Query Optimization Report

Introduction:

The purpose of this report is to optimize the searchMovieTitles query in our application. This query was found to be inefficient during performance testing.

Execution Plan Analysis:

Original execution plan indicated a full table scan:

| id | select\_type | table | type | possible\_keys | key | key\_len | ref | rows | Extra |

|----|-------------|-------|------|---------------|------|---------|------|------|-------------|

| 1 | SIMPLE | title | ALL | NULL | NULL | NULL | NULL | 6047 | Using where |

This was due to the lack of an index on the Title\_Name column.

Type: ALL indicates a full table scan, which is inefficient.

Possible Keys: NULL, meaning no indexes are suggested for this query.

Key: NULL, indicating no index is being used.

Rows: 6047, meaning all rows are scanned.

Extra: Using where, which shows a filter is applied after scanning.

Optimization Proposal:

Adding an index on the Title\_Name column to improve query performance:  
CREATE INDEX idx\_title\_name ON title (Title\_Name);

Implementation and Performance Comparison:

After adding the index, the execution plan showed the use of the index:

| id | select\_type | table | type | possible\_keys | key | key\_len | ref | rows | Extra |

|----|-------------|-------|-------|------|------|--------|--------|--------|---------------------------------|

| 1 | SIMPLE | title | index | null | null | 403 | NULL | 6047 | Using where; Using index |

Execution time before optimization: 0.015s

Execution time after optimization: 0.00577166 s

Query 6: SELECT Title\_ID, Title\_Name FROM title WHERE Title... - Execution time: 0.00577166 seconds

Query 7: SHOW WARNINGS - Execution time: 0.00010114 seconds

Query 8: SELECT @@lower\_case\_table\_names - Execution time: 0.00023461 seconds

Query 9: SELECT TABLE\_NAME FROM information\_schema.VIEWS WH... - Execution time: 0.00098324 seconds

Query 10: SELECT \*, ... - Execution time: 0.01025259 seconds

Query 11: SELECT COUNT(\*) FROM ... - Execution time: 0.00267208 seconds

Query 12: SHOW CREATE TABLE ... - Execution time: 0.00020189 seconds

Query 13: SELECT \*, ... - Execution time: 0.00107463 seconds

Query 14: SELECT \*, ... - Execution time: 0.00100162 seconds

Query 15: SHOW FULL COLUMNS FROM ... - Execution time: 0.00094084 seconds

Query 16: SHOW INDEXES FROM ... - Execution time: 0.00045352 seconds

Query 17, 18, 19: SHOW SESSION VARIABLES LIKE 'FOREIGN\_KEY\_CHECKS' - Execution time: 0.00168702, 0.00169033, 0.00166558 seconds respectively

Query 20: SELECT DATABASE() - Execution time: 0.00015345 seconds

Conclusion:

The optimization significantly reduced the execution time by using an index. This confirms that indexing on frequently searched columns can greatly enhance query performance.