

MongoDB Query Language and the Aggregation Pipeline

Discussion Format

Learning Objective:

Identify the differences between the MongoDB Query Language and the aggregation pipeline.

Approach:

- Frame the differences (and similarities) in terms of business needs and technical details.
- Juxtapose that to three user profiles:
 - analyst
 - developer
 - data scientist

Scope:

- Business Needs
- General Comparison
- Technical Differences
- Activities

Business Need: MQL || Aggregation Pipeline

- Perform operations on grouped data to return a single result.
 - aggregation pipeline
- Query and sort documents for some business process.
 - MQL or aggregation pipeline
- Present data changes over time.
 - aggregation pipeline
- Reveal patterns in data.
 - aggregation pipeline

General Comparison

MongoDB Query Language (MQL)

- Focused on business process problem-solving
- Simple queries
- Transactional
- Used for CRUD operations

Aggregation Pipeline

- Built to combine and unwind business data
- Complex queries
- Transformational
- Operates at the data science level
- Declarative style



Analyst

Developer

Data
Scientist

Technical Differences

MQL

- Query operators
 - `db.collection.find()`
- Application of query criteria
 - Comparison (`$gt`, `$lt`)
 - Logical (`$and`, `$or`)
- Cursor modifier
 - `.limit(5)`
- Projections
 - `{ fieldToExclude: 0 }`

Aggregation Pipeline

- Built with stages
 - Pipeline operator(s) as a stage
 - `$match` | `$group` | `$limit`
- Stages
 - Operate on and process input documents
- Input to Result
 - `{}, {}` \Rightarrow `{}, {}`
- `$set` and `$unset`



Analyst

Developer

Data
Scientist

Code Comparison

MQL:

```
db.users.find(  
  {  
    role:"developer"  
  }  
)
```

```
[  
  {  
    "firstName": "Maria",  
    "lastName": "DelCampo",  
    "role": "developer",  
    "coursesCompleted" : 4,  
  },  
  {  
    "firstName": "Ger",  
    "lastName": "Sletteemon",  
    "role": "business analyst",  
    "coursesCompleted" : 1,  
  },  
]
```

Aggregation Pipeline:

```
db.users.aggregate( [  
  { $match: { role:  
    "developer" } }  
] )
```


Engage: NodeJS Project



1. Recording of an instructor building a simple project (documentation of steps to be included):
 - a. Using MQL
 - i. Pre-built find query
 - ii. User adds additional methods
 - b. Using Aggregation Pipeline
 - i. Pre-built \$match stage
 - ii. User builds additional stages with \$group and \$limit

Close

Identification of the differences between the MongoDB Query Language and the aggregation pipeline.

Methodology:

- Business Needs
- General Comparison
- Technical Differences
- Activities