Santa Ana College
CMPR114
m10 Ch 16 Databases + class exercise #8
Objectives:

- SQLite and Python

There are 7 print screens each worth 14.2%

Project 1 (Create a database and label it as **CustomerDB** then create the **Contacts** table below with a Primary key on the ContactID column). Use the *SQLite Studio Management* software.

Figure 14-3 The Contacts table with data entered

ContactID	Name	Phone
1	Katie Allen	555-1234
2	Jill Ammons	555-5678
3	Kevin Brown	555-9012
4	Elisa Garcia	555-3456
5	Jeff Jenkins	555-7890
6	Leo Killian	555-1122
7	Marcia Potemkin	555-3344
8	Kelsey Rose	555-5566

```
Create table Contacts
(ContactID int primary key,
 Name text not null,
 Phone text not null);

insert into Contacts
values
(1,'Katie Allen','555-1234'),
(2,'Jill Ammons','555-5678'),
(3,'Kevin Brown','555-9012'),
(4,'Elsa Garcia','555-3456'),
(5,'Jeff Jenkins','555-7890'),
(6,'Leo Killian','555-1122'),
(7,'Marcia Potemkin','555-3344')
(8,'Kelsey Rose','555-5566');

select * from Contacts;
```

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Project #2 (using Python to extract all names that end with the letter s) uses the like statement.

```
import sqlite3

con = sqlite3.connect("C:\\Users\\techi\\OneDrive - Rancho Santiago Community College Distr
cur = con.cursor()

cur.execute('''select * from Contacts where name like '%s' ''')
# Fetch the results of the SELECT statement.
results = cur.fetchall()

print ('ContactID  Name            Phone')
# Iterate over the rows and display the results.
for row in results:
 print(f'{row[0]:1}          {row[1]:1}     {row[2]:1}')

con.commit()
# Close the connection.
con.close()
```

Project #3 (Using Database Triggers)

A database trigger will execute, or fire based on the DML statements such as Delete, Insert and Update.

The company table will be used as the main table.

```
CREATE TABLE COMPANY(
  ID INT PRIMARY KEY     NOT NULL,
  NAME           TEXT    NOT NULL,
  AGE            INT     NOT NULL,
  ADDRESS        CHAR(50),
  SALARY         REAL);
```

The audit table will be used to transfer the data using the database trigger.

```
CREATE TABLE AUDIT(
   EMP_ID INT NOT NULL,
   ENTRY_DATE TEXT NOT NULL);
```

This trigger will transfer the data into the audit table from the company table after it is inserted into the company table.

```
CREATE TRIGGER audit_log AFTER INSERT
ON COMPANY
BEGIN
   INSERT INTO AUDIT(EMP_ID, ENTRY_DATE) VALUES (new.ID, datetime('now'));
END;
```

This is the syntax to enter new information.

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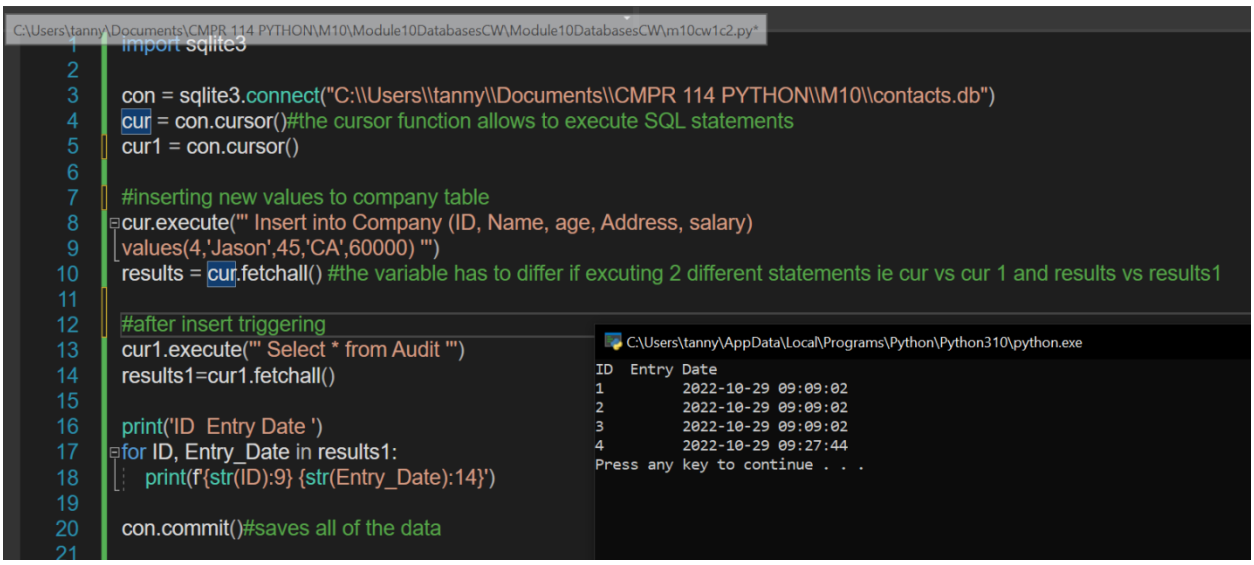
```
INSERT INTO COMPANY (ID,NAME,AGE,ADDRESS,SALARY)
VALUES (1, 'Paul', 32, 'California', 20000.00 ),
(2, 'Jake', 22, 'New Jersey', 40000.00 ),
(3, 'Jill', 42, 'Texas', 50000.00 );
```

To verify the information from the audit table.

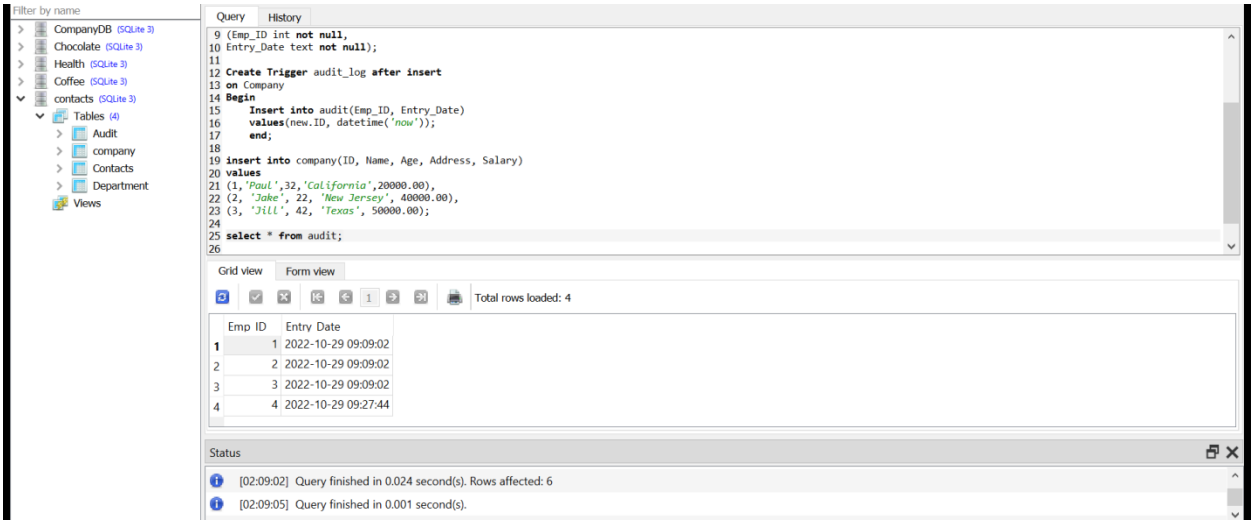
```
select * From audit;
```

Challenge Exercise #1: connect the company table to python and from the python, the application executes the trigger just created above.

#1 print screen the code with output on the python application below here



#2 on the SQLite studio, execute the select statement against the audit table to verify that the database trigger has worked. Print screen the output below here.



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Project #4 (Using Database Views), a database view is used to view and or read the data, and NOT update, delete, or insert data.

```
Create View ContactsView
as
select * from Contacts;

select * from ContactsView;
```

Try to use the delete statement to delete a row from the view.

```
delete from ContactsView where ContactID=1;
```

Notice, we get the following error below, because a view is used for read-only purposes.

[22:05:13] Error while executing SQL query on database 'CustomersDBNew': cannot modify ContactsView because it is a view

Project #5 (Using the Update, Delete Statements, and the Alter command)

```
delete from Contacts where contactID=1;
```

Deleting from a range

```
delete from Contacts where contactID >=6;
```

Using the update statement

```
update contacts set Name = 'Jason Sim' where ContactID = 5;
```

Using the Alter Statement to add a column

```
Alter table contacts
add column gender text;
```

Challenge Exercise #2: Using the update statement, update the gender column with either M or F.

#3 print screen the updated SQL code with the output below here.

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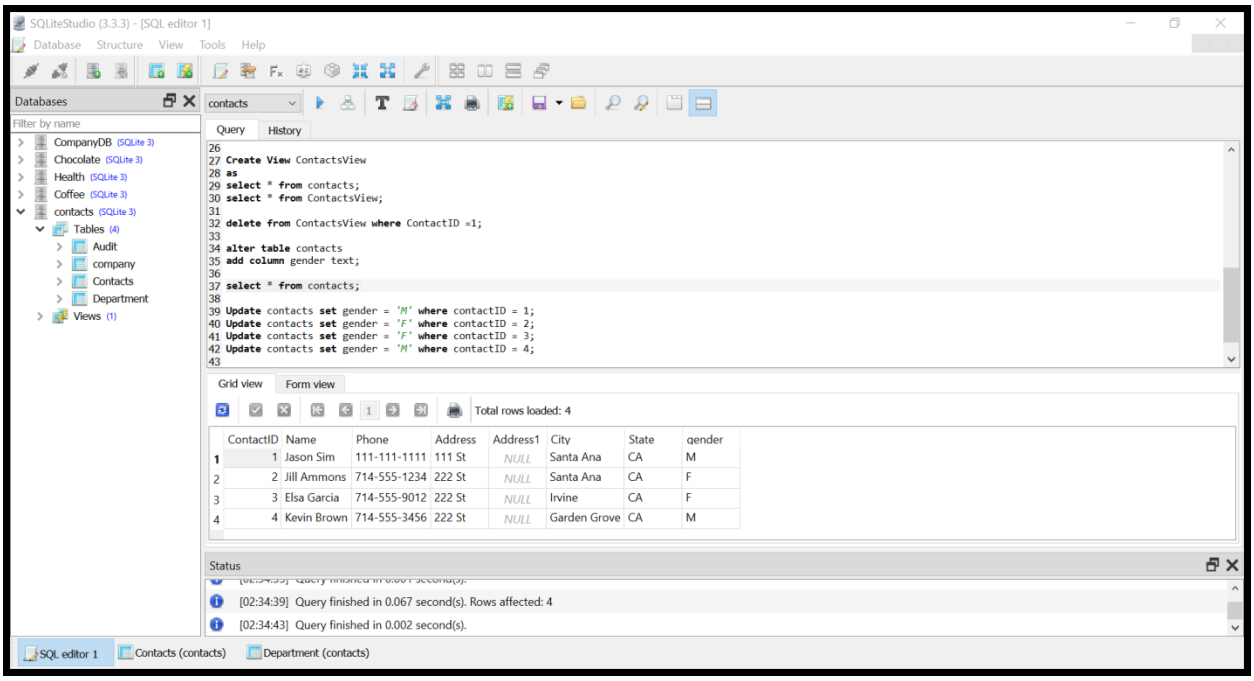

Challenge Exercise #3: Using the SQL script design the following employee data table below, and then enter the information using the SQL script.

Figure 14-6 Employee Data

Employee ID	Name	Position	Department	City
1	Arlene Meyers	Director	Research and Development	San Jose
2	Janelle Grant	Engineer	Manufacturing	Austin
3	Jack Smith	Manager	Marketing	New York City
4	Sonia Alvarado	Auditor	Accounting	Boston
5	Renee Kincaid	Designer	Marketing	New York City
6	Curt Green	Supervisor	Manufacturing	Austin

#4 print screen the create and insert SQL code with the output below here. Be sure to execute the select command to show the data in the table.

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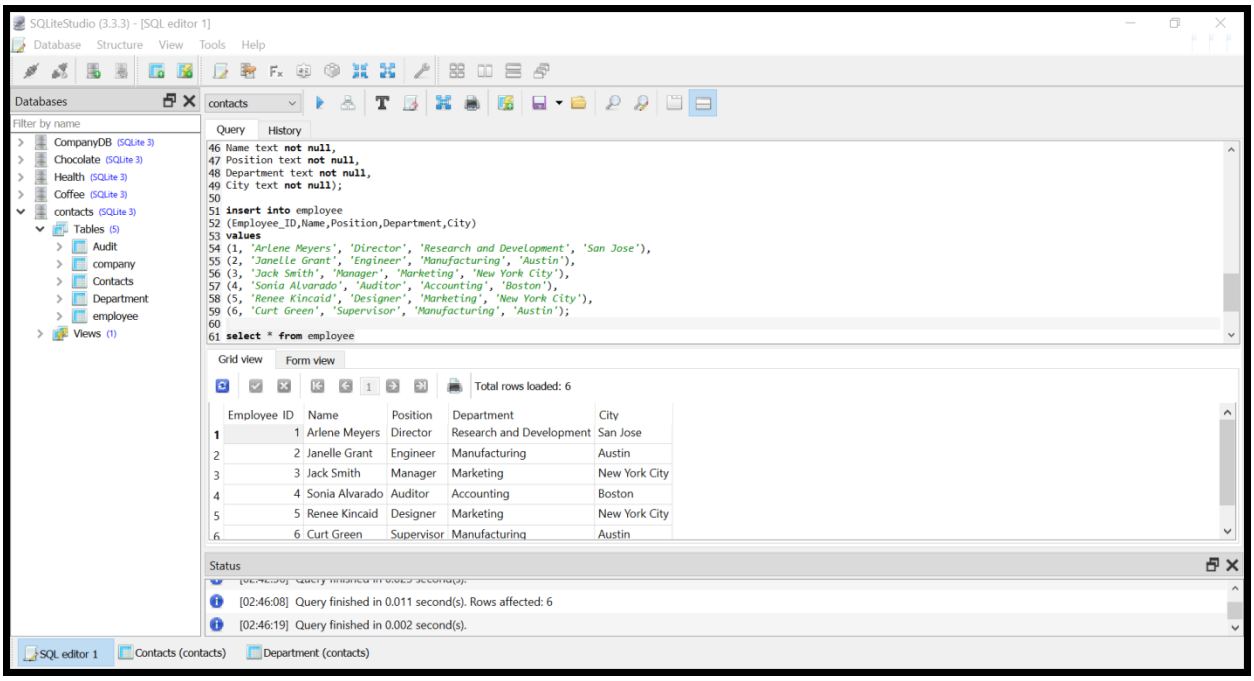
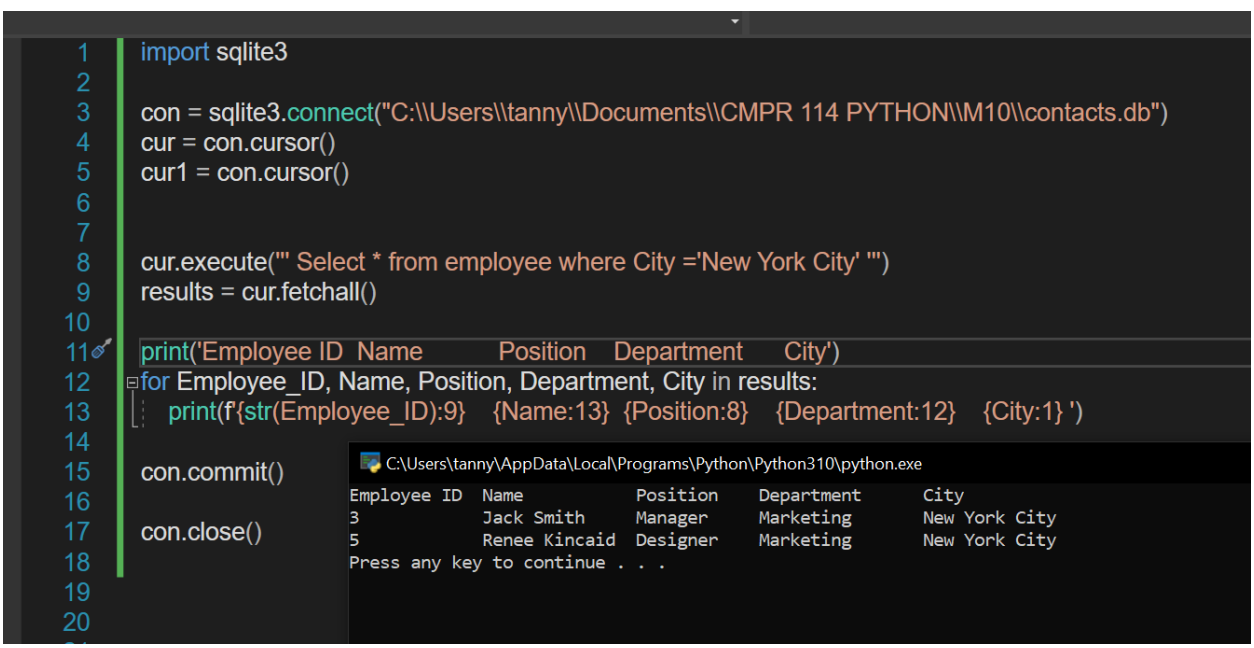


Challenge Exercise #4: Create a new python application and extract all employees who live in New York City. Be sure to extract all the rows with columns.

#5 Print screen below here.



Extract employee id greater than 3 and above. Be sure to extract all the rows with columns.

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#6 Print screen below here.

```python
import sqlite3

con = sqlite3.connect("C:\\Users\\tanny\\Documents\\CMPR 114 PYTHON\\M10\\contacts.db")
cur = con.cursor()
cur1 = con.cursor()

cur.execute(''' Select * from employee where City ='New York City' ''')
results = cur.fetchall()

cur1.execute(''' Select * from employee
where Employee_ID > 3; ''')
results1 =cur1.fetchall()

print('Employee ID  Name          Position      Department      City')
#for Employee_ID, Name, Position, Department, City in results:
    #print(f'{str(Employee_ID):9}   {Name:13}  {Position:8}   {Department:12}   {City:1} ')

for Employee_ID, Name,Position, Department, City in results1:
    print(f'{str(Employee_ID):9}   {Name:14}  {Position:10}   {Department:13}   {City:1} ')

con.commit()
```

No issues found

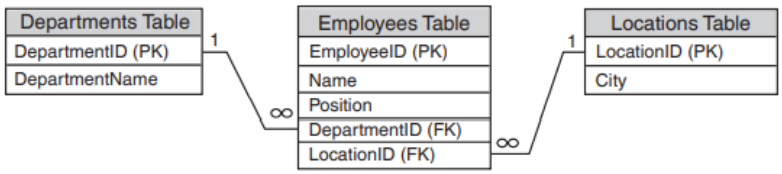
Autos Locals Watch 1

C:\Users\tanny\AppData\Local\Programs\Python\Python310\python.exe

```
Employee ID  Name            Position      Department      City
4            Sonia Alvarado  Auditor       Accounting      Boston
5            Renee Kincaid   Designer      Marketing       New York City
6            Curt Green      Supervisor    Manufacturing   Austin
Press any key to continue . . .
```

Challenge Exercise #5: Using SQL creates the relationship as shown in the diagram below.

Figure 14-7 Entity Relationship Diagram



Then enter the information as shown in the diagram below.

Figure 14-8 Contents of the `employees.db` database before a new employee is added

Employees Table

EmployeeID	Name	Position	DepartmentID	LocationID
1	Arlene Meyers	Director	4	4
2	Janelle Grant	Engineer	2	1
3	Jack Smith	Manager	3	3
4	Sonia Alvarado	Auditor	1	2
5	Renee Kincaid	Designer	3	3
6	Curt Green	Supervisor	2	1

Departments Table

DepartmentID	DepartmentName
1	Accounting
2	Manufacturing
3	Marketing
4	Research and Development

Locations Table

LocationID	City
1	Austin
2	Boston
3	New York City
4	San Jose

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Then join the three tables and print the screen below.

#7 print screen all the SQL scripts below here.

```sql
create table Department2
(DepartmentID int primary key,
DepartmentName text not null);

create table Location
(LocationID int primary key,
City text not null);

create table Employee2
(EmployeeID int primary key,
Name text not null,
Position text not null,
DepartmentID int not null,
LocationID int not null,
Constraint DepartmentID_FK foreign key (DepartmentID)
references Department2 (DepartmentID),
Constraint LocationID_FK foreign key (LocationID)
references Location (LocationID));

insert into Employee2
(EmployeeID,Name,Position,DepartmentID,LocationID)
values
(1, 'Arlene Meyers','Director',4,4),
(2, 'Janelle Grant','Engineer',2,1),
(3, 'Jack Smith','Manager',3,3),
(4, 'Sonia Alvarado','Auditor',1,2),
(5, 'Renee Kincaid','Designer',3,3),
(6, 'Curt Green','Supervisor',2,1);

insert into Department2
(DepartmentID,DepartmentName)
values
(1,'Accounting'),
(2,'Maufacturing'),
(3,'Marketing'),
(4,'Research and Development');

insert into Location
(LocationID, City)
values
(1, 'Austin'),
(2,'Boston'),
(3,'New York City'),
(4,'San Jose');

select Location.LocationID,City, Department2.DepartmentID, DepartmentName,EmployeeID,Name,Position,Employee2.DepartmentID, Employee2.LocationID
from Location,Department2,Employee2
where Location.LocationID = Employee2.LocationID and Department2.DepartmentID = Employee2.DepartmentID;
```

Grid view | Form view

Total rows loaded: 6

	LocationI	City	DepartmentID	DepartmentName	Employee	Name	Position	DepartmentID:1	LocationID:1
1	4	San Jose	4	Research and Development	1	Arlene Meyers	Director	4	4
2	1	Austin	2	Maufacturing	2	Janelle Grant	Engineer	2	1
3	3	New York City	3	Marketing	3	Jack Smith	Manager	3	3
4	2	Boston	1	Accounting	4	Sonia Alvarado	Auditor	1	2
5	3	New York City	3	Marketing	5	Renee Kincaid	Designer	3	3
6	1	Austin	2	Maufacturing	6	Curt Green	Supervisor	2	1

Status

[03:36:43] Query finished in 0.030 second(s). Rows affected: 6

[03:42:55] Query finished in 0.001 second(s).

Submit this document to the Module 10 class exercise.