

Introduction to MongoDB

Jogesh K. Muppala



THE DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING
計算機科學及工程學系



香港科技大學
THE HONG KONG UNIVERSITY OF
SCIENCE AND TECHNOLOGY

Databases

- Databases are used to store structured information
- Databases support various operations on the data
 - Query
 - Insert
 - Update
 - Delete

NoSQL Databases

- SQL (structured query language) based relational databases have been very popular means of storing data
- NoSQL databases are increasingly becoming popular to address some challenges encountered with SQL databases

NoSQL Databases

- Four broad categories:
 - Document databases (e.g., MongoDB)
 - Key-value databases (e.g., Redis)
 - Column-family databases (e.g., Cassandra)
 - Graph databases (e.g., Neo4J)

Document Databases

- Document: A self-contained piece of information
 - E.g., a JSON document: {"name": "Uthapizza", "description": "A unique combination . . ."}
- Collection: collection of documents
- Database: A set of collections

Why NoSQL

- Scalability
 - Availability
 - Consistency
 - Partition tolerance
- Ease of deployment
 - No object-relation mapping required

MongoDB

- Document Database
 - Server can support multiple databases
 - A database consists of a set of collections
 - A collection is a set of documents
 - Document is effectively a JSON document with some additional features

MongoDB Format

- Mongo stores the documents in BSON (Binary JSON) format
 - Supports length prefix on each value
 - Easy to skip over a field
 - Information about the type of a field value
 - Additional primitives types not supported by raw JSON like UTC date time, raw binary, and ObjectId

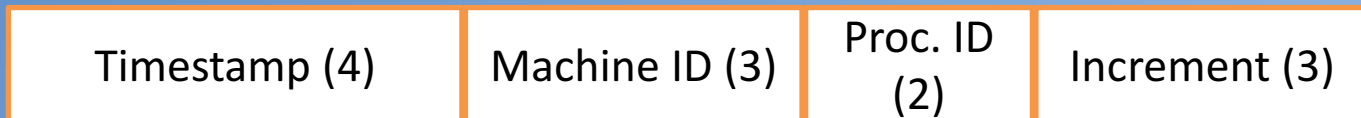
MongoDB ObjectId

- Every document in Mongo must have an “_id” field that is unique
- Default ObjectId created by Mongo when you insert a document
- Example:

```
{  
  "_id" : ObjectId("56ce74c0b02806eff4558f1f"),  
  "name" : "Uthapizza",  
  "description" : "Test"  
}
```

MongoDB ObjectId

- ObjectId is a 12 byte field:



- `id.getTimestamp()` returns the timestamp in ISO Date format.