

Sample output from my solution to Problem #1:  
(yours should match the format: the times depend on your machine's speed).

Nearest Neighbor, size = 100

Analysis of 5 timings

avg = 0.00191 min = 0.00187 max = 0.00197 span = 5.0%

Time Ranges

```
1.87e-03<>1.88e-03[ 20.0%] | *****
1.88e-03<>1.89e-03[ 40.0%] | *****
1.89e-03<>1.90e-03[  0.0%] |
1.90e-03<>1.91e-03[  0.0%] | A
1.91e-03<>1.92e-03[  0.0%] |
1.92e-03<>1.93e-03[ 20.0%] | *****
1.93e-03<>1.94e-03[  0.0%] |
1.94e-03<>1.95e-03[  0.0%] |
1.95e-03<>1.96e-03[  0.0%] |
1.96e-03<>1.97e-03[  0.0%] |
1.97e-03<>1.98e-03[ 20.0%] | *****
```

Nearest Neighbor, size = 200

Analysis of 5 timings

avg = 0.00475 min = 0.00459 max = 0.00501 span = 8.8%

Time Ranges

```
4.59e-03<>4.63e-03[ 20.0%] | *****
4.63e-03<>4.67e-03[ 20.0%] | *****
4.67e-03<>4.71e-03[ 20.0%] | *****
4.71e-03<>4.76e-03[  0.0%] | A
4.76e-03<>4.80e-03[ 20.0%] | *****
4.80e-03<>4.84e-03[  0.0%] |
4.84e-03<>4.88e-03[  0.0%] |
4.88e-03<>4.92e-03[  0.0%] |
4.92e-03<>4.97e-03[  0.0%] |
4.97e-03<>5.01e-03[  0.0%] |
5.01e-03<>5.05e-03[ 20.0%] | *****
```

Nearest Neighbor, size = 400

Analysis of 5 timings

avg = 0.00978 min = 0.00951 max = 0.01014 span = 6.4%

Time Ranges

```
9.51e-03<>9.57e-03[ 20.0%] | *****
9.57e-03<>9.63e-03[  0.0%] |
9.63e-03<>9.70e-03[  0.0%] |
9.70e-03<>9.76e-03[ 20.0%] | *****
9.76e-03<>9.82e-03[ 40.0%] | *****A
9.82e-03<>9.88e-03[  0.0%] |
9.88e-03<>9.95e-03[  0.0%] |
9.95e-03<>1.00e-02[  0.0%] |
1.00e-02<>1.01e-02[  0.0%] |
1.01e-02<>1.01e-02[  0.0%] |
1.01e-02<>1.02e-02[ 20.0%] | *****
```

Nearest Neighbor, size = 800

Analysis of 5 timings

avg = 0.02152 min = 0.02091 max = 0.02236 span = 6.7%

Time Ranges

```
2.09e-02<>2.11e-02[ 20.0%] | *****
```

```

2.11e-02<>2.12e-02[ 0.0%]|
2.12e-02<>2.13e-02[ 20.0%]|*****
2.13e-02<>2.15e-02[ 0.0%]|
2.15e-02<>2.16e-02[ 40.0%]|*****A
2.16e-02<>2.18e-02[ 0.0%]|
2.18e-02<>2.19e-02[ 0.0%]|
2.19e-02<>2.21e-02[ 0.0%]|
2.21e-02<>2.22e-02[ 0.0%]|
2.22e-02<>2.24e-02[ 0.0%]|
2.24e-02<>2.25e-02[ 20.0%]|*****

```

Nearest Neighbor, size = 1600

Analysis of 5 timings

avg = 0.04441 min = 0.04409 max = 0.04493 span = 1.9%

#### Time Ranges

```

4.41e-02<>4.42e-02[ 40.0%]|*****
4.42e-02<>4.43e-02[ 0.0%]|
4.43e-02<>4.43e-02[ 0.0%]|
4.43e-02<>4.44e-02[ 20.0%]|*****A
4.44e-02<>4.45e-02[ 0.0%]|
4.45e-02<>4.46e-02[ 20.0%]|*****
4.46e-02<>4.47e-02[ 0.0%]|
4.47e-02<>4.48e-02[ 0.0%]|
4.48e-02<>4.48e-02[ 0.0%]|
4.48e-02<>4.49e-02[ 0.0%]|
4.49e-02<>4.50e-02[ 20.0%]|*****

```

Nearest Neighbor, size = 3200

Analysis of 5 timings

avg = 0.09622 min = 0.09443 max = 0.09832 span = 4.0%

#### Time Ranges

```

9.44e-02<>9.48e-02[ 20.0%]|*****
9.48e-02<>9.52e-02[ 0.0%]|
9.52e-02<>9.56e-02[ 20.0%]|*****
9.56e-02<>9.60e-02[ 20.0%]|*****
9.60e-02<>9.64e-02[ 0.0%]|A
9.64e-02<>9.68e-02[ 0.0%]|
9.68e-02<>9.72e-02[ 20.0%]|*****
9.72e-02<>9.75e-02[ 0.0%]|
9.75e-02<>9.79e-02[ 0.0%]|
9.79e-02<>9.83e-02[ 0.0%]|
9.83e-02<>9.87e-02[ 20.0%]|*****

```

Nearest Neighbor, size = 6400

Analysis of 5 timings

avg = 0.20994 min = 0.20801 max = 0.21154 span = 1.7%

#### Time Ranges

```

2.08e-01<>2.08e-01[ 20.0%]|*****
2.08e-01<>2.09e-01[ 0.0%]|
2.09e-01<>2.09e-01[ 0.0%]|
2.09e-01<>2.09e-01[ 20.0%]|*****
2.09e-01<>2.10e-01[ 0.0%]|
2.10e-01<>2.10e-01[ 0.0%]|A
2.10e-01<>2.10e-01[ 20.0%]|*****
2.10e-01<>2.11e-01[ 20.0%]|*****
2.11e-01<>2.11e-01[ 0.0%]|
2.11e-01<>2.12e-01[ 0.0%]|
2.12e-01<>2.12e-01[ 20.0%]|*****

```

Nearest Neighbor, size = 12800

Analysis of 5 timings

avg = 0.44780 min = 0.44199 max = 0.45383 span = 2.6%

#### Time Ranges

```

4.42e-01<>4.43e-01[ 20.0%] | *****
4.43e-01<>4.44e-01[  0.0%] |
4.44e-01<>4.46e-01[ 20.0%] | *****
4.46e-01<>4.47e-01[  0.0%] |
4.47e-01<>4.48e-01[ 20.0%] | *****A
4.48e-01<>4.49e-01[  0.0%] |
4.49e-01<>4.50e-01[  0.0%] |
4.50e-01<>4.51e-01[ 20.0%] | *****
4.51e-01<>4.53e-01[  0.0%] |
4.53e-01<>4.54e-01[  0.0%] |
4.54e-01<>4.55e-01[ 20.0%] | *****

```

Nearest Neighbor, size = 25600

Analysis of 5 timings

avg = 0.96697 min = 0.95747 max = 0.98404 span = 2.7%

#### Time Ranges

```

9.57e-01<>9.60e-01[ 20.0%] | *****
9.60e-01<>9.63e-01[ 40.0%] | *****
9.63e-01<>9.65e-01[  0.0%] |
9.65e-01<>9.68e-01[  0.0%] | A
9.68e-01<>9.71e-01[  0.0%] |
9.71e-01<>9.73e-01[ 20.0%] | *****
9.73e-01<>9.76e-01[  0.0%] |
9.76e-01<>9.79e-01[  0.0%] |
9.79e-01<>9.81e-01[  0.0%] |
9.81e-01<>9.84e-01[  0.0%] |
9.84e-01<>9.87e-01[ 20.0%] | *****

```

## Sample output from my solution to Problem #2:

(yours should match the format: the times/counts depend on your machine's speed).

Sat Jun 3 07:29:18 2017 test\_profile

3108924 function calls (3076158 primitive calls) in 1.356 seconds

Ordered by: call count

List reduced from 23 to 15 due to restriction &lt;15&gt;

| ncalls  | tottime | percall | cumtime | percall | filename:lineno(function)                     |
|---------|---------|---------|---------|---------|---|
| 965269  | 0.062   | 0.000   | 0.062   | 0.000   | {built-in method builtins.len}                |
| 549354  | 0.117   | 0.000   | 0.117   | 0.000   | q82solution.py:14(swap)                       |
| 414949  | 0.026   | 0.000   | 0.026   | 0.000   | {built-in method builtins.abs}                |
| 374783  | 0.021   | 0.000   | 0.021   | 0.000   | {method 'append' of 'list' objects}           |
| 184320  | 0.014   | 0.000   | 0.014   | 0.000   | q82solution.py:69(<lambda>)                   |
| 174080  | 0.014   | 0.000   | 0.014   | 0.000   | q82solution.py:68(<lambda>)                   |
| 63410   | 0.062   | 0.000   | 0.072   | 0.000   | q82solution.py:42(dist)                       |
| 63410   | 0.010   | 0.000   | 0.010   | 0.000   | {built-in method math.sqrt}                   |
| 55164   | 0.242   | 0.000   | 0.359   | 0.000   | q82solution.py:13(partition)                  |
| 51200   | 0.003   | 0.000   | 0.003   | 0.000   | {method 'random' of '_random.Random' objects} |
| 32767/1 | 0.566   | 0.000   | 1.342   | 1.342   | q82solution.py:41(closest_2d)                 |
| 32766   | 0.011   | 0.000   | 0.011   | 0.000   | q82solution.py:43(<listcomp>)                 |
| 32766   | 0.018   | 0.000   | 0.038   | 0.000   | q82solution.py:43(min_none)                   |
| 32766   | 0.116   | 0.000   | 0.144   | 0.000   | {method 'sort' of 'list' objects}             |
| 32766   | 0.009   | 0.000   | 0.009   | 0.000   | {built-in method builtins.min}                |

Sat Jun 3 07:29:18 2017 test\_profile

3108924 function calls (3076158 primitive calls) in 1.356 seconds

Ordered by: internal time

List reduced from 23 to 15 due to restriction &lt;15&gt;

| ncalls  | tottime | percall | cumtime | percall | filename:lineno(function)           |
|---------|---------|---------|---------|---------|-------------------------------------|
| 32767/1 | 0.566   | 0.000   | 1.342   | 1.342   | q82solution.py:41(closest_2d)       |
| 55164   | 0.242   | 0.000   | 0.359   | 0.000   | q82solution.py:13(partition)        |
| 549354  | 0.117   | 0.000   | 0.117   | 0.000   | q82solution.py:14(swap)             |
| 32766   | 0.116   | 0.000   | 0.144   | 0.000   | {method 'sort' of 'list' objects}   |
| 63410   | 0.062   | 0.000   | 0.072   | 0.000   | q82solution.py:42(dist)             |
| 965269  | 0.062   | 0.000   | 0.062   | 0.000   | {built-in method builtins.len}      |
| 16383   | 0.035   | 0.000   | 0.395   | 0.000   | q82solution.py:26(select)           |
| 414949  | 0.026   | 0.000   | 0.026   | 0.000   | {built-in method builtins.abs}      |
| 374783  | 0.021   | 0.000   | 0.021   | 0.000   | {method 'append' of 'list' objects} |
| 32766   | 0.018   | 0.000   | 0.038   | 0.000   | q82solution.py:43(min_none)         |
| 16383   | 0.017   | 0.000   | 0.017   | 0.000   | q82solution.py:49(<listcomp>)       |
| 174080  | 0.014   | 0.000   | 0.014   | 0.000   | q82solution.py:68(<lambda>)         |
| 184320  | 0.014   | 0.000   | 0.014   | 0.000   | q82solution.py:69(<lambda>)         |
| 32766   | 0.011   | 0.000   | 0.011   | 0.000   | q82solution.py:43(<listcomp>)       |
| 63410   | 0.010   | 0.000   | 0.010   | 0.000   | {built-in method math.sqrt}         |