

컴퓨터 네트워크

- 01. Traceroute -

※ 과제 내용

python을 이용해 traceroute로 나오는 route의 위/경도를 출력

- 인자로 목적지 URL을 입력
- 서버프로세스를 실행시켜서 traceroute 실행
- 명령어 결과 값 파싱, IP 추출
- 다음주 google maps를 이용해 시각화할 예정

※ 실행 코드

```
import pygeoip
import sys
import subprocess

gi = pygeoip.GeoIP('GeoLiteCity.dat')

print("[Destination] ", sys.argv[1])
proc = subprocess.Popen(["traceroute", "-m", "30", sys.argv[1]], stdout = subprocess.PIPE)
out, err = proc.communicate()

output = out.decode('utf-8')
output = output.split("\n")

for i in range(1, len(output) - 1):
    outline = output[i].split()
    ip_addr = outline[1]
    if outline[1] != '*':
        if gi.record_by_addr(ip_addr) is None:
            print('[IP] ', ip_addr, " - No Geolocation Info.")
        else:
            a = gi.record_by_addr(ip_addr)
            print('[IP] ', ip_addr, ', Lat : ', a.get('latitude'), ', Lon : ', a.get('longitude'))
    elif outline[2] != '*':
        if gi.record_by_addr(ip_addr) is None:
            print('[IP] ', ip_addr, " - No Geolocation Info.")
        else:
            a = gi.record_by_addr(ip_addr)
            print('[IP] ', ip_addr, ', Lat : ', a.get('latitude'), ', Lon : ', a.get('longitude'))
```

print : python을 실행할 때 입력하는 인자의 값이 목적지이다. 이 인자를 사용해서 subprocess를 생성해 traceroute를 실행한다. 이 때 -m 30으로 30개만 출력해주었다.

for : 30개의 경로를 디코딩하여 \n으로 파싱을 해준다. 파싱을 한 30개의 경로 output을 다시 공백으로 파싱 한 후 첫 번째의 값을 ip_addr(IP 주소)로 저장한다.

if : IP 주소가 *이 아니라면 다음 조건문을 검사한다. gi.record_by_addr의 값이 없다면 "No Geolocation Info"를 출력해주고 있다면 IP주소, 위/경도를 출력해준다. 아래 outline[2]가 '*'이 아닐 때의 조건도 있는데 이것은 처음에 *이 나오고 두 번째에 IP 주소가 나올 경우를 고려해서 구현하였다.

※ 부가 과제

* * * 이 나오는 이유는 ?

➔ 출력이 * * * 가 되는 홑은 해당 홑의 라우터가 traceroute에 사용하는 패킷 유형에 응답하지 않는다는 것을 의미합니다.

※ 실행 결과

① 벨기에

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Wikipedia.org
[Destination]   Wikipedia.org
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.153 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.192 - No Geolocation Info.
[IP] 118.221.7.38 , Lat : 35.1028 , Lon : 129.0403
```

[Wikipedia.org]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Reddit.com
[Destination]   Reddit.com
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.153 , Lat : 35.1028 , Lon : 129.0403
[IP] 118.221.7.54 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.6.11 - No Geolocation Info.
```

[Reddit.com]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Yahoo.com
[Destination]   Yahoo.com
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 118.217.135.169 , Lat : 36.455600000000004 , Lon : 127.12470000000002
[IP] 10.222.10.156 - No Geolocation Info.
[IP] 118.221.7.38 , Lat : 35.1028 , Lon : 129.0403
[IP] 98.137.246.7 , Lat : 37.424900000000001 , Lon : -122.00739999999999
```

[Yahoo.com]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py 2dehands.be
[Destination]   2dehands.be
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.153 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.172 - No Geolocation Info.
[IP] 118.221.7.30 , Lat : 35.1028 , Lon : 129.0403
```

[2dehands.be]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Live.com
[Destination]   Live.com
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.142 - No Geolocation Info.
[IP] 58.229.11.42 , Lat : 37.5112 , Lon : 126.97410000000002
```

[Live.com]

② 아이슬란드

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Visir.is
[Destination] Visir.is
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.194 - No Geolocation Info.
[IP] 118.221.7.42 , Lat : 35.1028 , Lon : 129.0403
```

[Visir.is]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Fotbolti.net
[Destination] Fotbolti.net
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 118.217.135.169 , Lat : 36.455600000000004 , Lon : 127.12470000000002
[IP] 10.222.14.99 - No Geolocation Info.
[IP] 10.222.6.43 - No Geolocation Info.
[IP] 104.25.93.14 , Lat : 37.751000000000005 , Lon : -97.822
```

[Fotbolti.net]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Ruv.is
[Destination] Ruv.is
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.170 - No Geolocation Info.
[IP] 175.124.170.18 , Lat : 37.5985 , Lon : 126.97829999999999
[IP] 104.20.40.110 , Lat : 37.751000000000005 , Lon : -97.822
```

[Ruv.is]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Imdb.com
[Destination] Imdb.com
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 175.124.54.85 , Lat : 37.5985 , Lon : 126.97829999999999
[IP] 58.229.92.194 , Lat : 37.5112 , Lon : 126.974100000000002
[IP] 129.250.201.10 , Lat : 39.623700000000014 , Lon : -104.8738
[IP] 54.239.105.109 , Lat : 39.048100000000005 , Lon : -77.4728
[IP] 54.239.111.93 , Lat : 39.048100000000005 , Lon : -77.4728
[IP] 52.93.27.217 , Lat : 47.6344 , Lon : -122.34219999999999
```

[Imdb.com]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Mbl.is
[Destination] Mbl.is
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 118.217.135.165 , Lat : 36.455600000000004 , Lon : 127.12470000000002
[IP] 10.222.10.172 - No Geolocation Info.
[IP] 10.222.14.131 - No Geolocation Info.
[IP] 129.250.6.163 , Lat : 39.623700000000014 , Lon : -104.8738
[IP] 212.119.24.222 , Lat : 52.38239999999999 , Lon : 4.899499999999989
```

[Mbl.is]

③ 스위스

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Blick.ch
[Destination] Blick.ch
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 118.217.135.165 , Lat : 36.455600000000004 , Lon : 127.124700000000002
[IP] 10.222.10.174 - No Geolocation Info.
[IP] 58.229.4.55 , Lat : 37.5112 , Lon : 126.974100000000002
[IP] 63.243.216.23 , Lat : 38.926600000000001 , Lon : -77.3936
[IP] 37.58.62.60 , Lat : 51.29929999999999 , Lon : 9.4910000000000014
```

[Blick.ch]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py 20min.ch
[Destination] 20min.ch
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 118.221.7.58 , Lat : 35.1028 , Lon : 129.0403
[IP] 58.229.15.117 , Lat : 37.5112 , Lon : 126.974100000000002
[IP] 91.218.184.84 , Lat : 59.94999999999999 , Lon : 10.75
[IP] 91.218.184.174 , Lat : 59.94999999999999 , Lon : 10.75
```

[20min.ch]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Sbb.ch
[Destination] Sbb.ch
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 58.229.11.37 , Lat : 37.5112 , Lon : 126.974100000000002
[IP] 118.217.96.145 , Lat : 37.5112 , Lon : 126.974100000000002
[IP] 195.141.33.233 , Lat : 47.144900000000001 , Lon : 8.155100000000004
```

[Sbb.ch]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Ricardo.ch
[Destination] Ricardo.ch
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.153 , Lat : 35.1028 , Lon : 129.0403
[IP] 1.255.26.242 , Lat : 37.5112 , Lon : 126.974100000000002
[IP] 175.124.53.95 , Lat : 37.5985 , Lon : 126.97829999999999
[IP] 82.197.168.74 , Lat : 47.096200000000001 , Lon : 8.655200000000008
[IP] 82.197.168.238 , Lat : 47.096200000000001 , Lon : 8.655200000000008
```

[Ricardo.ch]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Srf.ch
[Destination] Srf.ch
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 118.217.135.169 , Lat : 36.455600000000004 , Lon : 127.124700000000002
[IP] 10.222.10.192 - No Geolocation Info.
[IP] 211.178.182.207 , Lat : 37.5985 , Lon : 126.97829999999999
```

[Srf.ch]

④ 프랑스

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Pole-emploi.fr
[Destination] Pole-emploi.fr
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 118.217.135.169 , Lat : 36.455600000000004 , Lon : 127.12470000000002
[IP] 175.124.54.81 , Lat : 37.5985 , Lon : 126.97829999999999
[IP] 58.229.14.9 , Lat : 37.5112 , Lon : 126.97410000000002
[IP] 154.54.24.221 , Lat : 37.751000000000005 , Lon : -97.822
[IP] 154.54.7.157 , Lat : 37.751000000000005 , Lon : -97.822
```

[Pole-emploi.fr]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Free.fr
[Destination] Free.fr
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 118.217.135.169 , Lat : 36.455600000000004 , Lon : 127.12470000000002
[IP] 175.124.53.93 , Lat : 37.5985 , Lon : 126.97829999999999
[IP] 58.229.92.229 , Lat : 37.5112 , Lon : 126.97410000000002
[IP] 154.54.28.69 , Lat : 37.751000000000005 , Lon : -97.822
[IP] 154.54.40.109 , Lat : 37.751000000000005 , Lon : -97.822
[IP] 194.149.161.242 , Lat : 48.858200000000001 , Lon : 2.3386999999999887
[IP] 212.27.48.10 , Lat : 48.858200000000001 , Lon : 2.3386999999999887
```

[Free.fr]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Orange.fr
[Destination] Orange.fr
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 118.217.135.169 , Lat : 36.455600000000004 , Lon : 127.12470000000002
[IP] 10.222.10.180 - No Geolocation Info.
[IP] 58.229.14.18 , Lat : 37.5112 , Lon : 126.97410000000002
[IP] 193.251.243.165 , Lat : 48.858200000000001 , Lon : 2.3386999999999887
[IP] 193.251.243.165 , Lat : 48.858200000000001 , Lon : 2.3386999999999887
```

[Orange.fr]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Ebay.fr
[Destination] Ebay.fr
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 175.124.172.250 , Lat : 37.5985 , Lon : 126.97829999999999
[IP] 39.115.132.87 , Lat : 37.5985 , Lon : 126.97829999999999
```

[Ebay.fr]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Leboncoin.fr
[Destination] Leboncoin.fr
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.59109999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.198 - No Geolocation Info.
[IP] 10.222.14.131 - No Geolocation Info.
```

[Leboncoin.fr]

⑤ 독일

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Web.de
[Destination] Web.de
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.591099999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.170 - No Geolocation Info.
[IP] 10.222.14.123 - No Geolocation Info.
```

[Web.de]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Ok.ru
[Destination] Ok.ru
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.591099999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.170 - No Geolocation Info.
[IP] 175.124.172.250 , Lat : 37.5985 , Lon : 126.97829999999999
```

[Ok.ru]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Mail.ru
[Destination] Mail.ru
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.591099999999998
[IP] 123.214.210.157 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.170 - No Geolocation Info.
[IP] 58.229.15.202 , Lat : 37.5112 , Lon : 126.974100000000002
```

[Mail.ru]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Yandex.ru
[Destination] Yandex.ru
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.591099999999998
[IP] 123.214.210.153 , Lat : 35.1028 , Lon : 129.0403
[IP] 10.222.10.164 - No Geolocation Info.
[IP] 58.229.4.53 , Lat : 37.5112 , Lon : 126.974100000000002
[IP] 77.88.55.77 , Lat : 55.73859999999999 , Lon : 37.60679999999999
```

[Yandex.ru]

```
leebyeongman@leebyeongman-VirtualBox:~/CN_201402391/180913$ python3 test.py Spiegel.de
[Destination] Spiegel.de
[IP] 192.168.0.1 - No Geolocation Info.
[IP] 192.168.25.1 - No Geolocation Info.
[IP] 116.125.253.1 , Lat : 35.870299999999986 , Lon : 128.591099999999998
[IP] 118.217.135.165 , Lat : 36.455600000000004 , Lon : 127.124700000000002
[IP] 10.222.14.119 - No Geolocation Info.
[IP] 175.124.53.93 , Lat : 37.5985 , Lon : 126.97829999999999
```

[Spiegel.de]