

### main Execution Time

run=20260501\_094125\_204110\_main; scenario=main; metric=execution\_ms\_median; reference=dp; ratio=direct variant/dp; extra ratio=GOO(combined)/GEQO, smaller means GOO(combined) faster

dataset	query	joins	median execution time (ms)							ratio to DP					GOO(combined) / GEQO smaller is better for GOO
			DP	GEQO	GOO(cost)	GOO(result_size)	GOO(selectivity)	GOO(combined)	GEQO/DP	GOO(cost)/DP	GOO(result_size)/DP	GOO(selectivity)/DP	GOO(combined)/DP		
job	1a	5 00	3 72	3 58	4 12	3 43	300 14	3 68	0 96	1 11	0 92	80 62	0 99	1 03	
job	1b	5 00	0 25	0 25	0 23	0 22	538 14	0 27	1 00	0 92	0 89	2161 21	1 07	1 07	
job	1c	5 00	2 65	2 59	1 51	2 73	196 30	2 67	0 98	0 57	1 03	74 13	1 01	1 03	
job	1d	5 00	0 28	0 29	0 30	0 25	650 29	0 31	1 04	1 07	0 90	2347 61	1 10	1 06	
job	2a	5 00	190 91	236 23	237 04	242 07	2984 24	246 53	1 24	1 24	1 27	15 63	1 29	1 04	
job	2b	5 00	182 36	231 84	234 73	238 77	2956 74	234 39	1 27	1 29	1 31	16 21	1 29	1 01	
job	2c	5 00	173 43	233 66	231 61	233 15	2679 95	234 03	1 35	1 34	1 34	15 45	1 35	1 00	
job	2d	5 00	244 40	243 62	245 73	245 08	3437 80	242 62	1 00	1 01	1 00	14 07	0 99	1 00	
job	3a	4 00	64 02	63 71	63 14	137 46	1061 02	67 49	1 00	0 99	2 15	16 57	1 05	1 06	
job	3b	4 00	43 14	42 01	42 39	652 14	511 96	44 53	0 97	0 98	15 12	11 87	1 03	1 06	
job	3c	4 00	113 66	115 18	111 58	149 66	1779 70	109 32	1 01	0 98	1 32	15 66	0 96	0 95	
job	4a	5 00	46 14	42 98	39 84	40 00	620 86	39 82	0 93	0 86	0 87	13 46	0 86	0 93	
job	4b	5 00	30 57	29 93	36 92	42 87	386 68	36 93	0 98	1 21	1 40	12 65	1 21	1 23	
job	4c	5 00	50 09	48 83	46 90	49 58	935 91	50 31	0 97	0 94	0 99	18 68	1 00	1 03	
job	5a	5 00	60 21	60 43	61 85	59 54	242 42	60 59	1 00	1 03	0 99	4 03	1 01	1 00	
job	5b	5 00	60 67	64 66	61 27	61 58	990 09	59 96	1 07	1 01	1 01	16 32	0 99	0 93	
job	5c	5 00	76 77	78 45	76 77	77 34	1221 13	77 69	1 02	1 00	1 01	15 91	1 01	0 99	
job	6a	5 00	9 88	9 75	9 66	10 37	555 08	9 87	0 99	0 98	1 05	56 17	1 00	1 01	
job	6b	5 00	90 07	88 76	85 91	84 09	313 67	88 29	0 99	0 95	0 93	3 48	0 98	0 99	
job	6c	5 00	4 45	4 15	4 23	4 31	309 53	4 20	0 93	0 95	0 97	69 54	0 94	1 01	
job	6d	5 00	1913 86	1914 84	1900 73	298 69	758 09	1924 38	1 00	0 99	0 16	0 40	1 01	1 00	
job	6e	5 00	9 56	9 67	9 61	9 77	764 22	9 95	1 01	1 01	1 02	79 93	1 04	1 03	
job	6f	5 00	1836 88	1866 20	1842 54	1843 52	12998 84	1908 32	1 02	1 00	1 00	7 08	1 04	1 02	
job	7a	8 00	323 29	355 38	353 24	58 63	609 71	364 07	1 10	1 09	0 18	1 89	1 13	1 02	
job	7b	8 00	99 15	97 91	98 00	56 81	450 11	98 51	0 99	0 99	0 57	4 54	0 99	1 01	
job	7c	8 00	1025 49	1020 69	932 73	483 27	1369 49	483 52	1 00	0 91	0 47	1 34	0 47	0 47	
job	8a	7 00	811 88	834 97	817 35	742 70	1741 50	820 41	1 03	1 01	0 91	2 15	1 01	0 98	
job	8b	7 00	146 36	149 14	145 37	283 31	1445 43	144 77	1 02	0 99	1 94	9 88	0 99	0 97	
job	8c	7 00	1846 43	2294 82	2106 71	2082 64	28517 62	2185 80	1 24	1 14	1 13	15 44	1 18	0 95	
job	8d	7 00	951 17	637 62	1557 72	1505 88	29886 85	1568 25	0 67	1 64	1 58	31 42	1 65	2 46	
job	9a	8 00	639 08	636 52	1218 60	2466 56	1234 20	1 00	1 00	1 91	0 42	3 86	1 93	1 94	
job	9b	8 00	670 47	691 39	1041 50	1254 39	1530 28	1038 54	1 03	1 55	1 87	2 28	1 55	1 50	
job	9c	8 00	660 73	667 88	1398 82	1653 40	2794 41	1388 34	1 01	2 12	2 50	4 23	2 10	2 08	
job	9d	8 00	1252 36	1920 22	1527 00	2182 93	3239 58	2208 96	1 53	1 22	1 74	2 59	1 76	1 15	
job	10a	7 00	204 48	204 14	204 41	642 43	1383 72	205 89	1 00	1 00	3 14	6 77	1 01	1 01	
job	10b	7 00	144 32	143 98	143 94	144 01	1498 06	145 50	1 00	1 00	1 00	10 38	1 01	1 01	
job	10c	7 00	2145 61	2128 06	2107 16	1874 62	2072 73	2062 70	0 99	0 98	0 87	0 97	0 96	0 97	
job	11a	8 00	19 30	18 73	248 33	18 80	195 09	19 16	0 97	12 87	0 97	10 11	0 99	1 02	
job	11b	8 00	11 73	11 17	26 53	76 67	143 35	26 54	0 95	2 26	6 54	12 23	2 26	2 38	
job	11c	8 00	43 26	43 70	243 62	40 27	133 13	40 10	1 01	5 63	0 93	3 08	0 93	0 92	
job	11d	8 00	38 66	38 61	259 43	38 07	135 80	38 29	1 00	6 71	0 98	3 51	0 99	0 99	
job	12a	8 00	116 27	115 85	124 56	89 93	1209 07	123 32	1 00	1 07	0 77	10 40	1 06	1 06	
job	12b	8 00	0 42	0 83	0 74	157 61	383 79	0 83	1 95	1 75	371 72	905 17	1 95	1 00	
job	12c	8 00	535 77	460 25	536 93	262 04	2069 64	537 36	0 86	1 00	0 49	3 86	1 00	1 17	
job	13a	9 00	922 66	927 81	927 36	1204 06	14843 63	929 93	1 01	1 01	1 30	16 09	1 01	1 00	
job	13b	9 00	352 35	352 90	353 24	89 26	247 87	352 24	1 00	1 00	0 25	0 70	1 00	1 00	
job	13c	9 00	336 70	335 74	335 19	63 87	151 20	334 70	1 00	1 00	0 19	0 45	0 99	1 00	
job	13d	9 00	1444 68	1442 97	1448 78	1449 81	18182 03	1454 71	1 00	1 00	1 00	12 59	1 01	1 01	
job	14a	8 00	105 58	104 48	103 88	110 76	1311 26	105 00	0 99	0 98	1 05	12 42	0 99	1 01	
job	14b	8 00	48 21	47 90	47 79	47 60	126 45	48 39	0 99	0 99	0 99	2 62	1 00	1 01	
job	14c	8 00	194 91	187 89	188 61	198 57	1531 67	188 67	0 96	0 97	1 02	7 86	0 97	1 00	
job	15a	9 00	231 03	230 53	2133 46	177 01	2159 49	2140 60	1 00	9 23	0 77	9 35	9 27	9 29	
job	15b	9 00	12 17	12 14	13 03	14218 55	533 01	13 20	1 00	1 07	1167 94	43 78	1 08	1 09	
job	15c	9 00	181 00	181 36	863 77	180 23	540 58	180 97	1 00	4 77	1 00	2 99	1 00	1 00	
job	15d	9 00	270 81	214 88	909 75	218 81	1521 97	218 69	0 79	3 36	0 81	5 62	0 81	1 02	

job	16a	8 00	71 10	70 79	71 02	71 12	1381 12	70 64	1 00	1 00	1 00	19 42	0 99	1 00
job	16b	8 00	6303 53	5836 60	6051 56	6053 69	342199 77	6089 69	0 93	0 96	0 96	54 29	0 97	1 04
job	16c	8 00	544 87	553 73	544 04	544 50	12356 31	544 90	1 02	1 00	1 00	22 68	1 00	0 98
job	16d	8 00	438 70	449 12	437 76	436 34	16194 85	437 68	1 02	1 00	0 99	36 92	1 00	0 97
job	17a	7 00	3637 84	3626 53	3658 57	3641 92	23514 42	3688 44	1 00	1 01	1 00	6 46	1 01	1 02
job	17b	7 00	2201 37	2228 99	8017 65	7984 83	5802 21	7991 55	1 01	3 64	3 63	2 64	3 63	3 59
job	17c	7 00	2150 74	2290 82	8038 69	8007 33	1236 56	8015 41	1 07	3 74	3 72	0 57	3 73	3 50
job	17d	7 00	2246 11	2287 87	8192 77	8224 68	2524 91	8174 35	1 02	3 65	3 66	1 12	3 64	3 57
job	17e	7 00	3739 58	3706 26	3692 37	3688 64	193099 00	3917 67	0 99	0 99	0 99	51 64	1 05	1 06
job	17f	7 00	3020 12	8249 43	8254 66	8228 65	44320 20	8367 88	2 73	2 73	2 72	14 67	2 77	1 01
job	18a	7 00	2511 86	2853 85	7000 50	1801 88	4866 96	6936 34	1 14	2 79	0 72	1 94	2 76	2 43
job	18b	7 00	117 13	118 69	117 93	169 84	1932 65	118 06	1 01	1 01	1 45	16 50	1 01	0 99
job	18c	7 00	3073 22	3085 12	3388 20	2579 17	3241 07	3363 53	1 00	1 10	0 84	1 05	1 09	1 09
job	19a	10 00	594 29	260 02	2225 06	2266 96	1853 43	2262 99	0 44	3 74	3 81	3 12	3 81	8 70
job	19b	10 00	113 81	108 31	860 72	107 37	4582 43	108 75	0 95	7 56	0 94	40 26	0 96	1 00
job	19c	10 00	637 20	635 75	60839 96	3613 18	3175 66	3619 95	1 00	95 48	5 67	4 98	5 68	5 69
job	19d	10 00	3889 77	6054 88	1912 49	5935 62	8624 04	5909 96	1 56	0 49	1 53	2 22	1 52	0 98
job	20a	10 00	847 63	911 67	3227 82	849 59	1429 61	840 17	1 08	3 81	1 00	1 69	0 99	0 92
job	20b	10 00	701 96	703 00	1650 18	458 83	2030 45	464 59	1 00	2 35	0 65	2 89	0 66	0 66
job	20c	10 00	401 94	403 72	1391 31	406 66	3163 88	417 02	1 00	3 46	1 01	7 87	1 04	1 03
job	21a	9 00	26 41	26 50	182 93	184 92	1374 40	184 88	1 00	6 93	7 00	52 05	7 00	6 98
job	21b	9 00	25 10	22 47	76 37	158 72	831 38	158 39	0 90	3 04	6 32	33 12	6 31	7 05
job	21c	9 00	25 22	25 64	392 90	25 30	397 43	24 14	1 02	15 58	1 00	15 76	0 96	0 94
job	22a	11 00	157 25	148 46	156 81	278 23	2287 33	156 89	0 94	1 00	1 77	14 55	1 00	1 06
job	22b	11 00	101 23	101 62	112 50	180 57	1372 21	110 85	1 00	1 11	1 78	13 56	1 09	1 09
job	22c	11 00	572 62	258 93	549 45	687 77	6410 09	550 78	0 45	0 96	1 20	11 19	0 96	2 13
job	22d	11 00	309 55	970 92	980 30	424 66	4543 03	978 08	3 14	3 17	1 37	14 68	3 16	1 01
job	23a	11 00	104 92	115 74	615 85	182 54	1235 26	181 84	1 10	5 87	1 74	11 77	1 73	1 57
job	23b	11 00	21 84	16 23	41 16	182 66	1222 07	40 94	0 74	1 88	8 36	55 96	1 87	2 52
job	23c	11 00	150 30	393 84	871 26	183 89	580 21	182 59	2 62	5 80	1 22	3 86	1 21	0 46
job	24a	12 00	87 91	165 12	108 27	404 40	1980 37	107 11	1 88	1 23	4 60	22 53	1 22	0 65
job	24b	12 00	98 03	13 74	13 96	13 79	87569 56	13 66	0 14	0 14	0 14	893 30	0 14	0 99
job	25a	9 00	942 20	933 06	1012 63	909 76	3043 30	1021 26	0 99	1 07	0 97	3 23	1 08	1 09
job	25b	9 00	120 15	121 46	119 21	97 02	1890 99	119 63	1 01	0 99	0 81	15 74	1 00	0 98
job	25c	9 00	2421 35	2554 30	2479 27	2476 59	3630 70	2479 55	1 05	1 02	1 02	1 50	1 02	0 97
job	26a	12 00	485 89	8107 20	357 74	200 51	3312 45	359 08	16 69	0 74	0 41	6 82	0 74	0 04
job	26b	12 00	57 26	73 51	1772 59	57 94	2831 11	57 34	1 28	30 96	1 01	49 45	1 00	0 78
job	26c	12 00	1515 45	25734 57	857 30	396 89	3292 05	859 12	16 98	0 57	0 26	2 17	0 57	0 03
job	27a	12 00	7 51	7 57	5 40	167 76	977 45	5 33	1 01	0 72	22 35	130 24	0 71	0 70
job	27b	12 00	4 12	3 43	3 27	51 69	1151 41	3 29	0 83	0 79	12 53	279 20	0 80	0 96
job	27c	12 00	10 96	10 71	10 55	37 48	157 20	10 68	0 98	0 96	3 42	14 35	0 97	1 00
job	28a	14 00	263 02	252 43	1115 79	420 63	126302 30	439 69	0 96	4 24	1 60	480 20	1 67	1 74
job	28b	14 00	157 94	102 92	452 69	1389 62	886 43	1390 30	0 65	2 87	8 80	5 61	8 80	13 51
job	28c	14 00	331 20	126 54	186921 05	441 56	135088 53	474 09	0 38	564 37	1 33	407 87	1 43	3 75
job	29a	17 00	113 23	8 85	81 65	1102 60	56079 95	80 44	0 08	0 72	9 74	495 30	0 71	9 09
job	29b	17 00	94 50	7 31	15 45	606 27	2332 24	15 95	0 08	0 16	6 42	24 68	0 17	2 18
job	29c	17 00	2517 84	131 53	997 16	64 82		64 99	0 05	0 40	0 03		0 03	0 49
job	30a	12 00	1096 33	885 56	1101 28	1824 00	3128 14	1837 57	0 81	1 00	1 66	2 85	1 68	2 08
job	30b	12 00	158 34	155 20	166 43	187 70	2164 26	164 33	0 98	1 05	1 19	13 67	1 04	1 06
job	30c	12 00	962 93	1012 78	1264 22	2398 74	6444 14	1275 29	1 05	1 31	2 49	6 69	1 32	1 26
job	31a	11 00	2104 70	2923 14	944 29	150 18	10220 65	966 77	1 39	0 45	0 07	4 86	0 46	0 33
job	31b	11 00	165 27	164 67	166 86	33 92	207333 82	215 89	1 00	1 01	0 21	1254 50	1 31	1 31
job	31c	11 00	3275 11	12009 36	944 27	169 86	38845 32	1197 56	3 67	0 29	0 05	11 86	0 37	0 10
job	32a	6 00	3 78	3 80	6 00	3 79	90 52	3 86	1 01	1 59	1 00	23 97	1 02	1 02
job	32b	6 00	43 66	94 20	83 96	43 88	92 86	43 73	2 16	1 92	1 01	2 13	1 00	0 46
job	33a	14 00	10 28	12 45	15 84	6 01	1121 48	16 30	1 21	1 54	0 58	109 14	1 59	1 31
job	33b	14 00	9 66	11 57	12 85	4 93	344 39	12 70	1 20	1 33	0 51	35 65	1 32	1 10
job	33c	14 00	11 32	8 75	22 43	7 13	1804 73	22 40	0 77	1 98	0 63	159 50	1 98	2 56
job_complex	q01	9 00	25 82	27 24	132 61	167 46	990 39	165 73	1 05	5 14	6 49	38 35	6 42	6 08
job_complex	q02	8 00	23 33	23 02	253 62	23 51	208 86	22 70	0 99	10 87	1 01	8 95	0 97	0 99
job_complex	q03	9 00	25 41	24 99	192 36	185 13	14344 74	184 50	0 98	7 57	7 29	564 51	7 26	7 38
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job_complex	q05	16 00	4352 27	5678 24	645 06	471 32	6953 13	461 95	1 30	0 15	0 11	1 60	0 11	0 08

job_complex	q06	9 00	33 82	23 90	78 32	158 73	841 46	157 50	0 71	2 32	4 69	24 88	4 66	6 59
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job_complex	q08	13 00	359 68	348 67	363 35	408 89	9754 10	366 79	0 97	1 01	1 14	27 12	1 02	1 05
job_complex	q09	14 00	250 60	238 03	1000 78	399 75	123888 37	396 85	0 95	3 99	1 60	494 37	1 58	1 67
job_complex	q10	8 00	6312 40	5364 13	10038 01	517 26	5220 38	9592 27	0 85	1 59	0 08	0 83	1 52	1 79
job_complex	q11	14 00	4382 62	4256 56	585 90	177318 82		587 13	0 97	0 13	40 46		0 13	0 14
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job_complex	q13	13 00	394 66	372 29	239 99	1519 49		237 37	0 94	0 61	3 85		0 60	0 64
job_complex	q14	7 00	1295 73	1298 57	1285 72	71583 94	6643 21	1274 09	1 00	0 99	55 25	5 13	0 98	0 98
job_complex	q15	9 00	2689 97	114942 06	12470 70	224 99	1610 25	228 68	42 73	4 64	0 08	0 60	0 09	0 00
job_complex	q16	7 00	2644 26	2947 76	7126 82	1812 91	4941 47	7152 82	1 11	2 70	0 69	1 87	2 71	2 43
job_complex	q17	14 00	10451 79	953 29	923 26			934 12	0 09	0 09			0 09	0 98
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job_complex	q19	13 00	2377 81	3184 78	1164 14	333 87		1147 30	1 34	0 49	0 14		0 48	0 36
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job_complex	q21	12 00	2540 46	1031 85	1148 29	346 70	24084 87	1144 16	0 41	0 45	0 14	9 48	0 45	1 11
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job_complex	q23	13 00	1839 27	15711 26	1117 53	526 98	3837 01	1120 65	8 54	0 61	0 29	2 09	0 61	0 07
job_complex	q24	9 00	4981 29	16995 04	9082 94	9116 22	6535 86	9112 76	3 41	1 82	1 83	1 31	1 83	0 54
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job_complex	q26	9 00	405 14	421 81		434 84	16145 23	435 96	1 04		1 07	39 85	1 08	1 03
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job_complex	q28	11 00	273 49	272 21	56590 74	181 31	590 61	56562 91	1 00	206 92	0 66	2 16	206 82	207 80
job_complex	q29	13 00	1228 65	2105 18	972 21	450 25		1001 85	1 71	0 79	0 37		0 82	0 48
job_complex	q30	7 00	3727 87	3776 53	3804 18	3789 96	22956 06	3774 10	1 01	1 02	1 02	6 16	1 01	1 00
<b>SUM</b>			<b>142665 06</b>	<b>430459 08</b>	<b>554196 48</b>	<b>399038 87</b>	<b>1996403 10</b>	<b>292194 35</b>	<b>3 02</b>	<b>3 90</b>	<b>3 02</b>	<b>16 46</b>	<b>2 05</b>	<b>0 68</b>