1.

a. **Why is a combination of columns used as the primary key in table flights but a single column is a primary key in table aircraft?**
The data table for flights uses a combination of columns for the primary key because there is not a single column that has unique rows while the data table for aircrafts has a column “Aircraft” in which every row is unique.

b. **Can you come up with your primary key for the flights table?**

```
[28] # creates table with my own primary key
     q = """CREATE TABLE IF NOT EXISTS flights
     (Depart_Time TEXT, Origin TEXT, Arrival_Time TEXT, Destination
     TEXT, Flight TEXT, Aircraft TEXT, Stops TEXT, hours INTEGER,
     minutes INTEGER, duration REAL, codeshare INTEGER,
     PRIMARY KEY(Origin, Flight));"""
     cursor.execute(q)
     con.commit()
```

```
# transferring data to table
data = pd.read_csv('flights-2.csv')
data.to_sql('flights', con, if_exists='append', index=False)
```

2. **Select the top > 3 rows from the table flight from origin airport “X”**

a. **Display output in ascending order by departure time**

b. **Display output in descending order by departure time**

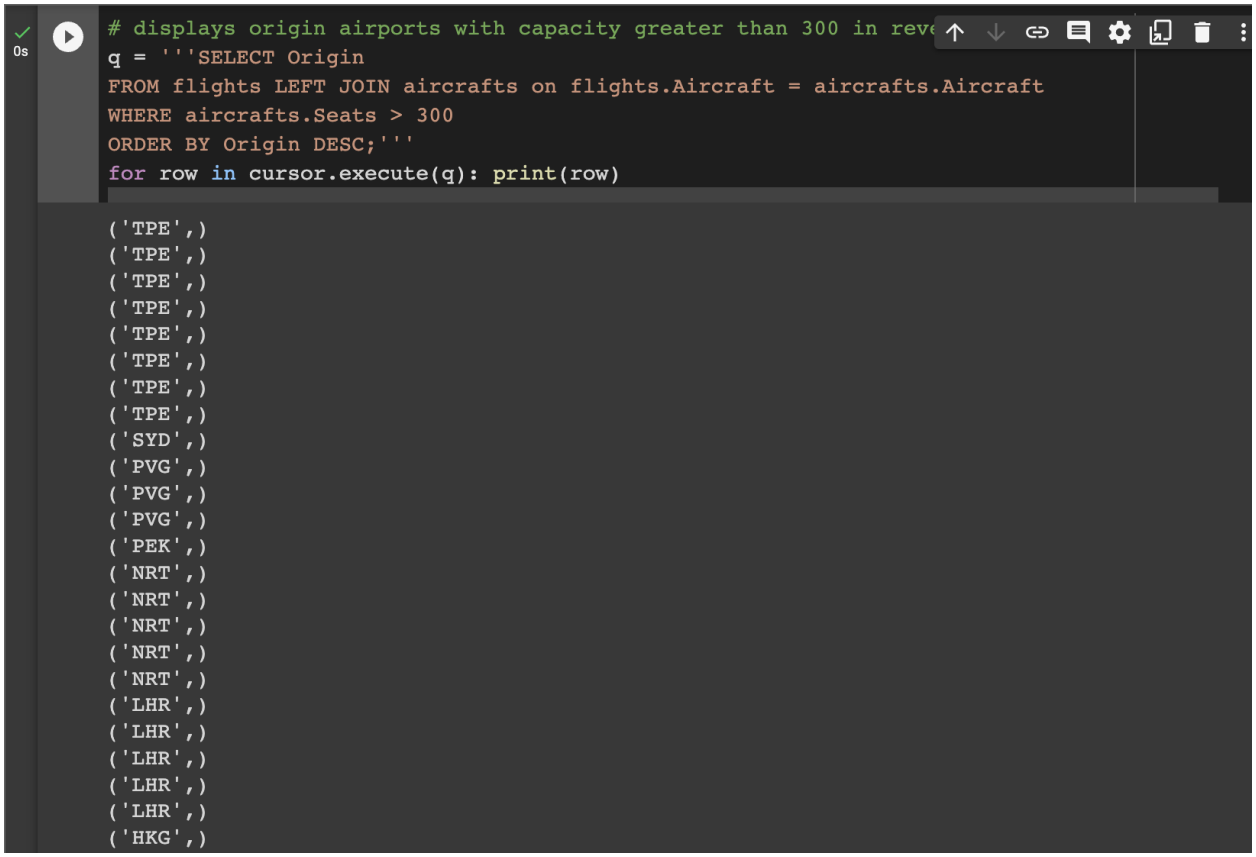
```
[34] # displays top 8 rows from flights that are from origin aiport "BOS"
     # presents them in ascending order
     q = '''SELECT * FROM flights WHERE Origin = 'BOS' ORDER BY Depart_Time ASC LIMIT 8;'''
     for row in cursor.execute(q): print(row)
```

```
('11:04', 'BOS', '14:39', 'SFO', 'NZ 9507 ', '752', 'Non-Stop', 6, 35, 6.58, 1)
('11:04', 'BOS', '14:39', 'SFO', 'UA 177 ', '752', 'Non-Stop', 6, 35, 6.58, None)
('11:04', 'BOS', '14:39', 'SFO', 'US 6337 ', '752', 'Non-Stop', 6, 35, 6.58, 1)
('17:58', 'BOS', '21:28', 'SFO', 'NZ 9509 ', '752', 'Non-Stop', 6, 30, 6.5, 1)
('17:58', 'BOS', '21:28', 'SFO', 'UA 179 ', '752', 'Non-Stop', 6, 30, 6.5, None)
('17:58', 'BOS', '21:28', 'SFO', 'US 6339 ', '752', 'Non-Stop', 6, 30, 6.5, 1)
('19:30', 'BOS', '23:05', 'SFO', 'AA 197 ', '757', 'Non-Stop', 6, 35, 6.58, None)
('19:30', 'BOS', '23:05', 'SFO', 'AS 1080 ', '757', 'Non-Stop', 6, 35, 6.58, 1)
```

```
# displays top 8 rows from flights that are from origin aiport "BOS"
# presents them in descending order
q = '''SELECT * FROM flights WHERE Origin = 'BOS' ORDER BY Depart_Time DESC LIMIT 8;'''
for row in cursor.execute(q): print(row)
```

```
('9:30', 'BOS', '15:12', 'SFO', 'UA 217 ', '752', '1', 8, 42, 8.7, None)
('8:40', 'BOS', '12:15', 'SFO', 'AA 183 ', '757', 'Non-Stop', 6, 35, 6.58, None)
('8:40', 'BOS', '12:15', 'SFO', 'AS 1269 ', '757', 'Non-Stop', 6, 35, 6.58, 1)
('8:40', 'BOS', '12:15', 'SFO', 'QF 3016 ', '757', 'Non-Stop', 6, 35, 6.58, 1)
('7:54', 'BOS', '11:29', 'SFO', 'NZ 9503 ', '752', 'Non-Stop', 6, 35, 6.58, 1)
('7:54', 'BOS', '11:29', 'SFO', 'UA 173 ', '752', 'Non-Stop', 6, 35, 6.58, None)
('7:54', 'BOS', '11:29', 'SFO', 'US 6335 ', '752', 'Non-Stop', 6, 35, 6.58, 1)
('6:25', 'BOS', '10:00', 'SFO', 'NZ 9501 ', '752', 'Non-Stop', 6, 35, 6.58, 1)
```

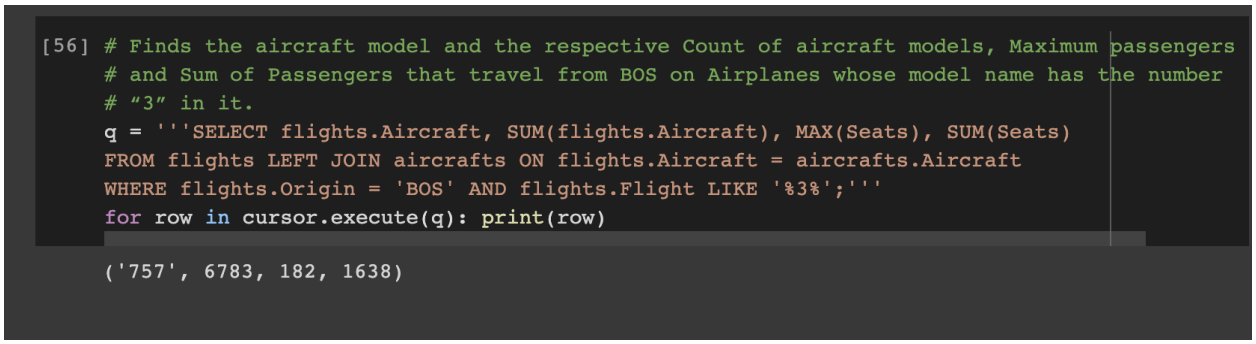
3. Find the origin airports with capacity > “X”. Display in reverse alphabetical order.



```
# displays origin airports with capacity greater than 300 in reve
q = '''SELECT Origin
FROM flights LEFT JOIN aircrafts on flights.Aircraft = aircrafts.Aircraft
WHERE aircrafts.Seats > 300
ORDER BY Origin DESC;'''
for row in cursor.execute(q): print(row)
```

```
('TPE',)
('TPE',)
('TPE',)
('TPE',)
('TPE',)
('TPE',)
('TPE',)
('TPE',)
('SYD',)
('PVG',)
('PVG',)
('PVG',)
('PEK',)
('NRT',)
('NRT',)
('NRT',)
('NRT',)
('NRT',)
('LHR',)
('LHR',)
('LHR',)
('LHR',)
('LHR',)
('HKG',)
```

4. Find the aircraft model and the respective Count of aircraft models, Maximum passengers, and Sum of Passengers that travel from “X” on Airplanes whose model name has the number “3” in it.



```
[56] # Finds the aircraft model and the respective Count of aircraft models, Maximum passengers
     # and Sum of Passengers that travel from BOS on Airplanes whose model name has the number
     # “3” in it.
     q = '''SELECT flights.Aircraft, SUM(flights.Aircraft), MAX(Seats), SUM(Seats)
     FROM flights LEFT JOIN aircrafts ON flights.Aircraft = aircrafts.Aircraft
     WHERE flights.Origin = 'BOS' AND flights.Flight LIKE '%3%';'''
     for row in cursor.execute(q): print(row)
```

```
('757', 6783, 182, 1638)
```