

Hello



MongoDB

- open-source
- document-oriented
- json/bson

JSON

```
> db.users.findOne()  
{  
  "_id" : ObjectId("5099803df3f4948bd2f98391"),  
  "name" : {  
    "first" : "Alan",  
    "last" : "Turing"  
  },  
  "birth" : ISODate("1912-06-22T21:00:00Z"),  
  "death" : ISODate("1954-06-06T21:00:00Z"),  
  "views" : NumberLong(1250000)  
}
```

`_id` field

```
> db.users.findOne({}, {_id: 1, name: 1})
{
  "_id" : ObjectId("5099803df3f4948bd2f98391"),
  "name" : {
    "first" : "Alan",
    "last"  : "Turing"
  }
}

> ObjectId("509..91").getTimestamp()
ISODate("2012-11-06T21:25:17Z")
```

BSON

- `http://bsonspec.org/#/specification`
- `http://groups.google.com/group/bson`

Schemaless

```
> db.users.update({_id: ObjectId("509..91")},
  { $set: { born: "London, England" }})

> db.users.find({"name.first": "Alan"})
{
  "_id" : ObjectId("5099803df3f4948bd2f98391"),
  "birth" : ISODate("1912-06-22T21:00:00Z"),
  "born" : "London, England",
  "death" : ISODate("1954-06-06T21:00:00Z"),
  "name" : {
    "first" : "Alan",
    "last" : "Turing"
  },
  "views" : NumberLong(1250000)
}
```

Storage

- mmap
- OS page cache

Journal

- present
- group commit every 100ms, by default (2..300ms)

Fault-tolerance

```
PRIMARY> rs.conf()  
{  
  "_id" : "rs2",  
  "version" : 3,  
  "members" : [  
    { "_id" : 0,  
      "host" : "10.99.41.134:27017" },  
    { "_id" : 1,  
      "host" : "10.28.130.177:27017" },  
    { "_id" : 2,  
      "host" : "10.217.30.225:27017" } ]  
}
```

Sharding

- horizontal partitioning
- multiple nodes
- 'config' servers, 1 or 3, sync. replication
- 'mongos' routers
- `db.runCommand(addshard: ...)`
- `db.runCommand(removeshard: ...)`
- chunks, 64M, changeable
- do it once, do it right
- increasing monotonically
- so do not shard by `_id`

Locks, etc.

- server-wide lock, prior to 2.1
- DB-level lock now
- yield on page fault
- ext3 fallocate, slow

Coursera

“Functional Programming Principles in Scala” by Martin Odersky

<https://class.coursera.org/progfun-002/class/index>

