

乱数データ(実行時間)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
mmsSort (dual pivot stable Sort)	安定	0.000175	0.000310	0.006040	0.034953	0.240084	3.406549	1
mmsSort (Half memory)	安定	0.000192	0.000473	0.003568	0.031807	0.258984	3.484698	1.022940812
MatMmsSort(1/5)	安定	0.000313	0.000493	0.006608	0.044305	0.291820	3.771844	1.107233156
MasSort	安定	0.000104	0.000367	0.010696	0.037227	0.280751	3.792268	1.113228666
mmSort		0.000149	0.000299	0.005721	0.053321	0.290831	3.914458	1.149097811
Quick Sort (3 Way & Median of 5)		0.000122	0.000312	0.006591	0.031272	0.304782	4.003185	1.175143819
Quick Sort (Median of 5)		0.000124	0.000331	0.003468	0.053520	0.281666	4.038135	1.185403468
Merge Sort	安定	0.000060	0.000358	0.008972	0.030105	0.294680	4.064345	1.193097472
Many Pivot Sort		0.000312	0.000525	0.006513	0.038318	0.296620	4.066891	1.193844856
Quick Sort (Median of 3)		0.000124	0.000308	0.003831	0.022590	0.257269	4.075146	1.196268129
MatSort(1/5)	安定	0.000204	0.000526	0.007774	0.038856	0.308023	4.084028	1.19887546
Arrays.Sort	安定	0.000143	0.000617	0.005237	0.041916	0.335586	4.664239	1.369197684

文字列・乱数データ(実行時間)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
MasSort	安定	0.000142	0.000565	0.008832	0.078086	1.036753	15.193885	1
mmsSort (dual pivot stable Sort)	安定	0.000178	0.000552	0.008625	0.067824	1.023343	15.357945	1.010797765
mmsSort (Half memory)	安定	0.000249	0.000658	0.016875	0.089627	1.049394	15.413899	1.014480431
Many Pivot Sort		0.000242	0.000676	0.015361	0.085462	1.107639	15.701201	1.033389485
MatMmsSort(1/5)	安定	0.000260	0.000742	0.008605	0.088445	1.125582	16.102460	1.059798728
mmSort		0.000172	0.000555	0.011704	0.091743	1.062951	16.189171	1.065505695
Quick Sort (3 Way & Median of 5)		0.000160	0.000525	0.011169	0.091438	1.060858	16.241388	1.068942407
Merge Sort	安定	0.000093	0.000531	0.012652	0.074021	1.088507	16.523548	1.087513036
MatSort(1/5)	安定	0.000246	0.000862	0.011123	0.087273	1.137546	16.568657	1.090481927
Quick Sort (Median of 5)		0.000169	0.000547	0.011156	0.082962	1.136631	17.319757	1.139916289
Quick Sort (Median of 3)		0.000172	0.000496	0.012080	0.075621	1.143907	17.548634	1.154980046
Arrays.Sort	安定	0.000153	0.000925	0.010312	0.084295	1.201692	18.266451	1.202223855

重複なし乱数データ(実行時間)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
mmsSort (dual pivot stable Sort)	安定	0.000138	0.000401	0.007736	0.025104	0.262252	3.655145	1
mmsSort (Half memory)	安定	0.000217	0.000483	0.008576	0.027914	0.259433	3.725380	1.01921538
MatMmsSort(1/5)	安定	0.000239	0.000564	0.007527	0.033068	0.297969	3.843233	1.051458424
mmSort		0.000127	0.000367	0.006030	0.054303	0.292443	3.942378	1.078583203
Many Pivot Sort		0.000212	0.000502	0.004612	0.048904	0.303635	3.944677	1.079212179
Quick Sort (3 Way & Median of 5)		0.000134	0.000348	0.008842	0.030504	0.262883	4.026442	1.101582017
MasSort	安定	0.000113	0.000371	0.007873	0.038666	0.303811	4.074715	1.11478888
Quick Sort (Median of 3)		0.000151	0.000340	0.004366	0.027511	0.265039	4.126885	1.129061911
Merge Sort	安定	0.000073	0.000299	0.009320	0.030161	0.301499	4.139900	1.132622646
Quick Sort (Median of 5)		0.000128	0.000337	0.004741	0.051482	0.310135	4.156458	1.137152698
MatSort(1/5)	安定	0.000211	0.000552	0.010940	0.040091	0.325283	4.320837	1.182124649
Arrays.Sort	安定	0.000123	0.000785	0.007078	0.043525	0.352856	4.765398	1.30375074

乱数データ(実行時間)

前半ソート済み・後半乱数(実行時間)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Merge Sort	安定	0.000048	0.000225	0.005078	0.026016	0.165166	2.132257	1
mmsSort (dual pivot stable Sort)	安定	0.000136	0.000327	0.004685	0.047443	0.171973	2.152764	1.009617509
MasSort	安定	0.000072	0.000303	0.002516	0.027135	0.173436	2.174297	1.019716197
MatSort(1/5)	安定	0.000188	0.000462	0.005973	0.027099	0.179113	2.265104	1.062303465
mmsSort (Half memory)	安定	0.000190	0.000447	0.006927	0.026998	0.200664	2.390381	1.121056702
MatMmsSort(1/5)	安定	0.000198	0.000484	0.002953	0.031051	0.201630	2.435835	1.14237402
Arrays.Sort	安定	0.000107	0.000473	0.002891	0.028829	0.198942	2.459019	1.153247005
Many Pivot Sort		0.000178	0.000444	0.006715	0.046518	0.219773	2.657166	1.246175297
mmSort		0.000133	0.000296	0.006239	0.052798	0.235559	2.683579	1.25856264
Quick Sort (3 Way & Median of 5)		0.000117	0.000318	0.005687	0.046466	0.238949	2.719967	1.275628126
Quick Sort (Median of 5)		0.000133	0.000300	0.006279	0.050290	0.224468	2.873546	1.347654621
Quick Sort (Median of 3)		0.000128	0.000304	0.002890	0.022415	0.195613	2.887418	1.354160404

ソート済み(実行時間)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Arrays.Sort	安定	0.000064	0.000108	0.000400	0.001131	0.007588	0.058192	1
Merge Sort	安定	0.000026	0.000070	0.000186	0.000996	0.010390	0.080839	1.389177206
MasSort	安定	0.000034	0.000095	0.000290	0.000964	0.010082	0.093649	1.609310558
MatSort(1/5)	安定	0.000120	0.000250	0.000831	0.003686	0.020035	0.169972	2.920882596
Quick Sort (Median of 3)		0.000100	0.000199	0.001188	0.014999	0.067431	0.742103	12.7526636
Quick Sort (3 Way & Median of 5)		0.000093	0.000214	0.001249	0.023143	0.102159	0.786832	13.52130877
Many Pivot Sort		0.000182	0.000393	0.004428	0.032977	0.115191	0.847689	14.56710544
MatMmsSort(1/5)	安定	0.000177	0.000345	0.004970	0.035287	0.090751	0.868309	14.92144968
mmsSort (Half memory)	安定	0.000163	0.000298	0.005112	0.036591	0.101548	0.917651	15.76936692
mmSort		0.000118	0.000245	0.004904	0.032344	0.141068	0.928944	15.9634314
mmsSort (dual pivot stable Sort)	安定	0.000124	0.000269	0.004880	0.032730	0.104381	0.952324	16.36520484
Quick Sort (Median of 5)		0.000099	0.000249	0.004798	0.030699	0.122243	0.956306	16.43363349

逆順ソート済み(実行時間)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Arrays.Sort	安定	0.000113	0.000373	0.002376	0.012442	0.042921	0.319810	1
Quick Sort (Median of 3)		0.000105	0.000215	0.001402	0.022580	0.074575	0.778590	2.434539258
Quick Sort (3 Way & Median of 5)		0.000100	0.000265	0.001422	0.022885	0.115051	0.825184	2.580232013
Many Pivot Sort		0.000172	0.000387	0.004914	0.033812	0.123283	0.863278	2.699346487
MatMmsSort(1/5)	安定	0.000176	0.000337	0.004716	0.029892	0.112428	0.930514	2.909583815
mmSort		0.000169	0.000248	0.004848	0.033676	0.154320	0.941958	2.945367562
Quick Sort (Median of 5)		0.000105	0.000258	0.005136	0.040151	0.124434	0.967934	3.026590788
mmsSort (dual pivot stable Sort)	安定	0.000114	0.000301	0.004321	0.029592	0.107598	0.978152	3.058541009
mmsSort (Half memory)	安定	0.000170	0.000352	0.005454	0.042854	0.129810	1.019806	3.188787092
MatSort(1/5)	安定	0.000174	0.000360	0.006866	0.018882	0.110284	1.025486	3.206547638
MasSort	安定	0.000083	0.000298	0.007004	0.023431	0.107293	1.103535	3.450595666
Merge Sort	安定	0.000048	0.000228	0.006061	0.022059	0.113565	1.187119	3.711950846

乱数データ(実行時間)

全て同値(実行時間)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Quick Sort (3 Way & Median of 5)		0.000020	0.000060	0.000307	0.001015	0.006915	0.058167	1
Arrays.Sort	安定	0.000058	0.000110	0.000409	0.001091	0.007744	0.059189	1.0175701
Merge Sort	安定	0.000034	0.000062	0.000200	0.000901	0.010681	0.078663	1.352364743
MasSort	安定	0.000036	0.000093	0.000295	0.001001	0.009625	0.091958	1.580930768
mmsSort (Half memory)	安定	0.000150	0.000200	0.000599	0.001991	0.014260	0.129352	2.223803875
mmsSort (dual pivot stable Sort)	安定	0.000076	0.000146	0.000569	0.002036	0.015121	0.131434	2.259597366
MatSort(1/5)	安定	0.000127	0.000238	0.000872	0.003724	0.020046	0.167862	2.885863118
MatMmsSort(1/5)	安定	0.000170	0.000306	0.001101	0.004509	0.025532	0.217537	3.739869686
mmSort		0.000113	0.000250	0.005774	0.022179	0.087805	0.879071	15.11288187
Many Pivot Sort		0.000173	0.000415	0.004523	0.012697	0.088277	0.958481	16.47808895
Quick Sort (Median of 5)		0.000117	0.000271	0.005376	0.012877	0.081773	0.963940	16.57193942
Quick Sort (Median of 3)		0.000105	0.000246	0.002506	0.020532	0.086007	1.042321	17.91945605

乱数データ(比較回数)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Quick Sort (3 Way & Median of 5)		373.2	6813.5	104174.4	1428079.1	17997846.2	216851217.8	1
Arrays.Sort	安定	532.5	8677.3	120387.1	1534761	18640446.6	220246159.4	1.015655626
Merge Sort	安定	566.9	9116.9	124103.2	1567764.1	19069428.1	223783615.5	1.031968452
MasSort	安定	530	8776	122640.5	1573617.9	19337151	229283496.1	1.057330913
mmsSort (dual pivot stable Sort)	安定	500.1	8920.6	123512.9	1595981	19529194.2	230384965	1.062410289
MatSort(1/5)	安定	599.7	9487.7	129642.8	1640909.4	19879874.4	233537962	1.076950198
mmSort		555.3	9286.6	129267.9	1680866.8	20541484.2	243247439.1	1.121725031
Many Pivot Sort		640.1	10194.2	138966.7	1766960.6	20957675	243335423.3	1.122130767
mmsSort (Half memory)	安定	610.1	10085.4	136253.7	1730349.1	20873141.9	244107390.2	1.125690659
MatMmsSort(1/5)	安定	677.9	11096.5	147453.6	1834074.7	21967524.1	255056643.1	1.176182664
Quick Sort (Median of 5)		640.1	10439.9	142456.1	1815721	22119842.6	261429914.3	1.205572728
Quick Sort (Median of 3)		615.2	10409.4	146049.8	1853520.6	22762240.7	268129054.9	1.236465525

文字列・乱数データ(比較回数)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Quick Sort (3 Way & Median of 5)		373.2	6813.5	104174.4	1428079.1	17997846.2	216851217.8	1
Arrays.Sort	安定	532.5	8677.3	120387.1	1534761	18640446.6	220246159.4	1.015655626
Merge Sort	安定	566.9	9116.9	124103.2	1567764.1	19069428.1	223783615.5	1.031968452
MasSort	安定	530	8776	122640.5	1573617.9	19337151	229283496.1	1.057330913
mmsSort (dual pivot stable Sort)	安定	500.1	8920.6	123512.9	1595981	19529194.2	230384965	1.062410289
MatSort(1/5)	安定	599.7	9487.7	129642.8	1640909.4	19879874.4	233537962	1.076950198
mmSort		555.3	9286.6	129267.9	1680866.8	20541484.2	243247439.1	1.121725031
Many Pivot Sort		640.1	10194.2	138966.7	1766960.6	20957675	243335423.3	1.122130767
mmsSort (Half memory)	安定	610.1	10085.4	136253.7	1730349.1	20873141.9	244107390.2	1.125690659
MatMmsSort(1/5)	安定	677.9	11096.5	147453.6	1834074.7	21967524.1	255056643.1	1.176182664
Quick Sort (Median of 5)		640.1	10439.9	142456.1	1815721	22119842.6	261429914.3	1.205572728
Quick Sort (Median of 3)		615.2	10409.4	146049.8	1853520.6	22762240.7	268129054.9	1.236465525

乱数データ(実行時間)

重複なし乱数データ(比較回数)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Arrays.Sort	安定	538.4	8682.8	120383.4	1534760.2	18640445.5	220246154.7	1
Merge Sort	安定	575.3	9122.8	124115.7	1567769.4	19069432.3	223783619	1.016061412
MatSort(1/5)	安定	594.3	9410.4	128819.6	1632344.2	19795018.9	232693694.5	1.056516491
MasSort	安定	585.2	9262	127371.4	1620585.9	19805791.5	233968886.9	1.062306342
mmSort		710.9	10512.6	141814.4	1804584.7	21741477	255749785.2	1.161199775
Many Pivot Sort		789.9	11536.8	152755.4	1908601.1	22356308.7	257429690.8	1.168827175
mmsSort (Half memory)	安定	751.4	11365.7	151385.7	1868658.7	22381989.9	258466943.2	1.173536689
MatMmsSort(1/5)	安定	719.9	11478	151047.8	1872087.6	22324797.6	258933613.9	1.175655549
mmsSort (dual pivot stable Sort)	安定	772.4	11633	151667.4	1884909.4	22378922	259531640.3	1.178370813
Quick Sort (3 Way & Median of 5)		745.9	10935.7	147093.9	1844559.1	22215759.8	259924298.5	1.180153628
Quick Sort (Median of 5)		789.9	11750.9	155964.2	1971285.6	23565727.7	274894927.9	1.24812589
Quick Sort (Median of 3)		765.3	11849.5	158404.6	2011851.6	24192679.1	283374055.2	1.286624303

前半ソート済み・後半乱数(比較回数)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Arrays.Sort	安定	363.7	5333.5	70190.7	867362.9	10320330	120123319.2	1
Merge Sort	安定	385.5	5555.5	72044.8	884070.6	10535065.9	121891310.4	1.014718135
MasSort	安定	398.8	5800.2	75752.3	934353.9	11051641.5	127599655.5	1.062238842
MatSort(1/5)	安定	465.1	6340.9	81011.5	977379.7	11560503	133418518.2	1.110679584
Quick Sort (3 Way & Median of 5)		368.4	6734.8	103606.2	1411485.9	17892297.4	214872687	1.78876748
mmsSort (dual pivot stable Sort)	安定	489.8	8582.1	120833	1549641.3	18958407	224452470.3	1.868517052
mmsSort (Half memory)	安定	573.2	9436.2	128555.9	1631873.6	19833532.3	232822191.7	1.938193127
MatMmsSort(1/5)	安定	556	9748.8	132166.4	1664106.2	20115639.6	235771383.2	1.962744493
mmSort		527.9	9225.9	129233.1	1651333.3	20185507.1	237845964.5	1.980014922
Many Pivot Sort		605.5	10028.8	136242.8	1721557.7	20607562.3	239644060.3	1.994983671
Quick Sort (Median of 5)		605.5	10168.9	140423.7	1793265.2	21765595.4	255752628.9	2.129083933
Quick Sort (Median of 3)		631.5	10462.5	145015.8	1861695.1	22719692	270782064.1	2.254200649

ソート済み(比較回数)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Merge Sort	安定	99	999	9999	99999	999999	9999999	1
Arrays.Sort	安定	99	999	9999	99999	999999	9999999	1
MasSort	安定	118	1267	13201	137559	1189223	10136712	1.013671301
MatSort(1/5)	安定	264	2654	27204	261584	2714264	28028384	2.80283868
Quick Sort (3 Way & Median of 5)		321	6325	94358	1285023	16240389	194051586	19.40516054
mmsSort (Half memory)	安定	325	7165	105081	1357919	17179901	205463195	20.54632155
MatMmsSort(1/5)	安定	329	6774	108454	1410024	17179909	207801164	20.78011848
Quick Sort (Median of 3)		443	7993	112733	1466133	17989253	212514213	21.25142343
mmsSort (dual pivot stable Sort)	安定	391	8297	115019	1458001	18180258	215463371	21.54633925
Many Pivot Sort		535	8963	124008	1612242	19076864	224646910	22.46469325
mmSort		516	8328	121732	1590835	19529753	232743309	23.27433323
Quick Sort (Median of 5)		535	9453	132326	1701864	20839611	246234844	24.62348686

乱数データ(実行時間)

逆順ソート済み(比較回数)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Arrays.Sort	安定	411	4338	41215	421964	4306436	41249953	1
MatSort(1/5)	安定	334	4175	57059	683179	8322705	97993859	2.37561141
MasSort	安定	369	5149	65653	792635	9263783	105935654	2.568139993
Merge Sort	安定	396	5730	74614	907446	10738262	124135094	3.009339041
Quick Sort (3 Way & Median of 5)		320	6324	94357	1285022	16240388	194051585	4.704286209
MatMmsSort(1/5)	安定	264	6840	99359	1318839	16784790	198811124	4.819669104
Quick Sort (Median of 3)		421	7971	112711	1466111	17989231	212514191	5.151865046
mmsSort (Half memory)	安定	416	8330	117018	1528426	18381500	215870190	5.23322269
mmsSort (dual pivot stable Sort)	安定	462	8718	122012	1578263	18880785	220870176	5.35443461
Many Pivot Sort		512	9035	124127	1612205	19076939	224647180	5.445998448
mmSort		485	8482	120034	1556424	19418648	230854215	5.596472195
Quick Sort (Median of 5)		512	9396	132588	1701320	20815054	246200776	5.968510461

全て同値(比較回数)

アルゴリズム	安定	100	1000	10000	100000	1000000	10000000	RATIO
Arrays.Sort	安定	99	999	9999	99999	999999	9999999	1
Merge Sort	安定	99	999	9999	99999	999999	9999999	1
Quick Sort (3 Way & Median of 5)		103	1003	10003	100003	1000003	10000003	1.0000004
mmsSort (dual pivot stable Sort)	安定	105	1011	10011	100011	1000011	10000011	1.0000012
mmsSort (Half memory)	安定	111	1023	10023	100023	1000023	10000023	1.0000024
MasSort	安定	118	1267	13201	137559	1189223	10136712	1.013671301
MatMmsSort(1/5)	安定	289	2639	26059	260059	2600059	26000059	2.60000616
MatSort(1/5)	安定	264	2654	27204	261584	2714264	28028384	2.80283868
mmSort		399	6983	99935	1395551	16979967	199862911	19.9862931
Many Pivot Sort		437	7308	112284	1443840	17354823	209118505	20.91185259
Quick Sort (Median of 5)		437	7345	112745	1445049	17360441	209938041	20.9938062
Quick Sort (Median of 3)		427	7283	114747	1436443	17307515	215067003	21.50670245