

# Human Facial Recognition Algorithm

Trevor Hutto and Jared Piedt  
CSCE 350  
December 4, 2015

## 1 Introduction

This project is meant to simulate the recognition of human facial expressions. A facial expression can be recognized by comparing query data to template data. After the comparisons have been completed, we find the ten closest matches in the template data to determine which images are making certain facial expressions. The top ten matches to the AU01 query are most likely surprised faces, the top ten from AU12 are happy faces, and AU17's top ten are more than likely sad faces.

The problem is making a solution that is time efficient. Since every element in a vector has to be compared to another vector to determine it's match, we have  $N^2$  time. Of course there is also a large startup cost for opening and closing so many files.

## 2 Methodology

Improving time is a rather difficult task considering that there must be  $N^2$  comparisons in order to get the right answer. In our solution, we start by loading the template file, after the template file has been loaded, we load the first query file, compare it to the template, and print the top ten matches. The comparisons are done in our Compare class, and the files are opened and closed in our Main class. We repeat this process until all of the files have been examined and their results printed.

We have a number of tricks to decrease the execution time, with the first being applied at compile time. We use the `O3` optimization flag in order to ensure that our program can run as fast as possible. Other than optimization, our speed up techniques include the *stable\_sort*, and minimizing output. The stable sort is among the fastest sorting algorithms in C++. We

use it to sort the list of pairs as they come out of comparison functions. Once the pairs of 'rows' and 'similarity' are sorted, we take the last ten pairs in the vector to display the top ten.

Output is another crucial piece of our program. We did our best to have the least amount of output as possible. Output is expensive and slows the CPU down considerably due to all of the I/O requests by the operating system. By minimizing the results printed to the console, we were able to speed up our programs CPU time considerably.

### 3 Pseudo Code

```
// Compare function
void function Compare
    for n in template
        for k in template[n]
            x <- queryData[k]
            y <- template[n][k]
            xxSum += x*x
            yySum += y*y
            xySum += x*y
        // Calculate similarity
        sum <- xySum / (sqrt(xxSum) * sqrt(yySum))
        solution[n] <- sum
    // Sort by desc
    stable_sort(solution)

    // Print the top ten.
    print solution[1:10]
```

### 4 Conclusion

This program taught us the importance of optimization. In the past, programs in other classes have focused only on correctness. Often times optimization is overlooked, but this program forced us to think about ways to improve efficiency throughout the coding process. In order to improve efficiency we tried to minimize output as much as possible because I/O takes up a substantial amount of CPU time. We also used the O3 optimization flag in our make file and a sorting algorithm in order to improve efficiency. This program was a good learning experience and will encourage us to not overlook optimization in future projects.

## 5 Experimental Results

```
../001_AU01_query.dat:    6: 75 -- 0.47146          1: 69 -- 0.585614
  1: 8 -- 0.426736        7: 8 -- 0.469299        2: 85 -- 0.566872
  2: 3 -- 0.423529        8: 41 -- 0.466008       3: 49 -- 0.556134
  3: 38 -- 0.422017       9: 38 -- 0.464723       4: 93 -- 0.549484
  4: 33 -- 0.42094        10: 13 -- 0.461279      5: 114 -- 0.547064
  5: 19 -- 0.414205      ../002_AU17_query.dat:  6: 51 -- 0.546065
  6: 119 -- 0.412088      1: 6 -- 0.459959        7: 35 -- 0.544378
  7: 116 -- 0.407938      2: 9 -- 0.451929        8: 124 -- 0.540504
  8: 126 -- 0.407394      3: 30 -- 0.4494         9: 117 -- 0.533478
  9: 41 -- 0.406872       4: 7 -- 0.437144       10: 61 -- 0.526581
 10: 91 -- 0.405498      5: 104 -- 0.435703     ../004_AU12_query.dat:
../001_AU12_query.dat:    6: 103 -- 0.435703      1: 105 -- 0.627848
  1: 41 -- 0.517193       7: 134 -- 0.435355      2: 128 -- 0.584869
  2: 3 -- 0.517137       8: 128 -- 0.430776      3: 126 -- 0.582415
  3: 38 -- 0.51248       9: 56 -- 0.430205      4: 70 -- 0.556351
  4: 91 -- 0.495798      10: 55 -- 0.430205     5: 111 -- 0.555623
  5: 75 -- 0.488712      ../003_AU01_query.dat:  6: 50 -- 0.552845
  6: 135 -- 0.488521      1: 7 -- 0.52345         7: 59 -- 0.543982
  7: 119 -- 0.482342      2: 10 -- 0.519857       8: 13 -- 0.541686
  8: 87 -- 0.477924      3: 85 -- 0.504173       9: 43 -- 0.541075
  9: 33 -- 0.472904      4: 117 -- 0.501696     10: 91 -- 0.529351
 10: 106 -- 0.465927     5: 114 -- 0.49945     ../004_AU17_query.dat:
../001_AU17_query.dat:    6: 73 -- 0.489094      1: 125 -- 0.578886
  1: 6 -- 0.462934        7: 93 -- 0.480159      2: 104 -- 0.567499
  2: 131 -- 0.453913      8: 4 -- 0.47524         3: 103 -- 0.567499
  3: 115 -- 0.441571      9: 51 -- 0.470271      4: 39 -- 0.550003
  4: 71 -- 0.435934      10: 29 -- 0.468973     5: 60 -- 0.541771
  5: 118 -- 0.435754     ../003_AU12_query.dat:  6: 105 -- 0.539325
  6: 36 -- 0.427402      1: 7 -- 0.52345         7: 61 -- 0.53465
  7: 2 -- 0.423894        2: 10 -- 0.519857       8: 86 -- 0.531641
  8: 56 -- 0.421689      3: 85 -- 0.504173       9: 131 -- 0.530379
  9: 55 -- 0.421689      4: 117 -- 0.501696     10: 115 -- 0.526261
 10: 86 -- 0.419778     5: 114 -- 0.49945     ../005_AU01_query.dat:
../002_AU01_query.dat:    6: 73 -- 0.489094      1: 88 -- 0.546914
  1: 5 -- 0.47524         7: 93 -- 0.480159      2: 8 -- 0.519857
  2: 4 -- 0.47524         8: 4 -- 0.47524         3: 7 -- 0.519857
  3: 9 -- 0.463927        9: 51 -- 0.470271      4: 10 -- 0.509392
  4: 7 -- 0.460817       10: 29 -- 0.468973     5: 114 -- 0.489214
  5: 72 -- 0.452896      ../003_AU17_query.dat:  6: 61 -- 0.48888
  6: 114 -- 0.442112      1: 131 -- 0.532777      7: 85 -- 0.487806
  7: 128 -- 0.436886      2: 115 -- 0.516234      8: 93 -- 0.486777
  8: 49 -- 0.435003      3: 56 -- 0.512027      9: 42 -- 0.481571
  9: 60 -- 0.433176      4: 55 -- 0.512027     10: 65 -- 0.478013
 10: 41 -- 0.432754     5: 130 -- 0.496604     ../005_AU12_query.dat:
../002_AU12_query.dat:    6: 37 -- 0.496372      1: 19 -- 0.54502
  1: 3 -- 0.517137       7: 9 -- 0.480108      2: 116 -- 0.545012
  2: 135 -- 0.511991      8: 7 -- 0.473898      3: 95 -- 0.533055
  3: 128 -- 0.503594      9: 2 -- 0.462934      4: 119 -- 0.519957
  4: 87 -- 0.479963      10: 15 -- 0.460923     5: 63 -- 0.515692
  5: 70 -- 0.479864     ../004_AU01_query.dat:  6: 57 -- 0.514221
```

7: 41 -- 0.513935	5: 69 -- 0.544099	3: 79 -- 0.465844
8: 54 -- 0.50381	6: 73 -- 0.540085	4: 108 -- 0.457323
9: 64 -- 0.50077	7: 120 -- 0.52069	5: 84 -- 0.452947
10: 79 -- 0.49852	8: 35 -- 0.508939	6: 50 -- 0.450805
../005_AU17_query.dat:	9: 132 -- 0.502946	7: 63 -- 0.450278
1: 94 -- 0.47566	10: 47 -- 0.500567	8: 18 -- 0.449513
2: 62 -- 0.458351	../007_AU12_query.dat:	9: 116 -- 0.447634
3: 57 -- 0.430176	1: 79 -- 0.572244	10: 109 -- 0.445465
4: 90 -- 0.421649	2: 18 -- 0.547982	../009_AU01_query.dat:
5: 56 -- 0.417782	3: 54 -- 0.537743	1: 49 -- 0.424286
6: 55 -- 0.417782	4: 63 -- 0.537463	2: 97 -- 0.417487
7: 44 -- 0.415042	5: 19 -- 0.5352	3: 10 -- 0.410465
8: 130 -- 0.414609	6: 46 -- 0.529934	4: 12 -- 0.396426
9: 27 -- 0.414135	7: 17 -- 0.523267	5: 39 -- 0.389026
10: 92 -- 0.411196	8: 116 -- 0.517829	6: 42 -- 0.378243
../006_AU01_query.dat:	9: 127 -- 0.487665	7: 36 -- 0.378052
1: 114 -- 0.549901	10: 95 -- 0.481147	8: 124 -- 0.376797
2: 17 -- 0.523267	../007_AU17_query.dat:	9: 107 -- 0.371591
3: 49 -- 0.519069	1: 18 -- 0.796596	10: 122 -- 0.367454
4: 10 -- 0.507243	2: 62 -- 0.531772	../009_AU12_query.dat:
5: 77 -- 0.506806	3: 127 -- 0.472313	1: 79 -- 0.553128
6: 69 -- 0.491489	4: 63 -- 0.470885	2: 24 -- 0.54688
7: 85 -- 0.481628	5: 37 -- 0.466514	3: 64 -- 0.52804
8: 53 -- 0.479729	6: 115 -- 0.464847	4: 43 -- 0.519295
9: 52 -- 0.479729	7: 17 -- 0.460581	5: 22 -- 0.513135
10: 18 -- 0.474132	8: 94 -- 0.460161	6: 41 -- 0.502726
../006_AU12_query.dat:	9: 130 -- 0.455067	7: 33 -- 0.485104
1: 128 -- 0.567225	10: 90 -- 0.450492	8: 83 -- 0.482471
2: 91 -- 0.564544	../008_AU01_query.dat:	9: 20 -- 0.476278
3: 87 -- 0.562226	1: 107 -- 0.491412	10: 87 -- 0.475633
4: 41 -- 0.552159	2: 69 -- 0.471386	../009_AU17_query.dat:
5: 50 -- 0.551123	3: 21 -- 0.448569	1: 25 -- 0.620705
6: 38 -- 0.550494	4: 35 -- 0.447887	2: 42 -- 0.435651
7: 135 -- 0.544712	5: 77 -- 0.444885	3: 27 -- 0.427931
8: 11 -- 0.541686	6: 117 -- 0.42832	4: 36 -- 0.4273
9: 79 -- 0.538918	7: 73 -- 0.424754	5: 131 -- 0.421381
10: 63 -- 0.525447	8: 82 -- 0.418556	6: 81 -- 0.418016
../006_AU17_query.dat:	9: 47 -- 0.418542	7: 115 -- 0.415875
1: 16 -- 0.796596	10: 17 -- 0.415244	8: 53 -- 0.414423
2: 17 -- 0.547982	../008_AU12_query.dat:	9: 52 -- 0.414423
3: 62 -- 0.508482	1: 63 -- 0.634026	10: 50 -- 0.408461
4: 63 -- 0.487228	2: 116 -- 0.588473	../010_AU01_query.dat:
5: 94 -- 0.481333	3: 41 -- 0.584808	1: 77 -- 0.569361
6: 37 -- 0.467462	4: 106 -- 0.555298	2: 39 -- 0.56834
7: 115 -- 0.464949	5: 79 -- 0.548145	3: 21 -- 0.549863
8: 131 -- 0.462744	6: 15 -- 0.54502	4: 85 -- 0.534623
9: 9 -- 0.460923	7: 87 -- 0.542637	5: 117 -- 0.519804
10: 127 -- 0.45889	8: 20 -- 0.5352	6: 125 -- 0.501971
../007_AU01_query.dat:	9: 54 -- 0.531836	7: 12 -- 0.493537
1: 77 -- 0.58077	10: 95 -- 0.530789	8: 35 -- 0.483476
2: 114 -- 0.555755	../008_AU17_query.dat:	9: 69 -- 0.481209
3: 26 -- 0.549863	1: 22 -- 0.54688	10: 124 -- 0.478338
4: 39 -- 0.546063	2: 78 -- 0.471824	../010_AU12_query.dat:

1: 27 -- 0.620705	10: 133 -- 0.448508	8: 111 -- 0.490495
2: 91 -- 0.472799	../012_AU01_query.dat:	9: 87 -- 0.49008
3: 41 -- 0.47201	1: 69 -- 0.497064	10: 15 -- 0.488599
4: 50 -- 0.471032	2: 125 -- 0.464364	../013_AU17_query.dat:
5: 87 -- 0.460677	3: 85 -- 0.4565	1: 50 -- 0.548467
6: 135 -- 0.456357	4: 124 -- 0.454612	2: 137 -- 0.546677
7: 123 -- 0.440848	5: 112 -- 0.445283	3: 136 -- 0.546677
8: 43 -- 0.440791	6: 122 -- 0.445066	4: 86 -- 0.546187
9: 59 -- 0.439666	7: 121 -- 0.445066	5: 125 -- 0.545266
10: 16 -- 0.427187	8: 53 -- 0.444641	6: 71 -- 0.526207
../010_AU17_query.dat:	9: 52 -- 0.444641	7: 12 -- 0.526149
1: 115 -- 0.525085	10: 12 -- 0.444312	8: 53 -- 0.516903
2: 131 -- 0.513062	../012_AU12_query.dat:	9: 52 -- 0.516903
3: 56 -- 0.499393	1: 79 -- 0.540424	10: 10 -- 0.511842
4: 55 -- 0.499393	2: 43 -- 0.51597	../014_AU01_query.dat:
5: 86 -- 0.491107	3: 135 -- 0.508341	1: 117 -- 0.585719
6: 48 -- 0.479846	4: 50 -- 0.49933	2: 69 -- 0.582894
7: 53 -- 0.476495	5: 83 -- 0.498853	3: 29 -- 0.56834
8: 52 -- 0.476495	6: 11 -- 0.490737	4: 124 -- 0.564557
9: 137 -- 0.471517	7: 38 -- 0.488026	5: 85 -- 0.563799
10: 136 -- 0.471517	8: 25 -- 0.485104	6: 93 -- 0.55448
../011_AU01_query.dat:	9: 41 -- 0.483984	7: 12 -- 0.550003
1: 93 -- 0.476551	10: 54 -- 0.474678	8: 125 -- 0.548446
2: 8 -- 0.468973	../012_AU17_query.dat:	9: 77 -- 0.546213
3: 7 -- 0.468973	1: 69 -- 0.497064	10: 49 -- 0.54613
4: 38 -- 0.462687	2: 125 -- 0.464364	../014_AU12_query.dat:
5: 53 -- 0.456103	3: 85 -- 0.4565	1: 135 -- 0.566093
6: 52 -- 0.456103	4: 124 -- 0.454612	2: 87 -- 0.564072
7: 10 -- 0.444159	5: 112 -- 0.445283	3: 41 -- 0.563411
8: 117 -- 0.436657	6: 122 -- 0.445066	4: 116 -- 0.556656
9: 85 -- 0.430654	7: 121 -- 0.445066	5: 50 -- 0.55532
10: 124 -- 0.429586	8: 53 -- 0.444641	6: 16 -- 0.550494
../011_AU12_query.dat:	9: 52 -- 0.444641	7: 106 -- 0.536927
1: 93 -- 0.476551	10: 12 -- 0.444312	8: 91 -- 0.529481
2: 8 -- 0.468973	../013_AU01_query.dat:	9: 79 -- 0.529237
3: 7 -- 0.468973	1: 85 -- 0.581734	10: 22 -- 0.524182
4: 38 -- 0.462687	2: 69 -- 0.576524	../014_AU17_query.dat:
5: 53 -- 0.456103	3: 49 -- 0.56933	1: 115 -- 0.570034
6: 52 -- 0.456103	4: 51 -- 0.547648	2: 130 -- 0.568128
7: 10 -- 0.444159	5: 10 -- 0.544378	3: 131 -- 0.546602
8: 117 -- 0.436657	6: 58 -- 0.52984	4: 116 -- 0.535135
9: 85 -- 0.430654	7: 114 -- 0.527924	5: 57 -- 0.514272
10: 124 -- 0.429586	8: 39 -- 0.521491	6: 127 -- 0.501163
../011_AU17_query.dat:	9: 117 -- 0.515601	7: 54 -- 0.498526
1: 137 -- 0.496554	10: 124 -- 0.5102	8: 90 -- 0.496629
2: 136 -- 0.496554	../013_AU12_query.dat:	9: 9 -- 0.496372
3: 125 -- 0.478886	1: 95 -- 0.554937	10: 63 -- 0.495476
4: 117 -- 0.472853	2: 116 -- 0.547272	../015_AU01_query.dat:
5: 71 -- 0.468924	3: 90 -- 0.526567	1: 65 -- 0.531867
6: 74 -- 0.46806	4: 63 -- 0.516572	2: 12 -- 0.525826
7: 12 -- 0.455947	5: 57 -- 0.515026	3: 10 -- 0.525258
8: 39 -- 0.453739	6: 54 -- 0.493189	4: 49 -- 0.506427
9: 5 -- 0.4494	7: 38 -- 0.49096	5: 72 -- 0.50199

6: 115 -- 0.489541	4: 126 -- 0.449095	2: 128 -- 0.567256
7: 13 -- 0.481571	5: 117 -- 0.443872	3: 126 -- 0.561974
8: 97 -- 0.481313	6: 64 -- 0.438673	4: 87 -- 0.560841
9: 61 -- 0.480751	7: 12 -- 0.437133	5: 44 -- 0.557508
10: 114 -- 0.478823	8: 53 -- 0.436563	6: 41 -- 0.55532
../015_AU12_query.dat:	9: 52 -- 0.436563	7: 11 -- 0.552845
1: 87 -- 0.619567	10: 39 -- 0.434192	8: 70 -- 0.552375
2: 106 -- 0.604417	../017_AU01_query.dat:	9: 16 -- 0.551123
3: 63 -- 0.585833	1: 42 -- 0.542911	10: 39 -- 0.548467
4: 22 -- 0.584808	2: 49 -- 0.522163	../018_AU17_query.dat:
5: 116 -- 0.579039	3: 85 -- 0.520194	1: 53 -- 0.565268
6: 91 -- 0.578456	4: 124 -- 0.508408	2: 52 -- 0.565268
7: 41 -- 0.563411	5: 120 -- 0.506127	3: 38 -- 0.547648
8: 50 -- 0.557508	6: 21 -- 0.500567	4: 10 -- 0.546065
9: 16 -- 0.552159	7: 69 -- 0.4991	5: 61 -- 0.535327
10: 57 -- 0.548422	8: 61 -- 0.487428	6: 85 -- 0.527838
../015_AU17_query.dat:	9: 38 -- 0.487423	7: 69 -- 0.52342
1: 98 -- 0.336549	10: 114 -- 0.482291	8: 93 -- 0.519535
2: 110 -- 0.33601	../017_AU12_query.dat:	9: 86 -- 0.513349
3: 112 -- 0.335508	1: 20 -- 0.529934	10: 71 -- 0.51188
4: 134 -- 0.329047	2: 116 -- 0.522711	../019_AU01_query.dat:
5: 48 -- 0.32154	3: 57 -- 0.508886	1: 54 -- 0.565268
6: 118 -- 0.320541	4: 95 -- 0.491803	2: 137 -- 0.547188
7: 133 -- 0.319302	5: 130 -- 0.485697	3: 136 -- 0.547188
8: 113 -- 0.319197	6: 127 -- 0.478957	4: 71 -- 0.544415
9: 128 -- 0.316761	7: 63 -- 0.478923	5: 85 -- 0.541877
10: 66 -- 0.315396	8: 37 -- 0.473745	6: 124 -- 0.527469
../016_AU01_query.dat:	9: 54 -- 0.472521	7: 69 -- 0.526044
1: 115 -- 0.517269	10: 115 -- 0.45364	8: 125 -- 0.519437
2: 63 -- 0.492699	../017_AU17_query.dat:	9: 10 -- 0.518097
3: 130 -- 0.485432	1: 133 -- 0.529631	10: 39 -- 0.516903
4: 131 -- 0.481979	2: 134 -- 0.521045	../019_AU12_query.dat:
5: 45 -- 0.476571	3: 118 -- 0.517999	1: 95 -- 0.663209
6: 57 -- 0.467547	4: 42 -- 0.510774	2: 57 -- 0.583341
7: 90 -- 0.465139	5: 113 -- 0.510396	3: 63 -- 0.582894
8: 22 -- 0.45962	6: 125 -- 0.501866	4: 46 -- 0.580145
9: 127 -- 0.458528	7: 112 -- 0.501786	5: 116 -- 0.575837
10: 61 -- 0.458116	8: 92 -- 0.5003	6: 20 -- 0.537743
../016_AU12_query.dat:	9: 91 -- 0.498004	7: 53 -- 0.535591
1: 95 -- 0.586065	10: 86 -- 0.497588	8: 22 -- 0.531836
2: 54 -- 0.580145	../018_AU01_query.dat:	9: 135 -- 0.529014
3: 50 -- 0.576833	1: 85 -- 0.577354	10: 44 -- 0.528188
4: 123 -- 0.561381	2: 38 -- 0.56933	../019_AU17_query.dat:
5: 59 -- 0.561275	3: 10 -- 0.556134	1: 54 -- 0.565268
6: 70 -- 0.548362	4: 114 -- 0.55489	2: 137 -- 0.547188
7: 135 -- 0.546883	5: 69 -- 0.554754	3: 136 -- 0.547188
8: 44 -- 0.545184	6: 42 -- 0.54613	4: 71 -- 0.544415
9: 11 -- 0.541075	7: 124 -- 0.529426	5: 85 -- 0.541877
10: 111 -- 0.540856	8: 61 -- 0.526253	6: 124 -- 0.527469
../016_AU17_query.dat:	9: 50 -- 0.522163	7: 69 -- 0.526044
1: 137 -- 0.506269	10: 17 -- 0.519069	8: 125 -- 0.519437
2: 136 -- 0.506269	../018_AU12_query.dat:	9: 10 -- 0.518097
3: 125 -- 0.474732	1: 46 -- 0.576833	10: 39 -- 0.516903

../020_AU01_query.dat:	9: 87 -- 0.502346	7: 88 -- 0.453877
1: 131 -- 0.54179	10: 16 -- 0.50105	8: 66 -- 0.452686
2: 12 -- 0.525209	../021_AU17_query.dat:	9: 85 -- 0.442997
3: 63 -- 0.515082	1: 12 -- 0.541771	10: 59 -- 0.441016
4: 9 -- 0.512027	2: 42 -- 0.533601	../023_AU12_query.dat:
5: 115 -- 0.507231	3: 71 -- 0.517096	1: 119 -- 0.585124
6: 134 -- 0.504123	4: 125 -- 0.515294	2: 91 -- 0.563661
7: 125 -- 0.503704	5: 104 -- 0.512785	3: 87 -- 0.558492
8: 137 -- 0.502311	6: 103 -- 0.512785	4: 75 -- 0.553169
9: 136 -- 0.502311	7: 89 -- 0.509792	5: 79 -- 0.532067
10: 86 -- 0.500935	8: 61 -- 0.505304	6: 25 -- 0.52804
../020_AU12_query.dat:	9: 131 -- 0.500515	7: 95 -- 0.526504
1: 63 -- 0.634881	10: 85 -- 0.499665	8: 44 -- 0.523034
2: 116 -- 0.61228	../022_AU01_query.dat:	9: 105 -- 0.522115
3: 57 -- 0.583341	1: 54 -- 0.535327	10: 135 -- 0.520067
4: 95 -- 0.568209	2: 12 -- 0.53465	../023_AU17_query.dat:
5: 130 -- 0.556875	3: 125 -- 0.533971	1: 67 -- 0.55424
6: 44 -- 0.548422	4: 85 -- 0.532786	2: 68 -- 0.468467
7: 106 -- 0.535054	5: 114 -- 0.529402	3: 134 -- 0.41274
8: 22 -- 0.518169	6: 10 -- 0.526581	4: 113 -- 0.410888
9: 115 -- 0.51729	7: 52 -- 0.526253	5: 51 -- 0.406677
10: 37 -- 0.515026	8: 42 -- 0.513159	6: 133 -- 0.393362
../020_AU17_query.dat:	9: 56 -- 0.511089	7: 44 -- 0.387798
1: 131 -- 0.54179	10: 55 -- 0.511089	8: 98 -- 0.381911
2: 12 -- 0.525209	../022_AU12_query.dat:	9: 61 -- 0.381842
3: 63 -- 0.515082	1: 116 -- 0.671814	10: 59 -- 0.381331
4: 9 -- 0.512027	2: 60 -- 0.634881	../024_AU01_query.dat:
5: 115 -- 0.507231	3: 22 -- 0.634026	1: 85 -- 0.608824
6: 134 -- 0.504123	4: 44 -- 0.585833	2: 117 -- 0.607168
7: 125 -- 0.503704	5: 57 -- 0.582894	3: 107 -- 0.588797
8: 137 -- 0.502311	6: 95 -- 0.577136	4: 10 -- 0.585614
9: 136 -- 0.502311	7: 130 -- 0.576861	5: 124 -- 0.583623
10: 86 -- 0.500935	8: 115 -- 0.555359	6: 42 -- 0.582894
../021_AU01_query.dat:	9: 90 -- 0.553944	7: 93 -- 0.582252
1: 85 -- 0.606074	10: 87 -- 0.551272	8: 38 -- 0.576524
2: 38 -- 0.52984	../022_AU17_query.dat:	9: 71 -- 0.565711
3: 10 -- 0.526223	1: 94 -- 0.547689	10: 52 -- 0.554754
4: 52 -- 0.515477	2: 19 -- 0.531772	../024_AU12_query.dat:
5: 69 -- 0.507203	3: 18 -- 0.508482	1: 66 -- 0.53064
6: 107 -- 0.506307	4: 115 -- 0.499635	2: 44 -- 0.502227
7: 82 -- 0.500253	5: 116 -- 0.491065	3: 68 -- 0.499201
8: 54 -- 0.498264	6: 60 -- 0.484805	4: 60 -- 0.493441
9: 114 -- 0.49393	7: 92 -- 0.47885	5: 22 -- 0.48635
10: 124 -- 0.492257	8: 130 -- 0.477662	6: 106 -- 0.48531
../021_AU12_query.dat:	9: 51 -- 0.46977	7: 57 -- 0.476308
1: 91 -- 0.591855	10: 40 -- 0.469494	8: 69 -- 0.468467
2: 46 -- 0.561275	../023_AU01_query.dat:	9: 87 -- 0.466272
3: 83 -- 0.555012	1: 45 -- 0.531867	10: 116 -- 0.463222
4: 11 -- 0.543982	2: 68 -- 0.499201	../024_AU17_query.dat:
5: 105 -- 0.538339	3: 64 -- 0.479349	1: 69 -- 0.55424
6: 44 -- 0.525912	4: 10 -- 0.478521	2: 59 -- 0.424343
7: 75 -- 0.521887	5: 13 -- 0.478013	3: 58 -- 0.424343
8: 64 -- 0.510514	6: 12 -- 0.456189	4: 68 -- 0.414473

5: 60 -- 0.412669	3: 67 -- 0.553169	1: 124 -- 0.498509
6: 130 -- 0.375662	4: 135 -- 0.542533	2: 85 -- 0.497218
7: 116 -- 0.372688	5: 119 -- 0.538823	3: 56 -- 0.493161
8: 57 -- 0.370082	6: 62 -- 0.521887	4: 55 -- 0.493161
9: 127 -- 0.36958	7: 11 -- 0.520221	5: 102 -- 0.487787
10: 131 -- 0.36671	8: 87 -- 0.515848	6: 61 -- 0.48035
../025_AU01_query.dat:	9: 105 -- 0.510669	7: 54 -- 0.480209
1: 45 -- 0.50199	10: 111 -- 0.497954	8: 114 -- 0.468302
2: 64 -- 0.496659	../026_AU17_query.dat:	9: 17 -- 0.468289
3: 42 -- 0.491082	1: 133 -- 0.552427	10: 72 -- 0.465035
4: 12 -- 0.488804	2: 42 -- 0.534356	../028_AU12_query.dat:
5: 105 -- 0.48541	3: 112 -- 0.523453	1: 20 -- 0.572244
6: 91 -- 0.471374	4: 113 -- 0.522452	2: 25 -- 0.553128
7: 10 -- 0.46957	5: 137 -- 0.504772	3: 22 -- 0.548145
8: 93 -- 0.467606	6: 136 -- 0.504772	4: 66 -- 0.547102
9: 52 -- 0.464324	7: 125 -- 0.502268	5: 36 -- 0.540424
10: 104 -- 0.463102	8: 104 -- 0.500658	6: 16 -- 0.538918
../025_AU12_query.dat:	9: 103 -- 0.500658	7: 53 -- 0.53382
1: 111 -- 0.620437	10: 117 -- 0.49261	8: 67 -- 0.532067
2: 135 -- 0.559058	../027_AU01_query.dat:	9: 41 -- 0.529237
3: 11 -- 0.556351	1: 21 -- 0.58077	10: 135 -- 0.527774
4: 53 -- 0.552375	2: 29 -- 0.569361	../028_AU17_query.dat:
5: 46 -- 0.548362	3: 42 -- 0.546213	1: 53 -- 0.543966
6: 125 -- 0.536137	4: 72 -- 0.544482	2: 125 -- 0.533565
7: 126 -- 0.532134	5: 114 -- 0.540187	3: 44 -- 0.529141
8: 128 -- 0.527904	6: 85 -- 0.519927	4: 12 -- 0.51766
9: 16 -- 0.524477	7: 38 -- 0.509957	5: 56 -- 0.515764
10: 87 -- 0.519764	8: 17 -- 0.506806	6: 55 -- 0.515764
../025_AU17_query.dat:	9: 132 -- 0.503661	7: 108 -- 0.514191
1: 125 -- 0.584594	10: 117 -- 0.49476	8: 89 -- 0.513979
2: 137 -- 0.577252	../027_AU12_query.dat:	9: 57 -- 0.504712
3: 136 -- 0.577252	1: 46 -- 0.480354	10: 115 -- 0.503952
4: 72 -- 0.565711	2: 25 -- 0.474569	../029_AU01_query.dat:
5: 134 -- 0.557071	3: 67 -- 0.455268	1: 61 -- 0.500253
6: 109 -- 0.550788	4: 36 -- 0.435932	2: 38 -- 0.481573
7: 111 -- 0.546544	5: 11 -- 0.428632	3: 124 -- 0.466297
8: 56 -- 0.544415	6: 79 -- 0.420381	4: 54 -- 0.465848
9: 55 -- 0.544415	7: 62 -- 0.419385	5: 85 -- 0.459661
10: 112 -- 0.543852	8: 119 -- 0.412913	6: 80 -- 0.446072
../026_AU01_query.dat:	9: 87 -- 0.410751	7: 114 -- 0.446054
1: 21 -- 0.540085	10: 44 -- 0.407916	8: 72 -- 0.440682
2: 117 -- 0.532692	../027_AU17_query.dat:	9: 56 -- 0.440267
3: 93 -- 0.525702	1: 22 -- 0.513614	10: 55 -- 0.440267
4: 114 -- 0.510137	2: 95 -- 0.4857	../029_AU12_query.dat:
5: 42 -- 0.504302	3: 79 -- 0.481051	1: 78 -- 0.582673
6: 72 -- 0.500118	4: 66 -- 0.480418	2: 91 -- 0.567781
7: 85 -- 0.490228	5: 116 -- 0.478594	3: 62 -- 0.555012
8: 8 -- 0.489094	6: 20 -- 0.478033	4: 105 -- 0.528225
9: 7 -- 0.489094	7: 115 -- 0.473315	5: 46 -- 0.514088
10: 29 -- 0.475012	8: 24 -- 0.471824	6: 135 -- 0.512653
../026_AU12_query.dat:	9: 30 -- 0.467786	7: 82 -- 0.506395
1: 83 -- 0.582673	10: 125 -- 0.467196	8: 16 -- 0.502346
2: 91 -- 0.571202	../028_AU01_query.dat:	9: 36 -- 0.498853



10: 111 -- 0.498056	8: 93 -- 0.487977	6: 44 -- 0.453725
../029_AU17_query.dat:	9: 10 -- 0.481588	7: 66 -- 0.453663
1: 86 -- 0.459726	10: 64 -- 0.48158	8: 108 -- 0.445726
2: 24 -- 0.452947	../031_AU12_query.dat:	9: 93 -- 0.445361
3: 81 -- 0.452925	1: 130 -- 0.579015	10: 75 -- 0.443491
4: 16 -- 0.448998	2: 116 -- 0.565478	../033_AU01_query.dat:
5: 53 -- 0.448335	3: 66 -- 0.553944	1: 99 -- 0.714235
6: 131 -- 0.444202	4: 37 -- 0.526567	2: 97 -- 0.693288
7: 40 -- 0.436954	5: 131 -- 0.524516	3: 98 -- 0.622835
8: 82 -- 0.436134	6: 115 -- 0.518273	4: 53 -- 0.540139
9: 74 -- 0.432818	7: 44 -- 0.508785	5: 94 -- 0.509898
10: 91 -- 0.425423	8: 60 -- 0.507243	6: 125 -- 0.49458
../030_AU01_query.dat:	9: 22 -- 0.506485	7: 11 -- 0.479541
1: 72 -- 0.608824	10: 57 -- 0.502219	8: 12 -- 0.477053
2: 61 -- 0.606074	../031_AU17_query.dat:	9: 112 -- 0.468655
3: 124 -- 0.597213	1: 125 -- 0.564511	10: 128 -- 0.466458
4: 93 -- 0.591164	2: 131 -- 0.535288	../033_AU12_query.dat:
5: 114 -- 0.585663	3: 89 -- 0.523157	1: 57 -- 0.663209
6: 38 -- 0.581734	4: 115 -- 0.521839	2: 116 -- 0.5891
7: 117 -- 0.577992	5: 84 -- 0.513979	3: 46 -- 0.586065
8: 52 -- 0.577354	6: 74 -- 0.510429	4: 66 -- 0.577136
9: 10 -- 0.566872	7: 63 -- 0.509792	5: 119 -- 0.576239
10: 42 -- 0.563799	8: 12 -- 0.508034	6: 111 -- 0.571202
../030_AU12_query.dat:	9: 10 -- 0.49636	7: 60 -- 0.568209
1: 44 -- 0.619567	10: 64 -- 0.491114	8: 37 -- 0.554937
2: 91 -- 0.614134	../032_AU01_query.dat:	9: 125 -- 0.548699
3: 106 -- 0.596457	1: 88 -- 0.591164	10: 15 -- 0.533055
4: 41 -- 0.564072	2: 72 -- 0.582252	../033_AU17_query.dat:
5: 16 -- 0.562226	3: 42 -- 0.55448	1: 65 -- 0.547689
6: 53 -- 0.560841	4: 10 -- 0.549484	2: 131 -- 0.504146
7: 67 -- 0.558492	5: 117 -- 0.547503	3: 125 -- 0.5011
8: 135 -- 0.557765	6: 76 -- 0.525702	4: 130 -- 0.498211
9: 119 -- 0.55308	7: 134 -- 0.523566	5: 59 -- 0.493196
10: 66 -- 0.551272	8: 114 -- 0.522187	6: 58 -- 0.493196
../030_AU17_query.dat:	9: 54 -- 0.519535	7: 89 -- 0.492974
1: 108 -- 0.578289	10: 52 -- 0.518723	8: 60 -- 0.491659
2: 125 -- 0.574981	../032_AU12_query.dat:	9: 115 -- 0.491298
3: 134 -- 0.54765	1: 90 -- 0.614134	10: 40 -- 0.487441
4: 39 -- 0.546187	2: 62 -- 0.591855	../034_AU01_query.dat:
5: 137 -- 0.536415	3: 44 -- 0.578456	1: 99 -- 0.693288
6: 136 -- 0.536415	4: 78 -- 0.571202	2: 94 -- 0.499575
7: 74 -- 0.536163	5: 86 -- 0.567781	3: 52 -- 0.495117
8: 118 -- 0.532421	6: 16 -- 0.564544	4: 125 -- 0.492962
9: 12 -- 0.531641	7: 67 -- 0.563661	5: 12 -- 0.490785
10: 115 -- 0.526581	8: 106 -- 0.557596	6: 53 -- 0.485454
../031_AU01_query.dat:	9: 125 -- 0.548596	7: 42 -- 0.481603
1: 13 -- 0.546914	10: 105 -- 0.543648	8: 45 -- 0.481313
2: 120 -- 0.526095	../032_AU17_query.dat:	9: 124 -- 0.474839
3: 42 -- 0.511376	1: 51 -- 0.5003	10: 44 -- 0.471983
4: 114 -- 0.509389	2: 65 -- 0.47885	../034_AU12_query.dat:
5: 124 -- 0.498194	3: 127 -- 0.470338	1: 99 -- 0.714235
6: 21 -- 0.49318	4: 115 -- 0.467339	2: 94 -- 0.533407
7: 72 -- 0.489258	5: 53 -- 0.457114	3: 53 -- 0.526412

4: 128 -- 0.494216	2: 74 -- 0.520643	../037_AU17_query.dat:
5: 41 -- 0.492288	3: 63 -- 0.512785	1: 109 -- 0.702241
6: 11 -- 0.490944	4: 96 -- 0.511999	2: 89 -- 0.578289
7: 135 -- 0.471847	5: 125 -- 0.508645	3: 74 -- 0.528512
8: 78 -- 0.467298	6: 10 -- 0.506061	4: 12 -- 0.523213
9: 105 -- 0.466443	7: 11 -- 0.500934	5: 125 -- 0.520249
10: 73 -- 0.461361	8: 77 -- 0.500658	6: 53 -- 0.519632
../034_AU17_query.dat:	9: 134 -- 0.499358	7: 90 -- 0.516904
1: 99 -- 0.622835	10: 42 -- 0.495422	8: 137 -- 0.515852
2: 125 -- 0.514859	../036_AU12_query.dat:	9: 136 -- 0.515852
3: 53 -- 0.506105	1: 11 -- 0.627848	10: 84 -- 0.514191
4: 133 -- 0.5013	2: 94 -- 0.543648	../038_AU01_query.dat:
5: 108 -- 0.499346	3: 12 -- 0.539325	1: 96 -- 0.513305
6: 51 -- 0.496342	4: 62 -- 0.538339	2: 105 -- 0.510256
7: 134 -- 0.495408	5: 53 -- 0.532859	3: 74 -- 0.497339
8: 52 -- 0.488306	6: 86 -- 0.528225	4: 88 -- 0.492974
9: 89 -- 0.479647	7: 67 -- 0.522115	5: 72 -- 0.49183
10: 39 -- 0.47151	8: 46 -- 0.520875	6: 110 -- 0.480005
../035_AU01_query.dat:	9: 111 -- 0.512131	7: 122 -- 0.47798
1: 74 -- 0.516093	10: 78 -- 0.510669	8: 121 -- 0.47798
2: 111 -- 0.5066	../036_AU17_query.dat:	9: 117 -- 0.477613
3: 138 -- 0.477733	1: 12 -- 0.567499	10: 103 -- 0.466009
4: 137 -- 0.473861	2: 74 -- 0.520643	../038_AU12_query.dat:
5: 136 -- 0.473861	3: 63 -- 0.512785	1: 73 -- 0.620437
6: 73 -- 0.471863	4: 96 -- 0.511999	2: 98 -- 0.571202
7: 128 -- 0.467363	5: 125 -- 0.508645	3: 135 -- 0.570864
8: 110 -- 0.466009	6: 10 -- 0.506061	4: 11 -- 0.555623
9: 126 -- 0.461905	7: 11 -- 0.500934	5: 126 -- 0.548411
10: 122 -- 0.458461	8: 77 -- 0.500658	6: 74 -- 0.546544
../035_AU12_query.dat:	9: 134 -- 0.499358	7: 46 -- 0.540856
1: 111 -- 0.478882	10: 42 -- 0.495422	8: 128 -- 0.540288
2: 123 -- 0.467095	../037_AU01_query.dat:	9: 90 -- 0.539242
3: 126 -- 0.457193	1: 72 -- 0.588797	10: 123 -- 0.532492
4: 138 -- 0.454723	2: 42 -- 0.538747	../038_AU17_query.dat:
5: 74 -- 0.454209	3: 117 -- 0.534325	1: 111 -- 0.702241
6: 11 -- 0.450762	4: 124 -- 0.534193	2: 74 -- 0.550788
7: 137 -- 0.446342	5: 10 -- 0.521733	3: 127 -- 0.531018
8: 136 -- 0.446342	6: 88 -- 0.520368	4: 89 -- 0.522352
9: 46 -- 0.445217	7: 61 -- 0.506307	5: 98 -- 0.521516
10: 16 -- 0.435428	8: 38 -- 0.502886	6: 73 -- 0.514011
../035_AU17_query.dat:	9: 74 -- 0.501659	7: 53 -- 0.511729
1: 110 -- 0.510256	10: 23 -- 0.491412	8: 135 -- 0.50954
2: 74 -- 0.509593	../037_AU12_query.dat:	9: 137 -- 0.502663
3: 72 -- 0.504281	1: 44 -- 0.604417	10: 136 -- 0.502663
4: 134 -- 0.500032	2: 90 -- 0.596457	../039_AU01_query.dat:
5: 111 -- 0.494459	3: 94 -- 0.557596	1: 88 -- 0.585663
6: 122 -- 0.492506	4: 22 -- 0.555298	2: 21 -- 0.555755
7: 121 -- 0.492506	5: 116 -- 0.549718	3: 52 -- 0.55489
8: 137 -- 0.492477	6: 66 -- 0.542096	4: 17 -- 0.549901
9: 136 -- 0.492477	7: 41 -- 0.536927	5: 10 -- 0.547064
10: 83 -- 0.487787	8: 60 -- 0.535054	6: 80 -- 0.540187
../036_AU01_query.dat:	9: 111 -- 0.529288	7: 64 -- 0.529402
1: 12 -- 0.567499	10: 46 -- 0.497139	8: 38 -- 0.527924

9: 72 -- 0.526827	7: 89 -- 0.526581	5: 135 -- 0.505237
10: 96 -- 0.522187	8: 12 -- 0.526261	6: 108 -- 0.503662
../039_AU12_query.dat:	9: 30 -- 0.525085	7: 44 -- 0.501253
1: 133 -- 0.549456	10: 92 -- 0.521839	8: 125 -- 0.496904
2: 74 -- 0.543852	../041_AU01_query.dat:	9: 11 -- 0.490189
3: 134 -- 0.536227	1: 42 -- 0.541509	10: 94 -- 0.488489
4: 77 -- 0.523453	2: 120 -- 0.527526	../042_AU17_query.dat:
5: 122 -- 0.514969	3: 91 -- 0.526095	1: 116 -- 0.54212
6: 121 -- 0.514969	4: 21 -- 0.52069	2: 115 -- 0.514969
7: 137 -- 0.514869	5: 124 -- 0.517741	3: 72 -- 0.50878
8: 136 -- 0.514869	6: 50 -- 0.506127	4: 52 -- 0.497089
9: 73 -- 0.511238	7: 132 -- 0.499928	5: 105 -- 0.492506
10: 11 -- 0.50992	8: 72 -- 0.491833	6: 42 -- 0.478113
../039_AU17_query.dat:	9: 125 -- 0.488122	7: 113 -- 0.47798
1: 134 -- 0.575808	10: 117 -- 0.487651	8: 74 -- 0.474198
2: 133 -- 0.567955	../041_AU12_query.dat:	9: 96 -- 0.471078
3: 122 -- 0.54212	1: 67 -- 0.585124	10: 125 -- 0.467715
4: 121 -- 0.54212	2: 98 -- 0.576239	../043_AU01_query.dat:
5: 74 -- 0.527392	3: 90 -- 0.55308	1: 88 -- 0.597213
6: 77 -- 0.522452	4: 94 -- 0.539396	2: 72 -- 0.583623
7: 51 -- 0.510396	5: 78 -- 0.538823	3: 42 -- 0.564557
8: 42 -- 0.503543	6: 15 -- 0.519957	4: 10 -- 0.540504
9: 118 -- 0.503	7: 119 -- 0.514822	5: 120 -- 0.540072
10: 125 -- 0.501152	8: 44 -- 0.511268	6: 110 -- 0.534193
../040_AU01_query.dat:	9: 114 -- 0.507055	7: 52 -- 0.529426
1: 72 -- 0.607168	10: 135 -- 0.505468	8: 56 -- 0.527469
2: 42 -- 0.585719	../041_AU17_query.dat:	9: 55 -- 0.527469
3: 88 -- 0.577992	1: 90 -- 0.543933	10: 117 -- 0.521236
4: 96 -- 0.547503	2: 125 -- 0.543608	../043_AU12_query.dat:
5: 124 -- 0.540072	3: 94 -- 0.537433	1: 128 -- 0.721561
6: 110 -- 0.534325	4: 89 -- 0.532421	2: 11 -- 0.582415
7: 10 -- 0.533478	5: 120 -- 0.524027	3: 53 -- 0.561974
8: 76 -- 0.532692	6: 51 -- 0.517999	4: 114 -- 0.548411
9: 120 -- 0.527526	7: 74 -- 0.510469	5: 73 -- 0.532134
10: 118 -- 0.524027	8: 137 -- 0.505043	6: 138 -- 0.507692
../040_AU12_query.dat:	9: 136 -- 0.505043	7: 41 -- 0.505482
1: 66 -- 0.671814	10: 116 -- 0.503	8: 16 -- 0.503313
2: 130 -- 0.623496	../042_AU01_query.dat:	9: 74 -- 0.500309
3: 60 -- 0.61228	1: 116 -- 0.54212	10: 44 -- 0.497711
4: 98 -- 0.5891	2: 115 -- 0.514969	../043_AU17_query.dat:
5: 22 -- 0.588473	3: 72 -- 0.50878	1: 74 -- 0.584594
6: 44 -- 0.579039	4: 52 -- 0.497089	2: 12 -- 0.578886
7: 57 -- 0.575837	5: 105 -- 0.492506	3: 89 -- 0.574981
8: 93 -- 0.565478	6: 42 -- 0.478113	4: 92 -- 0.564511
9: 127 -- 0.56424	7: 113 -- 0.47798	5: 137 -- 0.562782
10: 41 -- 0.556656	8: 74 -- 0.474198	6: 136 -- 0.562782
../040_AU17_query.dat:	9: 96 -- 0.471078	7: 98 -- 0.548699
1: 131 -- 0.639145	10: 125 -- 0.467715	8: 94 -- 0.548596
2: 130 -- 0.591638	../042_AU12_query.dat:	9: 42 -- 0.548446
3: 40 -- 0.570034	1: 46 -- 0.561381	10: 134 -- 0.547382
4: 66 -- 0.555359	2: 53 -- 0.546963	../044_AU01_query.dat:
5: 44 -- 0.53165	3: 114 -- 0.532492	1: 56 -- 0.505945
6: 127 -- 0.530601	4: 90 -- 0.513201	2: 55 -- 0.505945

3: 74 -- 0.493109	10: 90 -- 0.524861	6: 137 -- 0.540196
4: 111 -- 0.485078	../045_AU17_query.dat:	7: 89 -- 0.536415
5: 73 -- 0.483563	1: 118 -- 0.639145	8: 12 -- 0.524467
6: 137 -- 0.48241	2: 40 -- 0.546602	9: 136 -- 0.523744
7: 136 -- 0.48241	3: 119 -- 0.543562	10: 111 -- 0.515852
8: 112 -- 0.482314	4: 59 -- 0.54179	../047_AU12_query.dat:
9: 46 -- 0.463233	5: 58 -- 0.54179	1: 131 -- 0.545441
10: 57 -- 0.45895	6: 92 -- 0.535288	2: 114 -- 0.520178
../044_AU12_query.dat:	7: 9 -- 0.532777	3: 11 -- 0.512643
1: 129 -- 0.721561	8: 12 -- 0.530379	4: 129 -- 0.507692
2: 11 -- 0.584869	9: 93 -- 0.524516	5: 73 -- 0.502676
3: 53 -- 0.567256	10: 89 -- 0.520494	6: 103 -- 0.477733
4: 16 -- 0.567225	../046_AU01_query.dat:	7: 16 -- 0.467455
5: 138 -- 0.545441	1: 116 -- 0.575808	8: 67 -- 0.463592
6: 114 -- 0.540288	2: 74 -- 0.557071	9: 115 -- 0.462002
7: 73 -- 0.527904	3: 89 -- 0.54765	10: 74 -- 0.460051
8: 44 -- 0.524106	4: 128 -- 0.547382	../047_AU17_query.data
9: 41 -- 0.511517	5: 72 -- 0.54641	1: 74 -- 0.577252
10: 6 -- 0.503594	6: 137 -- 0.540196	2: 128 -- 0.562782
../044_AU17_query.dat:	7: 136 -- 0.540196	3: 56 -- 0.547188
1: 119 -- 0.56424	8: 115 -- 0.536227	4: 55 -- 0.547188
2: 53 -- 0.534044	9: 96 -- 0.523566	5: 39 -- 0.546677
3: 112 -- 0.531018	10: 51 -- 0.521045	6: 137 -- 0.540196
4: 118 -- 0.530601	../046_AU12_query.dat:	7: 89 -- 0.536415
5: 130 -- 0.512138	1: 114 -- 0.570864	8: 12 -- 0.524467
6: 57 -- 0.504088	2: 41 -- 0.566093	9: 136 -- 0.523744
7: 66 -- 0.503337	3: 73 -- 0.559058	10: 111 -- 0.515852
8: 40 -- 0.501163	4: 90 -- 0.557765	
9: 111 -- 0.496021	5: 46 -- 0.546883	
10: 44 -- 0.493964	6: 16 -- 0.544712	
../045_AU01_query.dat:	7: 78 -- 0.542533	
1: 72 -- 0.542508	8: 53 -- 0.541067	
2: 88 -- 0.53761	9: 98 -- 0.532339	
3: 38 -- 0.505573	10: 57 -- 0.529014	
4: 42 -- 0.505421	../046_AU17_query.dat:	
5: 80 -- 0.503661	1: 116 -- 0.567955	
6: 21 -- 0.502946	2: 77 -- 0.552427	
7: 123 -- 0.499928	3: 115 -- 0.549456	
8: 52 -- 0.496508	4: 74 -- 0.537691	
9: 120 -- 0.496223	5: 51 -- 0.529631	
10: 134 -- 0.495547	6: 128 -- 0.524432	
../045_AU12_query.dat:	7: 137 -- 0.523744	
1: 119 -- 0.623496	8: 136 -- 0.523744	
2: 118 -- 0.591638	9: 72 -- 0.50525	
3: 93 -- 0.579015	10: 101 -- 0.5013	
4: 66 -- 0.576861	../047_AU01_query.dat:	
5: 40 -- 0.568128	1: 74 -- 0.577252	
6: 60 -- 0.556875	2: 128 -- 0.562782	
7: 44 -- 0.532998	3: 56 -- 0.547188	
8: 22 -- 0.530612	4: 55 -- 0.547188	
9: 98 -- 0.526997	5: 39 -- 0.546677	

**Time Statistics:**

<b>real</b>	<b>0m7.004s</b>
<b>user</b>	<b>0m6.822s</b>
<b>sys</b>	<b>0m0.164s</b>