In [36]:
```
# import the library SQLite
import sqlite3

# Load our regular libraries
import pandas as pd
import numpy as np
from IPython.display import display
```

In [2]:
```
adult_data_df = pd.read_csv('https://archive.ics.uci.edu/ml/machine-learning-
#adult_data_df = pd.read_csv('adult.data')
display(adult_data_df.head())
```

	39	State-gov	77516	Bachelors	13	Never-married	Adm-clerical	Not-in-family	White	Male	2174	0	40
0	50	Self-emp-not-inc	83311	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	White	Male	0	0	13
1	38	Private	215646	HS-grad	9	Divorced	Handlers-cleaners	Not-in-family	White	Male	0	0	40
2	53	Private	234721	11th	7	Married-civ-spouse	Handlers-cleaners	Husband	Black	Male	0	0	40
3	28	Private	338409	Bachelors	13	Married-civ-spouse	Prof-specialty	Wife	Black	Female	0	0	40
4	37	Private	284582	Masters	14	Married-civ-spouse	Exec-managerial	Wife	White	Female	0	0	40

In [3]:
```
adult_data_df.columns =["age","workclass","fnlwgt","education","education_num
```

In [4]:
```
display(adult_data_df.head())
```

	age	workclass	fnlwgt	education	education_num	marital_status	occupation	relationship	ra
0	50	Self-emp-not-inc	83311	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	Wh
1	38	Private	215646	HS-grad	9	Divorced	Handlers-cleaners	Not-in-family	Wh
2	53	Private	234721	11th	7	Married-civ-spouse	Handlers-cleaners	Husband	Bla
3	28	Private	338409	Bachelors	13	Married-civ-spouse	Prof-specialty	Wife	Bla
4	37	Private	284582	Masters	14	Married-civ-spouse	Exec-managerial	Wife	Wh

In [5]:
```
# Start engine with sqlalchemy
```

In [6]:
```
import sqlalchemy
from sqlalchemy import create_engine
engine = create_engine('sqlite:///sqladb', echo = True)
```

In [7]:
```
connection = sqlite3.connect("sqladb")
cursor = connection.cursor()
```

In [8]:
```
1 adult_data_df.to_sql('sqladb', engine, if_exists='replace')
```

```
2018-06-20 19:19:52,379 INFO sqlalchemy.engine.base.Engine SELECT CAST('test pl
ain returns' AS VARCHAR(60)) AS anon_1
2018-06-20 19:19:52,394 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,394 INFO sqlalchemy.engine.base.Engine SELECT CAST('test un
icode returns' AS VARCHAR(60)) AS anon_1
2018-06-20 19:19:52,394 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,410 INFO sqlalchemy.engine.base.Engine PRAGMA table_info("s
qladb")
2018-06-20 19:19:52,410 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,425 INFO sqlalchemy.engine.base.Engine PRAGMA table_info("s
qladb")
2018-06-20 19:19:52,425 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,425 INFO sqlalchemy.engine.base.Engine SELECT name FROM sql
ite_master WHERE type='table' ORDER BY name
2018-06-20 19:19:52,441 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,441 INFO sqlalchemy.engine.base.Engine PRAGMA table_info("s
qladb")
2018-06-20 19:19:52,441 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,457 INFO sqlalchemy.engine.base.Engine SELECT sql FROM  (SE
LECT * FROM sqlite_master UNION ALL   SELECT * FROM sqlite_temp_master) WHERE n
ame = 'sqladb' AND type = 'table'
2018-06-20 19:19:52,457 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,472 INFO sqlalchemy.engine.base.Engine PRAGMA foreign_key_l
ist("sqladb")
2018-06-20 19:19:52,519 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,535 INFO sqlalchemy.engine.base.Engine SELECT sql FROM  (SE
LECT * FROM sqlite_master UNION ALL   SELECT * FROM sqlite_temp_master) WHERE n
ame = 'sqladb' AND type = 'table'
2018-06-20 19:19:52,550 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,550 INFO sqlalchemy.engine.base.Engine PRAGMA index_list("s
qladb")
2018-06-20 19:19:52,566 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,566 INFO sqlalchemy.engine.base.Engine PRAGMA index_info("i
x_sqladb_index")
2018-06-20 19:19:52,582 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,597 INFO sqlalchemy.engine.base.Engine PRAGMA index_list("s
qladb")
2018-06-20 19:19:52,597 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,613 INFO sqlalchemy.engine.base.Engine PRAGMA index_info("i
x_sqladb_index")
2018-06-20 19:19:52,613 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,629 INFO sqlalchemy.engine.base.Engine SELECT sql FROM  (SE
LECT * FROM sqlite_master UNION ALL   SELECT * FROM sqlite_temp_master) WHERE n
ame = 'sqladb' AND type = 'table'
2018-06-20 19:19:52,629 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,675 INFO sqlalchemy.engine.base.Engine
DROP TABLE sqladb
2018-06-20 19:19:52,675 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:52,847 INFO sqlalchemy.engine.base.Engine COMMIT
2018-06-20 19:19:52,879 INFO sqlalchemy.engine.base.Engine
CREATE TABLE sqladb (
        "index" BIGINT,
        age BIGINT,
        workclass TEXT,
        fnlwgt BIGINT,
```

```
        education TEXT,
        education_num BIGINT,
        marital_status TEXT,
        occupation TEXT,
        relationship TEXT,
        race TEXT,
        sex TEXT,
        capital_gain BIGINT,
        capital_loss BIGINT,
        hours_per_week BIGINT,
        native_country TEXT,
        income TEXT
)


2018-06-20 19:19:52,879 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:53,004 INFO sqlalchemy.engine.base.Engine COMMIT
2018-06-20 19:19:53,019 INFO sqlalchemy.engine.base.Engine CREATE INDEX ix_sqla
db_index ON sqladb ("index")
2018-06-20 19:19:53,019 INFO sqlalchemy.engine.base.Engine ()
2018-06-20 19:19:53,142 INFO sqlalchemy.engine.base.Engine COMMIT
2018-06-20 19:19:53,236 INFO sqlalchemy.engine.base.Engine BEGIN (implicit)
2018-06-20 19:19:54,737 INFO sqlalchemy.engine.base.Engine INSERT INTO sqladb
("index", age, workclass, fnlwgt, education, education_num, marital_status, occ
upation, relationship, race, sex, capital_gain, capital_loss, hours_per_week, n
ative_country, income) VALUES (?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?)
2018-06-20 19:19:54,737 INFO sqlalchemy.engine.base.Engine ((0, 50, ' Self-emp-
not-inc', 83311, ' Bachelors', 13, ' Married-civ-spouse', ' Exec-managerial', '
Husband', ' White', ' Male', 0, 0, 13, ' United-States', ' <=50K'), (1, 38, ' P
rivate', 215646, ' HS-grad', 9, ' Divorced', ' Handlers-cleaners', ' Not-in-fam
ily', ' White', ' Male', 0, 0, 40, ' United-States', ' <=50K'), (2, 53, ' Priva
te', 234721, ' 11th', 7, ' Married-civ-spouse', ' Handlers-cleaners', ' Husban
d', ' Black', ' Male', 0, 0, 40, ' United-States', ' <=50K'), (3, 28, ' Privat
e', 338409, ' Bachelors', 13, ' Married-civ-spouse', ' Prof-specialty', ' Wif
e', ' Black', ' Female', 0, 0, 40, ' Cuba', ' <=50K'), (4, 37, ' Private', 2845
82, ' Masters', 14, ' Married-civ-spouse', ' Exec-managerial', ' Wife', ' Whit
e', ' Female', 0, 0, 40, ' United-States', ' <=50K'), (5, 49, ' Private', 16018
7, ' 9th', 5, ' Married-spouse-absent', ' Other-service', ' Not-in-family', ' B
lack', ' Female', 0, 0, 16, ' Jamaica', ' <=50K'), (6, 52, ' Self-emp-not-inc',
209642, ' HS-grad', 9, ' Married-civ-spouse', ' Exec-managerial', ' Husband', '
White', ' Male', 0, 0, 45, ' United-States', ' >50K'), (7, 31, ' Private', 4578
1, ' Masters', 14, ' Never-married', ' Prof-specialty', ' Not-in-family', ' Whi
te', ' Female', 14084, 0, 50, ' United-States', ' >50K')  ... displaying 10 of
32560 total bound parameter sets ...  (32558, 22, ' Private', 201490, ' HS-gra
d', 9, ' Never-married', ' Adm-clerical', ' Own-child', ' White', ' Male', 0,
0, 20, ' United-States', ' <=50K'), (32559, 52, ' Self-emp-inc', 287927, ' HS-g
rad', 9, ' Married-civ-spouse', ' Exec-managerial', ' Wife', ' White', ' Femal
e', 15024, 0, 40, ' United-States', ' >50K'))
2018-06-20 19:19:55,159 INFO sqlalchemy.engine.base.Engine COMMIT
```

In [9]:

```
# make connection to server
connection = sqlite3.connect("sqladb")
cursor = connection.cursor()
```

In [10]:
```
1 cursor.execute('PRAGMA TABLE_INFO({})'.format("sqladb"))
2 cursor.fetchall()
```

Out[10]:
```
[(0, 'index', 'BIGINT', 0, None, 0),
 (1, 'age', 'BIGINT', 0, None, 0),
 (2, 'workclass', 'TEXT', 0, None, 0),
 (3, 'fnlwgt', 'BIGINT', 0, None, 0),
 (4, 'education', 'TEXT', 0, None, 0),
 (5, 'education_num', 'BIGINT', 0, None, 0),
 (6, 'marital_status', 'TEXT', 0, None, 0),
 (7, 'occupation', 'TEXT', 0, None, 0),
 (8, 'relationship', 'TEXT', 0, None, 0),
 (9, 'race', 'TEXT', 0, None, 0),
 (10, 'sex', 'TEXT', 0, None, 0),
 (11, 'capital_gain', 'BIGINT', 0, None, 0),
 (12, 'capital_loss', 'BIGINT', 0, None, 0),
 (13, 'hours_per_week', 'BIGINT', 0, None, 0),
 (14, 'native_country', 'TEXT', 0, None, 0),
 (15, 'income', 'TEXT', 0, None, 0)]
```

In [11]:
```
# Q1 Select 10 records from the adult sqladb
#cursor.execute('SELECT * FROM {tn} limit 10'. format(tn="sqladb"))
#output = cursor.fetchall()
#print(output)
#
# USE Pandas Print because it is cleaner
print(pd.read_sql_query('SELECT * FROM sqladb limit 10', connection))
```

```
   index  age          workclass  fnlwgt      education  education_num  \
0      0   50   Self-emp-not-inc   83311      Bachelors             13
1      1   38            Private  215646        HS-grad              9
2      2   53            Private  234721           11th              7
3      3   28            Private  338409      Bachelors             13
4      4   37            Private  284582        Masters             14
5      5   49            Private  160187            9th              5
6      6   52   Self-emp-not-inc  209642        HS-grad              9
7      7   31            Private   45781        Masters             14
8      8   42            Private  159449      Bachelors             13
9      9   37            Private  280464   Some-college             10

           marital_status          occupation    relationship    race  \
0      Married-civ-spouse     Exec-managerial         Husband   White
1                Divorced   Handlers-cleaners   Not-in-family   White
2      Married-civ-spouse   Handlers-cleaners         Husband   Black
3      Married-civ-spouse      Prof-specialty            Wife   Black
4      Married-civ-spouse     Exec-managerial            Wife   White
5   Married-spouse-absent       Other-service   Not-in-family   Black
6      Married-civ-spouse     Exec-managerial         Husband   White
7           Never-married      Prof-specialty   Not-in-family   White
8      Married-civ-spouse     Exec-managerial         Husband   White
9      Married-civ-spouse     Exec-managerial         Husband   Black

        sex  capital_gain  capital_loss  hours_per_week  native_country  income
0      Male             0             0              13   United-States   <=50K
1      Male             0             0              40   United-States   <=50K
2      Male             0             0              40   United-States   <=50K
3    Female             0             0              40            Cuba   <=50K
4    Female             0             0              40   United-States   <=50K
5    Female             0             0              16         Jamaica   <=50K
6      Male             0             0              45   United-States    >50K
7    Female         14084             0              50   United-States    >50K
8      Male          5178             0              40   United-States    >50K
9      Male             0             0              80   United-States    >50K
```

In [12]:
```
1 display(adult_data_df.head(10))
```

	age	workclass	fnlwgt	education	education_num	marital_status	occupation	relationship	ra
0	50	Self-emp-not-inc	83311	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	Wh
1	38	Private	215646	HS-grad	9	Divorced	Handlers-cleaners	Not-in-family	Wh
2	53	Private	234721	11th	7	Married-civ-spouse	Handlers-cleaners	Husband	Bla
3	28	Private	338409	Bachelors	13	Married-civ-spouse	Prof-specialty	Wife	Bla
4	37	Private	284582	Masters	14	Married-civ-spouse	Exec-managerial	Wife	Wh
5	49	Private	160187	9th	5	Married-spouse-absent	Other-service	Not-in-family	Bla
6	52	Self-emp-not-inc	209642	HS-grad	9	Married-civ-spouse	Exec-managerial	Husband	Wh
7	31	Private	45781	Masters	14	Never-married	Prof-specialty	Not-in-family	Wh
8	42	Private	159449	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	Wh
9	37	Private	280464	Some-college	10	Married-civ-spouse	Exec-managerial	Husband	Bla

In [13]:
```
1 # Q2 Show me the average hours per week of all men who are working in private
```

In [14]:
```
1 cursor.execute('SELECT avg(hours_per_week) FROM sqladb WHERE workclass=" Priv
2 output = cursor.fetchall()
3 print(output)
```

```
[(40.267095523440254,)]
```

In [15]:
```
1 # Q3  Show me the frequency table for education, occupation and relationship,
```

In [16]:
```
1 # Frequency table for education
2 cursor.execute('SELECT education, COUNT(*) from sqladb GROUP by education')
3 output = cursor.fetchall()
4 print(output)
```

```
[(' 10th', 933), (' 11th', 1175), (' 12th', 433), (' 1st-4th', 168), (' 5th-6t
h', 333), (' 7th-8th', 646), (' 9th', 514), (' Assoc-acdm', 1067), (' Assoc-vo
c', 1382), (' Bachelors', 5354), (' Doctorate', 413), (' HS-grad', 10501), (' M
asters', 1723), (' Preschool', 51), (' Prof-school', 576), (' Some-college', 72
91)]
```

In [17]:
```
# Frequency by occupation
cursor.execute('SELECT occupation, COUNT(*) from sqladb GROUP by occupation')
output = cursor.fetchall()
print(output)
```

```
[(' ?', 1843), (' Adm-clerical', 3769), (' Armed-Forces', 9), (' Craft-repair',
4099), (' Exec-managerial', 4066), (' Farming-fishing', 994), (' Handlers-clean
ers', 1370), (' Machine-op-inspct', 2002), (' Other-service', 3295), (' Priv-ho
use-serv', 149), (' Prof-specialty', 4140), (' Protective-serv', 649), (' Sale
s', 3650), (' Tech-support', 928), (' Transport-moving', 1597)]
```

In [18]:
```
# Frequency by relationship
cursor.execute('SELECT relationship, COUNT(*) from sqladb GROUP by relationsh
output = cursor.fetchall()
print(output)
```

```
[(' Husband', 13193), (' Not-in-family', 8304), (' Other-relative', 981), (' Ow
n-child', 5068), (' Unmarried', 3446), (' Wife', 1568)]
```

In [19]:
```
# Q4 Are there any people who are married, working in private sector and havi
```

In [20]:
```
# Q5 What is the average, minimum and maximum age group for people working in
```

In [21]:
```
1 print(pd.read_sql_query('SELECT * FROM sqladb WHERE education=" Masters" AND
```

```
   index  age workclass  fnlwgt education  education_num       marital_status
\
0      4   37   Private  284582   Masters             14   Married-civ-spouse

1     86   33   Private  202051   Masters             14   Married-civ-spouse

2     99   76   Private  124191   Masters             14   Married-civ-spouse

3    187   31   Private   99928   Masters             14   Married-civ-spouse

4    197   35   Private  138992   Masters             14   Married-civ-spouse

5    310   34   Private  142897   Masters             14   Married-civ-spouse

6    360   62   Private  270092   Masters             14   Married-civ-spouse

7    404   41   Private  445382   Masters             14   Married-civ-spouse

8    434   33   Private  208405   Masters             14   Married-civ-spouse

9    467   49   Private  192776   Masters             14   Married-civ-spouse


         occupation     relationship                 race      sex  \
0   Exec-managerial             Wife                White   Female
1    Prof-specialty          Husband                White     Male
2   Exec-managerial          Husband                White     Male
3    Prof-specialty             Wife                White   Female
4    Prof-specialty   Other-relative                White     Male
5   Exec-managerial          Husband   Asian-Pac-Islander     Male
6    Prof-specialty          Husband                White     Male
7   Exec-managerial          Husband                White     Male
8    Prof-specialty          Husband                White     Male
9   Exec-managerial          Husband                White     Male

   capital_gain  capital_loss  hours_per_week  native_country  income
0             0             0              40   United-States   <=50K
1             0             0              50   United-States   <=50K
2             0             0              40   United-States    >50K
3             0             0              50   United-States   <=50K
4          7298             0              40   United-States    >50K
5          7298             0              35          Taiwan    >50K
6             0             0              40   United-States    >50K
7             0          1977              65   United-States    >50K
8             0             0              50   United-States    >50K
9             0          1977              45   United-States    >50K
```

In [22]:
```
# average age for people working in different sectors
cursor.execute('SELECT occupation, avg(age) from sqladb GROUP by occupation')
output = cursor.fetchall()
print(output)
```

```
[(' ?', 40.882799782962564), (' Adm-clerical', 36.96391615813213), (' Armed-For
ces', 30.22222222222222), (' Craft-repair', 39.03147109050988), (' Exec-manager
ial', 42.16920806689621), (' Farming-fishing', 41.2112676056338), (' Handlers-c
leaners', 32.16569343065694), (' Machine-op-inspct', 37.71528471528472), (' Oth
er-service', 34.94962063732929), (' Priv-house-serv', 41.7248322147651), (' Pro
f-specialty', 40.51763285024155), (' Protective-serv', 38.9537750385208), (' Sa
les', 37.353972602739724), (' Tech-support', 37.022629310344826), (' Transport-
moving', 40.19787100814026)]
```

In [23]:
```
# minimum age for people working in different sectors
```

In [24]:
```
cursor.execute('SELECT occupation, min(age) from sqladb GROUP by occupation')
output = cursor.fetchall()
print(output)
```

```
[(' ?', 17), (' Adm-clerical', 17), (' Armed-Forces', 23), (' Craft-repair', 1
7), (' Exec-managerial', 17), (' Farming-fishing', 17), (' Handlers-cleaners',
17), (' Machine-op-inspct', 17), (' Other-service', 17), (' Priv-house-serv', 1
7), (' Prof-specialty', 17), (' Protective-serv', 17), (' Sales', 17), (' Tech-
support', 17), (' Transport-moving', 17)]
```

In [25]:
```
# maximum age for people working in differnt sectors
cursor.execute('SELECT occupation, max(age) from sqladb GROUP by occupation')
output = cursor.fetchall()
print(output)
```

```
[(' ?', 90), (' Adm-clerical', 90), (' Armed-Forces', 46), (' Craft-repair', 9
0), (' Exec-managerial', 90), (' Farming-fishing', 90), (' Handlers-cleaners',
90), (' Machine-op-inspct', 90), (' Other-service', 90), (' Priv-house-serv', 8
1), (' Prof-specialty', 90), (' Protective-serv', 90), (' Sales', 90), (' Tech-
support', 73), (' Transport-moving', 90)]
```

In [26]:
```
# Q5 Calculate age distribution by country
```

In [27]:
```
# min age distribution by country
cursor.execute('SELECT native_country, min(age) from sqladb GROUP by native_c
output = cursor.fetchall()
display(output)
```

```
[(' ?', 17),
 (' Cambodia', 18),
 (' Canada', 17),
 (' China', 22),
 (' Columbia', 18),
 (' Cuba', 21),
 (' Dominican-Republic', 18),
 (' Ecuador', 21),
 (' El-Salvador', 17),
 (' England', 17),
 (' France', 20),
 (' Germany', 18),
 (' Greece', 22),
 (' Guatemala', 19),
 (' Haiti', 17),
 (' Holand-Netherlands', 32),
 (' Honduras', 18),
 (' Hong', 19),
 (' Hungary', 24),
 (' India', 17),
 (' Iran', 22),
 (' Ireland', 23),
 (' Italy', 19),
 (' Jamaica', 18),
 (' Japan', 19),
 (' Laos', 19),
 (' Mexico', 17),
 (' Nicaragua', 19),
 (' Outlying-US(Guam-USVI-etc)', 21),
 (' Peru', 17),
 (' Philippines', 17),
 (' Poland', 17),
 (' Portugal', 19),
 (' Puerto-Rico', 17),
 (' Scotland', 18),
 (' South', 19),
 (' Taiwan', 20),
 (' Thailand', 19),
 (' Trinadad&Tobago', 17),
 (' United-States', 17),
 (' Vietnam', 19),
 (' Yugoslavia', 20)]
```

In [28]:
```
# max age distribution by country
cursor.execute('SELECT native_country, max(age) from sqladb GROUP by native_c
output = cursor.fetchall()
display(output)
```

```
[(' ?', 90),
 (' Cambodia', 65),
 (' Canada', 80),
 (' China', 75),
 (' Columbia', 75),
 (' Cuba', 82),
 (' Dominican-Republic', 78),
 (' Ecuador', 90),
 (' El-Salvador', 79),
 (' England', 90),
 (' France', 64),
 (' Germany', 74),
 (' Greece', 65),
 (' Guatemala', 66),
 (' Haiti', 63),
 (' Holand-Netherlands', 32),
 (' Honduras', 58),
 (' Hong', 60),
 (' Hungary', 81),
 (' India', 61),
 (' Iran', 63),
 (' Ireland', 68),
 (' Italy', 77),
 (' Jamaica', 66),
 (' Japan', 61),
 (' Laos', 56),
 (' Mexico', 81),
 (' Nicaragua', 67),
 (' Outlying-US(Guam-USVI-etc)', 63),
 (' Peru', 69),
 (' Philippines', 90),
 (' Poland', 85),
 (' Portugal', 78),
 (' Puerto-Rico', 90),
 (' Scotland', 62),
 (' South', 90),
 (' Taiwan', 61),
 (' Thailand', 55),
 (' Trinadad&Tobago', 61),
 (' United-States', 90),
 (' Vietnam', 73),
 (' Yugoslavia', 66)]
```

In [29]:
```
# average age distribution by country
cursor.execute('SELECT native_country, avg(age) from sqladb GROUP by native_c
output = cursor.fetchall()
display(output)
```

```
[(' ?', 38.72555746140652),
 (' Cambodia', 37.78947368421053),
 (' Canada', 42.54545454545455),
 (' China', 42.53333333333333),
 (' Columbia', 39.71186440677966),
 (' Cuba', 45.76842105263158),
 (' Dominican-Republic', 37.72857142857143),
 (' Ecuador', 36.642857142857146),
 (' El-Salvador', 34.132075471698116),
 (' England', 41.15555555555556),
 (' France', 38.96551724137931),
 (' Germany', 39.25547445255474),
 (' Greece', 46.206896551724135),
 (' Guatemala', 32.421875),
 (' Haiti', 38.27272727272727),
 (' Holand-Netherlands', 32.0),
 (' Honduras', 33.84615384615385),
 (' Hong', 33.65),
 (' Hungary', 49.38461538461539),
 (' India', 38.09),
 (' Iran', 39.41860465116279),
 (' Ireland', 36.458333333333336),
 (' Italy', 46.42465753424658),
 (' Jamaica', 35.592592592592595),
 (' Japan', 38.24193548387097),
 (' Laos', 34.72222222222222),
 (' Mexico', 33.29082426127527),
 (' Nicaragua', 33.61764705882353),
 (' Outlying-US(Guam-USVI-etc)', 38.714285714285715),
 (' Peru', 35.25806451612903),
 (' Philippines', 39.44444444444444),
 (' Poland', 43.11666666666667),
 (' Portugal', 40.2972972972973),
 (' Puerto-Rico', 40.50877192982456),
 (' Scotland', 40.416666666666664),
 (' South', 38.75),
 (' Taiwan', 33.8235294117647),
 (' Thailand', 34.94444444444444),
 (' Trinadad&Tobago', 41.31578947368421),
 (' United-States', 38.65566183276766),
 (' Vietnam', 34.059701492537314),
 (' Yugoslavia', 38.8125)]
```

In [30]:
```
# Q7. Compute a new column as 'Net-Capital-Gain' from the two columns 'capita
```

In [32]:
```
cursor.execute('alter table sqladb add column net_capital_gain')
```

Out[32]:
```
<sqlite3.Cursor at 0x278f192a960>
```

In [33]:
```
1 cursor.execute('UPDATE sqladb SET net_capital_gain = capital_gain-capital_los
```

Out[33]:
```
<sqlite3.Cursor at 0x278f192a960>
```

In [35]:
```
1 print(pd.read_sql_query("SELECT * FROM sqladb", connection).head(10))
```

```
   index  age          workclass  fnlwgt      education  education_num  \
0      0   50   Self-emp-not-inc   83311      Bachelors             13
1      1   38            Private  215646        HS-grad              9
2      2   53            Private  234721           11th              7
3      3   28            Private  338409      Bachelors             13
4      4   37            Private  284582        Masters             14
5      5   49            Private  160187            9th              5
6      6   52   Self-emp-not-inc  209642        HS-grad              9
7      7   31            Private   45781        Masters             14
8      8   42            Private  159449      Bachelors             13
9      9   37            Private  280464   Some-college             10

           marital_status          occupation    relationship    race  \
0      Married-civ-spouse     Exec-managerial         Husband   White
1                Divorced   Handlers-cleaners   Not-in-family   White
2      Married-civ-spouse   Handlers-cleaners         Husband   Black
3      Married-civ-spouse      Prof-specialty            Wife   Black
4      Married-civ-spouse     Exec-managerial            Wife   White
5   Married-spouse-absent       Other-service   Not-in-family   Black
6      Married-civ-spouse     Exec-managerial         Husband   White
7           Never-married      Prof-specialty   Not-in-family   White
8      Married-civ-spouse     Exec-managerial         Husband   White
9      Married-civ-spouse     Exec-managerial         Husband   Black

        sex  capital_gain  capital_loss  hours_per_week  native_country  \
0      Male             0             0              13   United-States
1      Male             0             0              40   United-States
2      Male             0             0              40   United-States
3    Female             0             0              40            Cuba
4    Female             0             0              40   United-States
5    Female             0             0              16         Jamaica
6      Male             0             0              45   United-States
7    Female         14084             0              50   United-States
8      Male          5178             0              40   United-States
9      Male             0             0              80   United-States

   income  net_capital_gain
0   <=50K                 0
1   <=50K                 0
2   <=50K                 0
3   <=50K                 0
4   <=50K                 0
5   <=50K                 0
6    >50K                 0
7    >50K             14084
8    >50K              5178
9    >50K                 0
```

In [ ]:
```
1
```