Python Lab #1:
Korean COVID-19 New Cases by Region

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Overview

- **Prerequisite**

  – Anacodna (Individual Edition)

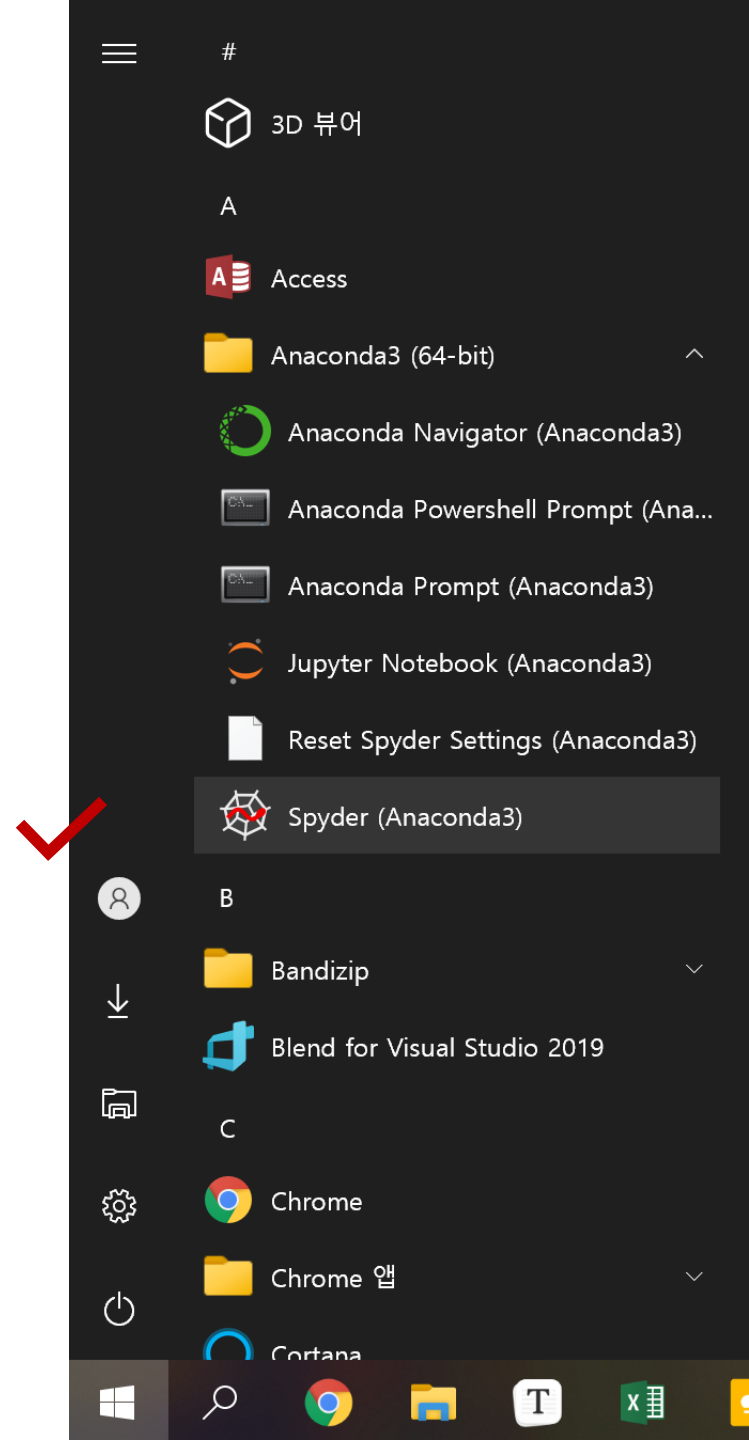- **Practice) Korean COVID-19 New Cases by Region**

  – Motivation

  – Data collection

  – Expected results

  – Practice with the given skeleton code

- **Assignment**

  – Mission: Complete the given skeleton code

Prerequisite

- Anaconda (Individual Edition)
  - Download: https://www.anaconda.com/products/individual
  - I will use Spyder IDE included in Anaconda.
  - Note) You can use other editors and Google Colab instead of Anaconda/Spyder.

Practice) Korean COVID-19 New Cases by Region

▪ Motivation

    – I want to know regional COVID-19 new cases <u>per 1 million people</u>.
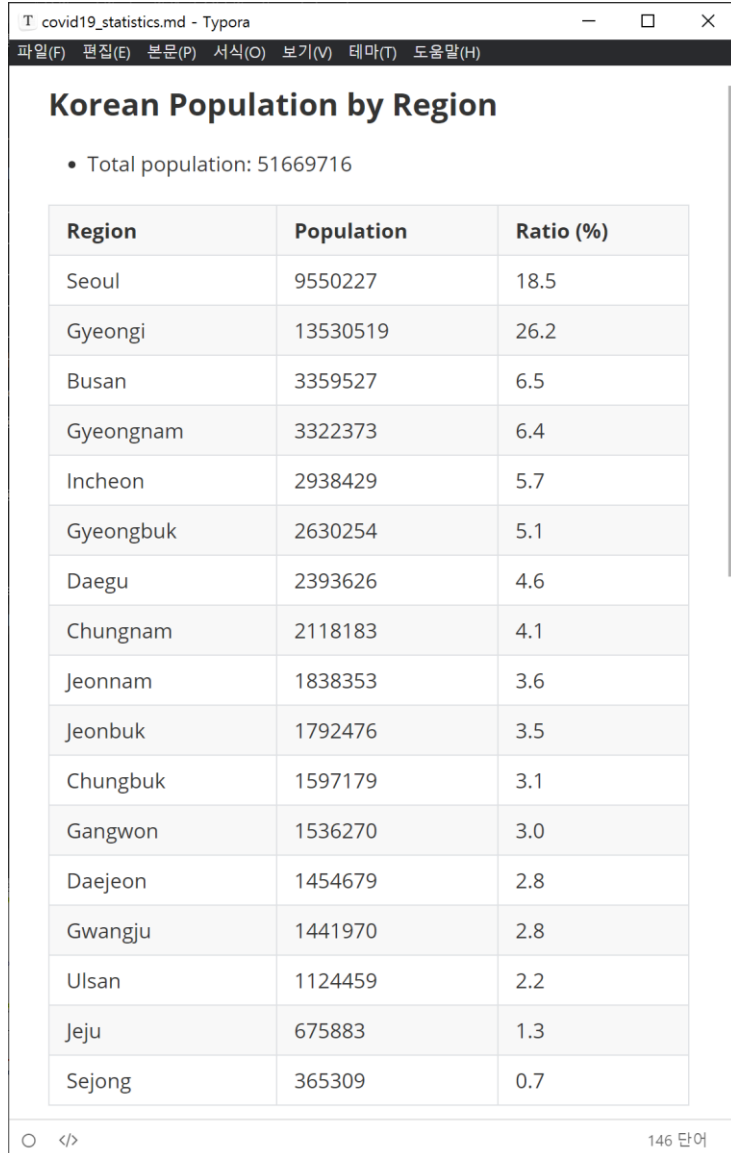

Image: <u>Daum</u> (retrieved on September 22nd, 2021)

Practice) Korean COVID-19 New Cases by Region

▪ Data collection

– Population by region

– The number of new cases by region

```python
regions = ['Seoul', 'Gyeongi', 'Busan', 'Gyeongnam', 'Incheon', 'Gyeongbuk', 'Daegu', 'Chungnam',
           'Jeonnam', 'Jeonbuk', 'Chungbuk', 'Gangwon', 'Daejeon', 'Gwangju', 'Ulsan', 'Jeju',
           'Sejong']
n_people = [9550227, 13530519, 3359527, 3322373, 2938429, 2630254, 2393626, 2118183, 1838353,
            1792476, 1597179, 1536270, 1454679, 1441970, 1124459, 675883, 365309] # 2021-08
n_covid = [644, 529, 38, 29, 148, 28, 41, 62, 23, 27, 27, 33, 16, 40, 20, 5, 4] # 2021-09-21
```
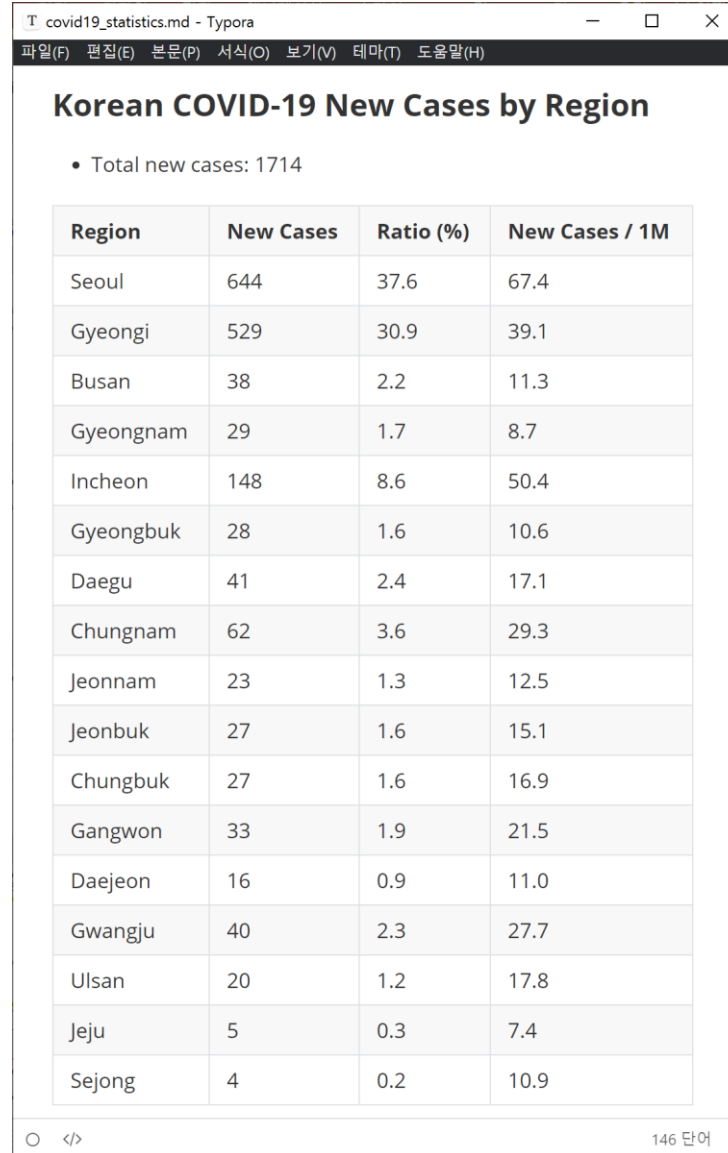
Practice) Korean COVID-19 New Cases by Region

- Expected results (with a Markdown editor or Markdown Live Preview or Github)

Korean Population by Region

- Total population: 51669716

Region	Population	Ratio (%)
Seoul	9550227	18.5
Gyeongi	13530519	26.2
Busan	3359527	6.5
Gyeongnam	3322373	6.4
Incheon	2938429	5.7
Gyeongbuk	2630254	5.1
Daegu	2393626	4.6
Chungnam	2118183	4.1
Jeonnam	1838353	3.6
Jeonbuk	1792476	3.5
Chungbuk	1597179	3.1
Gangwon	1536270	3.0
Daejeon	1454679	2.8
Gwangju	1441970	2.8
Ulsan	1124459	2.2
Jeju	675883	1.3
Sejong	365309	0.7

Korean COVID-19 New Cases by Region

- Total new cases: 1714

Region	New Cases	Ratio (%)	New Cases / 1M
Seoul	644	37.6	67.4
Gyeongi	529	30.9	39.1
Busan	38	2.2	11.3
Gyeongnam	29	1.7	8.7
Incheon	148	8.6	50.4
Gyeongbuk	28	1.6	10.6
Daegu	41	2.4	17.1
Chungnam	62	3.6	29.3
Jeonnam	23	1.3	12.5
Jeonbuk	27	1.6	15.1
Chungbuk	27	1.6	16.9
Gangwon	33	1.9	21.5
Daejeon	16	0.9	11.0
Gwangju	40	2.3	27.7
Ulsan	20	1.2	17.8
Jeju	5	0.3	7.4
Sejong	4	0.2	10.9

Practice) Korean COVID-19 New Cases by Region

- The given skeleton code (`covid19_statistics_skeleton.py`)

```python
def normalize_data(n_cases, n_people, scale):
    # TODO) Calculate the number of cases per its population
    norm_cases = []
    for idx, n in enumerate(n_cases):
        norm_cases.append(0)
    return norm_cases

regions  = ['Seoul', ...]
n_people = [9550227, ...] # 2021-08
n_covid  = [     644, ...] # 2021-09-21

sum_people = 0 # TODO) The total number of people
sum_covid  = 0 # TODO) The total number of new cases
norm_covid = normalize_data(n_covid, n_people, 1000000) # The new cases per 1 million people

# Print population by region
print('### Korean Population by Region')
print('* Total population:', sum_people)
print()
print('| Region | Population | Ratio (%) |')
print('| ------ | ---------- | --------- |')
for idx, pop in enumerate(n_people):
    ratio = 0 # TODO) The ratio of new cases to the total
    print('| %s | %d | %.1f |' % (regions[idx], pop, ratio))
print('')

# TODO) Print COVID-19 new cases by region
```

Assignment

- Mission
  - <mark>Complete</mark> the given skeleton code (`covid19_statistics_skeleton.py`)
  - Submit your code (`covid19_statistics.py`) and its output copy (`covid19_statistics.md`)
    - You need to copy and paste your printed output to a text file (`covid19_statistics.md`).

- Condition
  - Please follow the above filename convention.
  - You can start from scratch (without using the given skeleton code).
    - However, you should use the same data shown in the slide 5.
  - You can freely change the given skeleton code if necessary.

- Submission
  - Deadline: **September 18, 2024 23:59** (firm deadline; no extension)
  - Where: e-Class > Assignments
  - Score: Max 10 points