MongoDB 与 MySQL 的区别

MongoDB 虽说是文档型数据库，但是在学习和使用其语法时发现又与 MySQL 有些相似之处，在此记录点滴日后复习。

二、概念区别

比较	**MYSQL**	**MONGODB**
库	database	database
表	table	collection
行	row	document
列	column	field
索引	index	index
表关联	table joins	$lookup
主键	primary key	primary key
聚合	aggregation	aggregation pipeline

三、命令区别

比较	**MYSQL**	**MONGODB**
服务端	mysqld	mongod
客户端	mysql	mongo

四、关键字和函数区别

MYSQL	MONGODB
where	$match
group by	$group
having	$match
select	$project
order by	$sort
limit	$limit
sum()	$sum
count()	$sum
join	$lookup

五、语句区别

5.1 表结构

5.1.1 创建表/集合

```
db.people.insertOne( {
    user_id: "abc123",
    age: 55,
    status: "A"
 } )

相当于

CREATE TABLE people (
    id MEDIUMINT NOT NULL AUTO_INCREMENT,
    user_id Varchar(30),
    age Number,
    status char(1),
    PRIMARY KEY (id)
)
```

5.1.2 新增字段

```
db.people.updateMany(
    { },
    { $set: { join_date: new Date() } }
)

相当于 ALTER TABLE people ADD join_date DATETIME
```

5.1.3 删除字段

```
db.people.updateMany(
    { },
    { $unset: { "join_date": "" } }
)

相当于 ALTER TABLE people DROP COLUMN join_date
```

5.1.4 创建索引

```
db.people.createIndex( { user_id: 1 } )

相当于 CREATE INDEX idx_user_id_asc ON people(user_id)
```

5.1.5 删除表/集合

```
db.people.drop()

相当于 DROP TABLE people
```

5.2 新增记录/文档

```
db.people.insertOne(
   { user_id: "bcd001", age: 45, status: "A" }
)

相当于 INSERT INTO people(user_id,age,status) VALUES ("bcd001",45,"A")
```

5.3 查询记录/文档

5.3.1 简单查询

```
db.people.find()

相当于 SELECT * FROM people
```

```
db.people.find(
    { },
    { user_id: 1, status: 1 }
)

相当于 SELECT id,user_id,status FROM people
```

```
db.people.find(
    { },
    { user_id: 1, status: 1, _id: 0 }
)

相当于 SELECT user_id, status FROM people
```

5.3.2 条件查询

```
db.people.find(
    { status: "A" }
)

相当于 SELECT * FROM people WHERE status = "A"
```

```
db.people.find(
    { status: "A" },
    { user_id: 1, status: 1, _id: 0 }
)

相当于 SELECT user_id, status FROM people WHERE status = "A"
```

5.3.3 非查询

```
db.people.find(
    { status: { $ne: "A" } }
)

相当于 SELECT * FROM people WHERE status != "A"
```

5.3.4 且查询

```
db.people.find(
    { status: "A",
      age: 50 }
)

相当于 SELECT * FROM people WHERE status = "A" AND age = 50
```

5.3.5 或查询

```
db.people.find(
    { $or: [ { status: "A" } ,
             { age: 50 } ] }
)

相当于 SELECT * FROM people WHERE status = "A" OR age = 50
```

5.3.6 大于查询

```
db.people.find(
    { age: { $gt: 25 } }
)

相当于 SELECT * FROM people WHERE age > 25
```

5.3.7 小于查询

```
db.people.find(
   { age: { $lt: 25 } }
)

相当于 SELECT * FROM people WHERE age < 25
```

5.3.8 范围查询

```
db.people.find(
   { age: { $gt: 25, $lte: 50 } }
)

相当于 SELECT * FROM people WHERE age > 25 AND   age <= 50
```

5.3.9 模糊查询

```
db.people.find( { user_id: /bc/ } ) 或 db.people.find( { user_id: {
$regex: /bc/ } } )

相当于 SELECT * FROM people WHERE user_id like "%bc%"
```

```
db.people.find( { user_id: /^bc/ } ) 或 db.people.find( { user_id: {
$regex: /^bc/ } } )

相当于 SELECT * FROM people WHERE user_id like "bc%"
```

5.3.10 排序查询

```
db.people.find( { status: "A" } ).sort( { user_id: 1 } )

相当于 SELECT * FROM people WHERE status = "A" ORDER BY user_id ASC
```

```
db.people.find( { status: "A" } ).sort( { user_id: -1 } )

相当于 SELECT * FROM people WHERE status = "A" ORDER BY user_id DESC
```

5.3.11 统计查询

```
db.people.count() 或 db.people.find().count()

相当于 SELECT COUNT(*) FROM people
```

```
db.people.count( { user_id: { $exists: true } } ) 或 db.people.find( { user_id: { $exists: true } } ).count()

相当于 SELECT COUNT(user_id) FROM people
```

```
db.people.count( { age: { $gt: 30 } } ) 或 db.people.find( { age: { $gt: 30 } } ).count()

相当于 SELECT COUNT(*) FROM people WHERE age > 30
```

5.3.12 去重查询

```
db.people.distinct( "status" )

相当于 SELECT DISTINCT(status) FROM people
```

5.3.13 分页查询

```
db.people.findOne() 或 db.people.find().limit(1)

相当于 SELECT * FROM people LIMIT 1
```

```
db.people.find().limit(5).skip(10)

相当于 SELECT * FROM people LIMIT 5 SKIP 10
```

5.3.14 查询计划

```
db.people.find( { status: "A" } ).explain()

相当于 EXPLAIN SELECT * FROM people WHERE status = "A"
```

5.4 修改记录/文档

```
db.people.updateMany(
   { age: { $gt: 25 } },
   { $set: { status: "C" } }
);

相当于 UPDATE people SET status = "C" WHERE age > 25;

db.people.updateMany(
   { status: "A" } ,
   { $inc: { age: 3 } }
);

相当于 UPDATE people SET age = age + 3 WHERE status = "A";
```

5.5 删除记录/文档

```
db.people.deleteMany( { status: "D" } );

相当于 DELETE FROM people WHERE status = "D";

db.people.deleteMany({});

相当于 DELETE FROM people;
```

六、参考资料

- https://docs.mongodb.com/manual/reference/sql-aggregation-comparison/ 关键字和函数相关
- https://docs.mongodb.com/manual/reference/sql-comparison/ 语句相关