

In [2]:

```
import sqlite3
import pandas as pd

conn = sqlite3.connect("factbook.db")
cursor = conn.cursor()
cursor.execute(q1).fetchall()
```

Out[2]:

```
[('table',
  'sqlite_sequence',
  'sqlite_sequence',
  3,
  'CREATE TABLE sqlite_sequence(name,seq)'),
 ('table',
  'facts',
  'facts',
  47,
  'CREATE TABLE "facts" ("id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL, "code" varchar(255) NOT NULL, "name" varchar(255) NOT NULL, "area" integer, "area_land" integer, "area_water" integer, "population" integer, "population_growth" float, "birth_rate" float, "death_rate" float, "migration_rate" float)')]
```

In [3]:

```
q1 = "SELECT * FROM sqlite_master WHERE type='table';"
pd.read_sql_query(q1, conn)
```

Out[3]:

	type	name	tbl_name	rootpage	sql
0	table	sqlite_sequence	sqlite_sequence	3	CREATE TABLE sqlite_sequence(name,seq)
1	table	facts	facts	47	CREATE TABLE "facts" ("id" INTEGER PRIMARY KEY...

In [4]:

```
q2 = "select * from facts limit 5"
pd.read_sql_query(q2, conn)
```

Out[4]:

	id	code	name	area	area_land	area_water	population	population_growth	birth_rate	death_rate	migration_rate
0	1	af	Afghanistan	652230	652230	0	32564342	2.32	38.57	13.89	1.51
1	2	al	Albania	28748	27398	1350	3029278	0.30	12.92	6.58	3.30
2	3	ag	Algeria	2381741	2381741	0	39542166	1.84	23.67	4.31	0.92
3	4	an	Andorra	468	468	0	85580	0.12	8.13	6.96	0.00
4	5	ao	Angola	1246700	1246700	0	19625353	2.78	38.78	11.49	0.46

In [5]:

```
q3 = '''
select min(population) min_pop, max(population) max_pop,
min(population_growth) min_pop_grwth, max(population_growth) max_pop_grwth
from facts
'''
pd.read_sql_query(q3, conn)
```

Out[5]:

	min_pop	max_pop	min_pop_grwth	max_pop_grwth
0	0	7256490011	0.0	4.02

In [6]:

```
q4 = '''
select *
from facts
where population == (select max(population) from facts);
```

```
'''
pd.read_sql_query(q4, conn)
```

Out[6]:

	id	code	name	area	area_land	area_water	population	population_growth	birth_rate	death_rate	migration_rate
0	261	xx	World	None	None	None	7256490011	1.08	18.6	7.8	None

In [7]:

```
q5 = '''
select *
from facts
where population == (select min(population) from facts);
'''

pd.read_sql_query(q5, conn)
```

Out[7]:

	id	code	name	area	area_land	area_water	population	population_growth	birth_rate	death_rate	migration_rate
0	250	ay	Antarctica	None	280000	None	0	None	None	None	None

In [8]:

```
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline

fig = plt.figure(figsize=(10,10))
ax = fig.add_subplot(111)

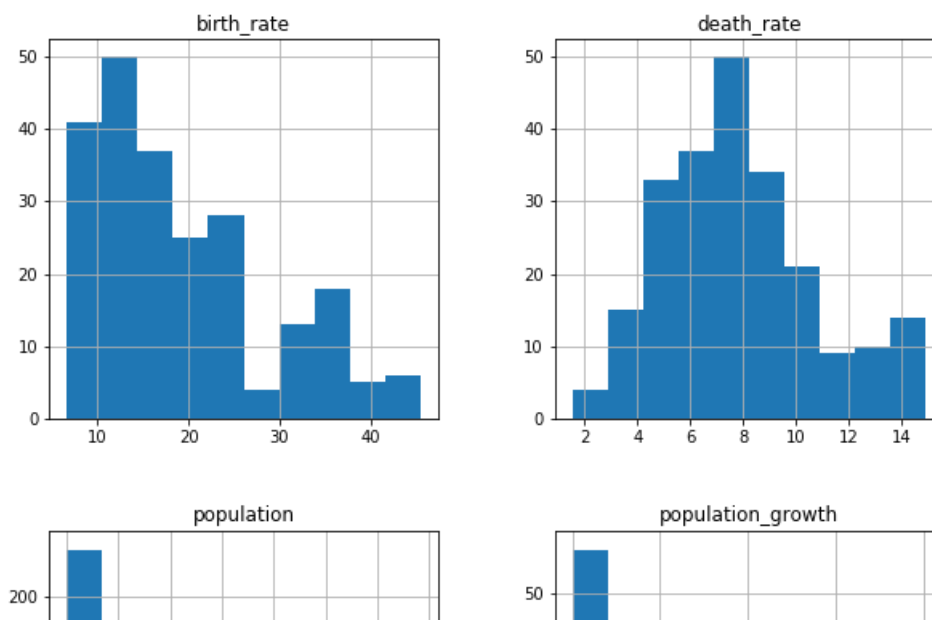
q6 = '''
select population, population_growth, birth_rate, death_rate
from facts
where population != (select max(population) from facts)
and population != (select min(population) from facts);
'''

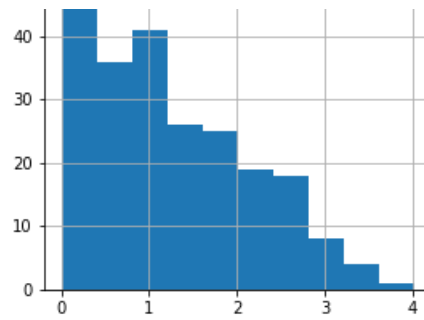
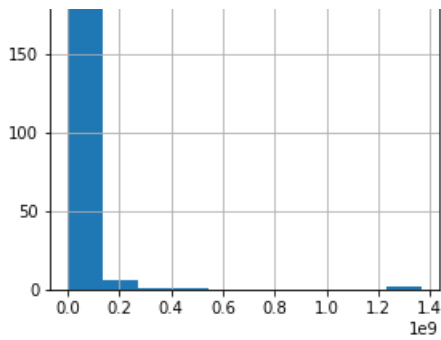
pd.read_sql_query(q6, conn).hist(ax=ax)

/Users/sudeng/anaconda3/lib/python3.7/site-packages/IPython/core/interactiveshell.py:2961: UserWarning:
To output multiple subplots, the figure containing the passed axes is being cleared
exec(code_obj, self.user_global_ns, self.user_ns)
```

Out[8]:

```
array([[<matplotlib.axes._subplots.AxesSubplot object at 0x1a23c23e48>,
        <matplotlib.axes._subplots.AxesSubplot object at 0x1a240cd828>],
       [<matplotlib.axes._subplots.AxesSubplot object at 0x1a240f5eb8>,
        <matplotlib.axes._subplots.AxesSubplot object at 0x1a24125588>]],
      dtype=object)
```





In [9]:

```
q7 = "select name, cast(population as float)/cast(area as float) density from facts order by density de
sc limit 20"
pd.read_sql_query(q7, conn)
```

Out[9]:

	name	density
0	Macau	21168.964286
1	Monaco	15267.500000
2	Singapore	8141.279770
3	Hong Kong	6445.041516
4	Gaza Strip	5191.819444
5	Gibraltar	4876.333333
6	Bahrain	1771.859211
7	Maldives	1319.640940
8	Malta	1310.015823
9	Bermuda	1299.925926
10	Sint Maarten	1167.323529
11	Bangladesh	1138.069143
12	Guernsey	847.179487
13	Jersey	838.741379
14	Barbados	675.823256
15	Mauritius	656.777941
16	Taiwan	650.781712
17	Aruba	623.122222
18	Lebanon	594.682788
19	Saint Martin	588.037037

In [10]:

```
q7 = '''select population, population_growth, birth_rate, death_rate
from facts
where population != (select max(population) from facts)
and population != (select min(population) from facts);
'''
pd.read_sql_query(q7, conn)
```

Out[10]:

	population	population_growth	birth_rate	death_rate
0	32564342	2.32	38.57	13.89
1	3029278	0.30	12.92	6.58
2	39542166	1.84	23.67	4.31
3	85580	0.12	8.13	6.96
4	19625353	2.78	38.78	11.49
5	92436	1.24	15.85	5.69
6	12421888	0.22	12.64	7.22

6	43431886 population	0.93 population_growth	16.64 birth_rate	7.33 death_rate
7	3056382	0.15	13.61	9.34
8	22751014	1.07	12.15	7.14
9	8665550	0.55	9.41	9.42
10	9780780	0.96	16.64	7.07
11	324597	0.85	15.50	7.05
12	1346613	2.41	13.66	2.69
13	168957745	1.60	21.14	5.61
14	290604	0.31	11.87	8.44
15	9589689	0.20	10.70	13.36
16	11323973	0.76	11.41	9.63
17	347369	1.87	24.68	5.97
18	10448647	2.78	36.02	8.21
19	741919	1.11	17.78	6.69
20	10800882	1.56	22.76	6.52
21	3867055	0.13	8.87	9.75
22	2182719	1.21	20.96	13.39
23	204259812	0.77	14.46	6.58
24	429646	1.62	17.32	3.52
25	7186893	0.58	8.92	14.44
26	18931686	3.03	42.03	11.72
27	56320206	1.01	18.39	7.96
28	10742276	3.28	42.01	9.27
29	15708756	1.58	23.83	7.68
...
210	112162	1.33	12.56	8.18
211	148406	0.43	13.80	8.20
212	39689	1.51	13.00	4.51
213	9838	2.95	14.33	8.03
214	1190	0.03	NaN	NaN
215	1337	0.01	NaN	NaN
216	1872	0.03	NaN	NaN
217	15700	NaN	NaN	NaN
218	16418	2.03	12.67	4.57
219	70196	0.50	11.33	8.23
220	33454	2.32	10.91	4.99
221	56092	2.10	12.11	5.53
222	15700	NaN	NaN	NaN
223	3361	0.01	10.90	4.90
224	29258	0.24	14.08	8.37
225	66080	0.34	9.84	8.78
226	97294	0.80	11.91	7.68
227	87545	0.76	11.10	10.06
228	5241	0.50	11.26	6.30
229	48	0.00	NaN	NaN
230	7795	0.24	9.88	7.44
231	50280	2.30	16.13	3.10
232	54343	0.30	22.89	4.75
233	161785	0.54	16.82	5.12
234	52344	2.18	18.32	3.71
235	3598357	0.60	10.86	8.67

236	population	population_growth	birth_rate	death_rate
	103574	0.99	10.31	8.34
237	1869055	2.81	31.11	3.04
238	2785366	1.95	22.99	3.50
239	570866	2.82	30.24	8.34

240 rows × 4 columns

In []: