

NOSQL

INFO-H-415

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MongoDB

- ▶ MongoDB is a document oriented database
- ▶ *json* documents

```
{
  "name": "John Smith",
  "address": {
    "street": "Lily Road",
    "number": 32,
    "city": "Owatonna",
    "zip": 55060
  },
  "hobbies": [ "yodeling", "ice skating" ]
}
```

Database Organisation

- ▶ A database contains many collections
- ▶ Collections contain documents (supposedly similar and/or related)
- ▶ The smallest item of data that can be queried is a whole document

Example Query

```
{  
  "name": "John Smith",  
  "address": { "street": "Lily Road",  
               "number": 32,  
               "city": "Owatonna",  
               "zip": 55060 },  
  "hobbies": [ "yodeling", "ice skating" ]  
}
```

- ▶ Find the employee named *John Smith*.

```
db.employee.findOne({"name": "John Smith"})
```

Example queries: Composite Objects

```
{
  "name": "John Smith",
  "address": { "street": "Lily Road",
               "number": 32,
               "city": "Owatonna",
               "zip": 55060 },
  "hobbies": [ "yodeling", "ice skating" ]
}
```

- ▶ Find the name of employees living in *Owatonna*.

```
db.employee.find(
  {"address.city": "Owatonna"},
  {"name": 1})
```

Example queries: Operators

```
{  
  "name": "John Smith",  
  "address": { "street": "Lily Road",  
               "number": 32,  
               "city": "Owatonna",  
               "zip": 55060 },  
  "hobbies": [ "yodeling", "ice skating" ]  
}
```

- ▶ Find the employees who do *not* have *yodeling* as a hobby.

```
db.employee.find(  
  {"hobbies": {"$ne": "yodeling"}})
```

Advanced Querying

- ▶ Queries supported by the database are very simple.
- ▶ The interpreter supports ECMAScript functions to build more complex results.
 - ▶ `map`: Transform each element of the result according to a function.

E.g. Map each employee in the database his address as a String.

- ▶ `filter`: Keeps results that match a predicate.

E.g. Retain employees whose age is greater than 35.

- ▶ Using the manual is heavily recommended.
 - ▶ <http://www.mongodb.org/display/DOCS/Manual>

Dataset

- ▶ Available on
`http://cs.ulb.ac.be/public/teaching/infoh415/tp`
- ▶ Setup
 - ▶ Gunzip the data: `gunzip nosql.js.gz`
 - ▶ Create the database: `mongo messageboard nosql.js`
 - ▶ Connect to the database:
`rlwrap mongo`
`use messageboard`