> 【有道云笔记】
> https://note.youdao.com/s/FMi8YpR7

关于《Explain详解与索引最佳实践》中课上示例是基于Mysql5.7的。mysql8也同样适用，有区别会在本文档中进行记录

### 查看mysql版本

```
7  select  version();
```

信息 | 结果 1 | 剖析 | 状态

| version() |
| --- |
| 8.0.32 |

## Explain分析示例

参考资料： https://dev.mysql.com/doc/refman/8.0/en/explain-output.html

在mysql8.0以上已经废除了explain extended这条命令，我们只需要使用explain就可以了。

```
10  explain extended select * from film where id = 1;
```

mysql8已经废弃了extended

信息 | 状态

```
explain extended select * from film where id = 1
> 1064 - You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near
'select * from film where id = 1' at line 1
> 时间: 0s
```

# 索引最佳实践

#### 3.不在索引列上做任何操作（计算、函数、（自动or手动）类型转换），会导致索引失效而转向全表扫描

给hire_time增加一个普通索引：

ALTER TABLE `employees` ADD INDEX `idx_hire_time` (`hire_time`) USING BTREE ;

转化为日期范围查询，有可能会走索引：

EXPLAIN  select * from employees where hire_time >='2018-09-30 00:00:00'  and  hire_time <='2018-09-30 23:59:59';

- mysql8中测试结果

```
94  EXPLAIN  select * from employees where hire_time >='2018-09-30 00:00:00'  and  hire_time <='2018-09-30 23:59:59';
```

息 | 结果 1 | 剖析 | 状态

| id | select_type | table | partitions | type | possible_key | key | key_len | ref | rows | filtered | Extra |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | SIMPLE | employees | (Null) | range | idx_hire_time | idx_hire_time | 4 | (Null) | 1 | 100.00 | Using index condition |

**6.mysql在使用不等于（！=或者<>），not in ，not exists 的时候无法使用索引会导致全表扫描**

**< 小于、 > 大于、 <=、>= 这些，mysql内部优化器会根据检索比例、表大小等多个因素整体评估是否使用索引**

EXPLAIN SELECT * FROM employees WHERE name != 'LiLei';

- mysql5.7中测试结果

```
EXPLAIN SELECT * FROM employees WHERE name != 'LiLei';
```

| id | select_type | table | partitions | type | possible_key | key | key_len | ref | rows | filtered | Extra |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SIMPLE | employees | (Null) | ALL | idx_name_ag | (Null) | (Null) | (Null) | 3 | 66.67 | Using where |

- mysql8中测试结果

```
EXPLAIN SELECT * FROM employees WHERE name != 'LiLei';
```

| id | select_type | table | partitions | type | possible_key | key | key_len | ref | rows | filtered | Extra |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SIMPLE | employees | (Null) | range | idx_name_ag | idx_name_age_74 | 74 | (Null) | 2 | 100.00 | Using index condition |

**10.少用or或in，用它查询时，mysql不一定使用索引，mysql内部优化器会根据检索比例、表大小等多个因素整体评估是否使用索引，详见范围查询优化**

EXPLAIN SELECT * FROM employees WHERE name = 'LiLei' or name = 'HanMeimei';

- mysql5.7中测试结果

```
EXPLAIN SELECT * FROM employees WHERE name = 'LiLei' or name = 'HanMeimei';
show warnings;
```

| id | select_type | table | partitions | type | possible_key | key | key_len | ref | rows | filtered | Extra |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SIMPLE | employees | (Null) | ALL | idx_name_ag | (Null) | (Null) | (Null) | 3 | 66.67 | Using where |

- mysql8中测试结果

```
EXPLAIN SELECT * FROM employees WHERE name = 'LiLei' or name = 'HanMeimei';
```

| id | select_type | table | partitions | type | possible_key | key | key_len | ref | rows | filtered | Extra |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SIMPLE | employees | (Null) | range | idx_name_ag | idx_name_age_74 | 74 | (Null) | 2 | 100.00 | Using index condition |

**11.范围查询优化**

给年龄添加单值索引

ALTER TABLE `employees` ADD INDEX `idx_age` (`age`) USING BTREE ;

explain select * from employees where age >=1 and age <=2000;

- mysql5.7中测试结果

```
ALTER TABLE `employees` ADD INDEX `idx_age` (`age`) USING BTREE ;
explain select * from employees where age >=1 and age <=2000;
```

| id | select_type | table | partitions | type | possible_key | key | key_len | ref | rows | filtered | Extra |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SIMPLE | employees | (Null) | ALL | idx_age | (Null) | (Null) | (Null) | 3 | 100.00 | Using where |

- mysql8中测试结果

```
ALTER TABLE `employees` ADD INDEX `idx_age` (`age`) USING BTREE ;
explain select * from employees where age >=1 and age <=2000;
```

信息 | 结果 1 | 剖析 | 状态

| id | select_type | table | partitions | type | possible_key | key | key_len | ref | rows | filtered | Extra |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SIMPLE | employees | (Null) | range | idx_age | idx_age | 4 | (Null) | 3 | 100.00 | Using index condition |