|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| QUERY | NON | BTREE | HASH | GIN | BRIN | RESULT |
| SELECT \* FROM public.students WHERE surname LIKE '%son%'; | (cost=0.00..2399.01 rows=9630 width=62)  (actual time=0.019..24.211 rows=8618 loops=1)  Time: 0.174 ms | (cost=0.00..2399.01 rows=9630 width=62)  (actual time=0.016..22.726 rows=8618 loops=1)  Planning Time: 0.190 ms | (cost=0.00..2399.01 rows=9630 width=62)  (actual time=0.019..23.690 rows=8618 loops=1)  "Planning Time: 0.176 ms" | (cost=0.00..2399.01 rows=9630 width=62)  (actual time=0.009..20.810 rows=8618 loops=1)  Planning Time: 0.487 ms | (cost=0.00..2399.01 rows=443 width=62)  (actual time=0.014..19.908 rows=470 loops=1)  "Planning Time: 0.582 ms" | Cost didn’t changed on partially match  The actual time has differences. Hash didnt change bec we usually use hash on direct Access |
| SELECT (name) FROM public.students WHERE name='Matt'; | (cost=0.00..2399.01 rows=443 width=62)  (actual time=0.015..16.615 rows=470 loops=1)  Time: 0.435 ms | (cost=7.73..866.26 rows=443 width=62)  (actual time=0.117..0.528 rows=470 loops=1)  Time: 0.105 ms | (cost=15.43..873.97 rows=443 width=62)  (actual time=0.217..0.920 rows=470 loops=1)  Time: 0.481 ms | (cost=15.44..873.97 rows=443 width=62)  (actual time=0.350..1.016 rows=470 loops=1)  Time: 0.168 ms | (cost=0.00..2399.01 rows=443 width=62)  (actual time=0.015..26.888 rows=470 loops=1) | For full match cost is decreasing with btree hash and gin But brin is same  Actual time increased i couldn’t understand why it is. |
| SELECT s.name, s.surname, r.grade, r.status FROM public.students as s  INNER JOIN results as r ON r.student = s.student\_id  WHERE s.surname LIKE '%Clark%'; | (cost=2888.41..19571.93 rows=6160 width=22)  (actual time=38.389..73.336 rows=7555 loops=1)  Planning Time: 0.375 ms | (cost=2888.41..19571.93 rows=6160 width=22)  (actual time=25.528..55.751 rows=7555 loops=1)  Planning Time: 0.857 ms | (cost=2888.41..19571.93 rows=6160 width=22)  (actual time=37.799..72.457 rows=7555 loops=1)  Planning Time: 0.703 ms | (cost=2888.41..19571.93 rows=6160 width=22)  (actual time=19.853..55.642 rows=7555 loops=1)  Planning Time: 0.592 ms | (cost=2888.41..19571.93 rows=6160 width=22)  (actual time=28.139..61.020 rows=7555 loops=1)  Planning Time: 0.727 ms | Nothing changed on partially match  The actual time has differences. Hash didnt change bec we usually use hash on direct Access |
|  |  |  |  |  |  |  |

BEFORE INDEX

1. Query

"QUERY PLAN"

"Seq Scan on students (cost=0.00..2399.01 rows=9630 width=62) (actual time=0.186..28.203 rows=8618 loops=1)"

" Filter: ((surname)::text ~~ '%son%'::text)"

" Rows Removed by Filter: 91383"

"Planning Time: 0.151 ms"

"Execution Time: 28.585 ms"

1. Query

"QUERY PLAN"

"Seq Scan on students (cost=0.00..2399.01 rows=443 width=62) (actual time=0.043..19.838 rows=470 loops=1)"

" Filter: ((name)::text = 'Matt'::text)"

" Rows Removed by Filter: 99531"

"Planning Time: 0.165 ms"

"Execution Time: 20.207 ms"

1. Query

"QUERY PLAN"

"Seq Scan on students (cost=0.00..2399.01 rows=1010 width=62) (actual time=0.015..17.710 rows=533 loops=1)"

" Filter: ((phone)::text ~~ '%580%'::text)"

" Rows Removed by Filter: 99468"

"Planning Time: 0.870 ms"

"Execution Time: 17.746 ms"

1. Query

"QUERY PLAN"

"Gather (cost=2888.41..19571.93 rows=6160 width=22) (actual time=26.754..62.880 rows=7555 loops=1)"

" Workers Planned: 2"

" Workers Launched: 2"

" -> Parallel Hash Join (cost=1888.41..17955.93 rows=2567 width=22) (actual time=13.087..46.848 rows=2518 loops=3)"

" Hash Cond: (r.student = s.student\_id)"

" -> Parallel Seq Scan on results r (cost=0.00..14864.34 rows=458334 width=17) (actual time=0.007..13.139 rows=366667 loops=3)"

" -> Parallel Hash (cost=1884.30..1884.30 rows=329 width=21) (actual time=12.535..12.535 rows=231 loops=3)"

" Buckets: 1024 Batches: 1 Memory Usage: 104kB"

" -> Parallel Seq Scan on students s (cost=0.00..1884.30 rows=329 width=21) (actual time=0.028..12.243 rows=231 loops=3)"

" Filter: ((surname)::text ~~ '%Clark%'::text)"

" Rows Removed by Filter: 33103"

"Planning Time: 1.830 ms"

"Execution Time: 63.119 ms"

AFTER INDEX

1. Query

"QUERY PLAN"

"Seq Scan on students (cost=0.00..2399.01 rows=9630 width=62) (actual time=0.012..20.214 rows=8618 loops=1)"

" Filter: ((surname)::text ~~ '%son%'::text)"

" Rows Removed by Filter: 91383"

"Planning Time: 1.251 ms"

"Execution Time: 21.056 ms"

2. Query

"QUERY PLAN"

"Bitmap Heap Scan on students (cost=15.43..873.97 rows=443 width=6) (actual time=0.135..0.755 rows=470 loops=1)"

" Recheck Cond: ((name)::text = 'Matt'::text)"

" Heap Blocks: exact=382"

" -> Bitmap Index Scan on idx\_students\_name (cost=0.00..15.32 rows=443 width=0) (actual time=0.069..0.070 rows=470 loops=1)"

" Index Cond: ((name)::text = 'Matt'::text)"

"Planning Time: 0.134 ms"

"Execution Time: 0.802 ms"

1. Query

"QUERY PLAN"

"Seq Scan on students (cost=0.00..2399.01 rows=1010 width=62) (actual time=0.028..23.502 rows=533 loops=1)"

" Filter: ((phone)::text ~~ '%580%'::text)"

" Rows Removed by Filter: 99468"

"Planning Time: 0.741 ms"

"Execution Time: 23.553 ms"

1. Query

"QUERY PLAN"

"Gather (cost=2888.41..19571.93 rows=6160 width=22) (actual time=36.798..167.056 rows=7555 loops=1)"

" Workers Planned: 2"

" Workers Launched: 2"

" -> Parallel Hash Join (cost=1888.41..17955.93 rows=2567 width=22) (actual time=17.155..140.513 rows=2518 loops=3)"

" Hash Cond: (r.student = s.student\_id)"

" -> Parallel Seq Scan on results r (cost=0.00..14864.34 rows=458334 width=17) (actual time=0.044..49.704 rows=366667 loops=3)"

" -> Parallel Hash (cost=1884.30..1884.30 rows=329 width=21) (actual time=13.168..13.169 rows=231 loops=3)"

" Buckets: 1024 Batches: 1 Memory Usage: 104kB"

" -> Parallel Seq Scan on students s (cost=0.00..1884.30 rows=329 width=21) (actual time=0.014..18.923 rows=346 loops=2)"

" Filter: ((surname)::text ~~ '%Clark%'::text)"

" Rows Removed by Filter: 49654"

"Planning Time: 0.773 ms"

"Execution Time: 167.420 ms"