mod5_final_project

February 12, 2025

Assignment: Notebook for Graded Assessment

1 Introduction

Using this Python notebook you will:

1. Understand three Chicago datasets
2. Load the three datasets into three tables in a SQLIte database
3. Execute SQL queries to answer assignment questions

1.1 Understand the datasets

To complete the assignment problems in this notebook you will be using three datasets that are available on the city of Chicago's Data Portal:

1. Socioeconomic Indicators in Chicago
2. Chicago Public Schools
3. Chicago Crime Data

1.1.1 1. Socioeconomic Indicators in Chicago

This dataset contains a selection of six socioeconomic indicators of public health significance and a "hardship index," for each Chicago community area, for the years 2008 – 2012.

A detailed description of this dataset and the original dataset can be obtained from the Chicago Data Portal at:

https://data.cityofchicago.org/Health-Human-Services/Census-Data-Selected-socioeconomic-indicators-in-C/kn9c-c2s2

1.1.2 2. Chicago Public Schools

This dataset shows all school level performance data used to create CPS School Report Cards for the 2011-2012 school year. This dataset is provided by the city of Chicago's Data Portal.

A detailed description of this dataset and the original dataset can be obtained from the Chicago Data Portal at:

https://data.cityofchicago.org/Education/Chicago-Public-Schools-Progress-Report-Cards-2011-/9xs2-f89t

1.1.3 3. Chicago Crime Data

This dataset reflects reported incidents of crime (with the exception of murders where data exists for each victim) that occurred in the City of Chicago from 2001 to present, minus the most recent seven days.

A detailed description of this dataset and the original dataset can be obtained from the Chicago Data Portal at:

https://data.cityofchicago.org/Public-Safety/Crimes-2001-to-present/ijzp-q8t2

1.1.4 Download the datasets

This assignment requires you to have these three tables populated with a subset of the whole datasets.

In many cases the dataset to be analyzed is available as a .CSV (comma separated values) file, perhaps on the internet.

Use the links below to read the data files using the Pandas library.

- Chicago Census Data

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-DB0201EN-SkillsNetwork/labs/FinalModule_Coursera_V5/data/ChicagoCensusData.csv?utm_medium=Exinflu SkillsNetwork-Channel-SkillsNetworkCoursesIBMDeveloperSkillsNetworkDB0201ENSkillsNetwork20127838-2021-01-01

- Chicago Public Schools

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-DB0201EN-SkillsNetwork/labs/FinalModule_Coursera_V5/data/ChicagoPublicSchools.csv?utm_medium=Exin SkillsNetwork-Channel-SkillsNetworkCoursesIBMDeveloperSkillsNetworkDB0201ENSkillsNetwork20127838-2021-01-01

- Chicago Crime Data

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-DB0201EN-SkillsNetwork/labs/FinalModule_Coursera_V5/data/ChicagoCrimeData.csv?utm_medium=Exinflu SkillsNetwork-Channel-SkillsNetworkCoursesIBMDeveloperSkillsNetworkDB0201ENSkillsNetwork20127838-2021-01-01

NOTE: Ensure you use the datasets available on the links above instead of directly from the Chicago Data Portal. The versions linked here are subsets of the original datasets and have some of the column names modified to be more database friendly which will make it easier to complete this assignment.

Execute the below code cell to avoid prettytable default error.

[92]:
```
import csv, sqlite3

con = sqlite3.connect("FinalDB.db")
cur = con.cursor()
```

[93]:
```
!pip install ipython-sql prettytable

import prettytable

prettytable.DEFAULT = 'DEFAULT'
```

```
Requirement already satisfied: ipython-sql in /opt/conda/lib/python3.12/site-
packages (0.5.0)
Requirement already satisfied: prettytable in /opt/conda/lib/python3.12/site-
packages (3.14.0)
Requirement already satisfied: ipython in /opt/conda/lib/python3.12/site-
packages (from ipython-sql) (8.31.0)
Requirement already satisfied: sqlalchemy>=2.0 in
/opt/conda/lib/python3.12/site-packages (from ipython-sql) (2.0.37)
Requirement already satisfied: sqlparse in /opt/conda/lib/python3.12/site-
packages (from ipython-sql) (0.5.3)
Requirement already satisfied: six in /opt/conda/lib/python3.12/site-packages
(from ipython-sql) (1.17.0)
Requirement already satisfied: ipython-genutils in
/opt/conda/lib/python3.12/site-packages (from ipython-sql) (0.2.0)
Requirement already satisfied: wcwidth in /opt/conda/lib/python3.12/site-
packages (from prettytable) (0.2.13)
Requirement already satisfied: greenlet!=0.4.17 in
/opt/conda/lib/python3.12/site-packages (from sqlalchemy>=2.0->ipython-sql)
(3.1.1)
Requirement already satisfied: typing-extensions>=4.6.0 in
/opt/conda/lib/python3.12/site-packages (from sqlalchemy>=2.0->ipython-sql)
(4.12.2)
Requirement already satisfied: decorator in /opt/conda/lib/python3.12/site-
packages (from ipython->ipython-sql) (5.1.1)
Requirement already satisfied: jedi>=0.16 in /opt/conda/lib/python3.12/site-
packages (from ipython->ipython-sql) (0.19.2)
Requirement already satisfied: matplotlib-inline in
/opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (0.1.7)
Requirement already satisfied: pexpect>4.3 in /opt/conda/lib/python3.12/site-
packages (from ipython->ipython-sql) (4.9.0)
Requirement already satisfied: prompt_toolkit<3.1.0,>=3.0.41 in
/opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (3.0.50)
Requirement already satisfied: pygments>=2.4.0 in
/opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (2.19.1)
Requirement already satisfied: stack_data in /opt/conda/lib/python3.12/site-
packages (from ipython->ipython-sql) (0.6.3)
Requirement already satisfied: traitlets>=5.13.0 in
/opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (5.14.3)
Requirement already satisfied: parso<0.9.0,>=0.8.4 in
/opt/conda/lib/python3.12/site-packages (from jedi>=0.16->ipython->ipython-sql)
(0.8.4)
Requirement already satisfied: ptyprocess>=0.5 in
```

```
/opt/conda/lib/python3.12/site-packages (from pexpect>4.3->ipython->ipython-sql)
(0.7.0)
Requirement already satisfied: executing>=1.2.0 in
/opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql)
(2.1.0)
Requirement already satisfied: asttokens>=2.1.0 in
/opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql)
(3.0.0)
Requirement already satisfied: pure_eval in /opt/conda/lib/python3.12/site-
packages (from stack_data->ipython->ipython-sql) (0.2.3)
```

1.1.5 Store the datasets in database tables

To analyze the data using SQL, it first needs to be loaded into SQLite DB. We will create three tables in as under:

1. **CENSUS_DATA**
2. **CHICAGO_PUBLIC_SCHOOLS**
3. **CHICAGO_CRIME_DATA**

Load the `pandas` and `sqlite3` libraries and establish a connection to `FinalDB.db`

[94]:
```
!pip install ipython-sql
!pip install pandas
%load_ext sql
```

```
Requirement already satisfied: ipython-sql in /opt/conda/lib/python3.12/site-
packages (0.5.0)
Requirement already satisfied: prettytable in /opt/conda/lib/python3.12/site-
packages (from ipython-sql) (3.14.0)
Requirement already satisfied: ipython in /opt/conda/lib/python3.12/site-
packages (from ipython-sql) (8.31.0)
Requirement already satisfied: sqlalchemy>=2.0 in
/opt/conda/lib/python3.12/site-packages (from ipython-sql) (2.0.37)
Requirement already satisfied: sqlparse in /opt/conda/lib/python3.12/site-
packages (from ipython-sql) (0.5.3)
Requirement already satisfied: six in /opt/conda/lib/python3.12/site-packages
(from ipython-sql) (1.17.0)
Requirement already satisfied: ipython-genutils in
/opt/conda/lib/python3.12/site-packages (from ipython-sql) (0.2.0)
Requirement already satisfied: greenlet!=0.4.17 in
/opt/conda/lib/python3.12/site-packages (from sqlalchemy>=2.0->ipython-sql)
(3.1.1)
Requirement already satisfied: typing-extensions>=4.6.0 in
/opt/conda/lib/python3.12/site-packages (from sqlalchemy>=2.0->ipython-sql)
(4.12.2)
Requirement already satisfied: decorator in /opt/conda/lib/python3.12/site-
packages (from ipython->ipython-sql) (5.1.1)
Requirement already satisfied: jedi>=0.16 in /opt/conda/lib/python3.12/site-
```

```
packages (from ipython->ipython-sql) (0.19.2)
Requirement already satisfied: matplotlib-inline in
/opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (0.1.7)
Requirement already satisfied: pexpect>4.3 in /opt/conda/lib/python3.12/site-
packages (from ipython->ipython-sql) (4.9.0)
Requirement already satisfied: prompt_toolkit<3.1.0,>=3.0.41 in
/opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (3.0.50)
Requirement already satisfied: pygments>=2.4.0 in
/opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (2.19.1)
Requirement already satisfied: stack_data in /opt/conda/lib/python3.12/site-
packages (from ipython->ipython-sql) (0.6.3)
Requirement already satisfied: traitlets>=5.13.0 in
/opt/conda/lib/python3.12/site-packages (from ipython->ipython-sql) (5.14.3)
Requirement already satisfied: wcwidth in /opt/conda/lib/python3.12/site-
packages (from prettytable->ipython-sql) (0.2.13)
Requirement already satisfied: parso<0.9.0,>=0.8.4 in
/opt/conda/lib/python3.12/site-packages (from jedi>=0.16->ipython->ipython-sql)
(0.8.4)
Requirement already satisfied: ptyprocess>=0.5 in
/opt/conda/lib/python3.12/site-packages (from pexpect>4.3->ipython->ipython-sql)
(0.7.0)
Requirement already satisfied: executing>=1.2.0 in
/opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql)
(2.1.0)
Requirement already satisfied: asttokens>=2.1.0 in
/opt/conda/lib/python3.12/site-packages (from stack_data->ipython->ipython-sql)
(3.0.0)
Requirement already satisfied: pure_eval in /opt/conda/lib/python3.12/site-
packages (from stack_data->ipython->ipython-sql) (0.2.3)
Requirement already satisfied: pandas in /opt/conda/lib/python3.12/site-packages
(2.2.3)
Requirement already satisfied: numpy>=1.26.0 in /opt/conda/lib/python3.12/site-
packages (from pandas) (2.2.2)
Requirement already satisfied: python-dateutil>=2.8.2 in
/opt/conda/lib/python3.12/site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in /opt/conda/lib/python3.12/site-
packages (from pandas) (2024.2)
Requirement already satisfied: tzdata>=2022.7 in /opt/conda/lib/python3.12/site-
packages (from pandas) (2025.1)
Requirement already satisfied: six>=1.5 in /opt/conda/lib/python3.12/site-
packages (from python-dateutil>=2.8.2->pandas) (1.17.0)
The sql extension is already loaded. To reload it, use:
  %reload_ext sql
```

[95]:
```
con = sqlite3.connect("FinalDB.db")
```

Load the SQL magic module

[96]:
```
%sql sqlite:///FULL_PATH_TO_DIRECTORY/FinalDB.db
```

```
Traceback (most recent call last):
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/base.py", line
146, in __init__
    self._dbapi_connection = engine.raw_connection()
                             ^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/base.py", line
3298, in raw_connection
    return self.pool.connect()
           ^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
449, in connect
    return _ConnectionFairy._checkout(self)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
1263, in _checkout
    fairy = _ConnectionRecord.checkout(pool)
            ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
712, in checkout
    rec = pool._do_get()
          ^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/impl.py", line
179, in _do_get
    with util.safe_reraise():
         ^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/util/langhelpers.py",
line 146, in __exit__
    raise exc_value.with_traceback(exc_tb)
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/impl.py", line
177, in _do_get
    return self._create_connection()
           ^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
390, in _create_connection
    return _ConnectionRecord(self)
           ^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
674, in __init__
    self.__connect()
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
900, in __connect
    with util.safe_reraise():
         ^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/util/langhelpers.py",
line 146, in __exit__
    raise exc_value.with_traceback(exc_tb)
```

```
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
896, in __connect
    self.dbapi_connection = connection = pool._invoke_creator(self)
                                         ^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/create.py",
line 646, in connect
    return dialect.connect(*cargs, **cparams)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/default.py",
line 622, in connect
    return self.loaded_dbapi.connect(*cargs, **cparams)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
sqlite3.OperationalError: unable to open database file

The above exception was the direct cause of the following exception:

Traceback (most recent call last):
  File "/opt/conda/lib/python3.12/site-packages/sql/magic.py", line 196, in
execute
    conn = sql.connection.Connection.set(
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sql/connection.py", line 70, in
set
    cls.current = existing or Connection(descriptor, connect_args, creator)
                              ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sql/connection.py", line 55, in
__init__
    self.internal_connection = engine.connect()
                               ^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/base.py", line
3274, in connect
    return self._connection_cls(self)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/base.py", line
148, in __init__
    Connection._handle_dbapi_exception_noconnection(
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/base.py", line
2439, in _handle_dbapi_exception_noconnection
    raise sqlalchemy_exception.with_traceback(exc_info[2]) from e
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/base.py", line
146, in __init__
    self._dbapi_connection = engine.raw_connection()
                             ^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/base.py", line
3298, in raw_connection
    return self.pool.connect()
           ^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
```

```
449, in connect
    return _ConnectionFairy._checkout(self)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
1263, in _checkout
    fairy = _ConnectionRecord.checkout(pool)
            ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
712, in checkout
    rec = pool._do_get()
          ^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/impl.py", line
179, in _do_get
    with util.safe_reraise():
         ^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/util/langhelpers.py",
line 146, in __exit__
    raise exc_value.with_traceback(exc_tb)
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/impl.py", line
177, in _do_get
    return self._create_connection()
           ^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
390, in _create_connection
    return _ConnectionRecord(self)
           ^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
674, in __init__
    self.__connect()
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
900, in __connect
    with util.safe_reraise():
         ^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/util/langhelpers.py",
line 146, in __exit__
    raise exc_value.with_traceback(exc_tb)
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/pool/base.py", line
896, in __connect
    self.dbapi_connection = connection = pool._invoke_creator(self)
                                         ^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/create.py",
line 646, in connect
    return dialect.connect(*cargs, **cparams)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/opt/conda/lib/python3.12/site-packages/sqlalchemy/engine/default.py",
line 622, in connect
    return self.loaded_dbapi.connect(*cargs, **cparams)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
```

```
sqlalchemy.exc.OperationalError: (sqlite3.OperationalError) unable to open
database file
(Background on this error at: https://sqlalche.me/e/20/e3q8)

Connection info needed in SQLAlchemy format, example:
               postgresql://username:password@hostname/dbname
               or an existing connection: dict_keys(['sqlite:///FinalDB.db'])
```

[97]:
```
%load_ext sql
```

```
The sql extension is already loaded. To reload it, use:
  %reload_ext sql
```

Use `Pandas` to load the data available in the links above to dataframes. Use these dataframes to load data on to the database `FinalDB.db` as required tables.

[98]:
```
import os
import sqlite3
import pandas as pd

db_path = os.path.join(os.getcwd(), "FinalDB.db")
con = sqlite3.connect(db_path)

census_url = "https://cf-courses-data.s3.us.cloud-object-storage.appdomain.
 ↪cloud/IBMDeveloperSkillsNetwork-DB0201EN-SkillsNetwork/labs/
 ↪FinalModule_Coursera_V5/data/ChicagoCensusData.csv?
 ↪utm_medium=Exinfluencer&utm_source=Exinfluencer&utm_content=000026UJ&utm_term=10006555&utm_
schools_url = "https://cf-courses-data.s3.us.cloud-object-storage.appdomain.
 ↪cloud/IBMDeveloperSkillsNetwork-DB0201EN-SkillsNetwork/labs/
 ↪FinalModule_Coursera_V5/data/ChicagoPublicSchools.csv?
 ↪utm_medium=Exinfluencer&utm_source=Exinfluencer&utm_content=000026UJ&utm_term=10006555&utm_
crime_url = "https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/
 ↪IBMDeveloperSkillsNetwork-DB0201EN-SkillsNetwork/labs/
 ↪FinalModule_Coursera_V5/data/ChicagoCrimeData.csv?
 ↪utm_medium=Exinfluencer&utm_source=Exinfluencer&utm_content=000026UJ&utm_term=10006555&utm_

df_census = pd.read_csv(census_url, header=0)
df_schools = pd.read_csv(schools_url, header=0)
df_crime = pd.read_csv(crime_url, header=0)

df_census.to_sql("CENSUS_DATA", con, if_exists="replace", index=False,␣
 ↪method="multi")
df_schools.to_sql("CHICAGO_PUBLIC_SCHOOLS", con, if_exists="replace",␣
 ↪index=False, method="multi")
df_crime.to_sql("CHICAGO_CRIME_DATA", con, if_exists="replace", index=False,␣
 ↪method="multi")

con.commit()
```

```
con.close()
```

Establish a connection between SQL magic module and the database `FinalDB.db`

[99]:
```
%sql SELECT name FROM sqlite_master WHERE type='table'
```

```
 * sqlite:///FinalDB.db
Done.
```

[99]:
```
[('CHICAGO_PUBLIC_SCHOOLS_DATA',),
 ('ChicagoCensusData',),
 ('ChicagoPublicSchools',),
 ('ChicagoCrimeData',),
 ('CENSUS_DATA',),
 ('CHICAGO_PUBLIC_SCHOOLS',),
 ('CHICAGO_CRIME_DATA',)]
```

You can now proceed to the the following questions. Please note that a graded assignment will follow this lab and there will be a question on each of the problems stated below. It can be from the answer you received or the code you write for this problem. Therefore, please keep a note of both your codes as well as the response you generate.

1.2 Problems

Now write and execute SQL queries to solve assignment problems

1.2.1 Problem 1

Find the total number of crimes recorded in the CRIME table.

[100]:
```
%%sql
SELECT COUNT(*) AS Total_Crimes FROM ChicagoCrimeData;
```

```
 * sqlite:///FinalDB.db
Done.
```

[100]:
```
[(533,)]
```

1.2.2 Problem 2

List community area names and numbers with per capita income less than 11000.

[106]:
```
%sql SELECT COMMUNITY_AREA_NAME FROM CENSUS_DATA WHERE PER_CAPITA_INCOME <␣
↪11000;
```

```
 * sqlite:///FinalDB.db
Done.
```

[106]:
```
[('West Garfield Park',),
 ('South Lawndale',),
 ('Fuller Park',),
 ('Riverdale',)]
```

1.2.3 Problem 3

List all case numbers for crimes involving minors?(children are not considered minors for the purposes of crime analysis)

[105]:
```
%sql SELECT DISTINCT CASE_NUMBER FROM CHICAGO_CRIME_DATA WHERE DESCRIPTION LIKE␣
  ↪'%MINOR%'
```

```
 * sqlite:///FinalDB.db
Done.
```

[105]:
```
[('HL266884',), ('HK238408',)]
```

1.2.4 Problem 4

List all kidnapping crimes involving a child?

[107]:
```
%sql SELECT DISTINCT CASE_NUMBER, PRIMARY_TYPE, DATE, DESCRIPTION FROM␣
  ↪CHICAGO_CRIME_DATA \
WHERE PRIMARY_TYPE='KIDNAPPING'
```

```
 * sqlite:///FinalDB.db
Done.
```

[107]:
```
[('HN144152', 'KIDNAPPING', '2007-01-26', 'CHILD ABDUCTION/STRANGER')]
```

1.2.5 Problem 5

List the kind of crimes that were recorded at schools. (No repetitions)

[108]:
```
%sql SELECT DISTINCT(PRIMARY_TYPE), LOCATION_DESCRIPTION FROM␣
  ↪CHICAGO_CRIME_DATA \
WHERE LOCATION_DESCRIPTION LIKE '%SCHOOL%'
```

```
 * sqlite:///FinalDB.db
Done.
```

[108]:
```
[('BATTERY', 'SCHOOL, PUBLIC, GROUNDS'),
 ('BATTERY', 'SCHOOL, PUBLIC, BUILDING'),
 ('CRIMINAL DAMAGE', 'SCHOOL, PUBLIC, GROUNDS'),
 ('NARCOTICS', 'SCHOOL, PUBLIC, GROUNDS'),
 ('NARCOTICS', 'SCHOOL, PUBLIC, BUILDING'),
 ('ASSAULT', 'SCHOOL, PUBLIC, GROUNDS'),
 ('CRIMINAL TRESPASS', 'SCHOOL, PUBLIC, GROUNDS'),
 ('PUBLIC PEACE VIOLATION', 'SCHOOL, PRIVATE, BUILDING'),
 ('PUBLIC PEACE VIOLATION', 'SCHOOL, PUBLIC, BUILDING')]
```

1.2.6 Problem 6

List the type of schools along with the average safety score for each type.

[109]:
```
%sql SELECT "Elementary, Middle, or High School", AVG(SAFETY_SCORE)␣
  ↪AVERAGE_SAFETY_SCORE FROM CHICAGO_PUBLIC_SCHOOLS GROUP BY "Elementary,␣
  ↪Middle, or High School";
```

```
 * sqlite:///FinalDB.db
Done.
```

[109]:
```
[('ES', 49.52038369304557), ('HS', 49.62352941176471), ('MS', 48.0)]
```

1.2.7 Problem 7

List 5 community areas with highest % of households below poverty line

[110]:
```
%sql SELECT COMMUNITY_AREA_NAME, PERCENT_HOUSEHOLDS_BELOW_POVERTY FROM␣
↪CENSUS_DATA ORDER BY PERCENT_HOUSEHOLDS_BELOW_POVERTY DESC LIMIT 5 ;
```

```
 * sqlite:///FinalDB.db
Done.
```

[110]:
```
[('Riverdale', 56.5),
 ('Fuller Park', 51.2),
 ('Englewood', 46.6),
 ('North Lawndale', 43.1),
 ('East Garfield Park', 42.4)]
```

1.2.8 Problem 8

Which community area is most crime prone? Display the coumminty area number only.

[114]:
```
%%sql
SELECT COMMUNITY_AREA_NUMBER ,COUNT(COMMUNITY_AREA_NUMBER) AS FREQUENCY
FROM CHICAGO_CRIME_DATA
GROUP BY COMMUNITY_AREA_NUMBER
ORDER BY COUNT(COMMUNITY_AREA_NUMBER) DESC
LIMIT 1;
```

```
 * sqlite:///FinalDB.db
Done.
```

[114]:
```
[(25.0, 43)]
```

Double-click **here** for a hint

1.2.9 Problem 9

Use a sub-query to find the name of the community area with highest hardship index

[115]:
```
%sql SELECT COMMUNITY_AREA_NAME FROM  CENSUS_DATA WHERE HARDSHIP_INDEX =␣
↪(SELECT MAX(HARDSHIP_INDEX) FROM CENSUS_DATA);
```

```
 * sqlite:///FinalDB.db
Done.
```

[115]:
```
[('Riverdale',)]
```

1.2.10 Problem 10

Use a sub-query to determine the Community Area Name with most number of crimes?

[116]:
```
%%sql
SELECT community_area_name FROM CENSUS_DATA
WHERE COMMUNITY_AREA_NUMBER = (SELECT COMMUNITY_AREA_NUMBER FROM␣
 ↪CHICAGO_CRIME_DATA
    GROUP BY COMMUNITY_AREA_NUMBER
    ORDER BY COUNT(COMMUNITY_AREA_NUMBER) DESC
    LIMIT 1)
LIMIT 1;
```

```
 * sqlite:///FinalDB.db
Done.
```

[116]:
```
[('Austin',)]
```

1.3 Author(s)

Hima Vasudevan

Rav Ahuja

Ramesh Sannreddy

1.4 Contribtuor(s)

Malika Singla

Abhishek Gagneja

##

[ ]:

[ ]:

[ ]:

[ ]: