

Added index to room\_type and room\_size and a cover index to (building\_LID, room\_num)

room\_type being indexed helped specifically when searching rooms by type and size:

Query:

```
EXPLAIN ANALYZE
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```
SELECT r.*, l.*
```

```
FROM rooms r
```

```
JOIN location l ON r.LID = l.LID
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```
WHERE r.room_type = 'study room';
```

Before:

-> Nested loop inner join (cost=31.6 rows=27.2) (actual time=0.304..0.371 rows=16 loops=1)

-> Filter: (r.room\_type = 'study room') (cost=22.1 rows=27.2) (actual time=0.284..0.303 rows=16 loops=1)

-> Table scan on r (cost=22.1 rows=218) (actual time=0.0861..0.245 rows=220 loops=1)

-> Single-row index lookup on l using PRIMARY (LID=r.LID) (cost=0.254 rows=1) (actual time=0.00379..0.00382 rows=1 loops=16)

After:

-> Nested loop inner join (cost=7.95 rows=16) (actual time=0.099..0.143 rows=16 loops=1)

-> Index lookup on r using idx\_rooms\_type (room\_type='study room'), with index condition: (r.room\_type = 'study room') (cost=2.35 rows=16) (actual time=0.0847..0.0922 rows=16 loops=1)

-> Single-row index lookup on l using PRIMARY (LID=r.LID) (cost=0.256 rows=1) (actual time=0.00279..0.00283 rows=1 loops=16)

- Execution time decreased from 0.304..0.371 to 0.099..0.143 in the nested join as well as a decreased estimated cost
- Scanned rows went from 220 to 16 total
- Actual results went from (actual time=0.0861..0.245 rows=220 loops=1) to (actual time=0.0847..0.0922 rows=16 loops=1)

Searching by room\_size:

Query:

EXPLAIN ANALYZE

SELECT r.\*, l.\*

FROM rooms r

JOIN location l ON r.LID = l.LID

WHERE r.room\_size = 'large';

Before:

-> Nested loop inner join (cost=47.5 rows=72.7) (actual time=0.353..0.363 rows=2 loops=1)

-> Filter: (r.room\_size = 'large') (cost=22.1 rows=72.7) (actual time=0.317..0.322 rows=2 loops=1)

-> Table scan on r (cost=22.1 rows=218) (actual time=0.0926..0.271 rows=220 loops=1)

-> Single-row index lookup on l using PRIMARY (LID=r.LID) (cost=0.251 rows=1) (actual time=0.0185..0.0186 rows=1 loops=2)

After:

-> Nested loop inner join (cost=1.4 rows=2) (actual time=0.0678..0.0728 rows=2 loops=1)

-> Index lookup on r using idx\_rooms\_size (room\_size='large'), with index condition: (r.room\_size = 'large') (cost=0.7 rows=2) (actual time=0.0458..0.0481 rows=2 loops=1)

-> Single-row index lookup on l using PRIMARY (LID=r.LID) (cost=0.3 rows=1) (actual time=0.00625..0.0063 rows=1 loops=2)

- Execution time decreased from 0.353..0.363 to 0.0678..0.0728 in the nested join as well as a decreased estimated cost
- Scanned rows went from 220 to 2 total
- Actual results went from (actual time=0.0926..0.271 rows=220 loops=1) to (actual time=0.0458..0.0481 rows=2 loops=1)