```
In [1]:
        pip install memory profiler
        pip install psutil
Out[1]: '\npip install memory profiler\npip install psutil\n'
In [2]: ! cat 012.Test_py_memory_001.py
        import sys
        n = int(sys.argv[1])
        @profile
        def r():
          import pandas as pd
          import numpy as np
          import time
          N = n
          data = pd.DataFrame(np.random.uniform(1,9,(N, 38)))
          data[data[12] > 5]
          time.sleep(2)
        r()
In [3]: ! py3 -m memory_profiler 012.Test_py_memory_001.py 10
        Filename: 012.Test_py_memory_001.py
        Line #
                                          Line Contents
                 Mem usage
                              Increment
        ______
             4
                 28.727 MiB
                             28.727 MiB
                                          @profile
             5
                                          def r():
                69.566 MiB
                             40.840 MiB
             6
                                            import pandas as pd
                                           import numpy as np
             7
                69.566 MiB
                             0.000 MiB
                 69.566 MiB
                              0.000 MiB
                                            import time
                              0.000 MiB
             9
                 69.566 MiB
                                            N = n
                                            data = pd.DataFrame(np.random.uniform(1,9,(N, 38)))
            10
                69.566 MiB
                              0.000 MiB
            11
                 69.805 MiB
                              0.238 MiB
                                            data[data[12] > 5]
            12
                 69.805 MiB
                              0.000 MiB
                                            time.sleep(2)
In [4]: ! py3 -m memory_profiler 012.Test_py_memory_001.py 100
        Filename: 012. Test py memory 001. py
        Line #
                 Mem usage
                              Increment
                                          Line Contents
             4
                 28.730 MiB
                             28.730 MiB
                                          @profile
             5
                                          def r():
                69.570 MiB
                             40.840 MiB
                                            import pandas as pd
```

```
import numpy as np
 7
     69.570 MiB
                   0.000 MiB
 8
     69.570 MiB
                   0.000 MiB
                                 import time
     69.570 MiB
                                 N = n
 9
                   0.000 MiB
     69.570 MiB
                                 data = pd.DataFrame(np.random.uniform(1,9,(N, 38)))
10
                   0.000 MiB
11
     69.809 MiB
                   0.238 MiB
                                 data[data[12] > 5]
     69.809 MiB
                   0.000 MiB
                                 time.sleep(2)
```

```
In [5]: ! py3 -m memory_profiler 012.Test_py_memory_001.py 1000
```

Filename: 012.Test\_py\_memory\_001.py

```
Line #
         Mem usage
                     Increment
                               Line Contents
______
                    28.730 MiB
                                @profile
    4
        28.730 MiB
    5
                                def r():
                    40.844 MiB
        69.574 MiB
                                  import pandas as pd
    6
        69.574 MiB
    7
                     0.000 MiB
                                  import numpy as np
    8
        69.574 MiB
                     0.000 MiB
                                  import time
        69.574 MiB
                     0.000 MiB
                                 N = n
                                  data = pd.DataFrame(np.random.uniform(1,9,(N, 38)))
   10
        69.816 MiB
                     0.242 MiB
                     0.508 MiB
                                  data[data[12] > 5]
        70.324 MiB
   12
        70.324 MiB
                     0.000 MiB
                                  time.sleep(2)
```

Filename: 012.Test\_py\_memory\_001.py

```
Line #
         Mem usage
                     Increment
                                Line Contents
       28.723 MiB 28.723 MiB
    4
                                @profile
    5
                                def r():
                                import pandas as pd
    6
       69.566 MiB
                   40.844 MiB
    7
        69.566 MiB
                    0.000 MiB
                                import numpy as np
    8
        69.566 MiB
                   0.000 MiB
                                import time
        69.566 MiB
                               N = n
                   0.000 MiB
        72.641 MiB
                   3.074 MiB
                                  data = pd.DataFrame(np.random.uniform(1,9,(N, 38)))
   10
                                  data[data[12] > 5]
   11
        72.922 MiB
                     0.281 MiB
   12
        72.922 MiB
                     0.000 MiB
                                time.sleep(2)
```

## In [7]: ! py3 -m memory\_profiler 012.Test\_py\_memory\_001.py 100000

Filename: 012.Test\_py\_memory\_001.py

Line #	Mem us	sage	Incre	ment	Line Contents	
4	28 <b>.</b> 727	==== MiB	28.727	===== MiB	======================================	
5					<pre>def r():</pre>	
6	69.574	$\mathtt{MiB}$	40.848	MiB	import pandas as pd	
7	69.574	$\mathtt{MiB}$	0.000	MiB	import numpy as np	
8	69.574	$\mathtt{MiB}$	0.000	MiB	import time	
9	69.574	$\mathtt{MiB}$	0.000	MiB	N = n	
10	98.691	$\mathtt{MiB}$	29.117	MiB	<pre>data = pd.DataFrame(np.random.uniform(1,9,(N, 3))</pre>	38)))
11	100.473	MiB	1.781	MiB	data[data[12] > 5]	
12	100.473	$\mathtt{MiB}$	0.000	MiB	time.sleep(2)	

## In [8]: ! py3 -m memory\_profiler 012.Test\_py\_memory\_001.py 1000000

Filename: 012.Test\_py\_memory\_001.py

Line #	Mem usage	Increment	Line Contents
4	28.723 MiB	28.723 MiB	<pre>@profile</pre>
5			def r():
6	69.574 MiB	40.852 MiB	import pandas as pd
7	69.574 MiB	0.000 MiB	import numpy as np
8	69.574 MiB	0.000 MiB	import time
9	69.574 MiB	0.000 MiB	N = n
10	359.598 MiB	290.023 MiB	<pre>data = pd.DataFrame(np.random.uniform(1,9,(N, 38)))</pre>
11	369.070 MiB	9.473 MiB	data[data[12] > 5]
12	369.070 MiB	0.000 MiB	time.sleep(2)