IS-664 Database Programming
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Advanced SQL

Data Analysis Exercise 1

USE OF JUPYTER LAB WITH MYSQL

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Task 1

- Within your Jupyter Notebook, create the stored procedure **calculateStrategic** which accepts only a country abbreviation, creates the table **strategicAnalysis** as shown below, and **display the first 20 rows** of the table.

MySQL 8.0 Command Line Cli

```
mysql> describe strategicAnalysis;
+------------+--------------+------+-----+---------+-------+
| Field      | Type         | Null | Key | Default | Extra |
+------------+--------------+------+-----+---------+-------+
| A_DESG     | varchar(20)  | NO   | PRI | NULL    |       |
| A_Chromium | decimal(10,2)| YES  |     | NULL    |       |
| A_Cobalt   | decimal(10,2)| YES  |     | NULL    |       |
| A_Tungsten | decimal(10,2)| YES  |     | NULL    |       |
| A_Uranium  | decimal(10,2)| YES  |     | NULL    |       |
| A_Country  | varchar(20)  | YES  |     | NULL    |       |
| A_AType    | varchar(20)  | YES  |     | NULL    |       |
+------------+--------------+------+-----+---------+-------+
7 rows in set (0.01 sec)

mysql>
```

All data retrieval must be done using one or more cursors.

[173]:

A_DESG	A_Chromium	A_Cobalt	A_Tungsten	A_Uranium	A_Country	A_AType
C-a1872-l	3.75	9.90	0.17	0.68	US	Carboneous
C-e4604-p	1.36	8.52	1.55	0.73	US	Carboneous
C-f2261-k	6.62	7.85	1.72	0.03	US	Carboneous
C-f3770-k	1.88	2.52	5.37	2.38	US	Carboneous
C-g1438-l	11.38	4.15	0.95	0.03	US	Carboneous
C-g46-n	1.34	2.02	6.87	2.43	US	Carboneous
C-h1552-p	11.72	2.14	0.23	0.14	US	Carboneous
M-b4912-l	13.94	0.71	0.03	0.01	US	Metallic
M-e260-n	6.93	1.45	6.69	2.74	US	Metallic
M-h3007-m	5.04	10.61	1.38	0.15	US	Metallic
M-h305-n	13.65	0.17	0.47	0.45	US	Metallic
M-h4498-j	12.66	1.70	0.74	0.19	US	Metallic
S-d4458-p	14.63	7.24	0.62	0.00	US	Silicaceous
S-e1633-n	4.72	4.43	5.35	0.30	US	Silicaceous
S-e4295-p	2.99	4.85	0.38	1.20	US	Silicaceous
S-f120-n	3.84	1.85	1.14	1.83	US	Silicaceous
S-f2688-m	3.73	8.50	1.84	1.52	US	Silicaceous
S-h2054-k	1.40	4.61	1.32	7.44	US	Silicaceous
S-h2242-q	3.08	8.05	4.40	1.39	US	Silicaceous
S-h4510-j	11.35	4.62	2.63	0.03	US	Silicaceous

Task 2

- Store the output of the **calculateStrategic** procedure, using '**US**' as the argument, into a **Pandas** data frame.

	A_DESG	A_Chromium	A_Cobalt	A_Tungsten	A_Uranium	A_Country	A_AType
0	C-a1872-l	3.75	9.90	0.17	0.68	US	Carboneous
1	C-e4604-p	1.36	8.52	1.55	0.73	US	Carboneous
2	C-f2261-k	6.62	7.85	1.72	0.03	US	Carboneous
3	C-f3770-k	1.88	2.52	5.37	2.38	US	Carboneous
4	C-g1438-l	11.38	4.15	0.95	0.03	US	Carboneous
5	C-g46-n	1.34	2.02	6.87	2.43	US	Carboneous
6	C-h1552-p	11.72	2.14	0.23	0.14	US	Carboneous
7	M-b4912-l	13.94	0.71	0.03	0.01	US	Metallic
8	M-e260-n	6.93	1.45	6.69	2.74	US	Metallic
9	M-h3007-m	5.04	10.61	1.38	0.15	US	Metallic
10	M-h305-n	13.65	0.17	0.47	0.45	US	Metallic
11	M-h4498-j	12.66	1.70	0.74	0.19	US	Metallic
12	S-d4458-p	14.63	7.24	0.62	0.00	US	Silicaceous
13	S-e1633-n	4.72	4.43	5.35	0.30	US	Silicaceous
14	S-e4295-p	2.99	4.85	0.38	1.20	US	Silicaceous
15	S-f120-n	3.84	1.85	1.14	1.83	US	Silicaceous
16	S-f2688-m	3.73	8.50	1.84	1.52	US	Silicaceous
17	S-h2054-k	1.40	4.61	1.32	7.44	US	Silicaceous
18	S-h2242-q	3.08	8.05	4.40	1.39	US	Silicaceous
19	S-h4510-j	11.35	4.62	2.63	0.03	US	Silicaceous

Task 3

- Utilizing the **Pandas** data frame, you created, calculate the average of each strategic metal utilizing **NumPy** arrays and display as shown below.

```
Strategic Metal Averages
        Average Chromium: 6.8
        Average Cobalt: 4.79
        Average Tungsten: 2.19
        Average Uranium: 1.18
```