

Programming Assignment 5 – 601.455/655 Fall 2021

Score Sheet (hand in with report) Also, PLEASE INDICATE WHETHER YOU ARE IN 601.455 or 601.655 (one in each section is OK)

Name 1	Suryansh Shukla	
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Name 2		
Email		
Other contact information (optional)		
Signature (required)	I (we) have followed the rules in completing this assignment <div style="text-align: center;"> <u>suryansh</u> </div>	
Grade Factor		
Program (40)		
Design and overall program structure	20	
Reusability and modularity	10	
Clarity of documentation and programming	10	
Results (20)		
Correctness and completeness	20	
Report (40)		
Description of formulation and algorithmic approach	15	
Overview of program	10	
Discussion of validation approach	5	
Discussion of results	10	
TOTAL	100	

NOTE: This is an optional assignment.

If you hand it in, I will use the grade to replace the lowest other programming assignment or written homework assignment with one exception:

You may not drop **both** HW#3 and HW#4. If these are your two lowest grades, then I will drop the lower of those two under the drop 1 homework scenario and replace the next lowest grade (other than the other of HW#3-4) with this score



Report CIS PA5

I started this problem by taking the input of the meshFile. There was two inputs, the first was Indices and the second was vertices.

The vertices of the mesh file was same as the vertices of the mode =0 file (Problem5Modes.txt). The rest of the modes were not the same.

I kept the indices same as from the meshFile and using that first I calculated the corresponding coordinates of each vertices of the triangle. There was total 3135 indices give for each mode.

The total modes were 6 i.e. from mode 1 to mode 6.

The mode =0 was taken as seperate.

For mode = 0

With the PA4 workflow, I performed the rigid registration and calculated the Freg. For that i used the two point clouds as S_k and C_k . Before performing the rigid registration, I calculated the points on the triangle mesh as C_k . For the initial guess Freg was identity(4).

In the trianglePoint.py we have calculated the q_{0k} also alongwith ck . i.e. using the C_k i have calculated the q_{0k} . So the function "closestPoint" actually returns the two values ie. q_{0k} and ck . For the calculation of q_{0k} , I first calculated the barycentric coordinates, which were l_1, l_2, l_3 for the point(ck) and the three vertices of the triangle(ms, mu, mt).

This is further explained in mathematics for calculation of q_{0k} .

For the calculation of the q_{mk} , we calculated it as $q_{1k}, q_{2k}, q_{3k}, q_{4k}, q_{5k}, q_{6k}$. with the number representing the mode. It was calculated by multiplying barycentric coordinate with triangle vertices. Barycentric coordinates were kept same for different modes. Just they varied with different vectors (k) given in the same mode.

Calculation of mode weight

We already had calculated the S_k and q_k also we had the q_{mk} . Here we used the least square calculation for finding the six lambdas i.e. $\lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5, \lambda_6$.

after 1 iteration we updated the F_{reg} by using the $q_{0,k} + \sum \lambda_m q_{m,k}$ as one point cloud and d_k as the second.

and I again calculated the S_k and C_k with the new F_{reg} .

Mathematics

the l_1, l_2, l_3 represents the barycentric coordinates of \vec{c}_k on the triangle formed by vertices $\vec{m}_{0,s}, \vec{m}_{0,t}, \vec{m}_{0,u}$. for the mode = 0.

$$\vec{q}_{0,k} = l_1 * \vec{m}_{0,s} + l_2 * \vec{m}_{0,t} + l_3 * \vec{m}_{0,u}$$

Calculation of q_{mk}

$$\vec{q}_{m,k} = l_1 * \vec{m}_{m,s} + l_2 * \vec{m}_{m,u} + l_3 * \vec{m}_{m,t}$$

Calculation of S_k

$$\vec{s}_k = F_{reg} \bullet \vec{d}_k$$

calculation of mode weight

$$F_{reg} \bullet d_k = q_{0,k} + \sum \lambda_m q_{m,k}$$

calculation of d_k

$$d_k = F_{b,k}^{-1} F_{A,k} A_{tip}$$

Calculation of C_k with F_{reg}

$$c_k = F_{reg} \bullet d_k$$

Unit Test

1. Barycentric Coordinate

Triangle vertices = a,b,c

$$\begin{aligned}a &= [1, 1, 3] \\b &= [-1, 1, 3] \\c &= [0, -1, 3]\end{aligned}$$

$$Point = [0.3, 0.4, 3]$$

$$Barycentriccoordinate = "$$

"

"

"

$$point = \lambda_1 * a + \lambda_2 * b + \lambda_3 * c$$

$$[0.3, 0.4, 3] = 0.499 * [1, 1, 2] + 0.2 * [3, 6, 1] + 0.2999 * [3, 3, 3]$$

And the sum of $\lambda_1 + \lambda_2 + \lambda_3 = 1$

Structure of the code

There are total 7 modules in the ciscode folder.

I'm using the code for ICP from the PA4.

Modules

barycentric.py

```
| barycentric_coordinates((point, a, b, c))
```

icp.py

```
| best_fit_transform() ← Perform the point cloud registration  
| nearest_neighbor() ← calculates the nearest neighbor  
| icp() ← Main function for calculating the ICP
```

registration.py

PointCloud() ← performs point cloud registration
frameInv() ← Calculates the inverse of the frame

trianglePoints.py

TriclosestPoint() ← This is the main function for calculation the closest point using the bounding box method
closestPoint() ← this function calls the TriClosestPoint function and it gives the input like the triangle vertices and point sk.

Result for Unknown Data

given at the end of the pdf

Discussion of result

The result is not very accurate because i run the code for just one iteration.

The calculated answer by my program was having only very little error. Like the first value was -10.23 in the actual answer of PA5-A-Debug and my answer was -10.334.

This error was because i run the program for just one iteration. Since for one iteration only, the time taken to calculate it was too long. Hence can't perform many iteration for the problem.

Also in the ICP, I limited the iteration upto 20. This can also be the one of major source of the error.

In addition to it, I run the code for overall 20 iteration and updating the Freg, but when it comes with the 400 sample file it took 10 min to run just one file (for 400 sample).

Otherwise, I expect the error would be low if calculated for all values.

PA5-G-Output

150, PA5-G-Output.txt, 6						
76.6341	-37.1834	-9.9843	159.6028	-33.5675	101.9273	
34.641	10.455	-12.728	34.641	10.455	-12.728	0.000
38.692	11.423	7.522	38.692	11.423	7.522	0.000
28.940	-3.767	29.215	28.940	-3.767	29.215	0.000
-21.447	-27.462	-11.656	-21.447	-27.462	-11.656	0.000
-9.299	-23.251	-9.477	-9.299	-23.251	-9.477	0.000
-33.760	-15.442	-33.382	-33.760	-15.442	-33.382	0.000
-7.830	-10.550	7.953	-7.830	-10.550	7.953	0.000
35.193	-11.291	-11.887	35.193	-11.291	-11.887	0.000
-5.861	-3.394	48.909	-5.861	-3.394	48.909	0.000
16.196	-12.179	8.345	16.196	-12.179	8.345	0.000
-1.522	-17.980	-6.609	-1.522	-17.980	-6.609	0.000
-20.860	24.527	26.889	-20.860	24.527	26.889	0.000
-3.991	24.596	37.973	-3.991	24.596	37.973	0.000
-30.613	-5.659	-38.149	-30.613	-5.659	-38.149	0.000
18.365	-15.474	-0.140	18.365	-15.474	-0.140	0.000
6.726	-8.614	51.817	6.726	-8.614	51.817	0.000
10.828	21.927	39.938	10.828	21.927	39.938	0.000
-10.554	9.769	-13.614	-10.554	9.769	-13.614	0.000
-5.341	-2.709	57.701	-5.341	-2.709	57.701	0.000
24.933	-3.535	-29.463	24.933	-3.535	-29.463	0.000
-14.335	27.618	33.662	-14.335	27.618	33.662	0.000
-29.567	1.316	-36.561	-29.567	1.316	-36.561	0.000
21.992	-16.064	-26.296	21.992	-16.064	-26.296	0.000
21.310	7.587	-32.202	21.310	7.587	-32.202	0.000
20.022	-15.475	-25.242	20.022	-15.475	-25.242	0.000
34.997	4.578	-17.060	34.997	4.578	-17.060	0.000
-17.070	-13.506	-43.556	-17.070	-13.506	-43.556	0.000
27.275	-7.358	25.231	27.275	-7.358	25.231	0.000
-3.883	13.199	61.065	-3.883	13.199	61.065	0.000
31.885	16.646	-9.021	31.885	16.646	-9.021	0.000
-22.275	-2.904	-43.434	-22.275	-2.904	-43.434	0.000
-19.758	-31.943	-22.576	-19.758	-31.943	-22.576	0.000
8.412	-8.636	40.770	8.412	-8.636	40.770	0.000
20.150	3.065	62.641	20.150	3.065	62.641	0.000
22.986	-17.163	-5.198	22.986	-17.163	-5.198	0.000
20.273	2.414	62.627	20.273	2.414	62.627	0.000

-8.260	9.591	-10.068	-8.260	9.591	-10.068	0.000
13.368	-15.568	-19.555	13.368	-15.568	-19.555	0.000
-11.636	13.267	5.533	-11.636	13.267	5.533	0.000
27.855	17.352	-21.018	27.855	17.352	-21.018	0.000
-8.709	11.624	-23.863	-8.709	11.624	-23.863	0.000
17.069	24.141	-22.945	17.069	24.141	-22.945	0.000
-22.636	23.141	30.704	-22.636	23.141	30.704	0.000
2.584	-9.178	22.687	2.584	-9.178	22.687	0.000
-8.271	-27.104	-12.512	-8.271	-27.104	-12.512	0.000
-4.545	-21.427	-38.713	-4.545	-21.427	-38.713	0.000
5.232	-8.830	23.289	5.232	-8.830	23.289	0.000
0.980	-8.811	26.698	0.980	-8.811	26.698	0.000
-4.321	-24.291	-17.167	-4.321	-24.291	-17.167	0.000
-31.884	5.167	-14.214	-31.884	5.167	-14.214	0.000
-35.195	-7.475	-11.839	-35.195	-7.475	-11.839	0.000
29.332	12.254	26.463	29.332	12.254	26.463	0.000
-28.153	2.629	-12.376	-28.153	2.629	-12.376	0.000
-3.492	-16.021	-40.537	-3.492	-16.021	-40.537	0.000
-6.972	-15.466	-42.934	-6.972	-15.466	-42.934	0.000
-6.694	10.437	-7.786	-6.694	10.437	-7.786	0.000
-25.036	-23.870	-9.885	-25.036	-23.870	-9.885	0.000
23.087	-17.465	-5.430	23.087	-17.465	-5.430	0.000
-30.456	-4.957	-38.206	-30.456	-4.957	-38.206	0.000
40.249	8.765	1.779	40.249	8.765	1.779	0.000
27.350	-13.020	5.688	27.350	-13.020	5.688	0.000
32.714	16.411	11.430	32.714	16.411	11.430	0.000
22.758	18.274	49.573	22.758	18.274	49.573	0.000
32.657	14.074	-12.254	32.657	14.074	-12.254	0.000
6.923	-18.232	-13.345	6.923	-18.232	-13.345	0.000
-23.529	-30.702	-22.883	-23.529	-30.702	-22.883	0.000
-7.921	-12.286	-44.302	-7.921	-12.286	-44.302	0.000
3.469	-1.947	-21.391	3.469	-1.947	-21.391	0.000
-10.540	8.445	38.113	-10.540	8.445	38.113	0.000
-11.996	21.590	18.690	-11.996	21.590	18.690	0.000
-8.711	-9.196	10.694	-8.711	-9.196	10.694	0.000
-34.645	-19.740	-14.588	-34.645	-19.740	-14.588	0.000
-2.158	-8.888	30.922	-2.158	-8.888	30.922	0.000
0.231	25.307	23.967	0.231	25.307	23.967	0.000
-8.212	11.338	-27.202	-8.212	11.338	-27.202	0.000
-25.303	-20.886	-6.269	-25.303	-20.886	-6.269	0.000

-3.924	-17.990	-6.083	-3.924	-17.990	-6.083	0.000
11.413	-11.076	8.944	11.413	-11.076	8.944	0.000
28.189	-12.130	7.454	28.189	-12.130	7.454	0.000
29.326	-18.174	-7.799	29.326	-18.174	-7.799	0.000
0.262	-17.725	-6.572	0.262	-17.725	-6.572	0.000
32.685	6.283	24.443	32.685	6.283	24.443	0.000
26.910	-16.518	-25.349	26.910	-16.518	-25.349	0.000
-2.549	7.624	-14.594	-2.549	7.624	-14.594	0.000
34.224	13.975	12.959	34.224	13.975	12.959	0.000
28.865	-10.526	-24.530	28.865	-10.526	-24.530	0.000
-16.747	6.911	-2.722	-16.747	6.911	-2.722	0.000
8.514	16.190	-31.952	8.514	16.190	-31.952	0.000
-14.061	-9.332	-45.583	-14.061	-9.332	-45.583	0.000
-4.926	-25.760	-17.135	-4.926	-25.760	-17.135	0.000
26.962	16.324	-23.207	26.962	16.324	-23.207	0.000
-3.079	-5.088	60.044	-3.079	-5.088	60.044	0.000
15.325	-14.595	2.494	15.325	-14.595	2.494	0.000
7.643	-8.361	-22.326	7.643	-8.361	-22.326	0.000
17.199	25.078	5.032	17.199	25.078	5.032	0.000
31.074	-12.228	6.030	31.074	-12.228	6.030	0.000
27.102	17.149	-22.644	27.102	17.149	-22.644	0.000
7.188	-15.938	-17.656	7.188	-15.938	-17.656	0.000
17.383	-6.364	59.135	17.383	-6.364	59.135	0.000
27.502	20.596	4.775	27.502	20.596	4.775	0.000
-3.037	22.561	55.668	-3.037	22.561	55.668	0.000
-1.600	22.939	51.913	-1.600	22.939	51.913	0.000
-11.660	3.448	31.393	-11.660	3.448	31.393	0.000
22.013	21.154	12.954	22.013	21.154	12.954	0.000
33.412	9.303	-17.880	33.412	9.303	-17.880	0.000
8.484	-18.344	-13.956	8.484	-18.344	-13.956	0.000
-24.613	12.346	-21.455	-24.613	12.346	-21.455	0.000
-2.939	-23.635	-20.158	-2.939	-23.635	-20.158	0.000
-13.360	-24.269	-39.696	-13.360	-24.269	-39.696	0.000
-0.314	-6.835	53.379	-0.314	-6.835	53.379	0.000
-5.927	-10.503	21.480	-5.927	-10.503	21.480	0.000
2.339	-9.058	23.600	2.339	-9.058	23.600	0.000
33.064	-15.881	-6.425	33.064	-15.881	-6.425	0.000
-7.400	17.662	7.779	-7.400	17.662	7.779	0.000
-4.789	-2.101	61.708	-4.789	-2.101	61.708	0.000
35.487	-12.784	-7.116	35.487	-12.784	-7.116	0.000

-24.446	-29.999	-25.377	-24.446	-29.999	-25.377	0.000
1.975	24.474	27.600	1.975	24.474	27.600	0.000
10.971	-18.695	-14.999	10.971	-18.695	-14.999	0.000
25.808	-6.543	30.346	25.808	-6.543	30.346	0.000
2.069	-7.584	38.837	2.069	-7.584	38.837	0.000
-32.499	-14.611	-34.462	-32.499	-14.611	-34.462	0.000
-0.126	10.618	-8.268	-0.126	10.618	-8.268	0.000
-33.023	4.713	-17.821	-33.023	4.713	-17.821	0.000
8.268	-8.553	35.215	8.268	-8.553	35.215	0.000
22.839	-17.374	-26.217	22.839	-17.374	-26.217	0.000
-31.295	-10.818	-36.106	-31.295	-10.818	-36.106	0.000
-24.950	-6.193	-4.968	-24.950	-6.193	-4.968	0.000
0.756	-7.352	34.837	0.756	-7.352	34.837	0.000
20.045	3.556	-30.516	20.045	3.556	-30.516	0.000
-1.258	4.093	-21.998	-1.258	4.093	-21.998	0.000
-32.305	3.376	-13.305	-32.305	3.376	-13.305	0.000
-26.011	-11.219	-42.397	-26.011	-11.219	-42.397	0.000
32.544	-1.460	23.623	32.544	-1.460	23.623	0.000
3.860	-15.354	-29.540	3.860	-15.354	-29.540	0.000
-14.664	12.303	9.117	-14.664	12.303	9.117	0.000
-3.364	-17.479	-39.812	-3.364	-17.479	-39.812	0.000
42.662	-1.451	9.172	42.662	-1.451	9.172	0.000
10.475	14.442	-32.208	10.475	14.442	-32.208	0.000
-31.478	7.339	-18.925	-31.478	7.339	-18.925	0.000
-36.032	1.047	-27.846	-36.032	1.047	-27.846	0.000
-8.642	-4.378	-44.059	-8.642	-4.378	-44.059	0.000
3.800	1.506	-16.956	3.800	1.506	-16.956	0.000
-31.356	6.332	-15.658	-31.356	6.332	-15.658	0.000
9.715	8.473	-12.069	9.715	8.473	-12.069	0.000
-33.603	-22.644	-17.029	-33.603	-22.644	-17.029	0.000
22.439	-6.051	42.865	22.439	-6.051	42.865	0.000
-33.614	-22.455	-28.319	-33.614	-22.455	-28.319	0.000
-2.010	21.933	58.875	-2.010	21.933	58.875	0.000
25.295	14.168	57.013	25.295	14.168	57.013	0.000

400, PA5-H-Output.txt, 6

76.6341	-37.1834	-9.9843	159.6028	-33.5675	101.9273	
14.203	22.333	17.641	14.203	22.333	17.641	0.000
5.303	-17.077	-27.735	5.303	-17.077	-27.735	0.000
-36.821	-17.824	-48.041	-36.821	-17.824	-48.041	0.000
-43.095	-2.676	-18.585	-43.095	-2.676	-18.585	0.000
-7.642	14.160	27.858	-7.642	14.160	27.858	0.000
21.775	11.979	-18.562	21.775	11.979	-18.562	0.000
29.405	11.003	-25.707	29.405	11.003	-25.707	0.000
19.011	21.073	43.580	19.011	21.073	43.580	0.000
-43.924	-6.879	-15.808	-43.924	-6.879	-15.808	0.000
-40.155	0.843	-37.483	-40.155	0.843	-37.483	0.000
-1.018	-11.709	-32.300	-1.018	-11.709	-32.300	0.000
3.480	16.174	34.367	3.480	16.174	34.367	0.000
-6.481	-4.150	-36.897	-6.481	-4.150	-36.897	0.000
11.403	-15.572	7.041	11.403	-15.572	7.041	0.000
-21.802	4.055	-10.669	-21.802	4.055	-10.669	0.000
-33.323	-0.739	-7.236	-33.323	-0.739	-7.236	0.000
35.002	3.163	-25.789	35.002	3.163	-25.789	0.000
37.641	8.986	-14.099	37.641	8.986	-14.099	0.000
-22.991	-33.893	-35.778	-22.991	-33.893	-35.778	0.000
13.882	21.518	21.321	13.882	21.518	21.321	0.000
13.689	-17.845	0.468	13.689	-17.845	0.468	0.000
21.121	-17.993	2.804	21.121	-17.993	2.804	0.000
21.456	7.814	-20.451	21.456	7.814	-20.451	0.000

37.269 9.771 -4.129 37.269 9.771 -4.129 0.000
2.238 -3.252 56.405 2.238 -3.252 56.405 0.000
31.835 19.725 -13.905 31.835 19.725 -13.905 0.000
-33.626 -5.543 -6.271 -33.626 -5.543 -6.271 0.000
37.740 4.790 -2.387 37.740 4.790 -2.387 0.000
-31.626 -32.942 -22.919 -31.626 -32.942 -22.919 0.000
21.987 -16.382 5.781 21.987 -16.382 5.781 0.000
-26.261 -4.188 -51.727 -26.261 -4.188 -51.727 0.000
2.454 -5.655 22.895 2.454 -5.655 22.895 0.000
23.680 -3.922 11.118 23.680 -3.922 11.118 0.000
-32.942 6.916 -41.678 -32.942 6.916 -41.678 0.000
27.468 -3.417 6.155 27.468 -3.417 6.155 0.000
10.015 6.022 -13.345 10.015 6.022 -13.345 0.000
12.412 -5.749 -19.296 12.412 -5.749 -19.296 0.000
-13.907 8.199 -42.148 -13.907 8.199 -42.148 0.000
25.909 11.241 19.842 25.909 11.241 19.842 0.000
16.527 -14.751 9.241 16.527 -14.751 9.241 0.000
-2.956 -2.508 17.988 -2.956 -2.508 17.988 0.000
-34.690 -21.543 -46.120 -34.690 -21.543 -46.120 0.000
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-29.510 -32.016 -16.676 -29.510 -32.016 -16.676 0.000
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19.392 20.966 -25.914 19.392 20.966 -25.914 0.000
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19.159 -18.701 2.305 19.159 -18.701 2.305 0.000

-12.318	-14.657	-49.223	-12.318	-14.657	-49.223	0.000
19.474	5.229	44.303	19.474	5.229	44.303	0.000
6.170	-6.449	-22.092	6.170	-6.449	-22.092	0.000
28.864	13.006	12.466	28.864	13.006	12.466	0.000
15.098	23.297	16.340	15.098	23.297	16.340	0.000
10.735	13.191	3.298	10.735	13.191	3.298	0.000
31.216	12.640	8.347	31.216	12.640	8.347	0.000
10.267	9.848	-1.158	10.267	9.848	-1.158	0.000
29.894	-4.067	1.875	29.894	-4.067	1.875	0.000
36.328	10.671	-15.085	36.328	10.671	-15.085	0.000
-38.630	-2.594	-9.993	-38.630	-2.594	-9.993	0.000
-15.870	6.790	-44.926	-15.870	6.790	-44.926	0.000
-31.827	9.905	-24.186	-31.827	9.905	-24.186	0.000
21.902	12.585	-24.688	21.902	12.585	-24.688	0.000
-20.593	-4.876	-52.053	-20.593	-4.876	-52.053	0.000
-9.404	13.839	28.238	-9.404	13.839	28.238	0.000
-35.997	6.091	-40.639	-35.997	6.091	-40.639	0.000
21.204	7.301	33.010	21.204	7.301	33.010	0.000
0.863	-4.569	20.600	0.863	-4.569	20.600	0.000
-34.672	-3.673	-5.359	-34.672	-3.673	-5.359	0.000
-16.067	-29.260	-40.596	-16.067	-29.260	-40.596	0.000
-0.322	-11.204	-32.485	-0.322	-11.204	-32.485	0.000
3.615	14.020	49.162	3.615	14.020	49.162	0.000
-17.253	-7.002	-3.575	-17.253	-7.002	-3.575	0.000
9.600	14.924	64.974	9.600	14.924	64.974	0.000

-40.050	5.296	-31.484	-40.050	5.296	-31.484	0.000
22.920	8.288	-24.284	22.920	8.288	-24.284	0.000
14.369	21.864	31.184	14.369	21.864	31.184	0.000
-11.645	-2.468	3.284	-11.645	-2.468	3.284	0.000
22.547	24.642	-10.079	22.547	24.642	-10.079	0.000
21.689	20.212	-26.582	21.689	20.212	-26.582	0.000
24.243	-8.338	-10.526	24.243	-8.338	-10.526	0.000
-42.943	-4.976	-14.206	-42.943	-4.976	-14.206	0.000
17.090	11.973	58.571	17.090	11.973	58.571	0.000
20.005	3.304	37.040	20.005	3.304	37.040	0.000
10.161	7.636	-8.953	10.161	7.636	-8.953	0.000
23.359	-11.861	6.376	23.359	-11.861	6.376	0.000
-21.699	-22.091	-50.203	-21.699	-22.091	-50.203	0.000
34.182	5.083	6.654	34.182	5.083	6.654	0.000
18.454	8.270	-10.134	18.454	8.270	-10.134	0.000
-15.386	-7.350	-2.976	-15.386	-7.350	-2.976	0.000
30.235	22.586	-5.509	30.235	22.586	-5.509	0.000
-9.594	-30.199	-27.659	-9.594	-30.199	-27.659	0.000
-19.464	-9.800	-52.321	-19.464	-9.800	-52.321	0.000
-27.456	-32.339	-37.762	-27.456	-32.339	-37.762	0.000
33.071	0.017	7.056	33.071	0.017	7.056	0.000
-23.411	-26.072	-46.589	-23.411	-26.072	-46.589	0.000
7.607	-4.885	61.864	7.607	-4.885	61.864	0.000
-1.695	-11.117	5.423	-1.695	-11.117	5.423	0.000
19.087	15.192	41.142	19.087	15.192	41.142	0.000

2.614	-3.294	40.792	2.614	-3.294	40.792	0.000
0.633	14.554	42.201	0.633	14.554	42.201	0.000
0.699	-17.596	-30.879	0.699	-17.596	-30.879	0.000
21.197	17.579	31.721	21.197	17.579	31.721	0.000
20.521	15.124	-27.493	20.521	15.124	-27.493	0.000
18.399	25.046	15.945	18.399	25.046	15.945	0.000
24.507	23.123	-18.249	24.507	23.123	-18.249	0.000
30.721	12.229	9.398	30.721	12.229	9.398	0.000
-10.598	-17.598	-3.436	-10.598	-17.598	-3.436	0.000
22.545	8.105	-25.290	22.545	8.105	-25.290	0.000
-38.927	-9.495	-7.672	-38.927	-9.495	-7.672	0.000
-39.492	-13.416	-8.839	-39.492	-13.416	-8.839	0.000
-1.184	-5.167	15.407	-1.184	-5.167	15.407	0.000
10.744	-14.715	7.701	10.744	-14.715	7.701	0.000
13.876	2.773	64.259	13.876	2.773	64.259	0.000
37.512	2.109	-5.674	37.512	2.109	-5.674	0.000
-5.517	-24.869	-5.991	-5.517	-24.869	-5.991	0.000
-34.056	-21.908	-9.399	-34.056	-21.908	-9.399	0.000
19.221	-12.174	13.643	19.221	-12.174	13.643	0.000
-42.447	-4.924	-28.736	-42.447	-4.924	-28.736	0.000
-36.800	4.104	-14.942	-36.800	4.104	-14.942	0.000
13.365	22.210	17.321	13.365	22.210	17.321	0.000
-23.352	-4.567	-51.966	-23.352	-4.567	-51.966	0.000
-34.296	-27.304	-15.333	-34.296	-27.304	-15.333	0.000
25.202	-10.928	-1.905	25.202	-10.928	-1.905	0.000

13.215	21.141	21.555	13.215	21.141	21.555	0.000
25.021	-9.734	-3.762	25.021	-9.734	-3.762	0.000
8.973	19.823	62.717	8.973	19.823	62.717	0.000
-21.370	-33.880	-35.859	-21.370	-33.880	-35.859	0.000
0.011	-6.070	-28.725	0.011	-6.070	-28.725	0.000
-7.516	3.221	-5.085	-7.516	3.221	-5.085	0.000
19.161	13.904	42.302	19.161	13.904	42.302	0.000
-2.686	-28.295	-13.737	-2.686	-28.295	-13.737	0.000
7.036	-4.664	43.893	7.036	-4.664	43.893	0.000
-29.452	-27.263	-9.917	-29.452	-27.263	-9.917	0.000
-21.459	14.165	-19.828	-21.459	14.165	-19.828	0.000
-27.343	6.435	-43.422	-27.343	6.435	-43.422	0.000
37.974	7.774	-11.300	37.974	7.774	-11.300	0.000
-36.514	8.573	-29.422	-36.514	8.573	-29.422	0.000
-4.341	7.196	-11.459	-4.341	7.196	-11.459	0.000
21.357	25.897	-3.119	21.357	25.897	-3.119	0.000
-3.226	14.853	42.699	-3.226	14.853	42.699	0.000
22.238	18.663	-26.349	22.238	18.663	-26.349	0.000
7.023	13.116	65.497	7.023	13.116	65.497	0.000
-43.000	-15.178	-21.030	-43.000	-15.178	-21.030	0.000
17.506	12.690	51.896	17.506	12.690	51.896	0.000
17.967	2.514	52.302	17.967	2.514	52.302	0.000
32.311	9.100	-25.689	32.311	9.100	-25.689	0.000
-12.795	-31.526	-26.717	-12.795	-31.526	-26.717	0.000
-7.907	-3.309	8.740	-7.907	-3.309	8.740	0.000

16.800	12.667	56.962	16.800	12.667	56.962	0.000
-3.116	12.957	43.038	-3.116	12.957	43.038	0.000
3.482	-10.562	-26.800	3.482	-10.562	-26.800	0.000
-9.104	12.312	25.644	-9.104	12.312	25.644	0.000
19.301	24.328	16.853	19.301	24.328	16.853	0.000
-18.899	-24.420	-6.682	-18.899	-24.420	-6.682	0.000
10.762	0.988	-17.919	10.762	0.988	-17.919	0.000
17.066	23.228	40.335	17.066	23.228	40.335	0.000
-16.171	-28.852	-13.699	-16.171	-28.852	-13.699	0.000
-37.130	-22.987	-42.625	-37.130	-22.987	-42.625	0.000
-6.859	-22.716	-7.667	-6.859	-22.716	-7.667	0.000
-12.852	9.202	-16.003	-12.852	9.202	-16.003	0.000
19.426	20.243	41.102	19.426	20.243	41.102	0.000
-43.267	-14.597	-42.451	-43.267	-14.597	-42.451	0.000
18.939	18.881	-17.560	18.939	18.881	-17.560	0.000
-3.396	-1.644	-30.736	-3.396	-1.644	-30.736	0.000
36.903	14.230	-12.028	36.903	14.230	-12.028	0.000
22.472	24.761	-10.527	22.472	24.761	-10.527	0.000
-7.153	-4.848	7.886	-7.153	-4.848	7.886	0.000
23.988	24.638	-13.490	23.988	24.638	-13.490	0.000
-9.316	-25.204	-7.176	-9.316	-25.204	-7.176	0.000
13.155	-18.460	-2.058	13.155	-18.460	-2.058	0.000
18.820	8.299	48.072	18.820	8.299	48.072	0.000
-10.193	-20.488	-5.442	-10.193	-20.488	-5.442	0.000
-6.616	1.793	-31.421	-6.616	1.793	-31.421	0.000

-43.400	-18.647	-30.173	-43.400	-18.647	-30.173	0.000
1.174	-25.996	-26.938	1.174	-25.996	-26.938	0.000
-16.851	13.466	-22.358	-16.851	13.466	-22.358	0.000
21.570	8.915	30.397	21.570	8.915	30.397	0.000
-21.813	-23.978	-6.477	-21.813	-23.978	-6.477	0.000
29.826	22.626	-2.157	29.826	22.626	-2.157	0.000
-12.295	-26.550	-10.023	-12.295	-26.550	-10.023	0.000
-32.820	-9.296	-5.195	-32.820	-9.296	-5.195	0.000
34.966	12.720	2.202	34.966	12.720	2.202	0.000
-10.972	-27.684	-38.711	-10.972	-27.684	-38.711	0.000
21.154	-10.702	-14.765	21.154	-10.702	-14.765	0.000
31.075	13.456	7.670	31.075	13.456	7.670	0.000
-42.730	-3.962	-27.280	-42.730	-3.962	-27.280	0.000
30.755	2.803	12.269	30.755	2.803	12.269	0.000
-36.525	5.640	-18.687	-36.525	5.640	-18.687	0.000
14.201	22.706	55.646	14.201	22.706	55.646	0.000
27.492	11.817	-25.975	27.492	11.817	-25.975	0.000
-9.639	-26.372	-10.030	-9.639	-26.372	-10.030	0.000
19.960	22.952	27.621	19.960	22.952	27.621	0.000
-4.922	-21.547	-6.450	-4.922	-21.547	-6.450	0.000
-27.297	4.665	-45.583	-27.297	4.665	-45.583	0.000
-6.847	-27.260	-32.204	-6.847	-27.260	-32.204	0.000
-30.686	3.906	-7.361	-30.686	3.906	-7.361	0.000
0.981	-4.680	21.441	0.981	-4.680	21.441	0.000
-26.392	-24.890	-8.090	-26.392	-24.890	-8.090	0.000

19.363 13.026 43.930 19.363 13.026 43.930 0.000
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13.432 -2.979 37.620 13.432 -2.979 37.620 0.000
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8.893 -13.770 -21.127 8.893 -13.770 -21.127 0.000
-31.862 -9.249 -52.158 -31.862 -9.249 -52.158 0.000

25.773	16.402	-25.139	25.773	16.402	-25.139	0.000
12.327	-15.394	8.078	12.327	-15.394	8.078	0.000
-14.491	-5.924	-1.103	-14.491	-5.924	-1.103	0.000
-0.593	-2.227	30.886	-0.593	-2.227	30.886	0.000
0.502	16.464	35.771	0.502	16.464	35.771	0.000
33.794	14.289	2.445	33.794	14.289	2.445	0.000
18.358	17.775	44.568	18.358	17.775	44.568	0.000
-27.134	2.260	-48.205	-27.134	2.260	-48.205	0.000
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-8.929 -6.926 6.060 -8.929 -6.926 6.060 0.000
4.531 -7.611 36.663 4.531 -7.611 36.663 0.000
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38.218 -2.771 -24.453 38.218 -2.771 -24.453 0.000
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-10.918	2.360	1.828	-10.918	2.360	1.828	0.000
-7.952	3.983	35.911	-7.952	3.983	35.911	0.000
-9.173	9.680	46.726	-9.173	9.680	46.726	0.000
-11.505	-27.840	-7.150	-11.505	-27.840	-7.150	0.000
25.169	7.751	19.787	25.169	7.751	19.787	0.000
23.034	28.023	-13.005	23.034	28.023	-13.005	0.000
-2.120	-10.834	-35.666	-2.120	-10.834	-35.666	0.000
-17.288	-9.496	-1.455	-17.288	-9.496	-1.455	0.000
-7.795	8.452	-27.676	-7.795	8.452	-27.676	0.000
11.084	-17.940	-13.242	11.084	-17.940	-13.242	0.000
4.448	-6.731	48.133	4.448	-6.731	48.133	0.000
22.661	14.239	-30.071	22.661	14.239	-30.071	0.000
-3.733	15.975	40.735	-3.733	15.975	40.735	0.000
25.352	-2.861	11.894	25.352	-2.861	11.894	0.000
0.872	14.132	6.805	0.872	14.132	6.805	0.000
-0.279	-10.134	10.555	-0.279	-10.134	10.555	0.000
5.200	-14.437	-26.474	5.200	-14.437	-26.474	0.000
-20.950	-32.928	-31.135	-20.950	-32.928	-31.135	0.000
-12.514	9.253	22.903	-12.514	9.253	22.903	0.000
-9.860	-1.754	10.864	-9.860	-1.754	10.864	0.000
23.590	0.683	18.055	23.590	0.683	18.055	0.000
21.425	25.869	-22.844	21.425	25.869	-22.844	0.000
12.919	13.937	66.060	12.919	13.937	66.060	0.000

23.317	-4.882	10.914	23.317	-4.882	10.914	0.000
27.602	27.158	-17.002	27.602	27.158	-17.002	0.000
19.213	9.343	36.574	19.213	9.343	36.574	0.000
19.972	12.951	34.814	19.972	12.951	34.814	0.000
43.032	7.824	-14.393	43.032	7.824	-14.393	0.000
26.826	24.169	-29.014	26.826	24.169	-29.014	0.000
-8.769	15.432	28.600	-8.769	15.432	28.600	0.000
-1.735	-18.976	-35.287	-1.735	-18.976	-35.287	0.000
10.397	-16.782	2.949	10.397	-16.782	2.949	0.000
3.216	-6.509	62.642	3.216	-6.509	62.642	0.000
-36.400	-26.472	-14.516	-36.400	-26.472	-14.516	0.000
23.076	22.267	15.347	23.076	22.267	15.347	0.000
12.027	23.273	9.975	12.027	23.273	9.975	0.000
-2.329	-5.438	42.695	-2.329	-5.438	42.695	0.000
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-12.768	7.472	-36.632	-12.768	7.472	-36.632	0.000
-27.987	-30.388	-10.354	-27.987	-30.388	-10.354	0.000
-1.001	12.644	9.922	-1.001	12.644	9.922	0.000
-30.907	-25.575	-6.114	-30.907	-25.575	-6.114	0.000
21.625	5.397	-25.147	21.625	5.397	-25.147	0.000
-7.779	-29.430	-11.117	-7.779	-29.430	-11.117	0.000
-27.946	-19.623	-44.492	-27.946	-19.623	-44.492	0.000
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34.103 3.599 -32.136 34.103 3.599 -32.136 0.000
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17.278	-3.229	23.640	17.278	-3.229	23.640	0.000
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32.190	-4.477	-27.426	32.190	-4.477	-27.426	0.000
12.075	-18.914	-8.744	12.075	-18.914	-8.744	0.000
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-12.399	9.288	-35.371	-12.399	9.288	-35.371	0.000
33.225	24.711	-11.013	33.225	24.711	-11.013	0.000
-5.559	11.101	16.647	-5.559	11.101	16.647	0.000
-38.378	-2.178	-33.044	-38.378	-2.178	-33.044	0.000
-22.262	2.873	-7.552	-22.262	2.873	-7.552	0.000
31.569	16.719	13.079	31.569	16.719	13.079	0.000
8.440	-8.983	-24.760	8.440	-8.983	-24.760	0.000
-9.543	-3.744	9.701	-9.543	-3.744	9.701	0.000
27.755	10.969	17.224	27.755	10.969	17.224	0.000
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-7.129	-13.517	-42.069	-7.129	-13.517	-42.069	0.000
-6.621	-20.296	-4.526	-6.621	-20.296	-4.526	0.000
-27.211	-29.790	-35.115	-27.211	-29.790	-35.115	0.000
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17.066	-17.560	4.432	17.066	-17.560	4.432	0.000
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14.118	-18.076	1.659	14.118	-18.076	1.659	0.000
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-8.992	-27.959	-8.932	-8.992	-27.959	-8.932	0.000
-6.089	-13.024	-40.441	-6.089	-13.024	-40.441	0.000
4.242	18.430	44.105	4.242	18.430	44.105	0.000
-34.376	-27.456	-29.836	-34.376	-27.456	-29.836	0.000
11.162	-8.144	22.724	11.162	-8.144	22.724	0.000
-10.560	-13.751	0.586	-10.560	-13.751	0.586	0.000
-32.090	-0.724	-4.768	-32.090	-0.724	-4.768	0.000
13.913	15.429	62.605	13.913	15.429	62.605	0.000
20.104	27.578	0.873	20.104	27.578	0.873	0.000
-2.900	6.896	-25.224	-2.900	6.896	-25.224	0.000
16.886	27.394	-7.270	16.886	27.394	-7.270	0.000
14.439	-3.893	29.122	14.439	-3.893	29.122	0.000
-21.874	10.055	-12.300	-21.874	10.055	-12.300	0.000
1.122	-3.478	-28.129	1.122	-3.478	-28.129	0.000
-0.387	-6.826	-31.719	-0.387	-6.826	-31.719	0.000
37.873	-3.500	-8.247	37.873	-3.500	-8.247	0.000
8.144	18.217	-0.920	8.144	18.217	-0.920	0.000
-34.473	3.427	-6.990	-34.473	3.427	-6.990	0.000
-0.193	-6.641	65.955	-0.193	-6.641	65.955	0.000
23.704	-17.961	0.401	23.704	-17.961	0.401	0.000

31.264	-6.926	1.854	31.264	-6.926	1.854	0.000
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8.636	11.445	-9.781	8.636	11.445	-9.781	0.000
15.745	-13.282	10.715	15.745	-13.282	10.715	0.000
-21.701	4.401	-40.583	-21.701	4.401	-40.583	0.000
9.577	-17.067	0.430	9.577	-17.067	0.430	0.000
34.642	5.441	10.492	34.642	5.441	10.492	0.000
30.915	20.179	-28.092	30.915	20.179	-28.092	0.000
23.871	10.369	-30.086	23.871	10.369	-30.086	0.000
-6.788	-3.549	18.450	-6.788	-3.549	18.450	0.000
-25.892	8.928	-33.482	-25.892	8.928	-33.482	0.000
-5.640	-27.543	-10.707	-5.640	-27.543	-10.707	0.000
-29.891	9.547	-18.608	-29.891	9.547	-18.608	0.000
4.624	-0.646	66.104	4.624	-0.646	66.104	0.000
-26.842	-8.671	-45.821	-26.842	-8.671	-45.821	0.000
10.535	4.360	64.939	10.535	4.360	64.939	0.000
-4.466	-23.931	-7.138	-4.466	-23.931	-7.138	0.000
30.618	24.720	-22.005	30.618	24.720	-22.005	0.000
35.952	22.101	-12.798	35.952	22.101	-12.798	0.000
-22.006	-34.364	-22.242	-22.006	-34.364	-22.242	0.000
-14.578	-11.508	-0.268	-14.578	-11.508	-0.268	0.000
-27.648	-31.894	-30.511	-27.648	-31.894	-30.511	0.000
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0.607	-22.041	-30.328	0.607	-22.041	-30.328	0.000
22.122	-5.389	11.631	22.122	-5.389	11.631	0.000
5.707	20.201	52.417	5.707	20.201	52.417	0.000
23.568	-1.842	15.441	23.568	-1.842	15.441	0.000
0.763	-24.020	-12.219	0.763	-24.020	-12.219	0.000
22.782	12.801	26.527	22.782	12.801	26.527	0.000
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37.437	5.568	-27.234	37.437	5.568	-27.234	0.000
2.164	14.399	5.194	2.164	14.399	5.194	0.000
1.897	-2.146	-27.384	1.897	-2.146	-27.384	0.000
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25.444	-14.127	-19.482	25.444	-14.127	-19.482	0.000
11.335	-10.337	12.874	11.335	-10.337	12.874	0.000
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18.338	-5.494	47.148	18.338	-5.494	47.148	0.000
-7.031	-29.571	-23.237	-7.031	-29.571	-23.237	0.000
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23.722	9.370	37.469	23.722	9.370	37.469	0.000
27.742	24.125	-9.597	27.742	24.125	-9.597	0.000
29.903	4.568	22.552	29.903	4.568	22.552	0.000
26.615	-5.626	17.262	26.615	-5.626	17.262	0.000
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2.733	2.241	68.046	2.733	2.241	68.046	0.000
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12.545	-7.839	69.111	12.545	-7.839	69.111	0.000
23.585	-8.899	7.304	23.585	-8.899	7.304	0.000
41.900	8.274	-14.878	41.900	8.274	-14.878	0.000

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32.556	8.824	-33.014	32.556	8.824	-33.014	0.000
-32.233	6.188	-13.330	-32.233	6.188	-13.330	0.000
-44.909	-4.694	-23.333	-44.909	-4.694	-23.333	0.000
-10.811	-6.479	16.778	-10.811	-6.479	16.778	0.000
38.877	15.931	-7.130	38.877	15.931	-7.130	0.000
-0.577	-3.175	-26.456	-0.577	-3.175	-26.456	0.000
-16.578	10.666	-22.650	-16.578	10.666	-22.650	0.000
4.546	3.295	-21.414	4.546	3.295	-21.414	0.000
11.324	19.194	34.208	11.324	19.194	34.208	0.000
13.399	24.343	-10.004	13.399	24.343	-10.004	0.000
-4.657	-7.239	47.723	-4.657	-7.239	47.723	0.000
3.829	16.974	-0.974	3.829	16.974	-0.974	0.000
20.413	6.723	-24.319	20.413	6.723	-24.319	0.000
-10.876	-13.178	-40.981	-10.876	-13.178	-40.981	0.000
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23.114	18.488	21.692	23.114	18.488	21.692	0.000
-28.922	-29.740	-8.196	-28.922	-29.740	-8.196	0.000
-22.601	-34.859	-15.518	-22.601	-34.859	-15.518	0.000
-40.007	-15.007	-36.374	-40.007	-15.007	-36.374	0.000
-0.190	-13.974	-33.067	-0.190	-13.974	-33.067	0.000
-15.898	-9.070	4.568	-15.898	-9.070	4.568	0.000
24.202	-7.486	12.673	24.202	-7.486	12.673	0.000

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5.585	-1.605	70.246	5.585	-1.605	70.246	0.000
22.646	-5.801	-26.431	22.646	-5.801	-26.431	0.000
-37.101	-0.934	-8.254	-37.101	-0.934	-8.254	0.000
23.668	13.145	31.763	23.668	13.145	31.763	0.000
21.633	-1.806	50.122	21.633	-1.806	50.122	0.000
-6.056	2.604	-27.702	-6.056	2.604	-27.702	0.000
-9.538	-6.021	22.832	-9.538	-6.021	22.832	0.000
-5.454	-6.369	-36.349	-5.454	-6.369	-36.349	0.000
6.215	-10.217	17.684	6.215	-10.217	17.684	0.000
-18.413	-29.242	-35.591	-18.413	-29.242	-35.591	0.000
22.442	18.690	22.977	22.442	18.690	22.977	0.000
-39.934	-22.209	-30.686	-39.934	-22.209	-30.686	0.000
6.756	-10.642	66.502	6.756	-10.642	66.502	0.000
-43.674	-4.527	-30.930	-43.674	-4.527	-30.930	0.000
17.742	9.980	59.109	17.742	9.980	59.109	0.000
23.554	-9.927	3.843	23.554	-9.927	3.843	0.000
-6.729	-18.083	-38.242	-6.729	-18.083	-38.242	0.000
-25.606	10.662	-19.151	-25.606	10.662	-19.151	0.000
22.555	13.198	-31.972	22.555	13.198	-31.972	0.000
-3.724	15.689	4.610	-3.724	15.689	4.610	0.000
30.283	-8.567	5.898	30.283	-8.567	5.898	0.000

-32.056 -31.785 -17.370 -32.056 -31.785 -17.370 0.000
-42.433 -19.725 -26.453 -42.433 -19.725 -26.453 0.000
-9.378 -3.954 39.224 -9.378 -3.954 39.224 0.000
19.069 -7.512 20.051 19.069 -7.512 20.051 0.000
-38.501 -13.288 -38.404 -38.501 -13.288 -38.404 0.000
-28.353 -32.113 -12.063 -28.353 -32.113 -12.063 0.000
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16.338 16.878 -23.742 16.338 16.878 -23.742 0.000
-17.206 -33.445 -26.356 -17.206 -33.445 -26.356 0.000
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21.183 3.815 -26.609 21.183 3.815 -26.609 0.000
0.088 -20.848 -26.702 0.088 -20.848 -26.702 0.000
-35.708 -12.259 -39.948 -35.708 -12.259 -39.948 0.000
0.686 12.879 62.404 0.686 12.879 62.404 0.000
-30.068 -17.952 -0.833 -30.068 -17.952 -0.833 0.000
24.427 24.769 -0.651 24.427 24.769 -0.651 0.000
-11.950 25.291 12.389 -11.950 25.291 12.389 0.000
38.122 2.833 11.929 38.122 2.833 11.929 0.000
22.065 1.079 52.054 22.065 1.079 52.054 0.000
-42.177 -15.065 -33.788 -42.177 -15.065 -33.788 0.000
-25.177 -34.670 -14.979 -25.177 -34.670 -14.979 0.000
1.788 17.444 33.693 1.788 17.444 33.693 0.000

-11.250 2.403 40.048 -11.250 2.403 40.048 0.000
6.470 -9.177 50.133 6.470 -9.177 50.133 0.000
1.950 13.522 65.638 1.950 13.522 65.638 0.000
19.629 -13.535 -17.844 19.629 -13.535 -17.844 0.000
-6.788 21.708 25.462 -6.788 21.708 25.462 0.000
-36.327 -28.025 -23.432 -36.327 -28.025 -23.432 0.000
25.414 14.649 24.852 25.414 14.649 24.852 0.000
20.936 5.023 58.079 20.936 5.023 58.079 0.000
-6.639 -16.889 -0.377 -6.639 -16.889 -0.377 0.000
1.698 18.543 30.029 1.698 18.543 30.029 0.000
13.261 -8.310 42.084 13.261 -8.310 42.084 0.000
-0.178 13.563 0.143 -0.178 13.563 0.143 0.000
-16.642 17.614 23.302 -16.642 17.614 23.302 0.000
2.888 -12.340 13.718 2.888 -12.340 13.718 0.000
22.976 -1.679 43.081 22.976 -1.679 43.081 0.000
20.553 6.141 58.338 20.553 6.141 58.338 0.000
11.739 -16.264 3.592 11.739 -16.264 3.592 0.000
1.449 8.519 -15.560 1.449 8.519 -15.560 0.000
-30.818 -26.715 -5.888 -30.818 -26.715 -5.888 0.000
1.298 0.579 -23.706 1.298 0.579 -23.706 0.000
4.544 -9.869 59.185 4.544 -9.869 59.185 0.000
25.928 5.836 33.225 25.928 5.836 33.225 0.000
38.985 -5.518 -23.303 38.985 -5.518 -23.303 0.000

-4.492	-9.783	-36.065	-4.492	-9.783	-36.065	0.000
13.137	-8.172	51.365	13.137	-8.172	51.365	0.000
-18.432	-10.543	2.186	-18.432	-10.543	2.186	0.000
38.130	-6.350	-25.108	38.130	-6.350	-25.108	0.000
3.682	-9.083	28.603	3.682	-9.083	28.603	0.000
22.543	-11.086	1.626	22.543	-11.086	1.626	0.000
-14.012	1.888	-1.194	-14.012	1.888	-1.194	0.000
-14.880	-1.147	7.452	-14.880	-1.147	7.452	0.000
-42.775	-20.384	-20.669	-42.775	-20.384	-20.669	0.000
-5.964	13.670	5.551	-5.964	13.670	5.551	0.000
-16.571	-15.121	0.421	-16.571	-15.121	0.421	0.000
30.968	10.502	18.867	30.968	10.502	18.867	0.000
40.747	2.174	-21.164	40.747	2.174	-21.164	0.000
-21.240	-23.933	-2.272	-21.240	-23.933	-2.272	0.000
-11.197	-1.953	40.944	-11.197	-1.953	40.944	0.000
17.951	19.065	-32.573	17.951	19.065	-32.573	0.000
-6.810	24.174	20.049	-6.810	24.174	20.049	0.000
-35.567	-9.851	-2.080	-35.567	-9.851	-2.080	0.000
-4.852	-9.452	-36.510	-4.852	-9.452	-36.510	0.000
23.292	4.756	-29.274	23.292	4.756	-29.274	0.000
-18.692	-4.607	0.789	-18.692	-4.607	0.789	0.000
-0.302	11.595	-2.646	-0.302	11.595	-2.646	0.000
-44.056	-10.817	-13.628	-44.056	-10.817	-13.628	0.000

1.387	-8.985	45.547	1.387	-8.985	45.547	0.000
14.885	19.289	-17.306	14.885	19.289	-17.306	0.000
29.821	23.403	-21.499	29.821	23.403	-21.499	0.000
19.732	21.666	15.625	19.732	21.666	15.625	0.000
17.550	3.388	71.530	17.550	3.388	71.530	0.000
-32.813	4.443	-29.290	-32.813	4.443	-29.290	0.000
-16.633	0.876	-37.447	-16.633	0.876	-37.447	0.000
-35.693	-20.544	-4.914	-35.693	-20.544	-4.914	0.000
-45.115	-10.162	-17.429	-45.115	-10.162	-17.429	0.000
-6.625	-18.891	-37.694	-6.625	-18.891	-37.694	0.000
17.665	15.410	-25.263	17.665	15.410	-25.263	0.000
-28.735	-12.248	-41.797	-28.735	-12.248	-41.797	0.000
27.701	3.712	28.705	27.701	3.712	28.705	0.000
22.421	4.107	50.167	22.421	4.107	50.167	0.000