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Database Management Systems

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-- POINT QUERY 1

SET @start_time = NOW(6);

SELECT balance FROM accounts WHERE account_num = '000039';

SET @end_time = NOW(6);

SELECT

 TIMESTAMPDIFF(MICROSECOND, @start_time, @end_time) AS execution_time_microseconds,

 TIMESTAMPDIFF(SECOND, @start_time, @end_time) AS execution_time_seconds;

The following results for the INDEXED point query 1 were

1. '48069', '0'
2. '46397', '0'
3. '46105', '0'
4. '45158', '0'
5. '45259', '0'
6. '44699', '0'
7. '49340', '0'
8. '45585', '0'
9. '51901', '0'
10. '49172', '0'

WITH OUT INDEXES

1. '40695', '0'
2. '49746', '0'
3. '45194', '0'
4. '45402', '0'
5. '45557', '0'
6. '49392', '0'
7. '44849', '0'
8. '47680', '0'
9. '49464', '0'
10. '49040', '0'

-- POINT QUERY 2

SET @start_time = NOW(6);

SELECT branch_name FROM accounts WHERE account_num = '000039';

SET @end_time = NOW(6);

SELECT

TIMESTAMPDIFF(MICROSECOND, @start_time, @end_time) AS execution_time_microseconds,

TIMESTAMPDIFF(SECOND, @start_time, @end_time) AS execution_time_seconds;

RESULTS FOR INDEXED point query 2

1. '49177', '0'
2. '46223', '0'
3. '49142', '0'
4. '46156', '0'
5. '47548', '0'
6. '47526', '0'
7. '42983', '0'
8. '52453', '0'
9. '48033', '0'
10. '47820', '0'

RESULTS FOR NON INDEXED point query 2

11. '44091', '0'
12. '45094', '0'
13. '52488', '0'
14. '48297', '0'
15. '42525', '0'
16. '49733', '0'
17. '47539', '0'
18. '51263', '0'
19. '49682', '0'

Ranged Query 1:

-- Ranged Query

SET @start_time = NOW(6);

Select count(*) FROM accounts WHERE balance BETWEEN 20000 AND 100000;

SET @end_time = NOW(6);

SELECT

TIMESTAMPDIFF(MICROSECOND, @start_time, @end_time) AS execution_time_microseconds,

TIMESTAMPDIFF(SECOND, @start_time, @end_time) AS execution_time_seconds;

RESULTS FOR INDEXED

1. '103998', '0'
2. '92262', '0'
3. '85830', '0'
4. '87293', '0'
5. '88712', '0'
6. '88832', '0'
7. '84570', '0'
8. '84323', '0'
9. '83348', '0'
10. '86556', '0'

RESULTS FOR NOT INDEXED

1. '104006', '0'
2. '85819', '0'
3. '94230', '0'
4. '96788', '0'
5. '92118', '0'
6. '85968', '0'
7. '84941', '0'
8. '89823', '0'
9. '89823', '0'
10. '92123', '0'

-- Ranged Query 2

SET @start_time = NOW(6);

Select * FROM accounts WHERE balance BETWEEN 0 AND 3900;

SET @end_time = NOW(6);

SELECT

TIMESTAMPDIFF(MICROSECOND, @start_time, @end_time) AS execution_time_microseconds,

TIMESTAMPDIFF(SECOND, @start_time, @end_time) AS execution_time_seconds;

RESULTS FOR INDEXED

1. '57917', '0'
2. '57484', '0'
3. '60871', '0'
4. '60950', '0'
5. '61987', '0'
6. '62269', '0'
7. '57794', '0'
8. '67273', '0'
9. '61730', '0'
10. '61858', '0'

NON-INDEXED

1. '61320', '0'
2. '60259', '0'
3. '62100', '0'
4. '67117', '0'
5. '60198', '0'
6. '64345', '0'
7. '62166', '0'
8. '57756', '0'
9. '64129', '0'
10. '62166', '0'

Excel Table with results summarized

| Query Type | Dataset Size | Index Type | (Microseconds) | | | |
|---------------|-----------------|--------------------------|---|--|--|--|
| Point Query 1 | 50,000 records | Without Indexes | 40695, 49746, 45194, 45402, 45557, 49392, 44849, 47680, 49464, 49040 | | | |
| Point Query 1 | 50,000 records | With Index (e.g., bname) | 48069, 46397, 46105, 45158, 45259, 44699, 49340, 45585, 51901, 49172 | | | |
| Point Query 2 | 100,000 records | Without Indexes | 44091, 45094, 52488, 48297, 42525, 49733, 47539, 51263, , | | | |
| Point Query 2 | 150,000 records | With Index (e.g., bname) | 49177, 46223, 49142, 46156, 47548, 47526, 42983, 52453, 48033, 47820 | | | |
| Range Query 1 | 50,000 records | Without Indexes | 104006, 85819, 94230, 96788, 92118, 85968, 84941, 89823, 89823, 92123 | | | |
| Range Query 1 | 50,000 records | With Index (e.g., bname) | 103998, 92262, 85830, 87293, 88712, 88832, 84570, 84323, 83348, 86556 | | | |
| Range Query 2 | 100,000 records | Without Indexes | 61320, 60259, 62100, 67117, 60198, 64345, 62166, 57756, 64129, 62166 | | | |
| Range Query 2 | 100,000 records | With Index (e.g., bname) | 57917, 57484, 60871, 60950, 61987, 62269, 57794, 67273, 61730, 61858 | | | |
| Point Query 1 | 50,000 records | Without Indexes | 40695, 49746, 45194, 45402, 45557, 49392, 44849, 47680, 49464, 49040 | | | |
| Point Query 1 | 150,000 records | With Index (e.g., bname) | 48069, 46397, 46105, 45158, 45259, 44699, 49340, 45585, 51901, 49172 | | | |
| Point Query 2 | 100,000 records | Without Indexes | 44091, 45094, 52488, 48297, 42525, 49733, 47539, 51263, , | | | |
| Point Query 2 | 100,000 records | With Index (e.g., bname) | 49177, 46223, 49142, 46156, 47548, 47526, 42983, 52453, 48033, 47820 | | | |
| Range Query 1 | 50,000 records | Without Indexes | 104006, 85819, 94230, 96788, 92118, 85968, 84941, 89823, 89823, 92123 | | | |
| Range Query 1 | 50,000 records | With Index (e.g., bname) | 103998, 92262, 85830, 87293, 88712, 88832, 84570, 84323, 83348, 86556 | | | |
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