values('Harvey','Lee',33,'M','pol_03','liya,california');
Query OK, 1 row affected (0.007 sec)

MariaDB [forensic_investigation]> insert into police values('Alfie','Jay',43,'M','pol_04','new neo,california');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into police values('John','Paul',47,'M','pol_05','neo,california');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into police values('Jayden','George',40,'M','pol_06','winge,california');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into police values('Jacob','James',38,'M','pol_07','milan,california');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into police values('Jack','Dean',35,'M','pol_08','stean,california');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into police values('Billy','Joe',37,'M','pol_09','reo,california');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into police values('Archie','Jack',29,'M','pol_10','lean,california');
Query OK, 1 row affected (0.002 sec)

MariaDB [forensic_investigation]> select * from police;
+------------+-----------+------+------+-----------+--------------------+
| first_name | last_name | age  | sex  | police_ID | address            |
+------------+-----------+------+------+-----------+--------------------+
| Tyler      | James     |   32 | M    | pol_01    | inoia,california   |
| Jamie      | Roy       |   32 | M    | pol_02    | Rimsa,california   |
| Harvey     | Lee       |   33 | M    | pol_03    | liya,california    |
| Alfie      | Jay       |   43 | M    | pol_04    | new neo,california |
| John       | Paul      |   47 | M    | pol_05    | neo,california     |
| Jayden     | George    |   40 | M    | pol_06    | winge,california   |
| Jacob      | James     |   38 | M    | pol_07    | milan,california   |
| Jack       | Dean      |   35 | M    | pol_08    | stean,california   |
| Billy      | Joe       |   37 | M    | pol_09    | reo,california     |
| Archie     | Jack      |   29 | M    | pol_10    | lean,california    |
+------------+-----------+------+------+-----------+--------------------+
10 rows in set (0.000 sec)

MariaDB [forensic_investigation]> |
```

Populating rows into table suspects and view of table suspects:



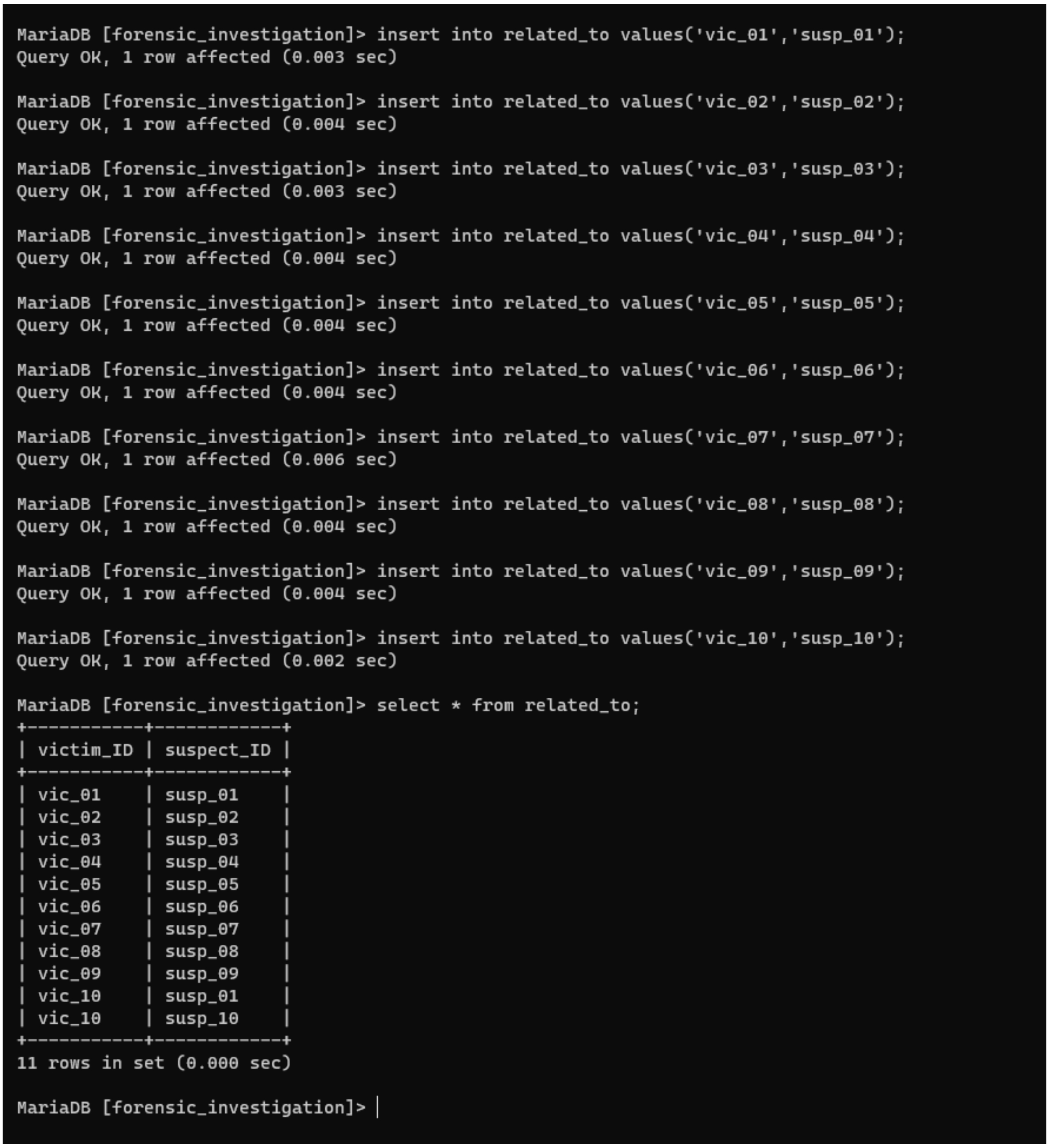
```
MariaDB [forensic_investigation]> insert into suspects values('A1','Ameen',29,'M','vic_01','pol_01','susp_01');
Query OK, 1 row affected (0.010 sec)

MariaDB [forensic_investigation]> insert into suspects values('Jaiden','lee',29,'M','vic_02','pol_02','susp_02');
Query OK, 1 row affected (0.007 sec)

MariaDB [forensic_investigation]> insert into suspects values('Jasee','lee',22,'M','vic_03','pol_03','susp_03');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into suspects values('Oliver','James',19,'M','vic_04','pol_04','susp_04');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into suspects values('Joshua','lee',19,'M','vic_05','pol_05','susp_05');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into suspects values('Amelia','Leigh',56,'M','vic_06','pol_06','susp_06');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into suspects values('Lacey','Mai',22,'F','vic_07','pol_07','susp_07');
Query OK, 1 row affected (0.005 sec)

MariaDB [forensic_investigation]> insert into suspects values('Lola','Rose',26,'F','vic_08','pol_08','susp_08');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into suspects values('Casey','Leigh',24,'F','vic_09','pol_09','susp_09');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into suspects values('Lily','Sue',20,'F','vic_10','pol_10','susp_10');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> select * from suspects;
+------------+-----------+------+------+-----------+-----------+------------+
| first_name | last_name | age  | sex  | victim_ID | police_ID | suspect_ID |
+------------+-----------+------+------+-----------+-----------+------------+
| A1         | Ameen     |   29 | M    | vic_01    | pol_01    | susp_01    |
| Jaiden     | lee       |   29 | M    | vic_02    | pol_02    | susp_02    |
| Jasee      | lee       |   22 | M    | vic_03    | pol_03    | susp_03    |
| Oliver     | James     |   19 | M    | vic_04    | pol_04    | susp_04    |
| Joshua     | lee       |   19 | M    | vic_05    | pol_05    | susp_05    |
| Amelia     | Leigh     |   56 | M    | vic_06    | pol_06    | susp_06    |
| Lacey      | Mai       |   22 | F    | vic_07    | pol_07    | susp_07    |
| Lola       | Rose      |   26 | F    | vic_08    | pol_08    | susp_08    |
| Casey      | Leigh     |   24 | F    | vic_09    | pol_09    | susp_09    |
| Lily       | Sue       |   20 | F    | vic_10    | pol_10    | susp_10    |
+------------+-----------+------+------+-----------+-----------+------------+
10 rows in set (0.000 sec)

MariaDB [forensic_investigation]> |
```

Populating rows into table murderer and view of the table murderer:



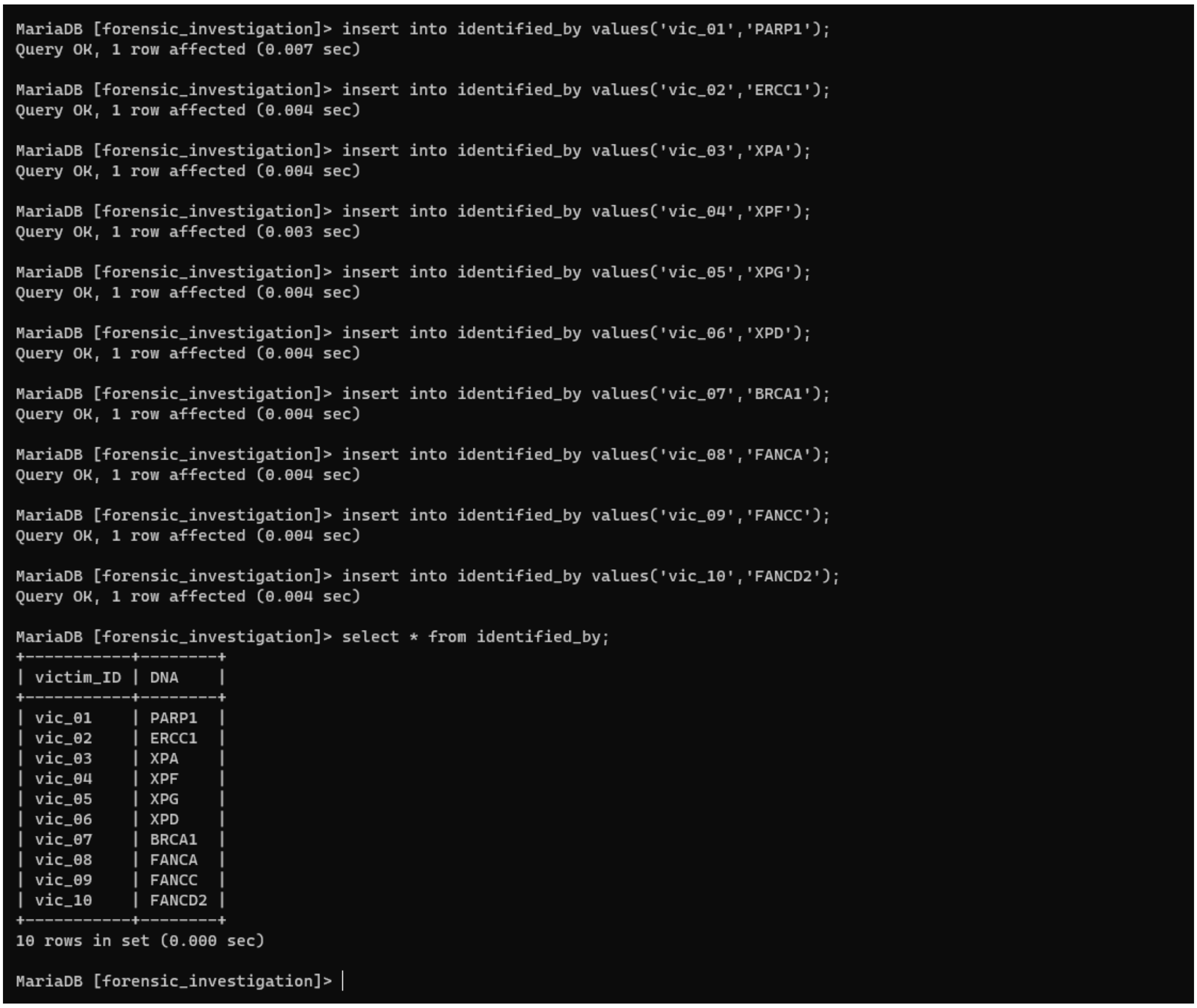
```
MariaDB [forensic_investigation]> insert into murderer values('Ryan','James',20,'M','knief','vic_01');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into murderer values('Riley','James',29,'M','knief','vic_02');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into murderer values('Cody','Jay',33,'M','Car','vic_03');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into murderer values('A','Jay',38,'M','Bike','vic_04');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into murderer values('Tommy','Joe',31,'M','Bike','vic_05');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into murderer values('Ruby','Grace',22,'F','NO_weapon','vic_06');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into murderer values('Chole','Anne',28,'F','Rope','vic_07');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into murderer values('Lisa','Marie',19,'F','Knief','vic_08');
Query OK, 1 row affected (0.003 sec)

MariaDB [forensic_investigation]> insert into murderer values('Scarlett','Rose',29,'F','Knief','vic_09');
Query OK, 1 row affected (0.003 sec)

MariaDB [forensic_investigation]> insert into murderer values('Mia','Lousie',29,'F','Knief','vic_10');
Query OK, 1 row affected (0.002 sec)

MariaDB [forensic_investigation]> select * from murderer;
+------------+-----------+------+------+-------------+-----------+
| first_name | last_name | age  | sex  | weapon_used | victim_ID |
+------------+-----------+------+------+-------------+-----------+
| Ryan       | James     |   20 | M    | knief       | vic_01    |
| Riley      | James     |   29 | M    | knief       | vic_02    |
| Cody       | Jay       |   33 | M    | Car         | vic_03    |
| A          | Jay       |   38 | M    | Bike        | vic_04    |
| Tommy      | Joe       |   31 | M    | Bike        | vic_05    |
| Ruby       | Grace     |   22 | F    | NO_weapon   | vic_06    |
| Chole      | Anne      |   28 | F    | Rope        | vic_07    |
| Lisa       | Marie     |   19 | F    | Knief       | vic_08    |
| Scarlett   | Rose      |   29 | F    | Knief       | vic_09    |
| Mia        | Lousie    |   29 | F    | Knief       | vic_10    |
+------------+-----------+------+------+-------------+-----------+
10 rows in set (0.000 sec)

MariaDB [forensic_investigation]>
```

Populating rows into table related_to and view of table related_to:



```
MariaDB [forensic_investigation]> insert into related_to values('vic_01','susp_01');
Query OK, 1 row affected (0.003 sec)

MariaDB [forensic_investigation]> insert into related_to values('vic_02','susp_02');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into related_to values('vic_03','susp_03');
Query OK, 1 row affected (0.003 sec)

MariaDB [forensic_investigation]> insert into related_to values('vic_04','susp_04');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into related_to values('vic_05','susp_05');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into related_to values('vic_06','susp_06');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into related_to values('vic_07','susp_07');
Query OK, 1 row affected (0.006 sec)

MariaDB [forensic_investigation]> insert into related_to values('vic_08','susp_08');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into related_to values('vic_09','susp_09');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into related_to values('vic_10','susp_10');
Query OK, 1 row affected (0.002 sec)

MariaDB [forensic_investigation]> select * from related_to;
+-----------+------------+
| victim_ID | suspect_ID |
+-----------+------------+
| vic_01    | susp_01    |
| vic_02    | susp_02    |
| vic_03    | susp_03    |
| vic_04    | susp_04    |
| vic_05    | susp_05    |
| vic_06    | susp_06    |
| vic_07    | susp_07    |
| vic_08    | susp_08    |
| vic_09    | susp_09    |
| vic_10    | susp_01    |
| vic_10    | susp_10    |
+-----------+------------+
11 rows in set (0.000 sec)

MariaDB [forensic_investigation]> |
```

Populating rows into table identified_by and view of table identified_by:



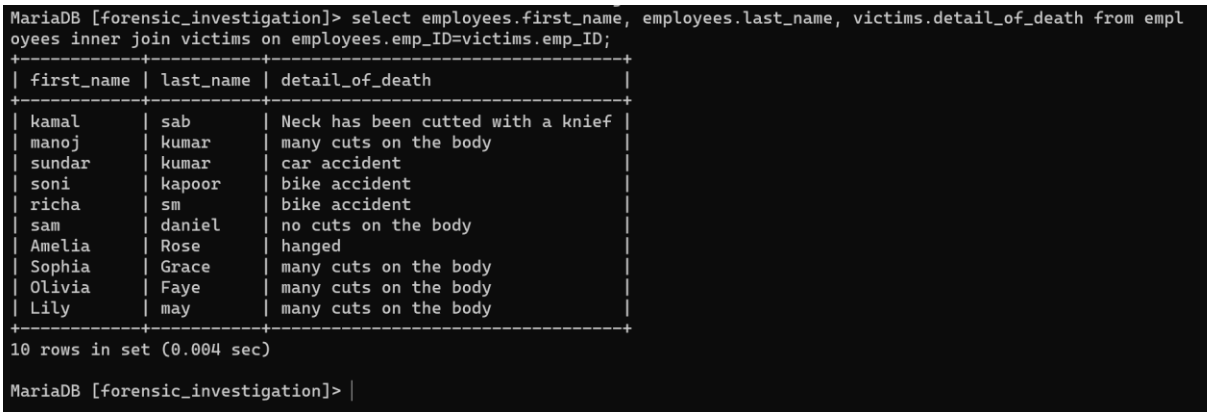
```
MariaDB [forensic_investigation]> insert into identified_by values('vic_01','PARP1');
Query OK, 1 row affected (0.007 sec)

MariaDB [forensic_investigation]> insert into identified_by values('vic_02','ERCC1');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into identified_by values('vic_03','XPA');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into identified_by values('vic_04','XPF');
Query OK, 1 row affected (0.003 sec)

MariaDB [forensic_investigation]> insert into identified_by values('vic_05','XPG');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into identified_by values('vic_06','XPD');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into identified_by values('vic_07','BRCA1');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into identified_by values('vic_08','FANCA');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into identified_by values('vic_09','FANCC');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> insert into identified_by values('vic_10','FANCD2');
Query OK, 1 row affected (0.004 sec)

MariaDB [forensic_investigation]> select * from identified_by;
+-----------+--------+
| victim_ID | DNA    |
+-----------+--------+
| vic_01    | PARP1  |
| vic_02    | ERCC1  |
| vic_03    | XPA    |
| vic_04    | XPF    |
| vic_05    | XPG    |
| vic_06    | XPD    |
| vic_07    | BRCA1  |
| vic_08    | FANCA  |
| vic_09    | FANCC  |
| vic_10    | FANCD2 |
+-----------+--------+
10 rows in set (0.000 sec)

MariaDB [forensic_investigation]>
```

Join Queries

REGULAR JOIN QUERIES:

1.Finding what kind of case each employee worked on.

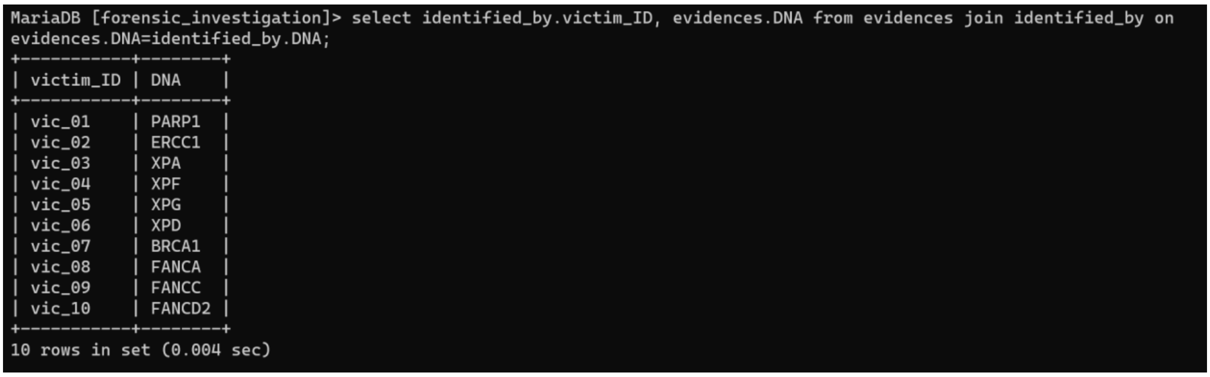
select employees.first_name, employees.last_name, victims.detail_of_death from employees inner join victims on employees.emp_ID=victims.emp_ID;



```
MariaDB [forensic_investigation]> select employees.first_name, employees.last_name, victims.detail_of_death from empl
oyees inner join victims on employees.emp_ID=victims.emp_ID;
+------------+-----------+-----------------------------------+
| first_name | last_name | detail_of_death                   |
+------------+-----------+-----------------------------------+
| kamal      | sab       | Neck has been cutted with a knief |
| manoj      | kumar     | many cuts on the body             |
| sundar     | kumar     | car accident                      |
| soni       | kapoor    | bike accident                     |
| richa      | sm        | bike accident                     |
| sam        | daniel    | no cuts on the body               |
| Amelia     | Rose      | hanged                            |
| Sophia     | Grace     | many cuts on the body             |
| Olivia     | Faye      | many cuts on the body             |
| Lily       | may       | many cuts on the body             |
+------------+-----------+-----------------------------------+
10 rows in set (0.004 sec)

MariaDB [forensic_investigation]>
```

2. Combining victim IDs and the DNA associated with each.

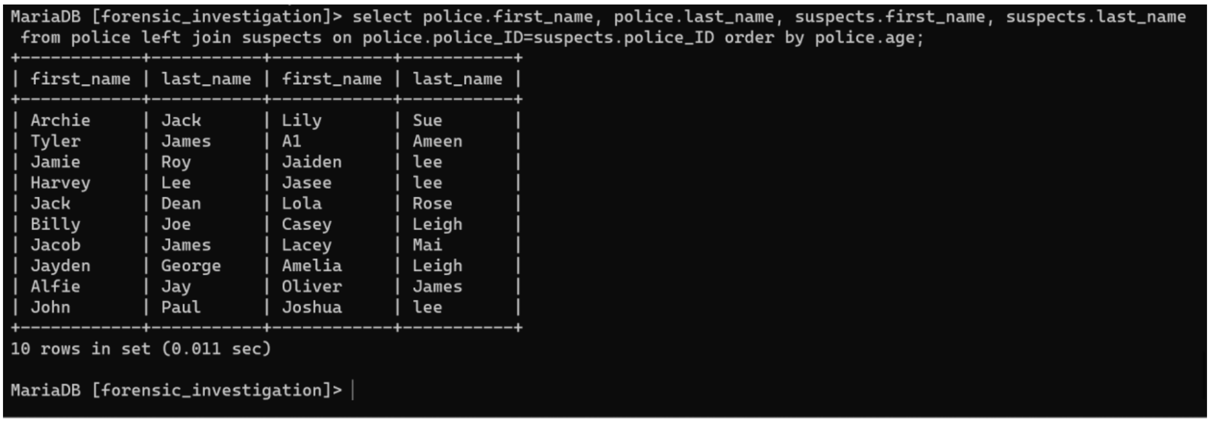
select identified_by.victim_ID, evidences.DNA from evidences join identified_by on evidences.DNA=identified_by.DNA;



```
MariaDB [forensic_investigation]> select identified_by.victim_ID, evidences.DNA from evidences join identified_by on
evidences.DNA=identified_by.DNA;
+-----------+--------+
| victim_ID | DNA    |
+-----------+--------+
| vic_01    | PARP1  |
| vic_02    | ERCC1  |
| vic_03    | XPA    |
| vic_04    | XPF    |
| vic_05    | XPG    |
| vic_06    | XPD    |
| vic_07    | BRCA1  |
| vic_08    | FANCA  |
| vic_09    | FANCC  |
| vic_10    | FANCD2 |
+-----------+--------+
10 rows in set (0.004 sec)
```

3.Finding out the suspects each police officer dealt with.

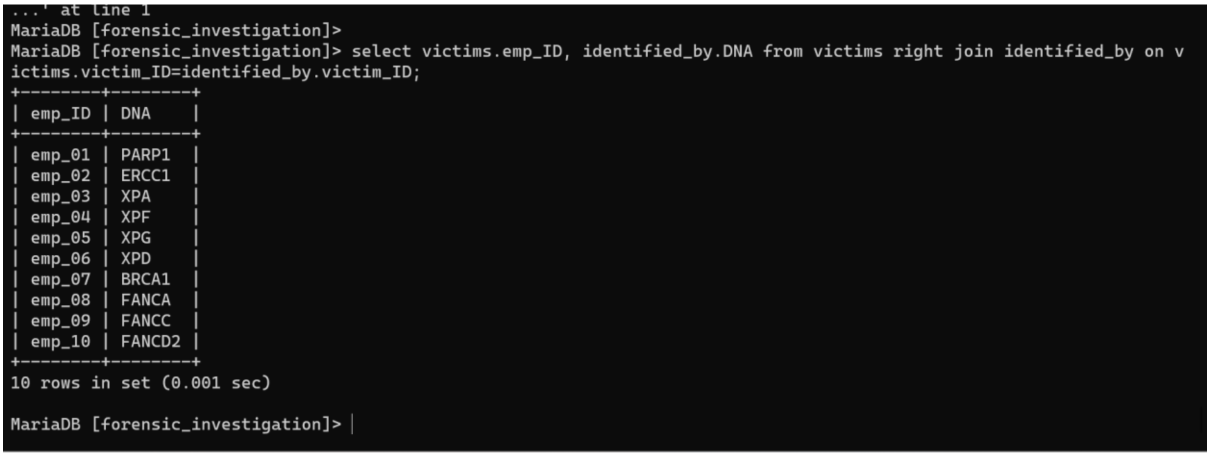
select police.first_name, police.last_name, suspects.first_name, suspects.last_name from police left join suspects on police.police_ID=suspects.police_ID order by police.age;



```
MariaDB [forensic_investigation]> select police.first_name, police.last_name, suspects.first_name, suspects.last_name
 from police left join suspects on police.police_ID=suspects.police_ID order by police.age;
+------------+-----------+------------+-----------+
| first_name | last_name | first_name | last_name |
+------------+-----------+------------+-----------+
| Archie     | Jack      | Lily       | Sue       |
| Tyler      | James     | A1         | Ameen     |
| Jamie      | Roy       | Jaiden     | lee       |
| Harvey     | Lee       | Jasee      | lee       |
| Jack       | Dean      | Lola       | Rose      |
| Billy      | Joe       | Casey      | Leigh     |
| Jacob      | James     | Lacey      | Mai       |
| Jayden     | George    | Amelia     | Leigh     |
| Alfie      | Jay       | Oliver     | James     |
| John       | Paul      | Joshua     | lee       |
+------------+-----------+------------+-----------+
10 rows in set (0.011 sec)

MariaDB [forensic_investigation]>
```

4.Figuring out the kinds of DNA structure each employee dealt with.

select victims.emp_ID, identified_by.DNA from victims right join identified_by on victims.victim_ID=identified_by.victim_ID;

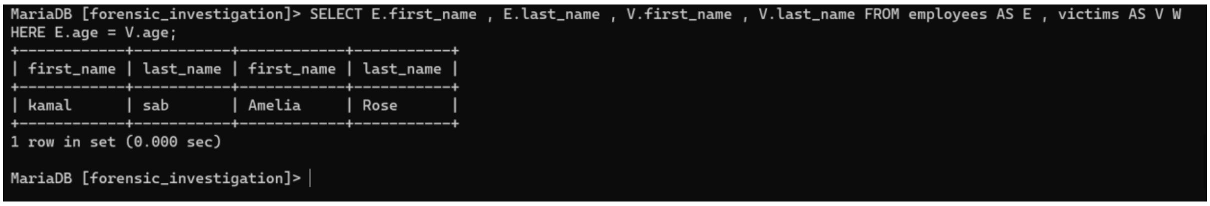


```
...' at line 1
MariaDB [forensic_investigation]>
MariaDB [forensic_investigation]> select victims.emp_ID, identified_by.DNA from victims right join identified_by on v
ictims.victim_ID=identified_by.victim_ID;
+--------+--------+
| emp_ID | DNA    |
+--------+--------+
| emp_01 | PARP1  |
| emp_02 | ERCC1  |
| emp_03 | XPA    |
| emp_04 | XPF    |
| emp_05 | XPG    |
| emp_06 | XPD    |
| emp_07 | BRCA1  |
| emp_08 | FANCA  |
| emp_09 | FANCC  |
| emp_10 | FANCD2 |
+--------+--------+
10 rows in set (0.001 sec)

MariaDB [forensic_investigation]>
```

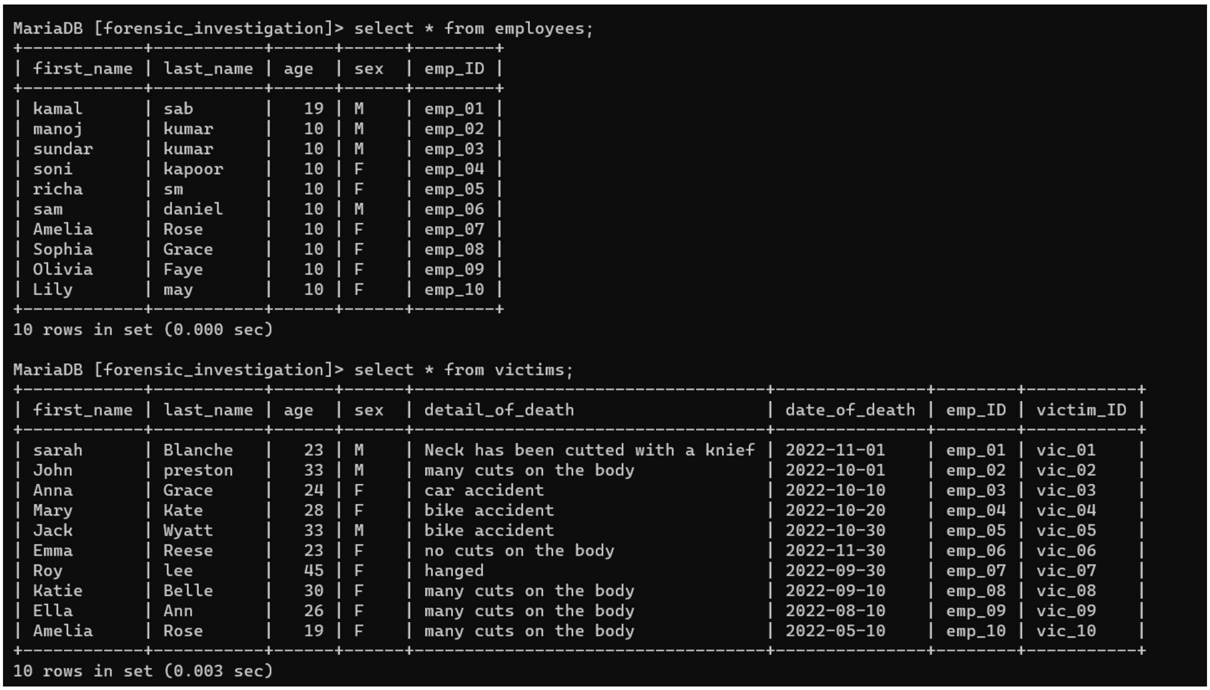
<u>CO-RELATED QUARIES:</u>

1.fetching first_name and last_name of employees whose age is same in columns employee and victims:

SELECT E.first_name , E.last_name , V.first_name , V.last_name FROM employees AS E , victims AS V WHERE E.age = V.age;



```
MariaDB [forensic_investigation]> SELECT E.first_name , E.last_name , V.first_name , V.last_name FROM employees AS E , victims AS V W
HERE E.age = V.age;
+------------+-----------+------------+-----------+
| first_name | last_name | first_name | last_name |
+------------+-----------+------------+-----------+
| kamal      | sab       | Amelia     | Rose      |
+------------+-----------+------------+-----------+
1 row in set (0.000 sec)

MariaDB [forensic_investigation]>
```



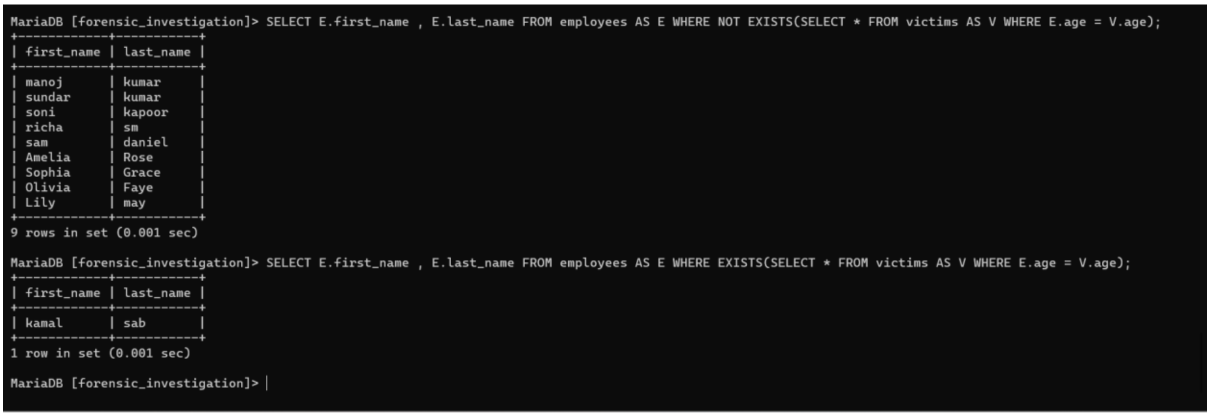
```
MariaDB [forensic_investigation]> select * from employees;
+------------+-----------+------+------+--------+
| first_name | last_name | age  | sex  | emp_ID |
+------------+-----------+------+------+--------+
| kamal      | sab       |   19 | M    | emp_01 |
| manoj      | kumar     |   10 | M    | emp_02 |
| sundar     | kumar     |   10 | M    | emp_03 |
| soni       | kapoor    |   10 | F    | emp_04 |
| richa      | sm        |   10 | F    | emp_05 |
| sam        | daniel    |   10 | M    | emp_06 |
| Amelia     | Rose      |   10 | F    | emp_07 |
| Sophia     | Grace     |   10 | F    | emp_08 |
| Olivia     | Faye      |   10 | F    | emp_09 |
| Lily       | may       |   10 | F    | emp_10 |
+------------+-----------+------+------+--------+
10 rows in set (0.000 sec)

MariaDB [forensic_investigation]> select * from victims;
+------------+-----------+------+------+------------------------------------+---------------+--------+-----------+
| first_name | last_name | age  | sex  | detail_of_death                    | date_of_death | emp_ID | victim_ID |
+------------+-----------+------+------+------------------------------------+---------------+--------+-----------+
| sarah      | Blanche   |   23 | M    | Neck has been cutted with a knief | 2022-11-01    | emp_01 | vic_01    |
| John       | preston   |   33 | M    | many cuts on the body              | 2022-10-01    | emp_02 | vic_02    |
| Anna       | Grace     |   24 | F    | car accident                       | 2022-10-10    | emp_03 | vic_03    |
| Mary       | Kate      |   28 | F    | bike accident                      | 2022-10-20    | emp_04 | vic_04    |
| Jack       | Wyatt     |   33 | M    | bike accident                      | 2022-10-30    | emp_05 | vic_05    |
| Emma       | Reese     |   23 | F    | no cuts on the body                | 2022-11-30    | emp_06 | vic_06    |
| Roy        | lee       |   45 | F    | hanged                             | 2022-09-30    | emp_07 | vic_07    |
| Katie      | Belle     |   30 | F    | many cuts on the body              | 2022-09-10    | emp_08 | vic_08    |
| Ella       | Ann       |   26 | F    | many cuts on the body              | 2022-08-10    | emp_09 | vic_09    |
| Amelia     | Rose      |   19 | F    | many cuts on the body              | 2022-05-10    | emp_10 | vic_10    |
+------------+-----------+------+------+------------------------------------+---------------+--------+-----------+
10 rows in set (0.003 sec)
```

2.featching first_name and last_name of the employee whose age value NOT EXISTS in victims age column

featching first_name and last_name of the employee whose age value EXISTS in victims age column

SELECT E.first_name , E.last_name FROM employees AS E WHERE NOT EXISTS (SELECT * FROM victims AS V WHERE E.age = V.age);

SELECT E.first_name , E.last_name FROM employees AS E WHERE EXISTS (SELECT * FROM victims AS V WHERE E.age = V.age);

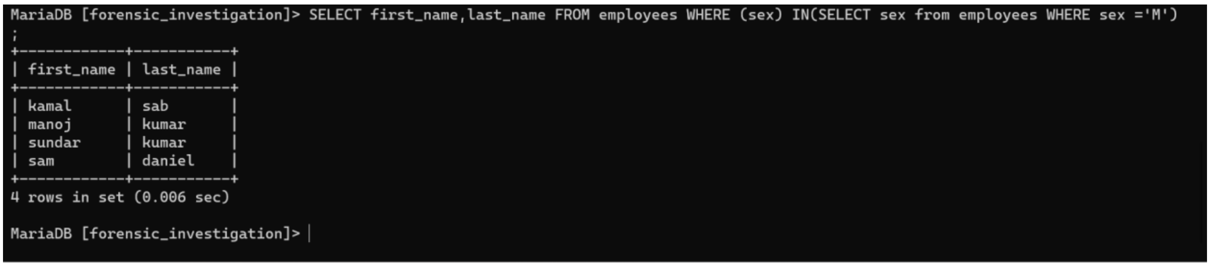


```
MariaDB [forensic_investigation]> SELECT E.first_name , E.last_name FROM employees AS E WHERE NOT EXISTS(SELECT * FROM victims AS V WHERE E.age = V.age);
+------------+-----------+
| first_name | last_name |
+------------+-----------+
| manoj      | kumar     |
| sundar     | kumar     |
| soni       | kapoor    |
| richa      | sm        |
| sam        | daniel    |
| Amelia     | Rose      |
| Sophia     | Grace     |
| Olivia     | Faye      |
| Lily       | may       |
+------------+-----------+
9 rows in set (0.001 sec)

MariaDB [forensic_investigation]> SELECT E.first_name , E.last_name FROM employees AS E WHERE EXISTS(SELECT * FROM victims AS V WHERE E.age = V.age);
+------------+-----------+
| first_name | last_name |
+------------+-----------+
| kamal      | sab       |
+------------+-----------+
1 row in set (0.001 sec)

MariaDB [forensic_investigation]> |
```

NESTED QUARIES:

1.listing first_name , last_name of all the male employees:

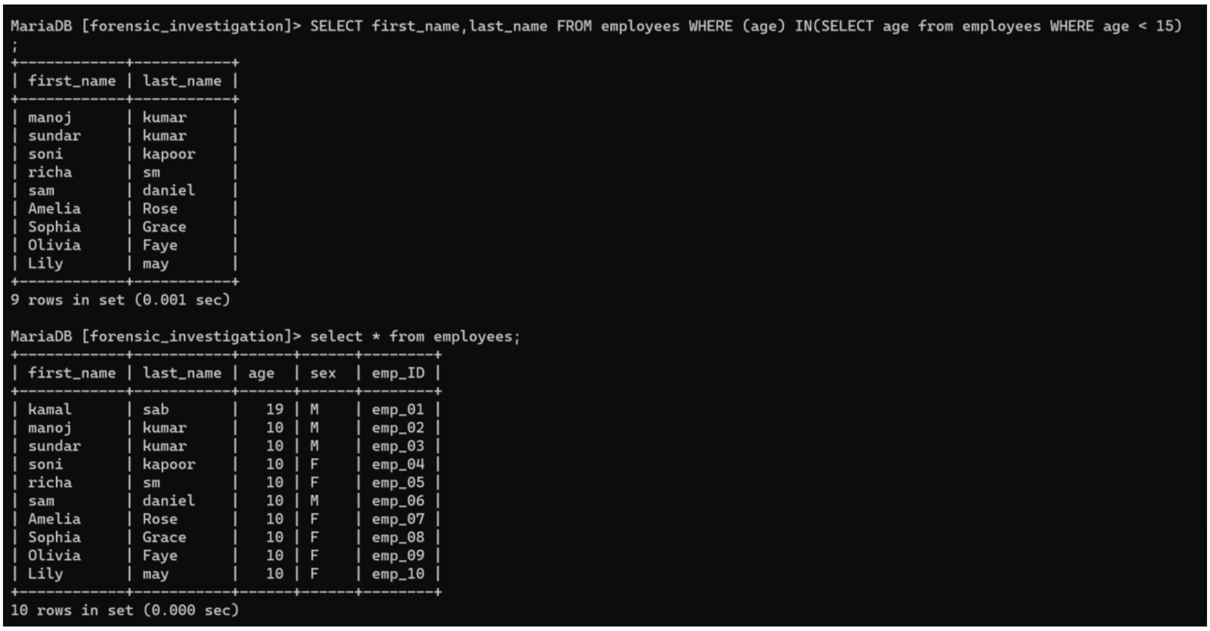
SELECT first_name, last_name FROM employees WHERE (sex) IN(SELECT sex from employees WHERE sex = ‘M’);



```
MariaDB [forensic_investigation]> SELECT first_name,last_name FROM employees WHERE (sex) IN(SELECT sex from employees WHERE sex ='M')
;
+------------+-----------+
| first_name | last_name |
+------------+-----------+
| kamal      | sab       |
| manoj      | kumar     |
| sundar     | kumar     |
| sam        | daniel    |
+------------+-----------+
4 rows in set (0.006 sec)

MariaDB [forensic_investigation]>
```

2 listing first_name, last_name of employees whose age is less than 15:

SELECT first_name,last_name FROM employees WHERE (age) IN(SELECT age from employees WHERE age < 15);

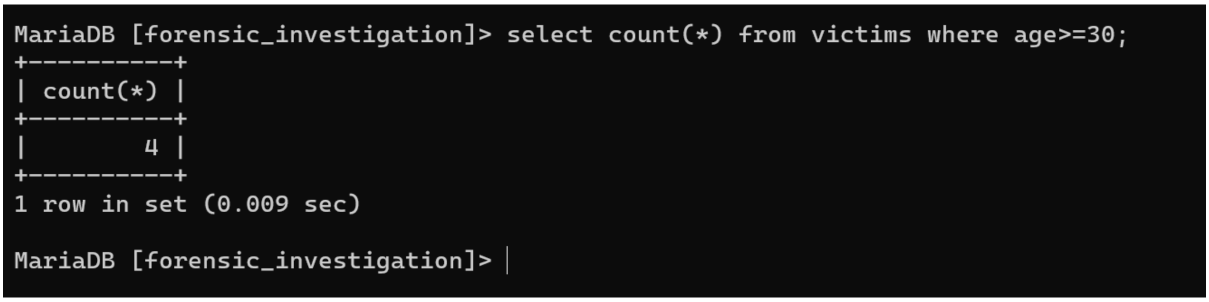


```
MariaDB [forensic_investigation]> SELECT first_name,last_name FROM employees WHERE (age) IN(SELECT age from employees WHERE age < 15)
;
+------------+-----------+
| first_name | last_name |
+------------+-----------+
| manoj      | kumar     |
| sundar     | kumar     |
| soni       | kapoor    |
| richa      | sm        |
| sam        | daniel    |
| Amelia     | Rose      |
| Sophia     | Grace     |
| Olivia     | Faye      |
| Lily       | may       |
+------------+-----------+
9 rows in set (0.001 sec)

MariaDB [forensic_investigation]> select * from employees;
+------------+-----------+------+------+--------+
| first_name | last_name | age  | sex  | emp_ID |
+------------+-----------+------+------+--------+
| kamal      | sab       |   19 | M    | emp_01 |
| manoj      | kumar     |   10 | M    | emp_02 |
| sundar     | kumar     |   10 | M    | emp_03 |
| soni       | kapoor    |   10 | F    | emp_04 |
| richa      | sm        |   10 | F    | emp_05 |
| sam        | daniel    |   10 | M    | emp_06 |
| Amelia     | Rose      |   10 | F    | emp_07 |
| Sophia     | Grace     |   10 | F    | emp_08 |
| Olivia     | Faye      |   10 | F    | emp_09 |
| Lily       | may       |   10 | F    | emp_10 |
+------------+-----------+------+------+--------+
10 rows in set (0.000 sec)
```

Aggregate Functions:

1.Counting the number of victims above the age of 30 years.

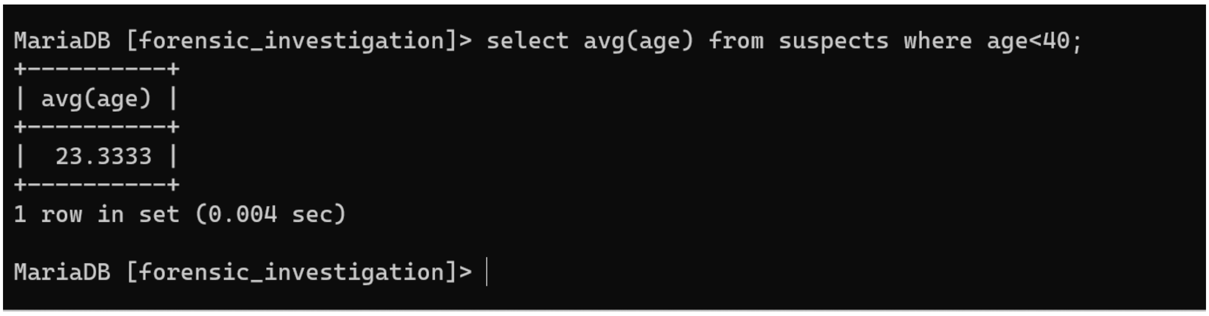
select count(*) from victims where age>=30;



```
MariaDB [forensic_investigation]> select count(*) from victims where age>=30;
+----------+
| count(*) |
+----------+
|        4 |
+----------+
1 row in set (0.009 sec)

MariaDB [forensic_investigation]>
```

2. Finding the average age of all suspects below the age of 40.

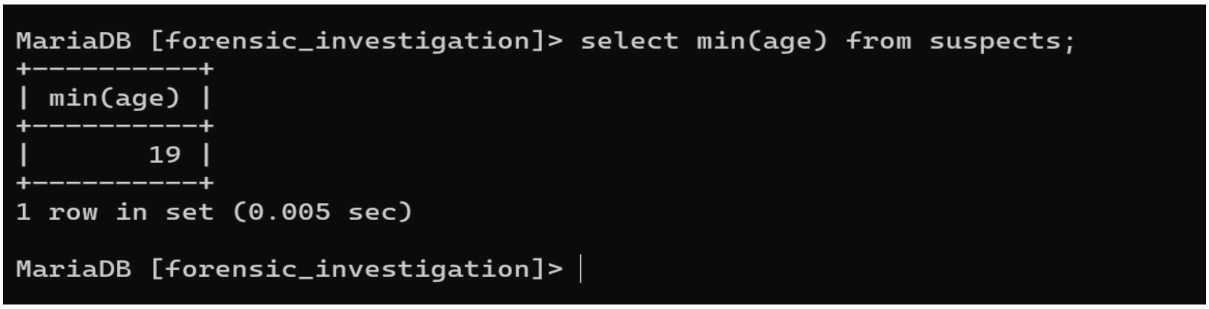
select avg(age) from suspects where age<40;



```
MariaDB [forensic_investigation]> select avg(age) from suspects where age<40;
+----------+
| avg(age) |
+----------+
|  23.3333 |
+----------+
1 row in set (0.004 sec)

MariaDB [forensic_investigation]>
```

3. Finding the youngest suspect.

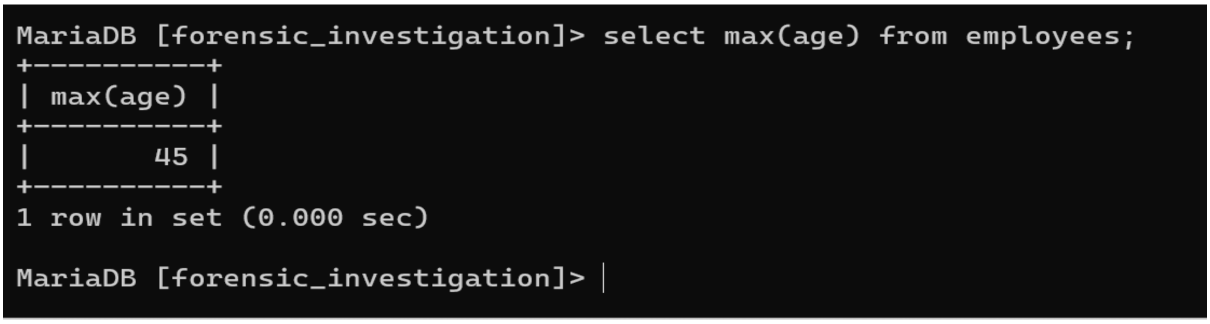
select min(age) from suspects;



```
MariaDB [forensic_investigation]> select min(age) from suspects;
+----------+
| min(age) |
+----------+
|       19 |
+----------+
1 row in set (0.005 sec)

MariaDB [forensic_investigation]>
```

4. Finding the oldest employee.

select max(age) from employees;

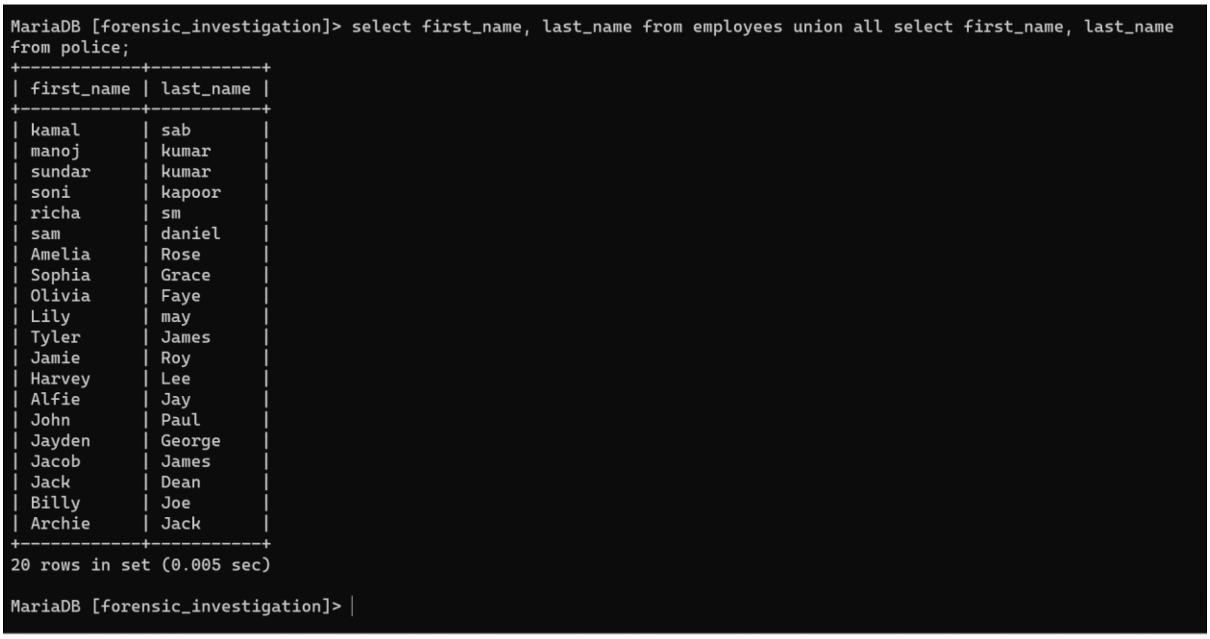


```
MariaDB [forensic_investigation]> select max(age) from employees;
+----------+
| max(age) |
+----------+
|       45 |
+----------+
1 row in set (0.000 sec)

MariaDB [forensic_investigation]>
```

Set Operations:

1. To find everyone part of the whole investigation process and other essentials.

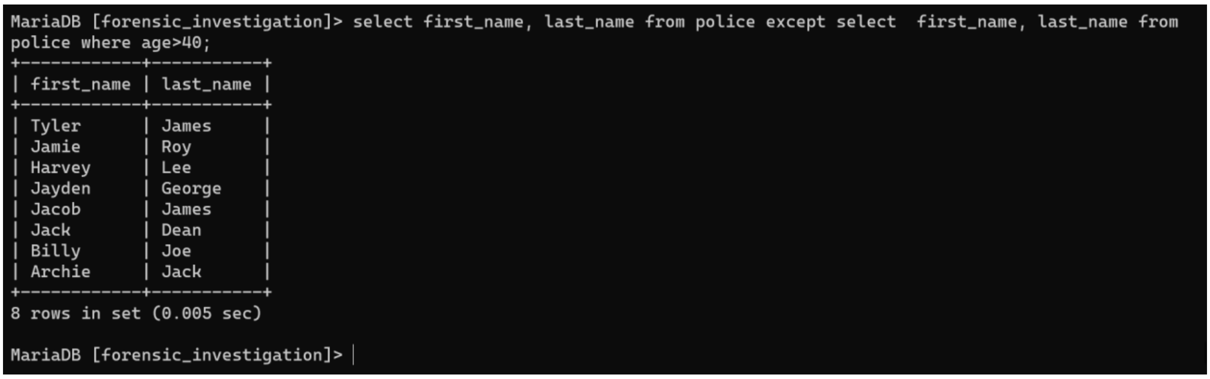
select first_name, last_name from employees union all select first_name, last_name from police;



```
MariaDB [forensic_investigation]> select first_name, last_name from employees union all select first_name, last_name
from police;
+------------+-----------+
| first_name | last_name |
+------------+-----------+
| kamal      | sab       |
| manoj      | kumar     |
| sundar     | kumar     |
| soni       | kapoor    |
| richa      | sm        |
| sam        | daniel    |
| Amelia     | Rose      |
| Sophia     | Grace     |
| Olivia     | Faye      |
| Lily       | may       |
| Tyler      | James     |
| Jamie      | Roy       |
| Harvey     | Lee       |
| Alfie      | Jay       |
| John       | Paul      |
| Jayden     | George    |
| Jacob      | James     |
| Jack       | Dean      |
| Billy      | Joe       |
| Archie     | Jack      |
+------------+-----------+
20 rows in set (0.005 sec)

MariaDB [forensic_investigation]>
```

2.Finding the names of police officers above the age of 40.

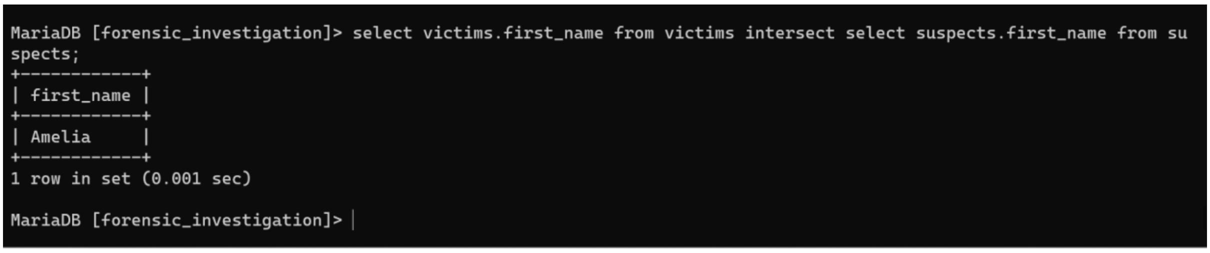
select first_name, last_name from police except select first_name, last_name from police where age>40;



```
MariaDB [forensic_investigation]> select first_name, last_name from police except select  first_name, last_name from
police where age>40;
+------------+-----------+
| first_name | last_name |
+------------+-----------+
| Tyler      | James     |
| Jamie      | Roy       |
| Harvey     | Lee       |
| Jayden     | George    |
| Jacob      | James     |
| Jack       | Dean      |
| Billy      | Joe       |
| Archie     | Jack      |
+------------+-----------+
8 rows in set (0.005 sec)

MariaDB [forensic_investigation]>
```

3. Find out common first names amongst victims and suspects.

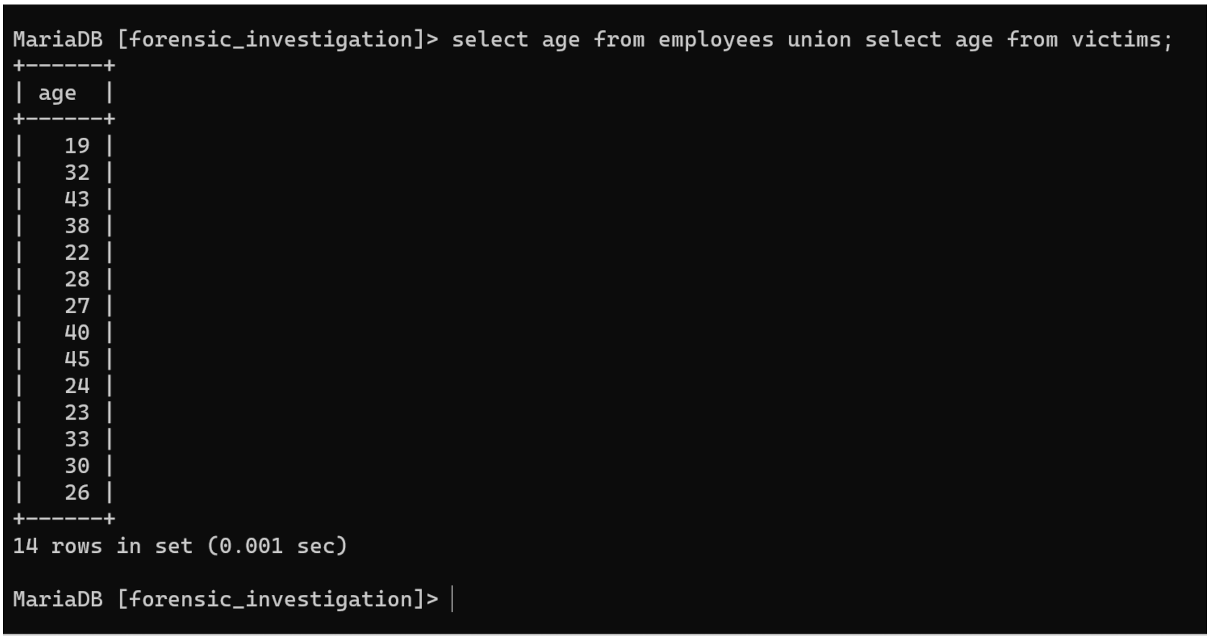
select victims.first_name from victims intersect select suspects.first_name from suspects;



```
MariaDB [forensic_investigation]> select victims.first_name from victims intersect select suspects.first_name from su
spects;
+------------+
| first_name |
+------------+
| Amelia     |
+------------+
1 row in set (0.001 sec)

MariaDB [forensic_investigation]>
```

4. Finding ages of all employees and victims.

select age from employees union select age from victims;



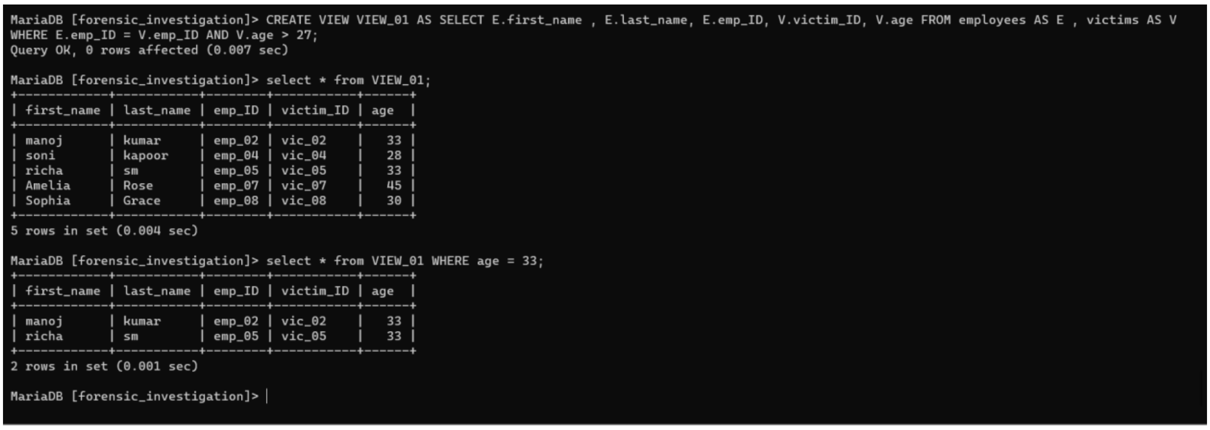
```
MariaDB [forensic_investigation]> select age from employees union select age from victims;
+------+
| age  |
+------+
|   19 |
|   32 |
|   43 |
|   38 |
|   22 |
|   28 |
|   27 |
|   40 |
|   45 |
|   24 |
|   23 |
|   33 |
|   30 |
|   26 |
+------+
14 rows in set (0.001 sec)

MariaDB [forensic_investigation]>
```

View:

Demonstrate creation and querying one view.

Creating a view to show first_name, last_name and emp_ID from table employees and victim_ID and age from table victim and the age must be greater than 27

CREATE VIEW VIEW_01 AS SELECT E.first_name, E.last_name,E.emp_ID , V.victim_ID, V.age FROM employees AS E , victims AS V WHERE E.emp_ID=V.emp_ID AND V.age > 27;

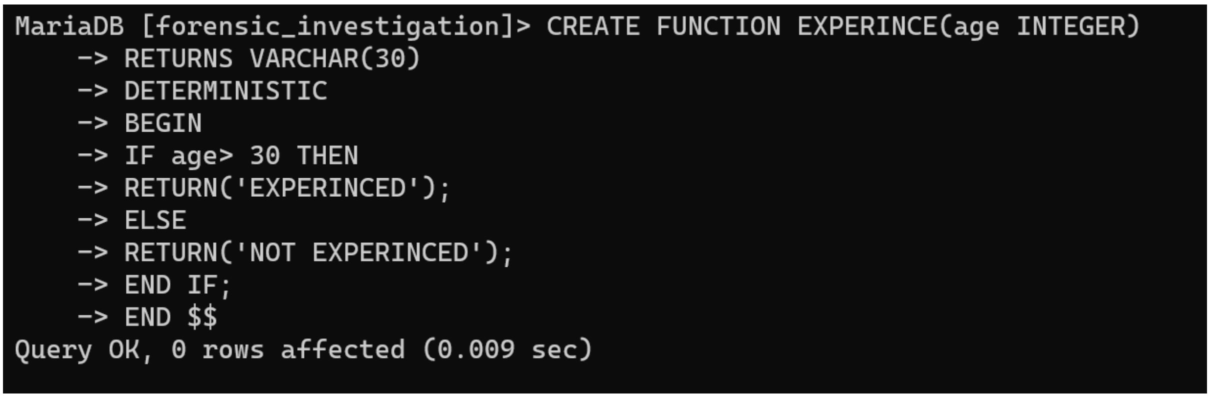


```
MariaDB [forensic_investigation]> CREATE VIEW VIEW_01 AS SELECT E.first_name , E.last_name, E.emp_ID, V.victim_ID, V.age FROM employees AS E , victims AS V
WHERE E.emp_ID = V.emp_ID AND V.age > 27;
Query OK, 0 rows affected (0.007 sec)

MariaDB [forensic_investigation]> select * from VIEW_01;
+------------+-----------+--------+-----------+------+
| first_name | last_name | emp_ID | victim_ID | age  |
+------------+-----------+--------+-----------+------+
| manoj      | kumar     | emp_02 | vic_02    |   33 |
| soni       | kapoor    | emp_04 | vic_04    |   28 |
| richa      | sm        | emp_05 | vic_05    |   33 |
| Amelia     | Rose      | emp_07 | vic_07    |   45 |
| Sophia     | Grace     | emp_08 | vic_08    |   30 |
+------------+-----------+--------+-----------+------+
5 rows in set (0.004 sec)

MariaDB [forensic_investigation]> select * from VIEW_01 WHERE age = 33;
+------------+-----------+--------+-----------+------+
| first_name | last_name | emp_ID | victim_ID | age  |
+------------+-----------+--------+-----------+------+
| manoj      | kumar     | emp_02 | vic_02    |   33 |
| richa      | sm        | emp_05 | vic_05    |   33 |
+------------+-----------+--------+-----------+------+
2 rows in set (0.001 sec)

MariaDB [forensic_investigation]> 
```

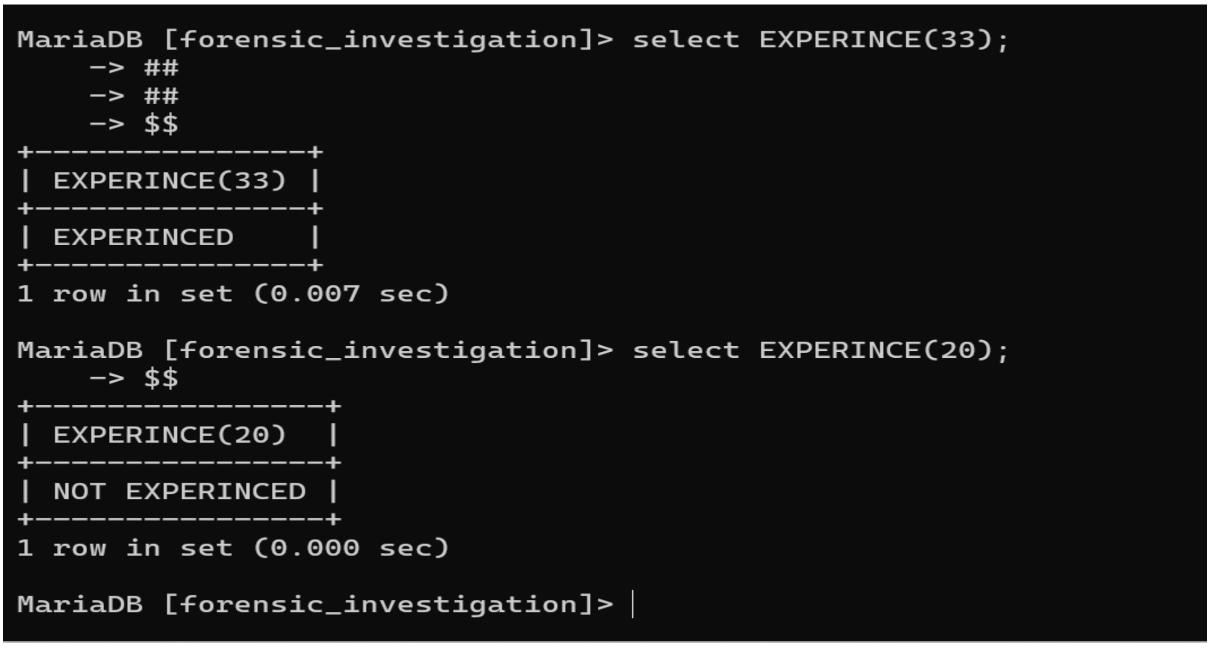
Functions:

1.create a function that classifies employees as ‘EXPERINCED’ and ‘NOT EXPERINCED’ based on their age.

```
CREATE FUNCTION EXPERINCE(age INTEGER)

   -> RETURNS VARCHAR(30)

   -> DETERMINISTIC

   -> BEGIN

   -> IF age> 30 THEN

   -> RETURN('EXPERINCED');

   -> ELSE

   -> RETURN('NOT EXPERINCED');

   -> END IF;

   -> END $$
```



```
MariaDB [forensic_investigation]> CREATE FUNCTION EXPERINCE(age INTEGER)
    -> RETURNS VARCHAR(30)
    -> DETERMINISTIC
    -> BEGIN
    -> IF age> 30 THEN
    -> RETURN('EXPERINCED');
    -> ELSE
    -> RETURN('NOT EXPERINCED');
    -> END IF;
    -> END $$
Query OK, 0 rows affected (0.009 sec)
```

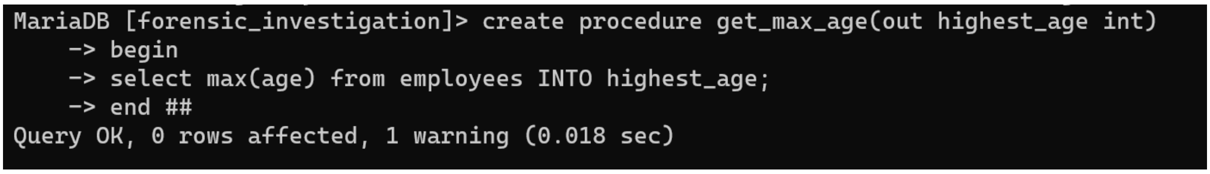


```
MariaDB [forensic_investigation]> select EXPERINCE(33);
    -> ##
    -> ##
    -> $$
+---------------+
| EXPERINCE(33) |
+---------------+
| EXPERINCED    |
+---------------+
1 row in set (0.007 sec)

MariaDB [forensic_investigation]> select EXPERINCE(20);
    -> $$
+----------------+
| EXPERINCE(20)  |
+----------------+
| NOT EXPERINCED |
+----------------+
1 row in set (0.000 sec)

MariaDB [forensic_investigation]>
```

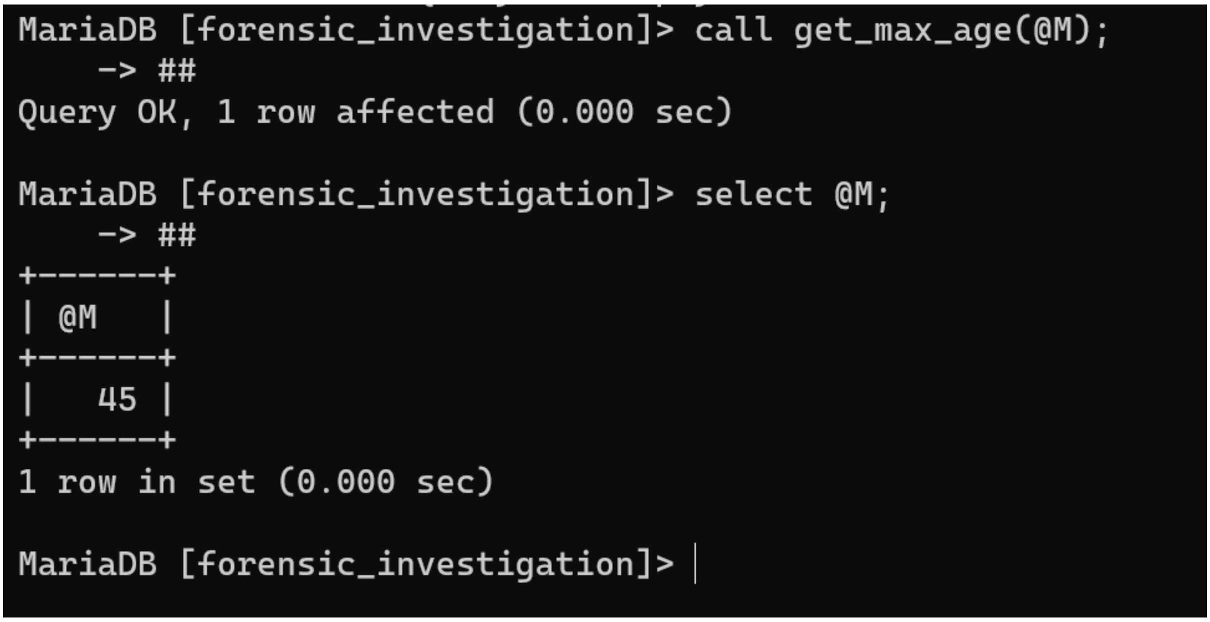
procedures:

1.Getting max age of employees through stored procedures.

```
delimiter ##

MariaDB [forensic_database]> create procedure get_max_age(out highestage int)

    -> begin

    -> select max(age) into highestage from employees;

    -> end ##

Query OK, 0 rows affected (0.010 sec)

MariaDB [forensic_database]> call get_max_age(@M);

MariaDB [forensic_database]> select @M;
```



```
MariaDB [forensic_investigation]> create procedure get_max_age(out highest_age int)
    -> begin
    -> select max(age) from employees INTO highest_age;
    -> end ##
Query OK, 0 rows affected, 1 warning (0.018 sec)
```



```
MariaDB [forensic_investigation]> call get_max_age(@M);
    -> ##
Query OK, 1 row affected (0.000 sec)

MariaDB [forensic_investigation]> select @M;
    -> ##
+------+
| @M   |
+------+
|   45 |
+------+
1 row in set (0.000 sec)

MariaDB [forensic_investigation]>
```

Triggers:

1.Stopping the update of table if new value is greater than 2 times the previous value.

(while updating if the age of the employee is greater than 2 times of the previous age, Then the updation cannot be done.

DELIMITER $$

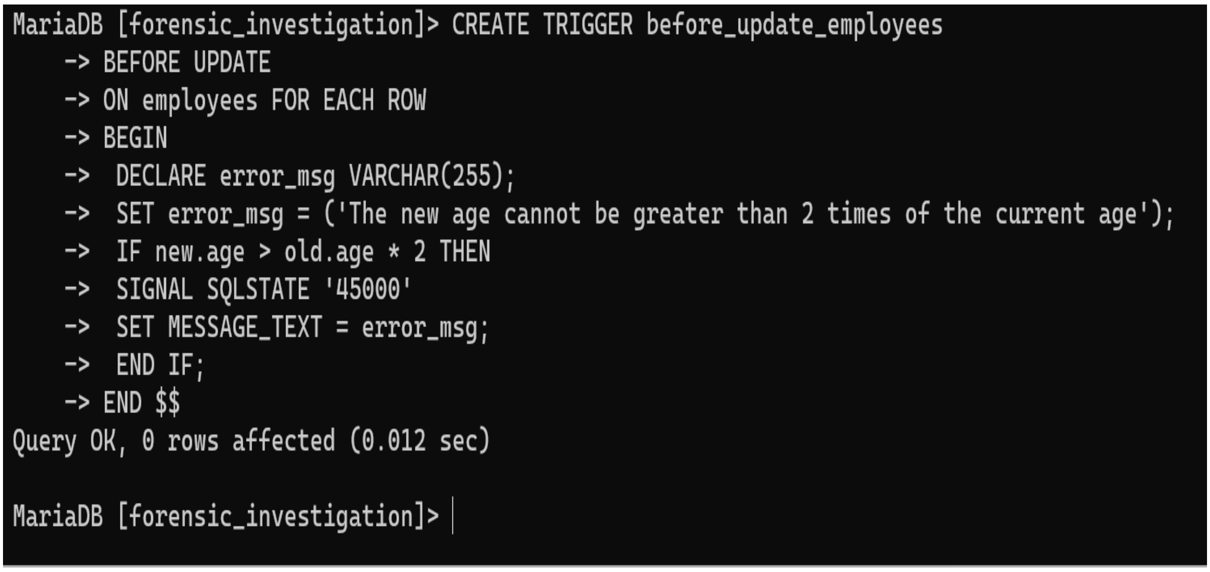
CREATE TRIGGER before_update_employees

```
   -> BEFORE UPDATE

   -> ON employees FOR EACH ROW

   -> BEGIN

   -> DECLARE error_msg VARCHAR(255);

   -> SET error_msg = ('The new age cannot be greater than 2 times the current quantity');

   -> IF new.age > old.age * 2 THEN

   -> SIGNAL SQLSTATE '45000'

   -> SET MESSAGE_TEXT = error_msg;

   -> END IF;

   -> END $$
```

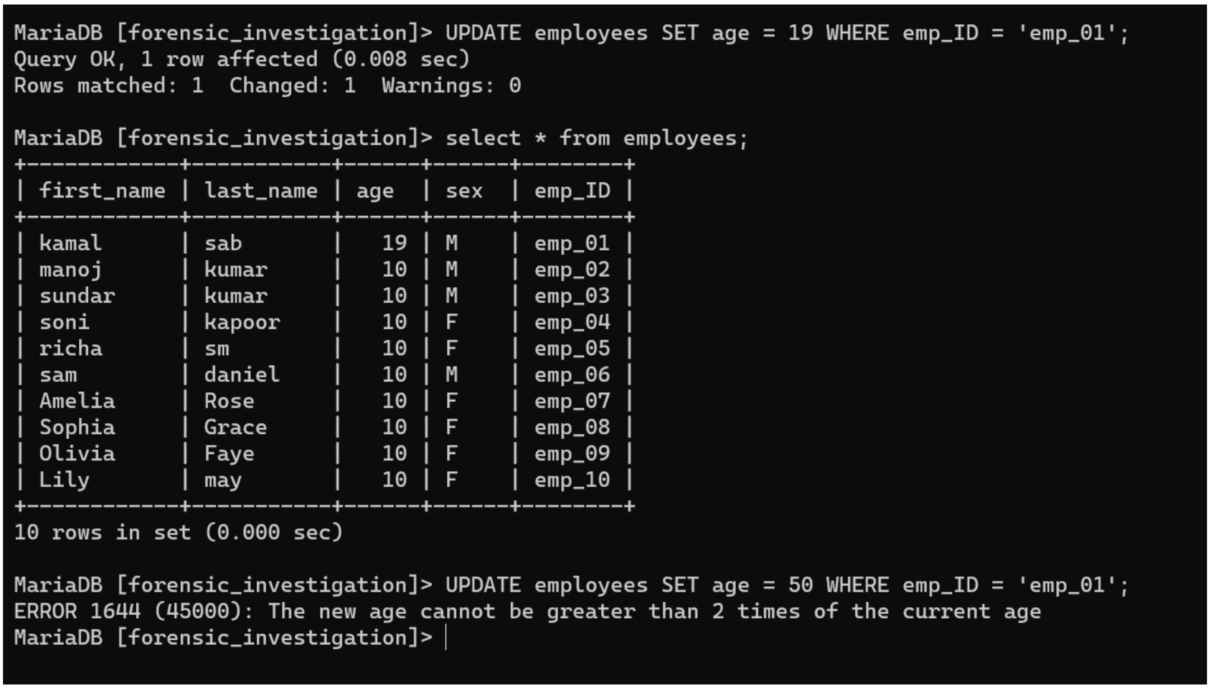
Delimiter;

UPDATE employees SET age=10 WHERE emp_ID = emp_01;

UPDATE employees SET age=30 WHERE emp_ID = emp_01;



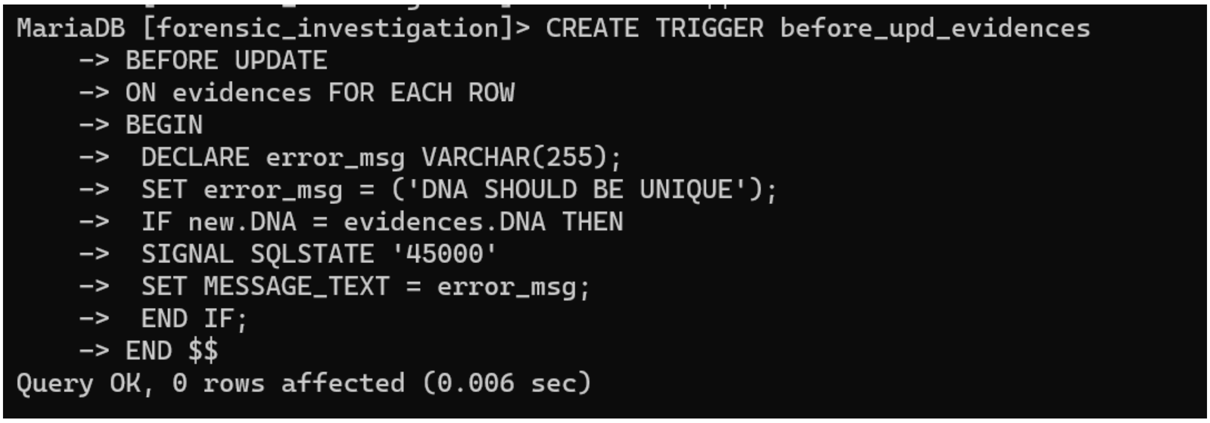
```
MariaDB [forensic_investigation]> CREATE TRIGGER before_update_employees
    -> BEFORE UPDATE
    -> ON employees FOR EACH ROW
    -> BEGIN
    ->  DECLARE error_msg VARCHAR(255);
    ->  SET error_msg = ('The new age cannot be greater than 2 times of the current age');
    ->  IF new.age > old.age * 2 THEN
    ->  SIGNAL SQLSTATE '45000'
    ->  SET MESSAGE_TEXT = error_msg;
    ->  END IF;
    -> END $$
Query OK, 0 rows affected (0.012 sec)

MariaDB [forensic_investigation]>
```



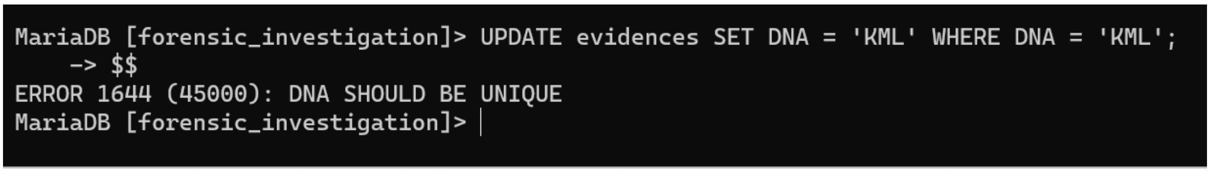
```
MariaDB [forensic_investigation]> UPDATE employees SET age = 19 WHERE emp_ID = 'emp_01';
Query OK, 1 row affected (0.008 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [forensic_investigation]> select * from employees;
+------------+-----------+------+------+--------+
| first_name | last_name | age  | sex  | emp_ID |
+------------+-----------+------+------+--------+
| kamal      | sab       |   19 | M    | emp_01 |
| manoj      | kumar     |   10 | M    | emp_02 |
| sundar     | kumar     |   10 | M    | emp_03 |
| soni       | kapoor    |   10 | F    | emp_04 |
| richa      | sm        |   10 | F    | emp_05 |
| sam        | daniel    |   10 | M    | emp_06 |
| Amelia     | Rose      |   10 | F    | emp_07 |
| Sophia     | Grace     |   10 | F    | emp_08 |
| Olivia     | Faye      |   10 | F    | emp_09 |
| Lily       | may       |   10 | F    | emp_10 |
+------------+-----------+------+------+--------+
10 rows in set (0.000 sec)

MariaDB [forensic_investigation]> UPDATE employees SET age = 50 WHERE emp_ID = 'emp_01';
ERROR 1644 (45000): The new age cannot be greater than 2 times of the current age
MariaDB [forensic_investigation]> |
```

2. creating a trigger to keep DNA unique of every evidences.

```
Delimiter $$

 CREATE TRIGGER before_upd_evidences

    -> BEFORE UPDATE

    -> ON evidences FOR EACH ROW

    -> BEGIN

    ->  DECLARE error_msg VARCHAR(255);

    ->  SET error_msg = ('DNA SHOULD BE UNIQUE');

    ->  IF new.DNA = evidences.DNA THEN

    ->  SIGNAL SQLSTATE '45000'

    ->  SET MESSAGE_TEXT = error_msg;

    ->  END IF;

    -> END $$
```

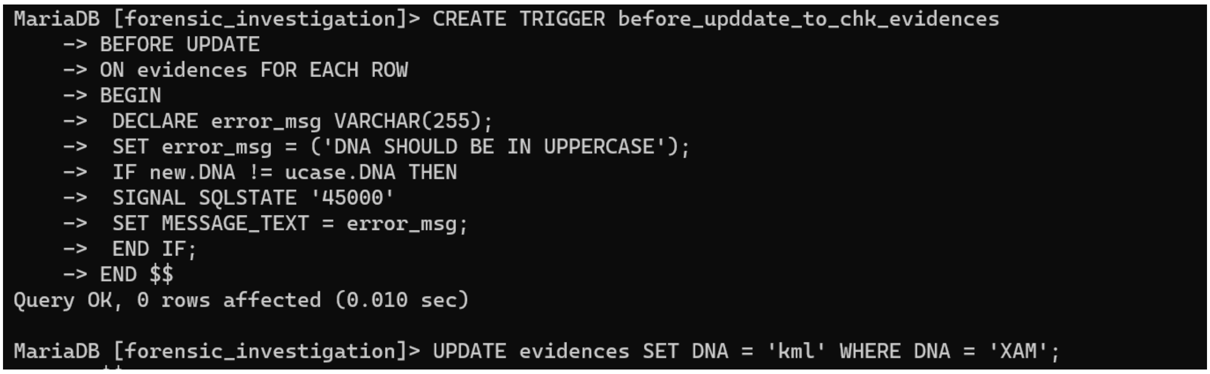


```
MariaDB [forensic_investigation]> CREATE TRIGGER before_upd_evidences
    -> BEFORE UPDATE
    -> ON evidences FOR EACH ROW
    -> BEGIN
    ->  DECLARE error_msg VARCHAR(255);
    ->  SET error_msg = ('DNA SHOULD BE UNIQUE');
    ->  IF new.DNA = evidences.DNA THEN
    ->  SIGNAL SQLSTATE '45000'
    ->  SET MESSAGE_TEXT = error_msg;
    ->  END IF;
    -> END $$
Query OK, 0 rows affected (0.006 sec)
```



```
MariaDB [forensic_investigation]> UPDATE evidences SET DNA = 'KML' WHERE DNA = 'KML';
    -> $$
ERROR 1644 (45000): DNA SHOULD BE UNIQUE
MariaDB [forensic_investigation]>
```

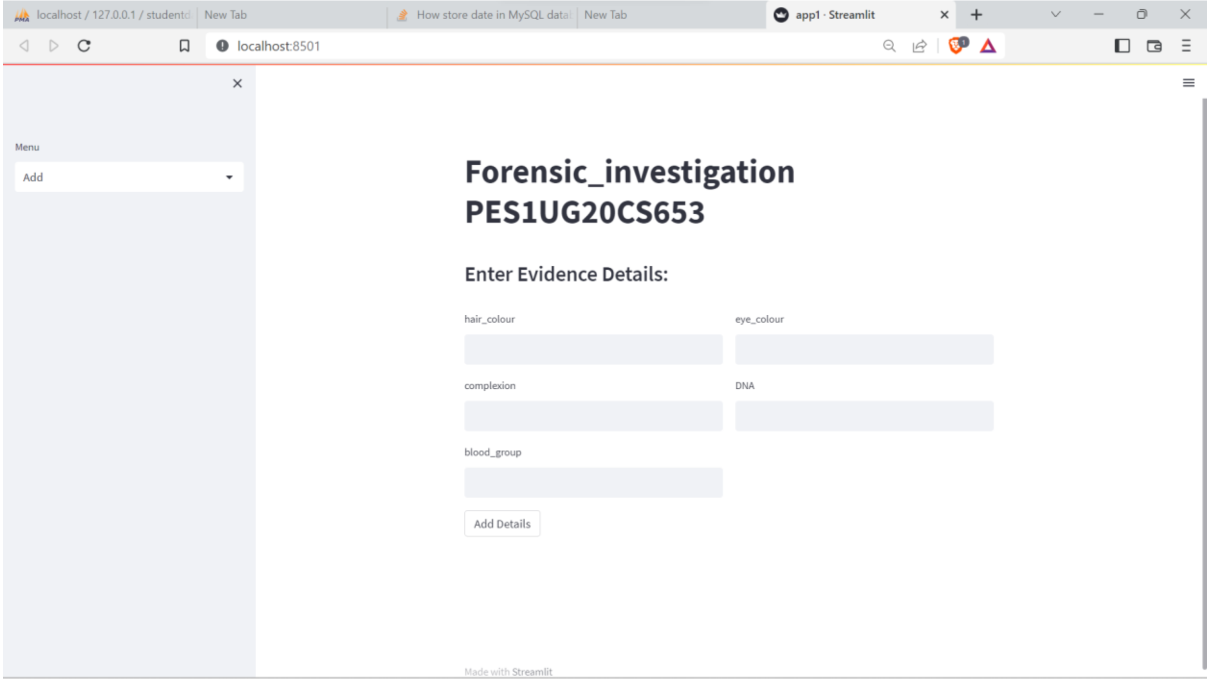
3.creating trigger to make sure that all DNA should be in uppercase:



```
MariaDB [forensic_investigation]> CREATE TRIGGER before_upddate_to_chk_evidences
    -> BEFORE UPDATE
    -> ON evidences FOR EACH ROW
    -> BEGIN
    ->  DECLARE error_msg VARCHAR(255);
    ->  SET error_msg = ('DNA SHOULD BE IN UPPERCASE');
    ->  IF new.DNA != ucase.DNA THEN
    ->  SIGNAL SQLSTATE '45000'
    ->  SET MESSAGE_TEXT = error_msg;
    ->  END IF;
    -> END $$
Query OK, 0 rows affected (0.010 sec)

MariaDB [forensic_investigation]> UPDATE evidences SET DNA = 'kml' WHERE DNA = 'XAM';
```

Frontend:

1. Addition, Modification and Deletion of records from any chosen table



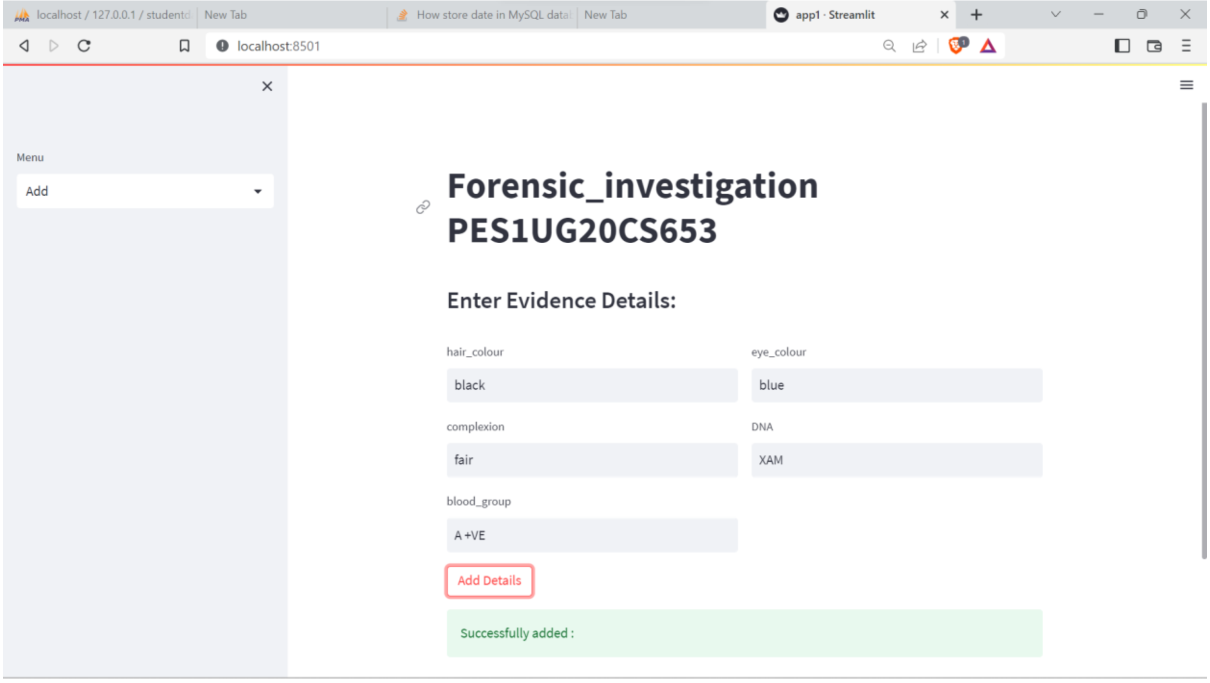
Forensic_investigation PES1UG20CS653

Enter Evidence Details:

hair_colour	eye_colour
complexion	DNA
blood_group	

Add Details

A frontend with which we can add table details.


localhost / 127.0.0.1 / studentd
New Tab
How store date in MySQL data
New Tab
app1 · Streamlit
localhost:8501
Menu
Add

Forensic_investigation PES1UG20CS653

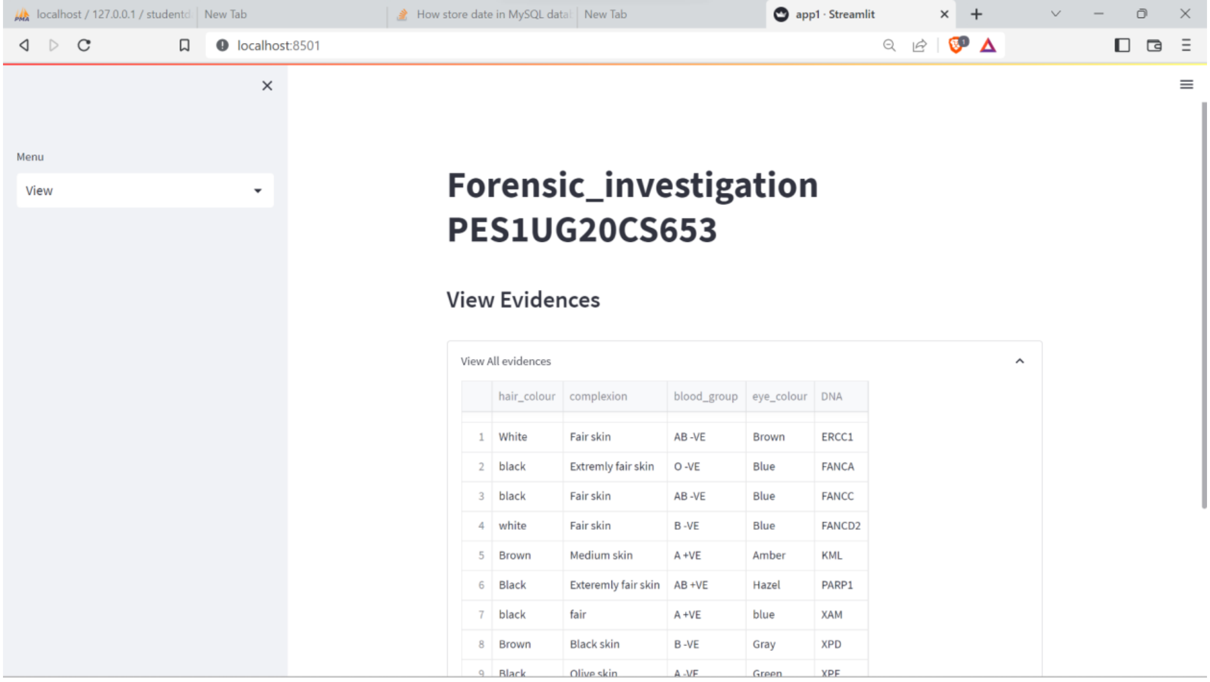
Enter Evidence Details:

hair_colour: black	eye_colour: blue
complexion: fair	DNA: XAM
blood_group: A +VE	

Add Details

Successfully added :

A frontend to view the attributes of the table:


localhost / 127.0.0.1 / studentd
New Tab
How store date in MySQL data
New Tab
app1 · Streamlit
localhost:8501

Menu

View

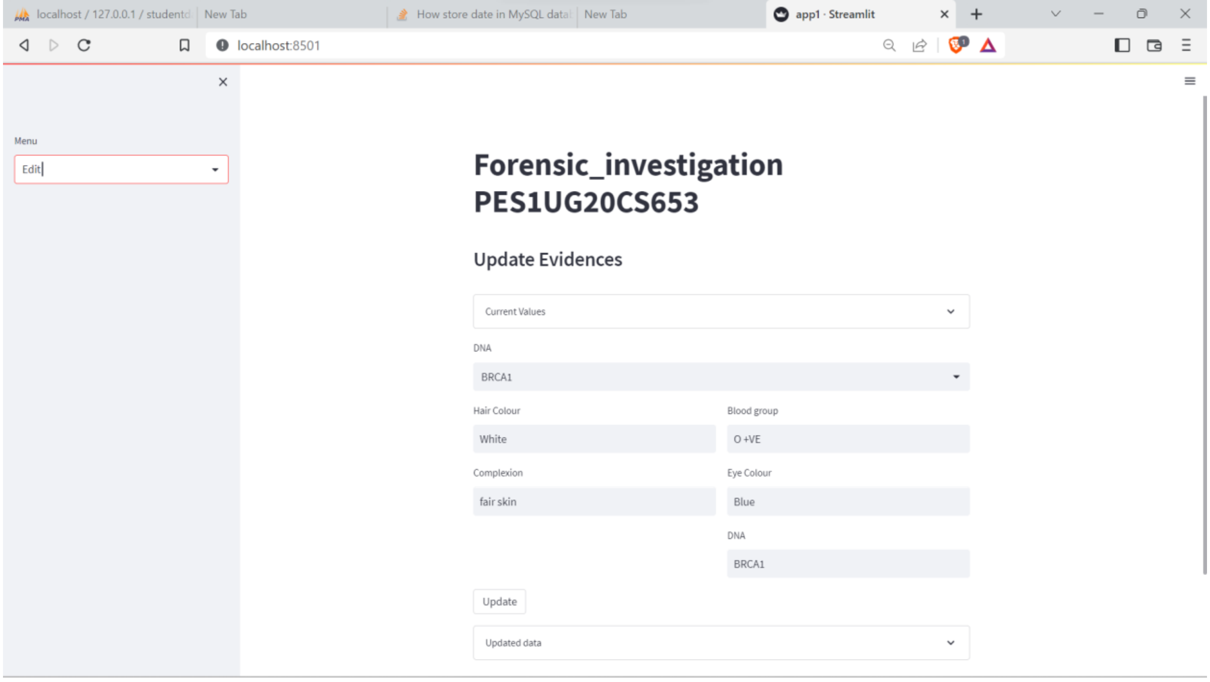
Forensic_investigation PES1UG20CS653

View Evidences

View All evidences

	hair_colour	complexion	blood_group	eye_colour	DNA
1	White	Fair skin	AB -VE	Brown	ERCC1
2	black	Extremly fair skin	O -VE	Blue	FANCA
3	black	Fair skin	AB -VE	Blue	FANCC
4	white	Fair skin	B -VE	Blue	FANCD2
5	Brown	Medium skin	A +VE	Amber	KML
6	Black	Exteremly fair skin	AB +VE	Hazel	PARP1
7	black	fair	A +VE	blue	XAM
8	Brown	Black skin	B -VE	Gray	XPD
9	Black	Olive skin	A -VE	Green	XPF

A frontend with which we can update the table details:


localhost / 127.0.0.1 / studentd
New Tab
How store date in MySQL data
New Tab
app1 · Streamlit
localhost:8501

Menu

Edit

Forensic_investigation PES1UG20CS653

Update Evidences

Current Values

DNA: BRCA1

Hair Colour: White

Blood group: O +VE

Complexion: fair skin

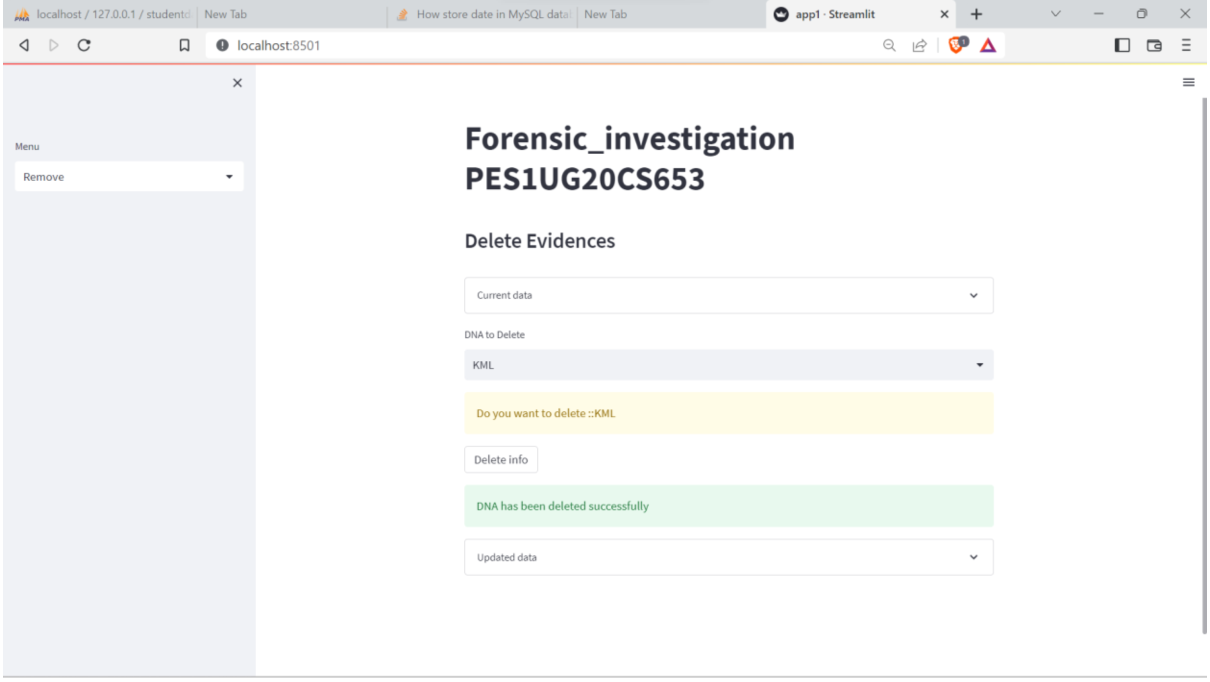
Eye Colour: Blue

DNA: BRCA1

Update

Updated data

A frontend with which we can delete rows from the table:



Menu
Remove

Forensic_investigation
PES1UG20CS653

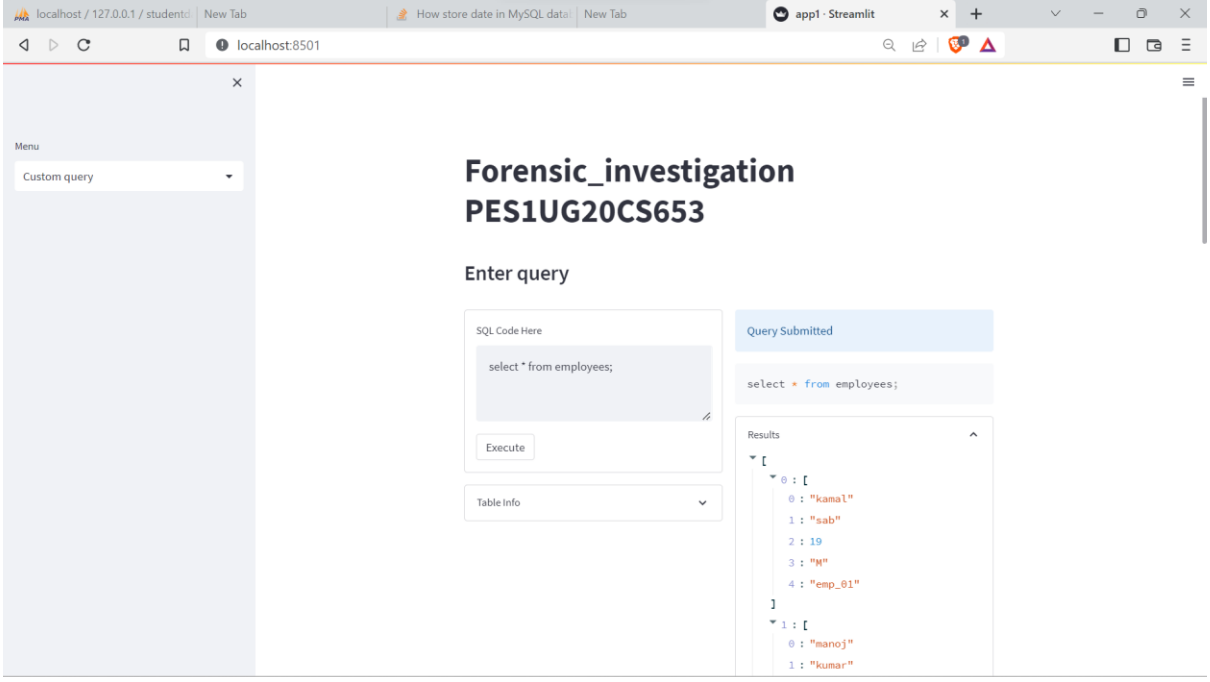
Delete Evidences

DNA to Delete
KML

Do you want to delete ::KML

DNA has been deleted successfully

A window which accepts custom query and displays the result:



Menu
Custom query

Forensic_investigation
PES1UG20CS653

Enter query

SQL Code Here

```
select * from employees;
```

Query Submitted

```
select * from employees;
```

Results

```
[
  0 : [
    0 : "kamal"
    1 : "sab"
    2 : 19
    3 : "M"
    4 : "emp_01"
  ]
  1 : [
    0 : "manoj"
    1 : "kumar"
```