

# task\_slowdown\_table

March 10, 2021

## 1 Task slowdown

```
[2]: import json
import sys
import gzip
import pandas
import seaborn as sns
import matplotlib as mpl
import matplotlib.pyplot as plt
from IPython.display import display, HTML
```

### 1.0.1 Legend for columns:

- $n\_fsh$ : number of jobs that terminated with status 6 (FINISH)
- $n\_non$ : number of jobs that did not terminate with status 6 or did not terminate at all
- $finished\%$ :  $n\_fsh / (n\_fsh + n\_non)$
- $c\_zero\_end$ : count of number of **Finished** jobs that have a last execution time of 0
- $s\_last$ : sum of execution times for last events
- $m\_last$ : mean execution time for last event
- $s\_all$ : sum of all execution times for all events
- $m\_all$ : mean execution time for all events
- $s\_slow$ : sum of **slowdown** values computed for each job:  $job\_slowdown = \text{sum}(\text{exec\_time}) / \text{last}(\text{exec\_time})$
- $m\_slow$ : mean job-wise **slowdown** value, i.e.  $s\_slow / n\_fsh$
- $m\_slow\_2$ : priority-wise mean **slowdown**, i.e.  $s\_all / s\_last$

```
[6]: CLUSTERS = "abcdefgh"
DIR = "/home/claudio/google_2019/thesis_queries/task_slowdown/"

df = {}

for cluster in CLUSTERS:
    print("Cluster " + cluster + ":")
    df[cluster] = pandas.read_csv(DIR + "/" + cluster + "_slowdown_table.csv")
    df[cluster]["m_slow_2"] = (df[cluster]["s_all"] / df[cluster]["s_last"])
    display(df[cluster])
```

Cluster a:

	Unnamed: 0	priority	n_fsh	n_non	finished%	c_zero_end	\
0	0	-1	499210	4201399	0.106201	0.0	
1	1	24	0	4	0.000000	NaN	
2	2	25	171	51172	0.003331	0.0	
3	3	100	0	9528	0.000000	NaN	
4	4	101	125339	27667	0.819177	0.0	
5	5	102	0	8992	0.000000	NaN	
6	6	103	1406882	7978164	0.149907	0.0	
7	7	105	24095559	17680282	0.576782	0.0	
8	8	107	5056370	4320033	0.539265	0.0	
9	9	114	0	54127	0.000000	NaN	
10	10	115	5171	120690	0.041085	0.0	
11	11	116	171154	1140843	0.130453	0.0	
12	12	117	0	89560	0.000000	NaN	
13	13	118	70767	523560	0.119071	0.0	
14	14	119	158153	585586	0.212646	0.0	
15	15	170	0	109	0.000000	NaN	
16	16	200	1812271	4847612	0.272118	0.0	
17	17	205	0	21334	0.000000	NaN	
18	18	210	0	1169	0.000000	NaN	
19	19	214	0	1390	0.000000	NaN	
20	20	215	0	1169	0.000000	NaN	
21	21	360	805	129798	0.006164	0.0	
22	22	400	0	75	0.000000	NaN	
23	23	450	112	4971	0.022034	0.0	
24	24	500	0	75	0.000000	NaN	

  

	s_last	m_last	s_all	m_all	s_slow	\
0	3.906499e+14	7.826006e+08	4.287602e+14	5.927146e+08	6.317847e+05	
1	NaN	NaN	NaN	NaN	NaN	
2	9.865622e+11	5.769370e+09	8.185831e+13	1.203020e+09	9.298476e+05	
3	NaN	NaN	NaN	NaN	NaN	
4	7.934233e+15	6.330522e+10	2.443592e+17	6.345536e+09	1.649199e+13	
5	NaN	NaN	NaN	NaN	NaN	
6	4.323773e+15	3.074344e+09	4.888366e+15	3.032797e+09	1.650518e+13	
7	4.014175e+16	1.666129e+09	4.330222e+16	1.749708e+09	1.650779e+13	
8	5.167496e+15	1.021995e+09	5.251141e+15	1.030654e+09	1.650779e+13	
9	NaN	NaN	NaN	NaN	NaN	
10	1.055055e+13	2.040726e+09	1.059617e+13	2.042044e+09	1.650779e+13	
11	7.603199e+14	4.443119e+09	7.852192e+14	4.443447e+09	1.650779e+13	
12	NaN	NaN	NaN	NaN	NaN	
13	1.282456e+14	1.816612e+09	1.286936e+14	1.814017e+09	1.650779e+13	
14	3.558131e+14	2.250102e+09	5.354711e+14	2.877438e+09	1.740399e+13	
15	NaN	NaN	NaN	NaN	NaN	
16	8.227217e+15	4.545547e+09	3.386948e+16	1.684469e+10	1.651621e+14	
17	NaN	NaN	NaN	NaN	NaN	

18	NaN	NaN	NaN	NaN	NaN	NaN
19	NaN	NaN	NaN	NaN	NaN	NaN
20	NaN	NaN	NaN	NaN	NaN	NaN
21	3.959197e+14	5.141815e+11	1.157676e+15	4.005801e+11	1.652857e+14	
22	NaN	NaN	NaN	NaN	NaN	NaN
23	1.373633e+13	6.868166e+11	1.569307e+13	6.538778e+11	1.652857e+14	
24	NaN	NaN	NaN	NaN	NaN	NaN

	m_slow	m_slow_2
0	1.265673e+00	1.097556
1	NaN	NaN
2	5.437705e+03	82.973285
3	NaN	NaN
4	1.315854e+08	30.798089
5	NaN	NaN
6	1.173572e+07	1.130579
7	6.851743e+05	1.078733
8	3.264806e+06	1.016187
9	NaN	NaN
10	3.192996e+09	1.004324
11	9.646740e+07	1.032749
12	NaN	NaN
13	2.338347e+08	1.003494
14	1.100599e+08	1.504923
15	NaN	NaN
16	9.125228e+07	4.116760
17	NaN	NaN
18	NaN	NaN
19	NaN	NaN
20	NaN	NaN
21	2.146568e+11	2.924018
22	NaN	NaN
23	8.264285e+12	1.142450
24	NaN	NaN

Cluster b:

	Unnamed: 0	priority	n_fsh	n_non	finished%	c_zero_end	\
0	0	0	28120567	34102646	0.451930	0.0	
1	1	25	19	104988	0.000181	0.0	
2	2	80	0	1	0.000000	NaN	
3	3	100	0	87231	0.000000	NaN	
4	4	101	25076	12644	0.664793	0.0	
5	5	103	16512	15505605	0.001064	0.0	
6	6	105	10945	2351495	0.004633	0.0	
7	7	107	0	501380	0.000000	NaN	
8	8	114	1999	293319	0.006769	0.0	
9	9	115	196	4564	0.041176	0.0	
10	10	116	215967	2380902	0.083164	0.0	

11	11	117	0	1849	0.000000	NaN
12	12	118	394	126176	0.003113	12.0
13	13	119	108	54995	0.001960	0.0
14	14	170	0	14	0.000000	NaN
15	15	199	0	14474	0.000000	NaN
16	16	200	91396	204224	0.309167	68.0
17	17	205	0	35822	0.000000	NaN
18	18	210	0	1869	0.000000	NaN
19	19	214	0	400	0.000000	NaN
20	20	215	0	1869	0.000000	NaN
21	21	360	1203	33139	0.035030	0.0
22	22	450	174	28215	0.006129	0.0

	s_last	m_last	s_all	m_all	s_slow \
0	3.799640e+16	1.351419e+09	4.469884e+16	1.466778e+09	1.456543e+12
1	2.032227e+11	1.069593e+10	2.712655e+13	4.121323e+09	1.456543e+12
2	NaN	NaN	NaN	NaN	NaN
3	NaN	NaN	NaN	NaN	NaN
4	1.521911e+14	6.069194e+09	6.596179e+16	5.401534e+09	1.758002e+12
5	3.207110e+14	1.942996e+10	5.276062e+14	1.489656e+10	1.767936e+12
6	1.022630e+16	9.344209e+11	2.462585e+16	3.924313e+11	1.768020e+12
7	NaN	NaN	NaN	NaN	NaN
8	6.586472e+13	3.294884e+10	6.609009e+13	3.047031e+10	1.768020e+12
9	4.886710e+12	2.558487e+10	2.891394e+13	1.070887e+11	2.151127e+12
10	6.325603e+15	2.928995e+10	7.019217e+15	2.901750e+10	2.285561e+12
11	NaN	NaN	NaN	NaN	NaN
12	1.068751e+12	2.775978e+09	1.068751e+12	2.775978e+09	2.285561e+12
13	2.085274e+13	1.930809e+11	5.328207e+13	3.044690e+11	2.285562e+12
14	NaN	NaN	NaN	NaN	NaN
15	NaN	NaN	NaN	NaN	NaN
16	1.668931e+16	1.826044e+11	1.620119e+17	4.663286e+11	5.237700e+15
17	NaN	NaN	NaN	NaN	NaN
18	NaN	NaN	NaN	NaN	NaN
19	NaN	NaN	NaN	NaN	NaN
20	NaN	NaN	NaN	NaN	NaN
21	1.261039e+15	1.048245e+12	2.032980e+15	4.951241e+11	5.237700e+15
22	2.748099e+14	1.579367e+12	2.906155e+14	1.529555e+12	5.237700e+15

	m_slow	m_slow_2
0	5.180489e+04	1.176397
1	7.666016e+10	133.481864
2	NaN	NaN
3	NaN	NaN
4	7.010696e+07	433.414195
5	1.071087e+08	1.645114
6	1.615515e+08	2.408090
7	NaN	NaN
8	8.844522e+08	1.003422

9	1.126245e+10	5.916852
10	1.058301e+07	1.109652
11	NaN	NaN
12	5.936521e+09	1.000000
13	2.116261e+10	2.555160
14	NaN	NaN
15	NaN	NaN
16	5.730776e+10	9.707524
17	NaN	NaN
18	NaN	NaN
19	NaN	NaN
20	NaN	NaN
21	4.353865e+12	1.612147
22	3.010172e+13	1.057515

Cluster c:

	Unnamed: 0	priority	n_fsh	n_non	finished%	c_zero_end	\
0	0	0	106013713	102314553	0.508878	4.0	
1	1	3	0	3	0.000000	NaN	
2	2	10	0	3	0.000000	NaN	
3	3	25	903	3116	0.224683	0.0	
4	4	100	0	827	0.000000	NaN	
5	5	101	25060	22557	0.526283	0.0	
6	6	103	2437	45665340	0.000053	219.0	
7	7	105	8972	38135622	0.000235	8.0	
8	8	107	27	11026707	0.000002	0.0	
9	9	114	223	1003339	0.000222	0.0	
10	10	115	353	124899	0.002818	1.0	
11	11	116	536	3873404	0.000138	0.0	
12	12	117	259	19	0.931655	0.0	
13	13	118	98	2368621	0.000041	0.0	
14	14	119	1523	67207	0.022159	0.0	
15	15	170	0	30	0.000000	NaN	
16	16	200	40086	1071316	0.036068	96.0	
17	17	205	0	2560	0.000000	NaN	
18	18	210	0	160	0.000000	NaN	
19	19	214	0	2560	0.000000	NaN	
20	20	215	0	160	0.000000	NaN	
21	21	360	1764	38626	0.043674	3.0	
22	22	450	472	30733	0.015126	0.0	

	s_last	m_last	s_all	m_all	s_slow	\
0	9.890267e+16	9.330286e+08	1.093652e+17	1.001823e+09	6.123674e+12	
1	NaN	NaN	NaN	NaN	NaN	
2	NaN	NaN	NaN	NaN	NaN	
3	1.546669e+14	1.712812e+11	1.266916e+15	4.551425e+09	1.564663e+13	
4	NaN	NaN	NaN	NaN	NaN	
5	1.571517e+14	6.271016e+09	6.623794e+16	2.497980e+09	1.629883e+13	

6	5.831405e+12	3.343696e+09	1.629492e+13	7.444003e+09	1.670900e+13
7	1.077840e+16	1.202141e+12	1.479109e+16	8.637638e+11	1.670917e+13
8	1.898978e+11	7.033253e+09	2.793068e+12	9.310227e+10	1.714303e+13
9	7.021014e+11	3.148437e+09	7.100114e+11	3.141643e+09	1.714303e+13
10	5.184592e+12	1.472896e+10	1.026934e+13	2.716758e+10	1.715451e+13
11	1.525622e+12	2.846309e+09	1.559367e+12	2.850762e+09	1.715451e+13
12	5.530792e+11	2.143718e+09	5.530792e+11	2.143718e+09	1.715451e+13
13	1.091897e+11	1.114181e+09	1.201097e+11	1.112127e+09	1.715451e+13
14	8.738064e+14	5.737402e+11	1.786103e+15	2.424465e+11	4.909867e+13
15	NaN	NaN	NaN	NaN	NaN
16	1.413303e+16	3.526030e+11	5.850686e+16	3.579934e+11	2.504408e+14
17	NaN	NaN	NaN	NaN	NaN
18	NaN	NaN	NaN	NaN	NaN
19	NaN	NaN	NaN	NaN	NaN
20	NaN	NaN	NaN	NaN	NaN
21	1.357018e+15	7.692844e+11	2.796929e+15	4.420624e+11	2.520519e+14
22	6.561625e+14	1.390175e+12	6.994786e+14	1.319771e+12	2.520519e+14

	m_slow	m_slow_2
0	5.776956e+04	1.105787
1	NaN	NaN
2	NaN	NaN
3	1.732739e+10	8.191258
4	NaN	NaN
5	6.503923e+08	421.490544
6	9.580850e+09	2.794339
7	1.863615e+09	1.372291
8	6.349270e+11	14.708268
9	7.687457e+10	1.011266
10	4.873442e+10	1.980743
11	3.200469e+10	1.022119
12	6.649037e+10	1.000000
13	1.750461e+11	1.100009
14	3.223813e+10	2.044049
15	NaN	NaN
16	6.248212e+09	4.139724
17	NaN	NaN
18	NaN	NaN
19	NaN	NaN
20	NaN	NaN
21	1.428865e+11	2.061085
22	5.340082e+11	1.066014

Cluster d:

	Unnamed: 0	priority	n_fsh	n_non	finished%	c_zero_end	\
0	0	0	22214009	61540068	0.265229	0.0	
1	1	5	0	1	0.000000	NaN	
2	2	25	785	4033	0.162931	0.0	

3	3	100	0	389	0.000000	NaN
4	4	101	25099	30289	0.453149	0.0
5	5	103	1409	31032032	0.000045	149.0
6	6	105	8438	16308736	0.000517	3.0
7	7	107	21	6004332	0.000003	0.0
8	8	114	0	1271161	0.000000	NaN
9	9	115	969	17705	0.051890	1.0
10	10	116	2205	1745653	0.001262	0.0
11	11	117	6	1	0.857143	0.0
12	12	118	684	1264690	0.000541	0.0
13	13	119	413	93059	0.004418	0.0
14	14	197	0	9	0.000000	NaN
15	15	199	0	2056	0.000000	NaN
16	16	200	83851	1200482	0.065288	104.0
17	17	205	0	1160	0.000000	NaN
18	18	210	0	116	0.000000	NaN
19	19	214	0	1160	0.000000	NaN
20	20	215	0	116	0.000000	NaN
21	21	360	630	38869	0.015950	1.0
22	22	450	169	27484	0.006111	0.0

	s_last	m_last	s_all	m_all	s_slow \
0	3.105563e+16	1.398282e+09	3.465815e+16	1.469082e+09	5.049183e+12
1	NaN	NaN	NaN	NaN	NaN
2	1.682447e+13	2.143244e+10	1.104970e+15	4.037395e+09	5.082576e+12
3	NaN	NaN	NaN	NaN	NaN
4	2.106023e+14	8.390863e+09	6.654064e+16	3.317183e+09	5.082723e+12
5	8.107930e+12	6.790561e+09	8.640792e+12	6.646763e+09	5.082723e+12
6	6.967672e+15	8.257492e+11	2.018562e+16	9.240808e+11	5.082736e+12
7	6.311163e+12	3.005316e+11	9.790846e+12	1.748365e+11	5.082736e+12
8	NaN	NaN	NaN	NaN	NaN
9	1.219481e+13	1.259795e+10	2.666472e+13	2.614188e+10	7.303040e+12
10	2.043633e+13	9.268178e+09	2.612806e+13	1.095516e+10	7.683330e+12
11	6.581518e+10	1.096920e+10	6.581518e+10	1.096920e+10	7.683330e+12
12	1.644383e+13	2.404069e+10	3.368928e+13	3.059880e+10	7.683330e+12
13	7.600749e+13	1.844842e+11	2.295795e+14	1.727461e+11	8.050015e+12
14	NaN	NaN	NaN	NaN	NaN
15	NaN	NaN	NaN	NaN	NaN
16	2.344094e+16	2.795646e+11	1.292615e+17	3.493639e+11	7.670291e+14
17	NaN	NaN	NaN	NaN	NaN
18	NaN	NaN	NaN	NaN	NaN
19	NaN	NaN	NaN	NaN	NaN
20	NaN	NaN	NaN	NaN	NaN
21	4.095733e+14	6.501164e+11	1.014393e+15	3.901510e+11	7.670291e+14
22	1.586449e+14	9.387273e+11	2.110371e+14	5.236652e+11	7.670291e+14

	m_slow	m_slow_2
0	2.273399e+05	1.116002

1	NaN	NaN
2	6.474620e+09	65.676400
3	NaN	NaN
4	2.025070e+08	315.954065
5	4.256887e+09	1.065721
6	6.023626e+08	2.897040
7	2.420350e+11	1.551354
8	NaN	NaN
9	7.544463e+09	2.186562
10	3.484503e+09	1.278510
11	1.280555e+12	1.000000
12	1.123294e+10	2.048749
13	1.953887e+10	3.020486
14	NaN	NaN
15	NaN	NaN
16	9.147852e+09	5.514350
17	NaN	NaN
18	NaN	NaN
19	NaN	NaN
20	NaN	NaN
21	1.217507e+12	2.476706
22	4.538634e+12	1.330248

Cluster e:

	Unnamed: 0	priority	n_fsh	n_non	finished%	c_zero_end	\
0	0	0	18722018	25015686	0.428052	1.0	
1	1	25	560	9918	0.053445	0.0	
2	2	100	0	2801	0.000000	NaN	
3	3	101	1000	6281160	0.000159	0.0	
4	4	103	2901	13390514	0.000217	63.0	
5	5	105	1819	447535	0.004048	10.0	
6	6	107	0	17636	0.000000	NaN	
7	7	114	0	26682	0.000000	NaN	
8	8	115	35	128050	0.000273	0.0	
9	9	116	0	22414	0.000000	NaN	
10	10	117	0	1927223	0.000000	NaN	
11	11	118	0	231	0.000000	NaN	
12	12	119	32	6951	0.004583	0.0	
13	13	170	0	25	0.000000	NaN	
14	14	200	52049	2604518	0.019593	55.0	
15	15	201	0	52	0.000000	NaN	
16	16	205	0	48240	0.000000	NaN	
17	17	210	0	2691	0.000000	NaN	
18	18	215	0	2691	0.000000	NaN	
19	19	220	0	360	0.000000	NaN	
20	20	360	3670	6207	0.371570	0.0	
21	21	450	82	14869	0.005485	0.0	



	s_last	m_last	s_all	m_all	s_slow \
0	1.500353e+16	8.021925e+08	2.159825e+16	1.126541e+09	5.550257e+11
1	1.792954e+13	3.224737e+10	4.798188e+13	3.894633e+10	5.550257e+11
2	NaN	NaN	NaN	NaN	NaN
3	3.060326e+13	3.060326e+10	3.435236e+13	2.772588e+10	5.550258e+11
4	2.186579e+14	7.629376e+10	6.916250e+14	4.855212e+10	5.550261e+11
5	1.940461e+14	1.066774e+11	2.862241e+15	6.419020e+10	5.581847e+11
6	NaN	NaN	NaN	NaN	NaN
7	NaN	NaN	NaN	NaN	NaN
8	2.353297e+12	6.723705e+10	2.353297e+12	6.536935e+10	5.581847e+11
9	NaN	NaN	NaN	NaN	NaN
10	NaN	NaN	NaN	NaN	NaN
11	NaN	NaN	NaN	NaN	NaN
12	1.987924e+12	6.212262e+10	2.049727e+13	8.332224e+10	5.581847e+11
13	NaN	NaN	NaN	NaN	NaN
14	1.205656e+16	2.316386e+11	1.029114e+17	4.141488e+11	2.096092e+13
15	NaN	NaN	NaN	NaN	NaN
16	NaN	NaN	NaN	NaN	NaN
17	NaN	NaN	NaN	NaN	NaN
18	NaN	NaN	NaN	NaN	NaN
19	NaN	NaN	NaN	NaN	NaN
20	2.244219e+15	6.115037e+11	6.448186e+15	4.392796e+11	2.097112e+13
21	6.591093e+13	8.037918e+11	7.337755e+13	8.244668e+11	2.097112e+13

	m_slow	m_slow_2
0	2.967551e+04	1.439544
1	9.982477e+08	2.676136
2	NaN	NaN
3	5.550258e+08	1.122507
4	1.936588e+08	3.163046
5	3.068635e+08	14.750313
6	NaN	NaN
7	NaN	NaN
8	1.594814e+10	1.000000
9	NaN	NaN
10	NaN	NaN
11	NaN	NaN
12	1.744327e+10	10.310893
13	NaN	NaN
14	4.027151e+08	8.535722
15	NaN	NaN
16	NaN	NaN
17	NaN	NaN
18	NaN	NaN
19	NaN	NaN
20	5.714203e+09	2.873243
21	2.557454e+11	1.113283

Cluster f:

	Unnamed: 0	priority	n_fsh	n_non	finished%	c_zero_end	\
0	0	0	12923639	15663283	4.520822e-01	0.0	
1	1	25	41	6291	6.475047e-03	0.0	
2	2	100	0	1	0.000000e+00	NaN	
3	3	101	24996	37034	4.029663e-01	0.0	
4	4	103	7762	13279173	5.841829e-04	0.0	
5	5	105	12351	5541856	2.223720e-03	0.0	
6	6	107	135	221684	6.086043e-04	0.0	
7	7	114	46	661054	6.958100e-05	0.0	
8	8	115	284	7503	3.647104e-02	0.0	
9	9	116	0	3286187	0.000000e+00	NaN	
10	10	117	2	2330310	8.582542e-07	0.0	
11	11	118	28	1344923	2.081860e-05	0.0	
12	12	119	9624	21070	3.135466e-01	0.0	
13	13	200	91296	2407549	3.653528e-02	4.0	
14	14	201	0	2710	0.000000e+00	NaN	
15	15	360	3433	42804	7.424790e-02	0.0	
16	16	450	257	25634	9.926229e-03	0.0	

	s_last	m_last	s_all	m_all	s_slow	\
0	3.783381e+16	2.928982e+09	4.116930e+16	2.972516e+09	1.201620e+12	
1	7.565244e+12	1.845182e+11	1.687775e+13	3.409647e+10	1.201620e+12	
2	NaN	NaN	NaN	NaN	NaN	
3	2.039588e+14	8.159656e+09	6.605382e+16	1.008262e+10	1.202133e+12	
4	3.588243e+14	4.644373e+10	4.188724e+14	4.723414e+10	1.202133e+12	
5	1.372628e+16	1.111530e+12	2.128196e+16	1.173594e+12	1.202169e+12	
6	1.082034e+13	8.015069e+10	1.095805e+13	7.883492e+10	1.202169e+12	
7	3.114919e+10	6.771562e+08	3.114919e+10	6.771562e+08	1.202169e+12	
8	3.179232e+13	1.213447e+11	1.619569e+14	2.526629e+11	1.202171e+12	
9	NaN	NaN	NaN	NaN	NaN	
10	3.175054e+10	1.587527e+10	3.175054e+10	1.587527e+10	1.202171e+12	
11	8.412515e+11	3.004470e+10	8.412515e+11	2.549247e+10	1.202171e+12	
12	1.483986e+15	1.541964e+11	1.129135e+16	6.883334e+10	1.242061e+12	
13	2.713027e+16	2.971682e+11	1.612419e+17	4.923717e+11	3.139660e+14	
14	NaN	NaN	NaN	NaN	NaN	
15	3.307183e+15	9.633506e+11	7.181627e+15	5.694281e+11	3.140996e+14	
16	2.867563e+14	1.115783e+12	2.927933e+14	1.113282e+12	3.140996e+14	

	m_slow	m_slow_2
0	9.302590e+04	1.088162
1	2.930781e+10	2.230960
2	NaN	NaN
3	4.809302e+07	323.858714
4	1.555958e+08	1.167347
5	9.734947e+07	1.550453
6	8.904953e+09	1.012727

7	2.613410e+10	1.000000
8	4.588440e+09	5.094215
9	NaN	NaN
10	6.010856e+11	1.000000
11	4.293468e+10	1.000000
12	1.290587e+08	7.608799
13	3.438990e+09	5.943247
14	NaN	NaN
15	9.149421e+10	2.171524
16	1.222178e+12	1.021053

Cluster g:

	Unnamed: 0	priority	n_fsh	n_non	finished%	c_zero_end	\
0	0	0	5492965	10849211	0.336122	0.0	
1	1	25	16	6841	0.002333	0.0	
2	2	50	0	114	0.000000	NaN	
3	3	100	0	352	0.000000	NaN	
4	4	101	99978	3658	0.964703	0.0	
5	5	103	1955	6006297	0.000325	0.0	
6	6	105	260	132200	0.001963	8.0	
7	7	107	0	23092	0.000000	NaN	
8	8	114	0	120	0.000000	NaN	
9	9	115	130	1573	0.076336	0.0	
10	10	117	0	1839528	0.000000	NaN	
11	11	118	1425	1485	0.489691	0.0	
12	12	119	122	141831	0.000859	0.0	
13	13	170	0	260	0.000000	NaN	
14	14	200	51527	141118	0.267471	43.0	
15	15	360	1713	104101	0.016189	1.0	
16	16	450	643	22848	0.027372	0.0	

	s_last	m_last	s_all	m_all	s_slow	\
0	1.652722e+16	3.009921e+09	1.882431e+16	3.316600e+09	1.116295e+13	
1	9.873307e+11	6.170817e+10	8.582429e+12	1.215641e+10	1.116295e+13	
2	NaN	NaN	NaN	NaN	NaN	
3	NaN	NaN	NaN	NaN	NaN	
4	1.339232e+16	1.339527e+11	2.595234e+17	7.448012e+09	2.071545e+13	
5	2.302315e+14	1.183101e+11	2.926893e+14	1.127462e+11	2.071545e+13	
6	2.150574e+12	8.271437e+09	2.152161e+12	8.214355e+09	2.071545e+13	
7	NaN	NaN	NaN	NaN	NaN	
8	NaN	NaN	NaN	NaN	NaN	
9	4.406302e+12	3.442423e+10	7.940457e+12	5.631530e+10	2.110285e+13	
10	NaN	NaN	NaN	NaN	NaN	
11	8.671496e+14	6.085260e+11	3.362027e+15	4.747285e+11	2.112130e+13	
12	1.512875e+13	1.240061e+11	4.789877e+13	2.313950e+11	2.112130e+13	
13	NaN	NaN	NaN	NaN	NaN	
14	5.974724e+15	1.159533e+11	8.707510e+16	3.990500e+11	1.918182e+14	
15	1.347436e+15	7.865942e+11	2.855922e+15	4.880250e+11	1.918182e+14	

16 7.746521e+14 1.204747e+12 8.032579e+14 1.188251e+12 1.918182e+14

	m_slow	m_slow_2
0	2.032987e+06	1.138988
1	6.976846e+11	8.692558
2	NaN	NaN
3	NaN	NaN
4	2.072001e+08	19.378523
5	1.064515e+10	1.271282
6	7.967482e+10	1.000738
7	NaN	NaN
8	NaN	NaN
9	1.648660e+11	1.802068
10	NaN	NaN
11	1.482196e+10	3.877102
12	1.731254e+11	3.166077
13	NaN	NaN
14	3.722673e+09	14.573912
15	1.119779e+11	2.119524
16	2.983176e+11	1.036927

Cluster h:

	Unnamed: 0	priority	n_fsh	n_non	finished%	c_zero_end	\
0	0	0	6626426	17257424	2.774438e-01	0.0	
1	1	19	0	10	0.000000e+00	NaN	
2	2	25	79	7497	1.042767e-02	0.0	
3	3	101	25000	0	1.000000e+00	0.0	
4	4	103	24112	4986108	4.812563e-03	0.0	
5	5	105	10000	690645	1.427256e-02	0.0	
6	6	107	0	146547	0.000000e+00	NaN	
7	7	115	23	426	5.122494e-02	0.0	
8	8	116	134	12809	1.035309e-02	0.0	
9	9	117	1	2013415	4.966683e-07	0.0	
10	10	118	506	49926	1.003331e-02	0.0	
11	11	119	3970	2729917	1.452145e-03	0.0	
12	12	200	57852	2082619	2.702770e-02	21.0	
13	13	201	0	363	0.000000e+00	NaN	
14	14	220	0	360	0.000000e+00	NaN	
15	15	360	1862	40210	4.425746e-02	1.0	
16	16	450	91	16906	5.353886e-03	0.0	

	s_last	m_last	s_all	m_all	s_slow	\
0	3.750671e+16	5.663232e+09	4.209970e+16	6.211185e+09	9.556217e+11	
1	NaN	NaN	NaN	NaN	NaN	
2	2.408477e+13	3.048705e+11	7.380026e+13	2.838472e+11	9.556237e+11	
3	8.515792e+14	3.406317e+10	6.509309e+16	1.224965e+10	1.012711e+12	
4	6.553604e+15	2.726352e+11	8.271087e+15	9.289390e+10	1.012712e+12	
5	6.117631e+15	6.117631e+11	2.572798e+16	3.937615e+11	1.012750e+12	

6	NaN	NaN	NaN	NaN	NaN
7	6.648578e+11	2.890686e+10	6.648578e+11	2.890686e+10	1.012750e+12
8	8.484331e+10	6.331590e+08	6.231571e+12	4.210521e+10	1.012751e+12
9	6.557861e+08	6.557861e+08	6.557861e+08	6.557861e+08	1.012751e+12
10	1.000296e+14	1.976869e+11	1.947697e+14	1.391212e+11	1.012751e+12
11	5.554317e+14	1.399072e+11	4.055259e+15	1.555807e+10	1.246604e+12
12	1.728555e+16	2.987994e+11	1.002241e+17	4.707830e+11	1.713280e+13
13	NaN	NaN	NaN	NaN	NaN
14	NaN	NaN	NaN	NaN	NaN
15	1.561695e+15	8.387189e+11	3.152188e+15	3.973012e+11	1.713283e+13
16	1.338225e+14	1.470577e+12	1.411397e+14	1.411397e+12	1.713283e+13

	m_slow	m_slow_2
0	1.442917e+05	1.122458
1	NaN	NaN
2	1.209650e+10	3.064188
3	4.050842e+07	76.438090
4	4.212964e+07	1.262067
5	1.012750e+08	4.205547
6	NaN	NaN
7	4.403262e+10	1.000000
8	7.557840e+09	73.447995
9	1.012751e+12	1.000000
10	2.001483e+09	1.947121
11	3.140059e+08	7.301093
12	2.961590e+08	5.798142
13	NaN	NaN
14	NaN	NaN
15	9.201306e+09	2.018441
16	1.882729e+11	1.054678

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