

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

```
closest_2d, size = 1000
Analysis of 5 timings
avg = 0.026   min = 0.025   max = 0.027   span = 8.4%
```

```
Time Ranges
2.50e-02<>2.52e-02[ 20.0%] | *****
2.52e-02<>2.54e-02[  0.0%] |
2.54e-02<>2.56e-02[ 20.0%] | *****
2.56e-02<>2.59e-02[  0.0%] |
2.59e-02<>2.61e-02[  0.0%] |
2.61e-02<>2.63e-02[  0.0%] | A
2.63e-02<>2.65e-02[ 20.0%] | *****
2.65e-02<>2.68e-02[  0.0%] |
2.68e-02<>2.70e-02[  0.0%] |
2.70e-02<>2.72e-02[ 20.0%] | *****
2.72e-02<>2.74e-02[ 20.0%] | *****
```

```
closest_2d, size = 2000
Analysis of 5 timings
avg = 0.055   min = 0.055   max = 0.057   span = 3.9%
```

```
Time Ranges
5.45e-02<>5.47e-02[ 40.0%] | *****
5.47e-02<>5.49e-02[  0.0%] |
5.49e-02<>5.52e-02[  0.0%] |
5.52e-02<>5.54e-02[ 40.0%] | *****A
5.54e-02<>5.56e-02[  0.0%] |
5.56e-02<>5.58e-02[  0.0%] |
5.58e-02<>5.60e-02[  0.0%] |
5.60e-02<>5.62e-02[  0.0%] |
5.62e-02<>5.64e-02[  0.0%] |
5.64e-02<>5.67e-02[  0.0%] |
5.67e-02<>5.69e-02[ 20.0%] | *****
```

```
closest_2d, size = 4000
Analysis of 5 timings
avg = 0.115   min = 0.114   max = 0.116   span = 2.2%
```

```
Time Ranges
1.14e-01<>1.14e-01[ 20.0%] | *****
1.14e-01<>1.14e-01[  0.0%] |
1.14e-01<>1.15e-01[  0.0%] |
1.15e-01<>1.15e-01[ 20.0%] | *****
1.15e-01<>1.15e-01[  0.0%] |
1.15e-01<>1.15e-01[  0.0%] |
1.15e-01<>1.16e-01[  0.0%] | A
1.16e-01<>1.16e-01[ 20.0%] | *****
1.16e-01<>1.16e-01[  0.0%] |
1.16e-01<>1.16e-01[ 20.0%] | *****
1.16e-01<>1.17e-01[ 20.0%] | *****
```

```
closest_2d, size = 8000
Analysis of 5 timings
avg = 0.251   min = 0.246   max = 0.257   span = 4.4%
```

```
Time Ranges
2.46e-01<>2.47e-01[ 40.0%] | *****
```

```

2.47e-01<>2.48e-01[ 0.0%]|
2.48e-01<>2.49e-01[ 0.0%]|
2.49e-01<>2.51e-01[ 0.0%]|
2.51e-01<>2.52e-01[ 20.0%]|*****A
2.52e-01<>2.53e-01[ 20.0%]|*****
2.53e-01<>2.54e-01[ 0.0%]|
2.54e-01<>2.55e-01[ 0.0%]|
2.55e-01<>2.56e-01[ 0.0%]|
2.56e-01<>2.57e-01[ 0.0%]|
2.57e-01<>2.58e-01[ 20.0%]|*****

```

closest\_2d, size = 16000

Analysis of 5 timings

avg = 0.538 min = 0.532 max = 0.543 span = 2.1%

#### Time Ranges

```

5.32e-01<>5.33e-01[ 20.0%]|*****
5.33e-01<>5.35e-01[ 20.0%]|*****
5.35e-01<>5.36e-01[ 0.0%]|
5.36e-01<>5.37e-01[ 0.0%]|
5.37e-01<>5.38e-01[ 0.0%]|
5.38e-01<>5.39e-01[ 20.0%]|*****A
5.39e-01<>5.40e-01[ 0.0%]|
5.40e-01<>5.41e-01[ 0.0%]|
5.41e-01<>5.42e-01[ 0.0%]|
5.42e-01<>5.43e-01[ 20.0%]|*****
5.43e-01<>5.45e-01[ 20.0%]|*****

```

closest\_2d, size = 32000

Analysis of 5 timings

avg = 1.180 min = 1.165 max = 1.198 span = 2.8%

#### Time Ranges

```

1.17e+00<>1.17e+00[ 20.0%]|*****
1.17e+00<>1.17e+00[ 20.0%]|*****
1.17e+00<>1.17e+00[ 0.0%]|
1.17e+00<>1.18e+00[ 0.0%]|
1.18e+00<>1.18e+00[ 20.0%]|*****A
1.18e+00<>1.18e+00[ 0.0%]|
1.18e+00<>1.19e+00[ 0.0%]|
1.19e+00<>1.19e+00[ 20.0%]|*****
1.19e+00<>1.19e+00[ 0.0%]|
1.19e+00<>1.20e+00[ 0.0%]|
1.20e+00<>1.20e+00[ 20.0%]|*****

```

closest\_2d, size = 64000

Analysis of 5 timings

avg = 2.478 min = 2.434 max = 2.505 span = 2.9%

#### Time Ranges

```

2.43e+00<>2.44e+00[ 20.0%]|*****
2.44e+00<>2.45e+00[ 0.0%]|
2.45e+00<>2.46e+00[ 0.0%]|
2.46e+00<>2.46e+00[ 0.0%]|
2.46e+00<>2.47e+00[ 20.0%]|*****
2.47e+00<>2.48e+00[ 0.0%]|
2.48e+00<>2.48e+00[ 20.0%]|*****A
2.48e+00<>2.49e+00[ 0.0%]|
2.49e+00<>2.50e+00[ 0.0%]|
2.50e+00<>2.50e+00[ 20.0%]|*****
2.50e+00<>2.51e+00[ 20.0%]|*****

```

closest\_2d, size = 128000  
 Analysis of 5 timings  
 avg = 5.571 min = 5.522 max = 5.645 span = 2.2%

Time Ranges

5.52e+00<>5.53e+00	20.0%	*****
5.53e+00<>5.55e+00	20.0%	*****
5.55e+00<>5.56e+00	0.0%	
5.56e+00<>5.57e+00	20.0%	*****A
5.57e+00<>5.58e+00	20.0%	*****
5.58e+00<>5.60e+00	0.0%	
5.60e+00<>5.61e+00	0.0%	
5.61e+00<>5.62e+00	0.0%	
5.62e+00<>5.63e+00	0.0%	
5.63e+00<>5.64e+00	0.0%	
5.64e+00<>5.66e+00	20.0%	*****

closest\_2d, size = 256000  
 Analysis of 5 timings  
 avg = 11.682 min = 11.605 max = 11.772 span = 1.4%

Time Ranges

1.16e+01<>1.16e+01	20.0%	*****
1.16e+01<>1.16e+01	0.0%	
1.16e+01<>1.17e+01	0.0%	
1.17e+01<>1.17e+01	20.0%	*****
1.17e+01<>1.17e+01	20.0%	*****A
1.17e+01<>1.17e+01	20.0%	*****
1.17e+01<>1.17e+01	0.0%	
1.17e+01<>1.17e+01	0.0%	
1.17e+01<>1.18e+01	0.0%	
1.18e+01<>1.18e+01	0.0%	
1.18e+01<>1.18e+01	20.0%	*****

closest\_2d, size = 512000  
 Analysis of 5 timings  
 avg = 25.802 min = 25.694 max = 25.881 span = 0.7%

Time Ranges

2.57e+01<>2.57e+01	20.0%	*****
2.57e+01<>2.57e+01	0.0%	
2.57e+01<>2.58e+01	0.0%	
2.58e+01<>2.58e+01	20.0%	*****
2.58e+01<>2.58e+01	0.0%	
2.58e+01<>2.58e+01	20.0%	*****A
2.58e+01<>2.58e+01	0.0%	
2.58e+01<>2.58e+01	0.0%	
2.58e+01<>2.59e+01	0.0%	
2.59e+01<>2.59e+01	20.0%	*****
2.59e+01<>2.59e+01	20.0%	*****

closest\_2d, size = 1024000  
 Analysis of 5 timings  
 avg = 57.984 min = 56.906 max = 58.873 span = 3.4%

Time Ranges

5.69e+01<>5.71e+01	20.0%	*****
5.71e+01<>5.73e+01	0.0%	
5.73e+01<>5.75e+01	0.0%	
5.75e+01<>5.77e+01	20.0%	*****

```
5.77e+01<>5.79e+01[ 20.0%]|*****
5.79e+01<>5.81e+01[  0.0%]|A
5.81e+01<>5.83e+01[  0.0%]|
5.83e+01<>5.85e+01[  0.0%]|
5.85e+01<>5.87e+01[  0.0%]|
5.87e+01<>5.89e+01[ 20.0%]|*****
5.89e+01<>5.91e+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 and the random list created).

Fri Nov 25 09:15:27 2016 test\_profile

16828753 function calls (16697683 primitive calls) in 7.119 seconds

Ordered by: call count

ncalls	totttime	percall	cumtime	percall	filename:lineno(function)
5191304	0.245	0.000	0.245	0.000	{built-in method builtins.len}
3238194	0.639	0.000	0.639	0.000	...\q82solution.py:14(swap)
2301436	0.109	0.000	0.109	0.000	{built-in method builtins.abs}
2113535	0.101	0.000	0.101	0.000	{method 'append' of 'list' objects}
1031168	0.074	0.000	0.074	0.000	...\q82solution.py:69(<lambda>)
1016832	0.087	0.000	0.087	0.000	...\q82solution.py:68(<lambda>)
287930	0.043	0.000	0.043	0.000	{built-in method math.sqrt}
287930	0.320	0.000	0.362	0.000	...\q82solution.py:42(dist)
256000	0.015	0.000	0.015	0.000	{method 'random' of '_random.Random' objects}
252463	1.396	0.000	2.035	0.000	...\q82solution.py:13(partition)
131071/1	2.896	0.000	7.054	7.054	...\q82solution.py:41(closest_2d)
131070	0.052	0.000	0.052	0.000	...\q82solution.py:43(<listcomp>)
131070	0.078	0.000	0.160	0.000	...\q82solution.py:43(min_none)
131070	0.701	0.000	0.862	0.000	{method 'sort' of 'list' objects}
131070	0.031	0.000	0.031	0.000	{built-in method builtins.min}
65535	0.128	0.000	0.128	0.000	...\q82solution.py:49(<listcomp>)
65535	0.151	0.000	2.188	0.000	...\q82solution.py:26(select)
65535	0.005	0.000	0.005	0.000	{method 'extend' of 'list' objects}
1	0.004	0.004	7.119	7.119	<string>:1(<module>)
1	0.000	0.000	0.000	0.000	{method 'disable' of '_lsprof.Profiler' objects}
1	0.001	0.001	7.114	7.114	...\q82solution.py:93(test)
1	0.000	0.000	7.119	7.119	{built-in method builtins.exec}
1	0.044	0.044	0.059	0.059	...\q82solution.py:94(<listcomp>)

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16828753 function calls (16697683 primitive calls) in 7.119 seconds

Ordered by: internal time

ncalls	totttime	percall	cumtime	percall	filename:lineno(function)
131071/1	2.896	0.000	7.054	7.054	...\q82solution.py:41(closest_2d)
252463	1.396	0.000	2.035	0.000	...\q82solution.py:13(partition)
131070	0.701	0.000	0.862	0.000	{method 'sort' of 'list' objects}
3238194	0.639	0.000	0.639	0.000	...\q82solution.py:14(swap)
287930	0.320	0.000	0.362	0.000	...\q82solution.py:42(dist)
5191304	0.245	0.000	0.245	0.000	{built-in method builtins.len}
65535	0.151	0.000	2.188	0.000	...\q82solution.py:26(select)
65535	0.128	0.000	0.128	0.000	...\q82solution.py:49(<listcomp>)
2301436	0.109	0.000	0.109	0.000	{built-in method builtins.abs}
2113535	0.101	0.000	0.101	0.000	{method 'append' of 'list' objects}
1016832	0.087	0.000	0.087	0.000	...\q82solution.py:68(<lambda>)
131070	0.078	0.000	0.160	0.000	...\q82solution.py:43(min_none)
1031168	0.074	0.000	0.074	0.000	...\q82solution.py:69(<lambda>)
131070	0.052	0.000	0.052	0.000	...\q82solution.py:43(<listcomp>)
1	0.044	0.044	0.059	0.059	...\q82solution.py:94(<listcomp>)
287930	0.043	0.000	0.043	0.000	{built-in method math.sqrt}
131070	0.031	0.000	0.031	0.000	{built-in method builtins.min}
256000	0.015	0.000	0.015	0.000	{method 'random' of '_random.Random' objects}

65535	0.005	0.000	0.005	0.000	{method 'extend' of 'list' objects}
1	0.004	0.004	7.119	7.119	<string>:1(<module>)
1	0.001	0.001	7.114	7.114	...\q82solution.py:93(test)
1	0.000	0.000	7.119	7.119	{built-in method builtins.exec}
1	0.000	0.000	0.000	0.000	{method 'disable' of '_lsprof.Profiler' objects}

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16828753 function calls (16697683 primitive calls) in 7.119 seconds

Ordered by: cumulative time

ncalls	totttime	percall	cumtime	percall	filename:lineno(function)
1	0.000	0.000	7.119	7.119	{built-in method builtins.exec}
1	0.004	0.004	7.119	7.119	<string>:1(<module>)
1	0.001	0.001	7.114	7.114	...\q82solution.py:93(test)
131071/1	2.896	0.000	7.054	7.054	...\q82solution.py:41(closest_2d)
65535	0.151	0.000	2.188	0.000	...\q82solution.py:26(select)
252463	1.396	0.000	2.035	0.000	...\q82solution.py:13(partition)
131070	0.701	0.000	0.862	0.000	{method 'sort' of 'list' objects}
3238194	0.639	0.000	0.639	0.000	...\q82solution.py:14.swap)
287930	0.320	0.000	0.362	0.000	...\q82solution.py:42(dist)
5191304	0.245	0.000	0.245	0.000	{built-in method builtins.len}
131070	0.078	0.000	0.160	0.000	...\q82solution.py:43(min_none)
65535	0.128	0.000	0.128	0.000	...\q82solution.py:49(<listcomp>)
2301436	0.109	0.000	0.109	0.000	{built-in method builtins.abs}
2113535	0.101	0.000	0.101	0.000	{method 'append' of 'list' objects}
1016832	0.087	0.000	0.087	0.000	...\q82solution.py:68(<lambda>)
1031168	0.074	0.000	0.074	0.000	...\q82solution.py:69(<lambda>)
1	0.044	0.044	0.059	0.059	...\q82solution.py:94(<listcomp>)
131070	0.052	0.000	0.052	0.000	...\q82solution.py:43(<listcomp>)
287930	0.043	0.000	0.043	0.000	{built-in method math.sqrt}
131070	0.031	0.000	0.031	0.000	{built-in method builtins.min}
256000	0.015	0.000	0.015	0.000	{method 'random' of '_random.Random' objects}
65535	0.005	0.000	0.005	0.000	{method 'extend' of 'list' objects}
1	0.000	0.000	0.000	0.000	{method 'disable' of '_lsprof.Profiler' objects}