Population (One Table)

Unique Keys

```
SELECT *
FROM population
```

```
SELECT townName, Total
FROM population
```

```
SELECT townName, Total
FROM population
WHERE total > 50000
```

```
SELECT townName, Total
FROM population
WHERE total > 50000
ORDER BY total DESC
```

```
SELECT COUNT(*)
FROM population
WHERE total > 50000
ORDER BY total DESC
```

```
SELECT SUM(total)
FROM population
WHERE total > 50000
ORDER BY total DESC
```

```
SELECT townName, total
FROM population
WHERE total BETWEEN 10000 AND 15000
```

```
SELECT townName
FROM population
WHERE townName like "תל%"
```

```
SELECT DISTINCT nafaName
FROM population
ORDER BY nafaName
```

```
SELECT nafaName, townName
FROM population
WHERE nafaName = "חולון"
```

```
SELECT nafaName, townName
FROM population
ORDER BY nafaName
```

```
SELECT nafaName, COUNT(*) AS "settlements"
FROM population
GROUP BY nafaName
ORDER BY "settlements" DESC
```

```
SELECT townName, total, age_0_5*100/total AS "youngPercent"
FROM population
ORDER BY "youngPercent" DESC
```

```
INSERT INTO population
        (townCode, townName, total)
VALUES
        (7777,
        "מעלה טל",
        100000)
```

```
UPDATE population
SET total = total + 1
WHERE townCode = 7777
```

```
DELETE
FROM population
WHERE townCode = 7777
```

Company Plans (Costumers and Planes)

1. **A Many to One Relation**
2. **Split the data into two tables**

```
SELECT *
FROM Customer JOIN Plan ON Customer.planId = Plan.id
```

Primary Key, Foreign Key

```
SELECT Customer.name, Plan.name, Plan.price
FROM Customer JOIN Plan ON Customer.planId = Plan.id
```

```
SELECT Customer.name, Plan.name AS "planName", Plan.price
FROM Customer JOIN Plan ON Customer.planId = Plan.id
```

```
SELECT Customer.name, Customer.phoneNumber
FROM Customer JOIN Plan ON Customer.planId = Plan.id
WHERE Plan.name = "Basic"
```

```
SELECT SUM(Plan.price)
FROM Customer JOIN Plan ON Customer.planId = Plan.id
```

```
SELECT Plan.name, SUM(Plan.price)
FROM Customer JOIN Plan ON Customer.planId = Plan.id
GROUP BY Plan.id
```

```
SELECT Plan.name, Count(*) AS "Customers", SUM(Plan.price) AS "Income"
FROM Customer JOIN Plan ON Customer.planId = Plan.id
GROUP BY Plan.id
```

Chinook (Music Store)

```
SELECT *
FROM Artist JOIN Album
ON Album.ArtistId = Artist.ArtistId
ORDER BY Artist.Name
```

```
SELECT Artist.Name, Album.Title
FROM Artist JOIN Album
ON Album.ArtistId = Artist.ArtistId
ORDER BY Artist.Name
```

```
SELECT Artist.Name, Count(Album.Title)
FROM Artist JOIN Album
ON Album.ArtistId = Artist.ArtistId
GROUP BY Artist.Name
ORDER BY Artist.Name
```

```
SELECT Artist.Name, Count(Album.Title) AS "AlbumsInData"
FROM Artist JOIN Album
ON Album.ArtistId = Artist.ArtistId
GROUP BY Artist.Name
ORDER BY "AlbumsInData" DESC
```

IMDB

1. **Many to Many Relationship**
2. **Junction Table**

10 most highly rated popular movies
```
SELECT primaryTitle, startYear, genres, averageRating, numVotes
FROM movies
WHERE numVotes > 10000
ORDER BY averageRating DESC
Limit 10
```

Morgan Freeman Movies with Role and Character name
```
SELECT movies.primaryTitle, startYear, averageRating, numVotes, participants.category, participants.characters
FROM movies JOIN participants ON movies.tconst = participants.tconst
WHERE participants.nconst = (SELECT names.nconst FROM names WHERE primaryName = "Morgan Freeman")
ORDER BY averageRating DESC
```

The longest Tarantino movies (as director)
```
SELECT movies.primaryTitle, startYear, averageRating, movies.runtimeMinutes
FROM movies JOIN participants ON movies.tconst = participants.tconst
WHERE participants.nconst = (SELECT names.nconst FROM names WHERE primaryName LIKE "%
tarantino%")
        AND participants.category = "director"
ORDER BY movies.runtimeMinutes DESC
```

In Python Code Examples:

```python
[1]: import sqlite3
     sql_connection = sqlite3.connect('Company.db')
     sql_cursor = sql_connection.cursor()
```

```python
[2]: results = sql_cursor.execute('''SELECT * FROM Plans''')
     results.fetchall()
```

```
[2]: [(1, 'Basic', 0, 1),
      (2, 'Extended', 4.99, 3),
      (3, 'Max', 7.99, 5),
      (4, 'Total', 14.99, 7)]
```

```python
[3]: results = sql_cursor.execute('''SELECT * FROM Plans WHERE name = ?''', ('Basic',))
     results.fetchall()
```

```
[3]: [(1, 'Basic', 0, 1)]
```

```python
[4]: sql_cursor.execute('''INSERT INTO Plans (id, name, price, members) VALUES (?,?,?,?)''',
                        (5,'Extreme',29.99,50))
     sql_connection.commit()
     results = sql_cursor.execute('''SELECT * FROM Plans''')
     results.fetchall()
```

```
[4]: [(1, 'Basic', 0, 1),
      (2, 'Extended', 4.99, 3),
      (3, 'Max', 7.99, 5),
      (4, 'Total', 14.99, 7),
      (5, 'Extreme', 29.99, 50)]
```

```python
[5]: sql_cursor.execute('''UPDATE Plans SET members = ? WHERE id = 4''',
                        (9,))
     sql_connection.commit()
     results = sql_cursor.execute('''SELECT * FROM Plans''')
     results.fetchall()
```

```
[5]: [(1, 'Basic', 0, 1),
      (2, 'Extended', 4.99, 3),
      (3, 'Max', 7.99, 5),
      (4, 'Total', 14.99, 9),
      (5, 'Extreme', 29.99, 50)]
```

```python
[ ]: sql_connection.close()
```