

**LAPORAN SISTEM MANAJEMEN BASIS DATA**  
**DATABASE PERFORMANCE**



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**D3 MANAJEMEN INFORMATIKA**  
**PSDKU POLITEKNIK NEGERI MALANG DI KOTA KEDIRI**  
**2025**

1.

```
SELECT * FROM employee;
```

203437	1962-06-08	Aemilian	Vesel	M	1988-10-03
203438	1953-10-24	Gift	Thisen	M	1988-10-30
203439	1957-01-02	Zeydy	Kushner	M	1991-01-14
203440	1957-07-16	Stafford	Eiter	F	1988-02-06
203441	1958-06-12	Geoffry	Nitto	M	1989-06-04
203442	1963-02-19	Foong	Gammage	F	1994-12-28
203443	1963-07-25	Elliot	Wixon	M	1993-11-04
203444	1953-12-12	Leah	Vieri	M	1990-08-09
203445	1958-01-13	Radhika	Bolsens	M	1994-08-10
203446	1955-11-18	Kristen	Molenaar	M	1986-06-04
203447	1959-01-17	Oscal	Demos	M	1985-04-17
203448	1952-04-08	Nirmal	Parhami	F	1995-02-19
203449	1962-01-07	Moty	Wynblatt	M	1990-01-17
203450	1962-05-01	Wayne	Henders	F	1994-09-21
203451	1955-07-15	Janche	Schmittgen	M	1991-01-12
203452	1960-07-09	Gift	Birke	M	1987-03-18
203453	1960-03-29	Val	Malinowski	M	1985-08-04
203454	1959-03-29	Lein	Ranta	M	1988-08-10
203455	1953-07-23	Peer	Serdy	M	1994-04-25
203456	1953-10-23	Iara	Moehrke	F	1990-06-12
203457	1960-08-12	Phillip	Matteis	M	1986-11-05
203458	1961-03-19	Heng	Luce	M	1985-06-19
203459	1954-04-04	Lunjin	Juneja	M	1988-08-12
203460	1963-01-27	Hsiangchu	Anger	F	1989-10-19
203461	1960-10-30	Xiaobin	Staudhammer	M	1988-12-30

```
EXPLAIN SELECT * FROM employee WHERE first_name = 'Georgi';
```

```
mysql> EXPLAIN SELECT * FROM employee WHERE first_name = 'Georgi';
+----+
| id | select_type | table | partitions | type | possible_keys | key | key_len | ref | rows | filtered | Extra |
+----+
| 1 | SIMPLE | employee | NULL | ALL | NULL | NULL | NULL | NULL | 299246 | 10.00 | Using where |
+----+
1 row in set, 1 warning (0.02 sec)
```

```
ALTER TABLE employee ADD INDEX idx_full_name (first_name, last_name);
```

```
mysql> ALTER TABLE employee ADD INDEX idx_full_name (first_name, last_name);
Query OK, 0 rows affected (2.32 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
EXPLAIN SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';
```

```
mysql> EXPLAIN SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';
+----+
| id | select_type | table | partitions | type | possible_keys | key | key_len | ref | rows | filtered | Extra |
+----+
| 1 | SIMPLE | employee | NULL | ref | idx_full_name | idx_full_name | 124 | const,const | 1 | 100.00 | NULL |
+----+
1 row in set, 1 warning (0.02 sec)

mysql>
```

2.

```
ALTER TABLE dept_manager ADD COLUMN dept_name VARCHAR(255);
UPDATE dept_manager dm
JOIN departments d ON dm.dept_no = d.dept_no
SET dm.dept_name = d.dept_name;
```

```
mysql> UPDATE dept_manager dm
      -> JOIN department d ON dm.dept_no = d.dept_no
      -> SET dm.dept_name = d.dept_name;
Query OK, 24 rows affected (0.01 sec)
Rows matched: 24  Changed: 24  Warnings: 0

mysql> _
```

3.

```
ALTER TABLE dept_emp ADD COLUMN dept_name VARCHAR(255);
UPDATE dept_emp de
JOIN department d ON de.dept_no = d.dept_no
SET de.dept_name = d.dept_name;
```

```
mysql> UPDATE dept_emp de
      -> JOIN department d ON de.dept_no = d.dept_no
      -> SET de.dept_name = d.dept_name;
Query OK, 331603 rows affected (19.69 sec)
Rows matched: 331603  Changed: 331603  Warnings: 0
```

4.

```
SELECT e.first_name, e.last_name, s.amount
FROM employee e
JOIN dept_emp de ON e.emp_no = de.emp_no
JOIN salary s ON e.emp_no = s.emp_no
WHERE de.dept_no = 'd006'
ORDER BY s.amount DESC
LIMIT 1;
```

```
mysql> SELECT e.first_name, e.last_name, s.amount
      -> FROM employee e
      -> JOIN dept_emp de ON e.emp_no = de.emp_no
      -> JOIN salary s ON e.emp_no = s.emp_no
      -> WHERE de.dept_no = 'd006'
      -> ORDER BY s.amount DESC
      -> LIMIT 1;
+-----+-----+-----+
| first_name | last_name | amount |
+-----+-----+-----+
| Shin      | Luck      | 132103 |
+-----+-----+-----+
1 row in set (0.52 sec)
```

5.

```
ALTER TABLE employee ADD COLUMN umur INT;  
UPDATE employee  
SET umur = TIMESTAMPDIFF(YEAR, birth_date, CURDATE());
```

```
mysql> ALTER TABLE employee ADD COLUMN umur INT;  
Query OK, 0 rows affected (0.17 sec)  
Records: 0 Duplicates: 0 Warnings: 0  
  
mysql> UPDATE employee  
-> SET umur = TIMESTAMPDIFF(YEAR, birth_date, CURDATE());  
Query OK, 300024 rows affected (19.53 sec)  
Rows matched: 300024 Changed: 300024 Warnings: 0
```

6.

```
ALTER TABLE employee ADD INDEX idx_name_dept (first_name, last_name);  
ALTER TABLE dept_emp ADD CONSTRAINT fk_dept FOREIGN KEY (dept_no)  
REFERENCES department(dept_no);
```

```
mysql>  
mysql> ALTER TABLE employee ADD INDEX idx_name_dept (first_name, last_name);  
Query OK, 0 rows affected, 1 warning (2.80 sec)  
Records: 0 Duplicates: 0 Warnings: 1  
  
mysql> ALTER TABLE dept_emp ADD CONSTRAINT fk_dept FOREIGN KEY (dept_no) REFERENCES department(dept_no);  
Query OK, 331603 rows affected (7.28 sec)  
Records: 331603 Duplicates: 0 Warnings: 0
```

7.

```
EXPLAIN SELECT * FROM employee WHERE first_name = 'Georgi';
```

```
mysql> EXPLAIN SELECT * FROM employee WHERE first_name = 'Georgi';  
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+  
| id | select_type | table | partitions | type | possible_keys | key | key_len | ref | rows | filtered | Extra |  
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+  
| 1 | SIMPLE | employee | NULL | ref | idx_full_name,idx_name_dept | idx_full_name | 58 | const | 253 | 100.00 | NULL |  
+----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+  
1 row in set, 1 warning (0.00 sec)
```

8.

#### Sebelum Menambah Index

```
ALTER TABLE employee DROP INDEX idx_full_name;  
ALTER TABLE employee DROP INDEX idx_name_dept;  
SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';
```

```
mysql> SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';  
+-----+-----+-----+-----+-----+-----+-----+  
| emp_no | birth_date | first_name | last_name | gender | hire_date | umur |  
+-----+-----+-----+-----+-----+-----+-----+  
| 36825 | 1963-10-13 | Georgi | Bahr | M | 1988-10-30 | 61 |  
+-----+-----+-----+-----+-----+-----+-----+  
1 row in set (0.28 sec)  
  
mysql> SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';  
+-----+-----+-----+-----+-----+-----+-----+  
| emp_no | birth_date | first_name | last_name | gender | hire_date | umur |  
+-----+-----+-----+-----+-----+-----+-----+  
| 36825 | 1963-10-13 | Georgi | Bahr | M | 1988-10-30 | 61 |  
+-----+-----+-----+-----+-----+-----+-----+  
1 row in set (0.28 sec)  
  
mysql> SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';  
+-----+-----+-----+-----+-----+-----+-----+  
| emp_no | birth_date | first_name | last_name | gender | hire_date | umur |  
+-----+-----+-----+-----+-----+-----+-----+  
| 36825 | 1963-10-13 | Georgi | Bahr | M | 1988-10-30 | 61 |  
+-----+-----+-----+-----+-----+-----+-----+  
1 row in set (0.31 sec)  
  
mysql> SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';  
+-----+-----+-----+-----+-----+-----+-----+  
| emp_no | birth_date | first_name | last_name | gender | hire_date | umur |  
+-----+-----+-----+-----+-----+-----+-----+  
| 36825 | 1963-10-13 | Georgi | Bahr | M | 1988-10-30 | 61 |  
+-----+-----+-----+-----+-----+-----+-----+  
1 row in set (0.30 sec)  
  
mysql> SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';  
+-----+-----+-----+-----+-----+-----+-----+  
| emp_no | birth_date | first_name | last_name | gender | hire_date | umur |  
+-----+-----+-----+-----+-----+-----+-----+  
| 36825 | 1963-10-13 | Georgi | Bahr | M | 1988-10-30 | 61 |  
+-----+-----+-----+-----+-----+-----+-----+  
1 row in set (0.31 sec)
```

Rata-Rata = (0.286 sec)

#### Setelah Menambah Index

```
ALTER TABLE employee ADD INDEX idx_full_name (first_name, last_name);  
SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';
```

```
+-----+-----+-----+-----+-----+-----+-----+  
| 36825 | 1963-10-13 | Georgi | Bahr | M | 1988-10-30 | 61 |  
+-----+-----+-----+-----+-----+-----+-----+  
1 row in set (0.00 sec)  
  
mysql> SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';  
+-----+-----+-----+-----+-----+-----+-----+  
| emp_no | birth_date | first_name | last_name | gender | hire_date | umur |  
+-----+-----+-----+-----+-----+-----+-----+  
| 36825 | 1963-10-13 | Georgi | Bahr | M | 1988-10-30 | 61 |  
+-----+-----+-----+-----+-----+-----+-----+  
1 row in set (0.00 sec)  
  
mysql> SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';  
+-----+-----+-----+-----+-----+-----+-----+  
| emp_no | birth_date | first_name | last_name | gender | hire_date | umur |  
+-----+-----+-----+-----+-----+-----+-----+  
| 36825 | 1963-10-13 | Georgi | Bahr | M | 1988-10-30 | 61 |  
+-----+-----+-----+-----+-----+-----+-----+  
1 row in set (0.00 sec)  
  
mysql> SELECT * FROM employee WHERE first_name = 'Georgi' AND last_name = 'Bahr';  
+-----+-----+-----+-----+-----+-----+-----+  
| emp_no | birth_date | first_name | last_name | gender | hire_date | umur |  
+-----+-----+-----+-----+-----+-----+-----+  
| 36825 | 1963-10-13 | Georgi | Bahr | M | 1988-10-30 | 61 |  
+-----+-----+-----+-----+-----+-----+-----+  
1 row in set (0.00 sec)
```

Rata-Rata = (0.00 sec)

