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DSC450
01/31/21
HW 4

Part 1
A)

```
-- Drop all the tables to clean up
DROP TABLE Handles;
DROP TABLE Animal;
DROP TABLE ZooKeeper;

CREATE TABLE ZooKeeper
(
  ZID       NUMBER(3,0),
  ZName      VARCHAR2(25) NOT NULL,
  HourlyRate NUMBER(6, 2) NOT NULL,

  CONSTRAINT ZooKeeper_PK
    PRIMARY KEY(ZID)
);


-- ACategory: Animal category 'common', 'rare', 'exotic'.  May be NULL
-- TimeToFeed: Time it takes to feed the animal (hours)
CREATE TABLE Animal
(
  AID      NUMBER(3, 0),
  AName     VARCHAR(30) NOT NULL,
  ACategory VARCHAR(18),

  TimeToFeed NUMBER(4,2),

  CONSTRAINT Animal_PK
   PRIMARY KEY(AID)
);

CREATE TABLE Handles
(
  ZooKeepID     NUMBER(3,0),
  AnimalID    NUMBER(3,0),

  Assigned    DATE,
```

```
  CONSTRAINT Handles_PK
    PRIMARY KEY(ZooKeepID, AnimalID),

  CONSTRAINT Handles_FK1
    FOREIGN KEY(ZooKeepID)
      REFERENCES ZooKeeper(ZID),

  CONSTRAINT Handles_FK2
    FOREIGN KEY(AnimalID)
      REFERENCES Animal(AID)
);

INSERT INTO ZooKeeper VALUES (1, 'Jim Carrey', 500);
INSERT INTO ZooKeeper VALUES (2, 'Tina Fey', 350);
INSERT INTO ZooKeeper VALUES (3, 'Rob Schneider', 250);

INSERT INTO Animal VALUES(1, 'Galapagos Penguin', 'exotic', 0.5);
INSERT INTO Animal VALUES(2, 'Emperor Penguin', 'rare', 0.75);

INSERT INTO Animal VALUES(3, 'Sri Lankan sloth bear', 'exotic', 2.5);
INSERT INTO Animal VALUES(4, 'Grizzly bear', 'common', 3.0);
INSERT INTO Animal VALUES(5, 'Giant Panda bear', 'exotic', 1.5);
INSERT INTO Animal VALUES(6, 'Florida black bear', 'rare', 1.75);

INSERT INTO Animal VALUES(7, 'Siberian tiger', 'rare', 3.5);
INSERT INTO Animal VALUES(8, 'Bengal tiger', 'common', 2.75);
INSERT INTO Animal VALUES(9, 'South China tiger', 'exotic', 2.25);

INSERT INTO Animal VALUES(10, 'Alpaca', 'common', 0.25);
INSERT INTO Animal VALUES(11, 'Llama', NULL, 3.5);



INSERT INTO Handles VALUES(1, 1, '01-Jan-2000');
INSERT INTO Handles VALUES(1, 2, '02-Jan-2000');
INSERT INTO Handles VALUES(1, 10, '01-Jan-2000');

INSERT INTO Handles VALUES(2, 3, '02-Jan-2000');
INSERT INTO Handles VALUES(2, 4, '04-Jan-2000');
INSERT INTO Handles VALUES(2, 5, '03-Jan-2000');

INSERT INTO Handles VALUES(3, 7, '01-Jan-2000');
INSERT INTO Handles VALUES(3, 8, '03-Jan-2000');
INSERT INTO Handles VALUES(3, 9, '05-Jan-2000');
```

```
INSERT INTO Handles Values(3, 10,'04-Jan-2000');

SELECT * FROM Zookeeper;

SELECT * FROM Animal;

SELECT * FROM Handles;

SELECT AName, TimeToFeed
FROM Animal
WHERE ACategory = 'rare'
ORDER BY TimeToFeed;

SELECT AName, ACategory
FROM Animal
WHERE AName LIKE '%bear';

SELECT AName
FROM Animal
WHERE AName LIKE '%tiger' AND ACategory != 'common';

SELECT AName
FROM Animal
WHERE AName NOT LIKE '%tiger';

SELECT AName, ZooKeepID
FROM Animal, Handles
WHERE Animal.AID = Handles.AnimalID;

SELECT AName, ZooKeepID
FROM Animal LEFT OUTER JOIN Handles ON Animal.AID = Handles.AnimalID;

SELECT ZName, SUM(TimeToFeed)
FROM Zookeeper INNER JOIN Handles ON Zookeeper.ZID = Handles.ZooKeepID
JOIN Animal ON Animal.AID = Handles.AnimalID
GROUP BY ZName;

SELECT Assigned, ZName, AName
FROM Zookeeper INNER JOIN Handles ON Zookeeper.ZID = Handles.ZooKeepID
JOIN Animal ON Animal.AID = Handles.AnimalID
ORDER BY Assigned;
```

```
114 SELECT ZName, SUM(TimeToFeed)
115 FROM Zookeeper INNER JOIN Handles ON Zookeeper.ZID = Handles.ZooKeepID
116 JOIN Animal ON Animal.AID = Handles.AnimalID
117 GROUP BY ZName;
118
119 SELECT Assigned, ZName, AName
120 FROM Zookeeper INNER JOIN Handles ON Zookeeper.ZID = Handles.ZooKeepID
121 JOIN Animal ON Animal.AID = Handles.AnimalID
122 ORDER BY Assigned;
123
```

Script Output | Query Result

SQL | All Rows Fetched: 3 in 0.017 seconds

	ZNAME	SUM(TIMETOFEED)
1	Tina Fey	7
2	Jim Carrey	1.5
3	Rob Schneider	8.75

```
119 SELECT Assigned, ZName, AName
120 FROM Zookeeper INNER JOIN Handles ON Zookeeper.ZID = Handles.ZooKeepID
121 JOIN Animal ON Animal.AID = Handles.AnimalID
122 ORDER BY Assigned;
123
```

Script Output | Query Result

SQL | All Rows Fetched: 10 in 0.021 seconds

	ASSIGNED	ZNAME	ANAME
1	01-JAN-00	Jim Carrey	Galapagos Penguin
2	01-JAN-00	Jim Carrey	Alpaca
3	01-JAN-00	Rob Schneider	Siberian tiger
4	02-JAN-00	Jim Carrey	Emperor Penguin
5	02-JAN-00	Tina Fey	Sri Lankan sloth bear
6	03-JAN-00	Tina Fey	Giant Panda bear
7	03-JAN-00	Rob Schneider	Bengal tiger
8	04-JAN-00	Tina Fey	Grizzly bear
9	04-JAN-00	Rob Schneider	Alpaca
10	05-JAN-00	Rob Schneider	South China tiger

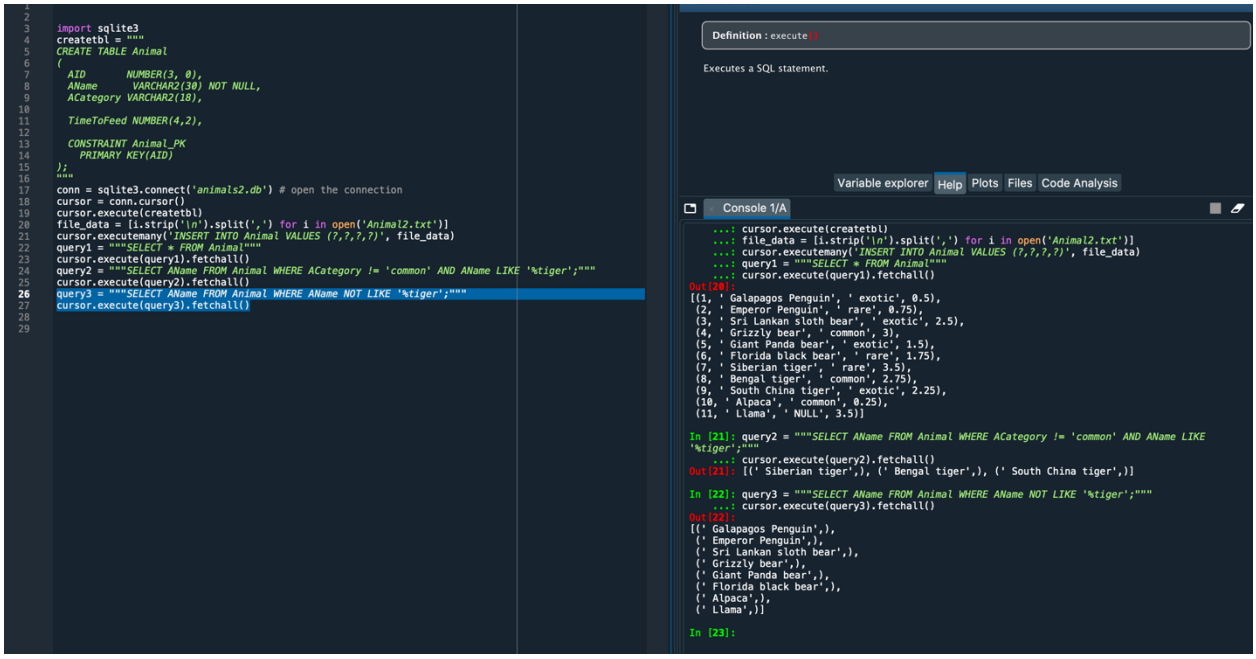
B)

```
import sqlite3
createtbl = """
CREATE TABLE Animal
(
 AID      NUMBER(3, 0),
 AName     VARCHAR2(30) NOT NULL,
 ACategory VARCHAR2(18),

 TimeToFeed NUMBER(4,2),

 CONSTRAINT Animal_PK
  PRIMARY KEY(AID)
);
"""
```

```
conn = sqlite3.connect('animals2.db') # open the connection
cursor = conn.cursor()
cursor.execute(createtbl)
file_data = [i.strip('\n').split(',') for i in open('Animal2.txt')]
cursor.executemany('INSERT INTO Animal VALUES (?,?,?,?)', file_data)
query1 = """SELECT * FROM Animal"""
cursor.execute(query1).fetchall()
query2 = """SELECT AName FROM Animal WHERE ACategory != 'common' AND AName LIKE
'%tiger';"""
cursor.execute(query2).fetchall()
query3 = """SELECT AName FROM Animal WHERE AName NOT LIKE '%tiger';"""
cursor.execute(query3).fetchall()
```



PART 2

A).

B)

CREATE TABLE Name

(

```
  FIRST       VARCHAR2(20),
  LAST       VARCHAR2(25),
  ADDRESS    VARCHAR2(35),

  CONSTRAINT Name_PK
     PRIMARY KEY(FIRST, LAST)
);

CREATE TABLE Position
(
  Job       VARCHAR2(20),
  Salary    NUMBER(7),
  Assistant VARCHAR2(25),

  CONSTRAINT Position_PK
    PRIMARY KEY(Job)
);

CREATE TABLE Connection
(
  Job       VARCHAR2(20),
  FIRST      VARCHAR2(20),
  LAST      VARCHAR2(25),

  CONSTRAINT Connection_PK
    PRIMARY KEY(Job, FIRST, LAST),

  CONSTRAINT Name_FK1
    FOREIGN KEY(FIRST, LAST)
      REFERENCES Name(FIRST, LAST),

  CONSTRAINT Position_FK2
    FOREIGN KEY(Job)
      REFERENCES Position(Job)
);
```

C)

```
import sqlite3

createtbl1 = """CREATE TABLE Name
(
  FIRST       VARCHAR2(20),
  LAST       VARCHAR2(25),
```

```
  ADDRESS    VARCHAR2(35),

  CONSTRAINT Name_PK
    PRIMARY KEY(FIRST, LAST)
);"""

createtbl2 = """CREATE TABLE Position
(
  Job      VARCHAR2(20),
  Salary    NUMBER(7),
  Assistant VARCHAR2(25),

  CONSTRAINT Position_PK
    PRIMARY KEY(Job)
);"""

createtbl3 = """CREATE TABLE Connection
(
  Job       VARCHAR2(20),
  FIRST     VARCHAR2(20),
  LAST      VARCHAR2(25),

  CONSTRAINT Connection_PK
    PRIMARY KEY(Job, FIRST, LAST),

  CONSTRAINT Name_FK1
    FOREIGN KEY(FIRST, LAST)
      REFERENCES Name(FIRST, LAST),

  CONSTRAINT Position_FK2
    FOREIGN KEY(Job)
      REFERENCES Position(Job)
);"""


conn = sqlite3.connect('dsc450_3.db') # open the connection
cursor = conn.cursor()
cursor.execute(createtbl1)
cursor.execute(createtbl2)
cursor.execute(createtbl3)
with open('data_module4_part2.txt') as fp:
    first, second, third, fourth, fifth, sixth = zip(*[line.rstrip().split(',') for line in fp])
cursor.execute("INSERT OR IGNORE INTO Name VALUES(?, ?, ?)", ['John', 'Smith', '111 N.
Wabash Avenue']);
```

```
cursor.execute("INSERT OR IGNORE INTO Name VALUES(?, ?, ?)", ['Jane', 'Doe', '243 S. Wabash Avenue']);
cursor.execute("INSERT OR IGNORE INTO Name VALUES(?, ?, ?)", ['Mike', 'Jackson', '1 Michigan Avenue']);
cursor.execute("INSERT OR IGNORE INTO Name VALUES(?, ?, ?)", ['Mary', 'Who', '20 S. Michigan Avenue']);
query1 = """SELECT * FROM Name"""
cursor.execute(query1).fetchall()
cursor.execute("INSERT OR IGNORE INTO Position VALUES(?, ?, ?)", ['Plumber', '40000', 'NULL']);
cursor.execute("INSERT OR IGNORE INTO Position VALUES(?, ?, ?)", ['Bouncer', '35000', 'NULL']);
cursor.execute("INSERT OR IGNORE INTO Position VALUES(?, ?, ?)", ['Waitress', '50000', 'Yes']);
cursor.execute("INSERT OR IGNORE INTO Position VALUES(?, ?, ?)", ['Accountant', '42000', 'Yes']);
cursor.execute("INSERT OR IGNORE INTO Position VALUES(?, ?, ?)", ['Bouncer', '35000', 'NULL']);
cursor.execute("INSERT OR IGNORE INTO Position VALUES(?, ?, ?)", ['Accountant', '42000', 'Yes']);
cursor.execute("INSERT OR IGNORE INTO Position VALUES(?, ?, ?)", ['Plumber', '40000', 'NULL']);
cursor.execute("INSERT OR IGNORE INTO Position VALUES(?, ?, ?)", ['Accountant', 'NULL', 'Yes']);
cursor.execute("INSERT OR IGNORE INTO Position VALUES(?, ?, ?)", ['Risk Analyst', '80000', 'Yes']);
query2 = """SELECT * FROM Position"""
cursor.execute(query2).fetchall()
cursor.execute("INSERT OR IGNORE INTO Connection VALUES(?, ?, ?)", ['John', 'Smith', 'Plumber']);
cursor.execute("INSERT OR IGNORE INTO Connection VALUES(?, ?, ?)", ['John', 'Smith', 'Bouncer']);
cursor.execute("INSERT OR IGNORE INTO Connection VALUES(?, ?, ?)", ['Jane', 'Doe', 'Waitress']);
cursor.execute("INSERT OR IGNORE INTO Connection VALUES(?, ?, ?)", ['Jane', 'Doe', 'Accountant']);
cursor.execute("INSERT OR IGNORE INTO Connection VALUES(?, ?, ?)", ['Jane', 'Doe', 'Bouncer']);
cursor.execute("INSERT OR IGNORE INTO Connection VALUES(?, ?, ?)", ['Mike', 'Jackson', 'Accountant']);
cursor.execute("INSERT OR IGNORE INTO Connection VALUES(?, ?, ?)", ['Mike', 'Jackson', 'Plumber']);
cursor.execute("INSERT OR IGNORE INTO Connection VALUES(?, ?, ?)", ['Mary', 'Who', 'Accountant']);
cursor.execute("INSERT OR IGNORE INTO Connection VALUES(?, ?, ?)", ['Mary', 'Who', 'Risk Analyst']);
query3 = """SELECT * FROM Connection"""
```

```
cursor.execute(query3).fetchall()
```