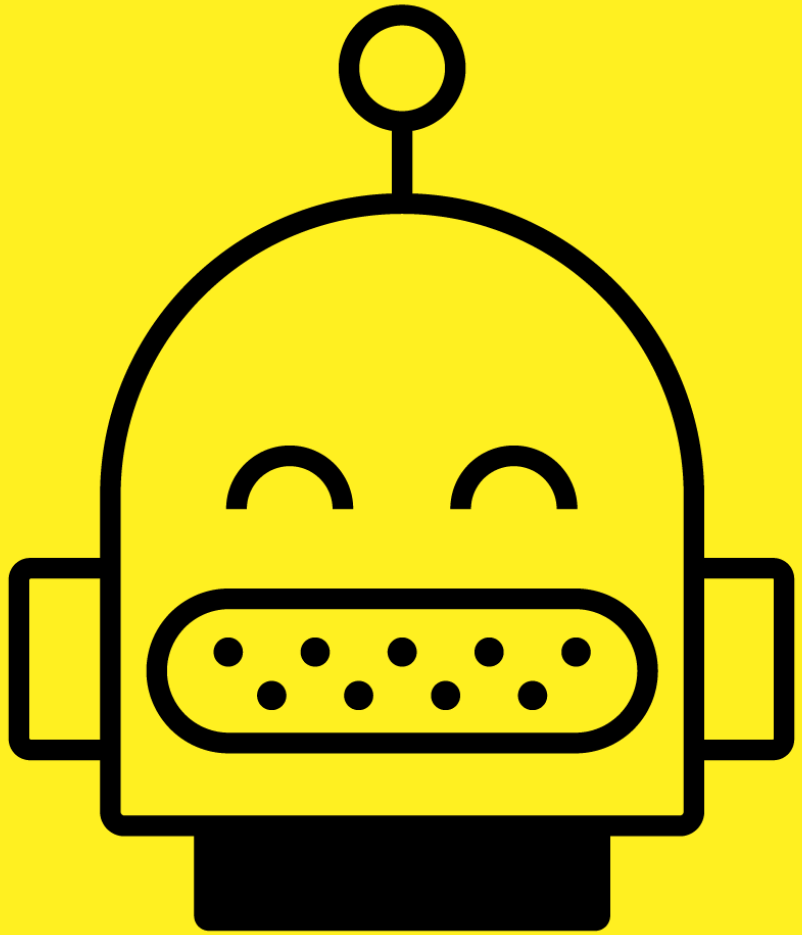
Communication and Multimedia Design | Hogeschool van Amsterdam

Project Tech

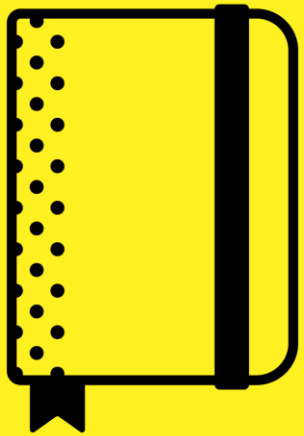
Verdieping Backend #2

Forms & Database



Collegejaar 23/24

Creating Tomorrow

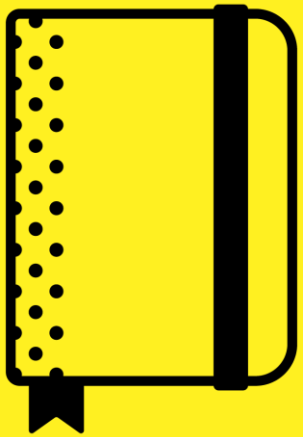


Recap theorie

Routing & templating

Laat je server code zien

Welke vragen zijn er nog?



Theorie

Posting Forms


localhost:8000/add
Add a new movie
Title
Plot
Description
Add Movie

view/add.ejs

```
<%- include('head.ejs') %>

<h1>Add a new movie</h1>
<form action="/add-movie" method="POST">
  <label>Title</label>
  <input type="text" name="title">

  <label>Plot</label>
  <input type="text" name="plot">

  <label>Description</label>
  <textarea name="description"></textarea>

  <input type="submit" value="Add Movie">
</form>
```

Send a HTTP **POST** request to the URL specified in the **ACTION**...

...when the form is submitted

index.js

```
const express = require('express')
const app = express()

app.use(express.urlencoded({extended: true}))

app.get('/add', showAddForm)
app.post('/add-movie', addMovie)

function showAddForm(req, res) {
  res.render('add.ejs')
}

function addMovie(req, res) {
  res.send(`Thanks for adding the movie with:
      title: ${req.body.title},
      plot: ${req.body.plot},
      and description: ${req.body.description}
  `)
}
```

Middleware: parses form data

Route to handle the **post** request to **/add-movie**

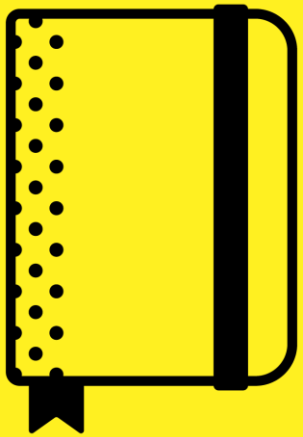
Parsed form data is stored in **req.body**

The properties of **req.body** match the **name** attributes of the inputs in the form

Opdracht: formulier posten

Breid je `node.js` server uit met code om gepost formulier te verwerken. Je kunt het inlogformulier uit de vorige les gebruiken, maar haal dan eerst de front-end JavaScript er uit. We gaan deze functionaliteit nu immers in de back-end bouwen!

1. Maak een route en een view om je formulier te tonen
2. Geef het formulier een action en een POST-method
3. Maak een route om de POST request af te handelen als het formulier wordt verstuurd
4. Maak een view om een HTTP response op de POST request te sturen. Laat in deze view de ontvangen formulier data zien.



Theorie

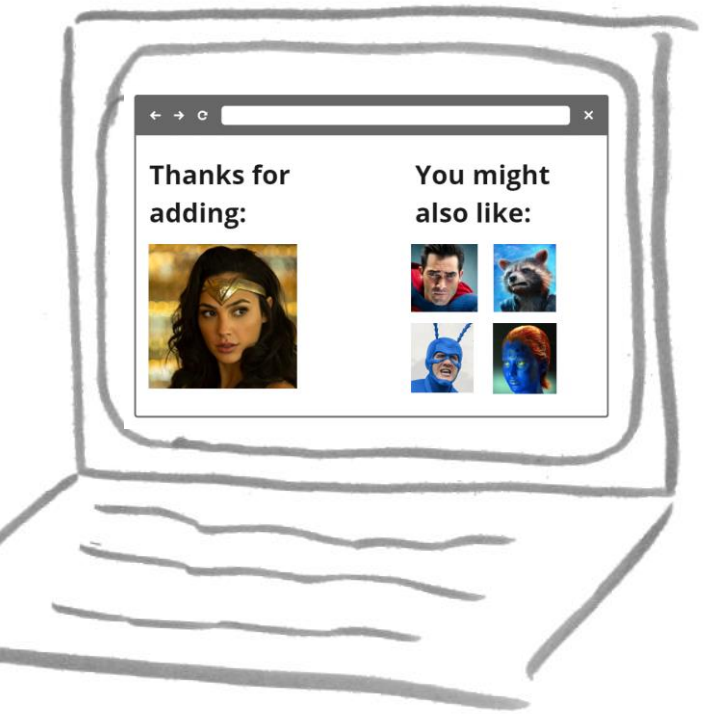
Database

Storing data in db

Client
(browser)

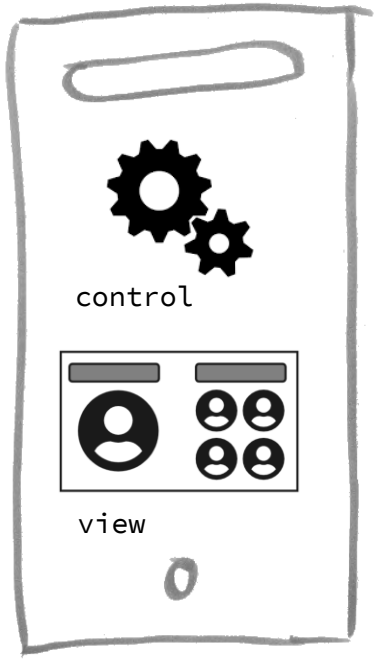
Server
(Webserver met Node.js)

Database
(MongoDB)



1. Browser: here's form data about a new movie

HTTP POST request

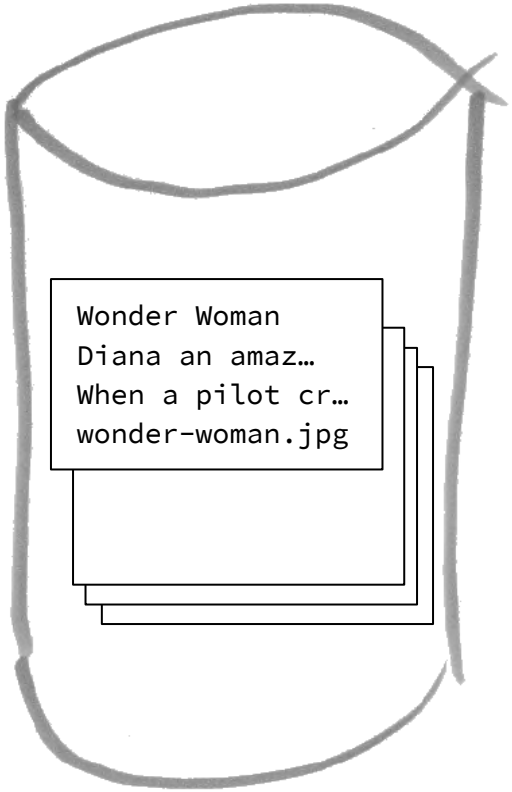


2. Server: please store this info

3. Database: I did!

4. Server: now get me some related movies

5. Database: here are the details



6. Server: here's a new page

HTTP response

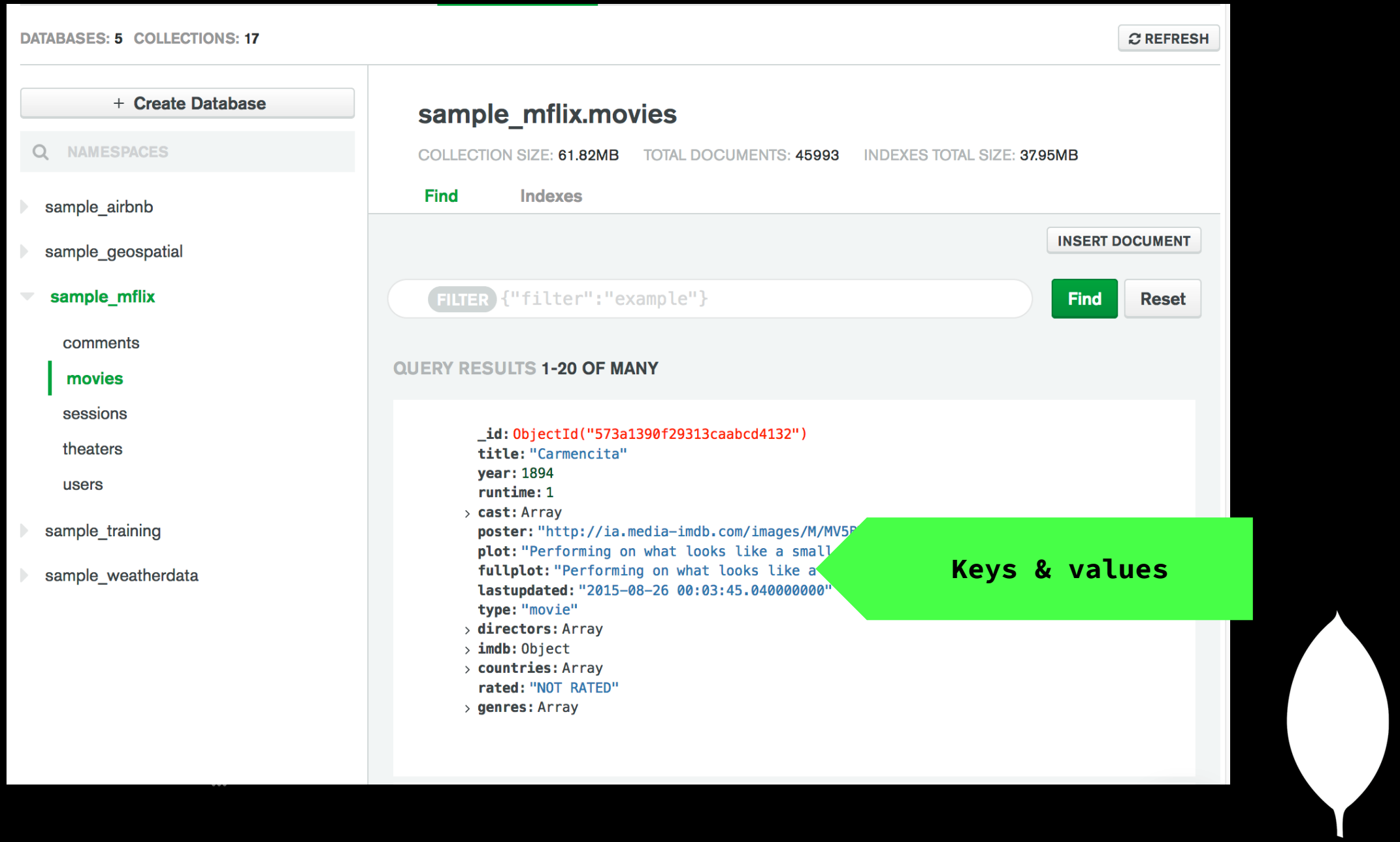
MongoDB

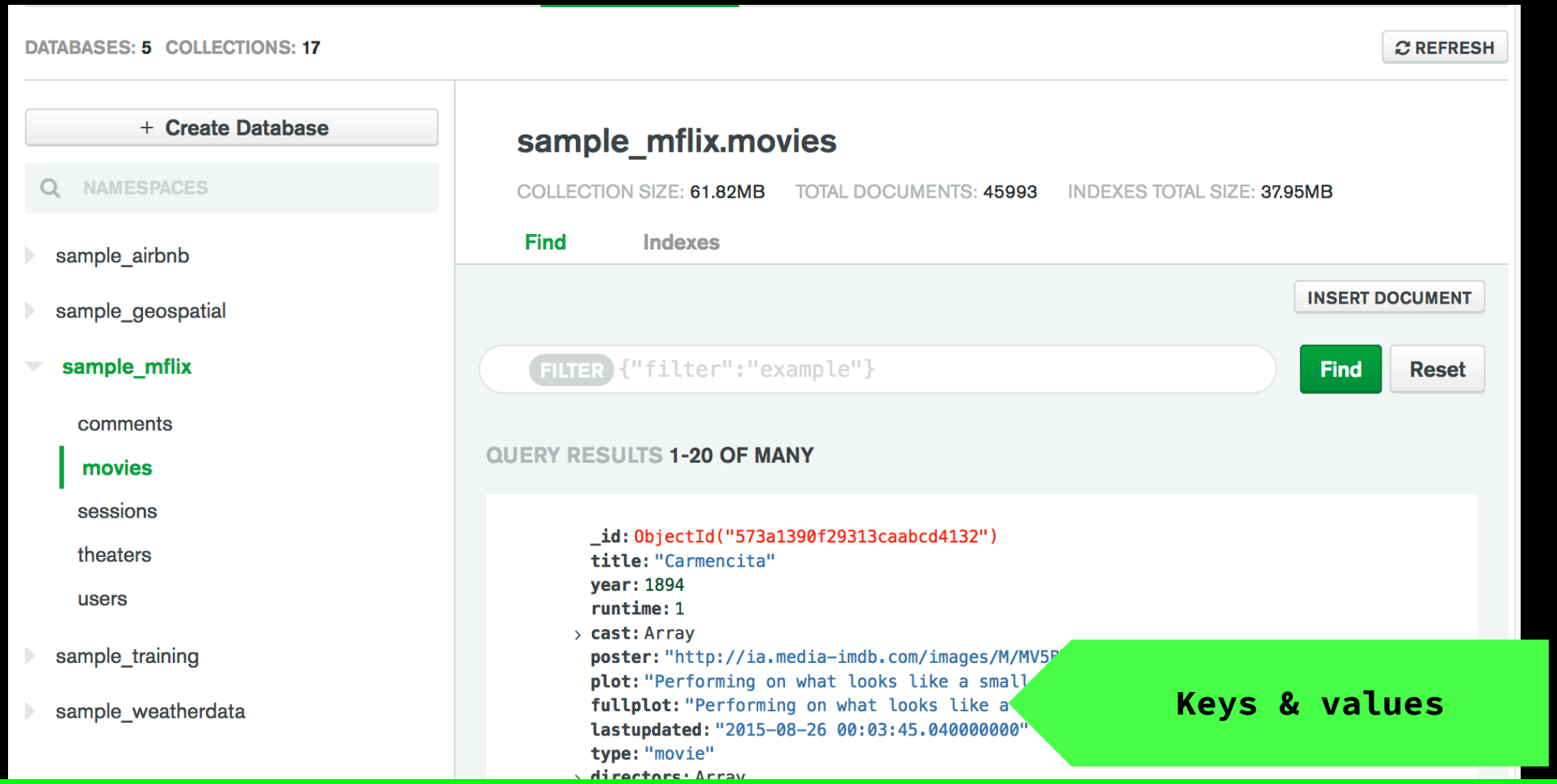
MongoDB (from humongous) is a free and **open-source** cross-platform document-oriented database program. Classified as a **NoSQL** database program, MongoDB uses **JSON-like documents** with schemas. MongoDB is developed by MongoDB Inc. […]

(wikipedia.org)

Waarom MongoDB?

- Het werkt goed samen met JavaScript / Node.js
- Je kunt je data flexibel structureren op een JSON-achtige manier, zonder SQL of formeel database ontwerp te hoeven leren
- Het is gratis ;)


DATABASES: 5 COLLECTIONS: 17
REFRESH
+ Create Database
NAMESPACES
sample_airbnb
sample_geospatial
sample_mflix
comments
movies
sessions
theaters
users
sample_training
sample_weatherdata
sample_mflix.movies
COLLECTION SIZE: 61.82MB TOTAL DOCUMENTS: 45993 INDEXES TOTAL SIZE: 37.95MB
Find
Indexes
INSERT DOCUMENT
FILTER {"filter":"example"}
Find
Reset
QUERY RESULTS 1-20 OF MANY
_id: ObjectId("573a1390f29313caabcd4132")
title: "Carmencita"
year: 1894
runtime: 1
cast: Array
poster: "http://ia.media-imdb.com/images/M/MV5B
plot: "Performing on what looks like a small
fullplot: "Performing on what looks like a
lastupdated: "2015-08-26 00:03:45.040000000"
type: "movie"
directors: Array
imdb: Object
countries: Array
rated: "NOT RATED"
genres: Array
Keys & values



Think about how you want to structure you data.
This is called **data modelling.**

Maar eerst: .env

- Je inloggegevens voor de database wil je niet in je code zetten
- Als ze op GitHub staan, kan de hele wereld bij je database (en dat gaan ze doen ook)
- Zelfs als ze alleen in een oude commit staan (dat was het fijne van Git)
- Daarom zetten we dit soort gegeven in een apart bestand, genaamd: `.env`
- En zetten `.env` in onze `.gitignore` (!!)
- Ook handig als er iets verandert: een nieuw database account, deployen naar een nieuwe webserver etc. Je hoeft dit dan maar op 1 plek aan te passen.

.env

```
DB_HOST=dbhost.somewhere.com
DB_NAME=mydatabase
DB_USERNAME=myusername
DB_PASSWORD=mypassword
DB_COLLECTION=mycollection
```

We gebruiken meestal hoofdletters

Geen “ ” (.env is geen JavaScript)

.gitignore

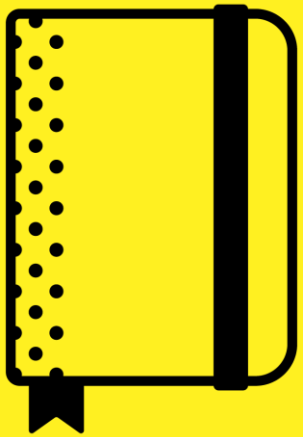
```
node_modules/
.DS_Store
.env
```

Opdracht: database

1. Maak een eigen database account aan op `mongodb.com` volgens de instructies op onze GitHub
2. Maak een `.env` file met je eigen gegevens
3. En zet je `.env` in je `.gitignore`
4. Installeer met `npm install` de modules `dotenv` en `mongodb`
5. Breid je `node.js` server uit met code om de database verbinding te openen

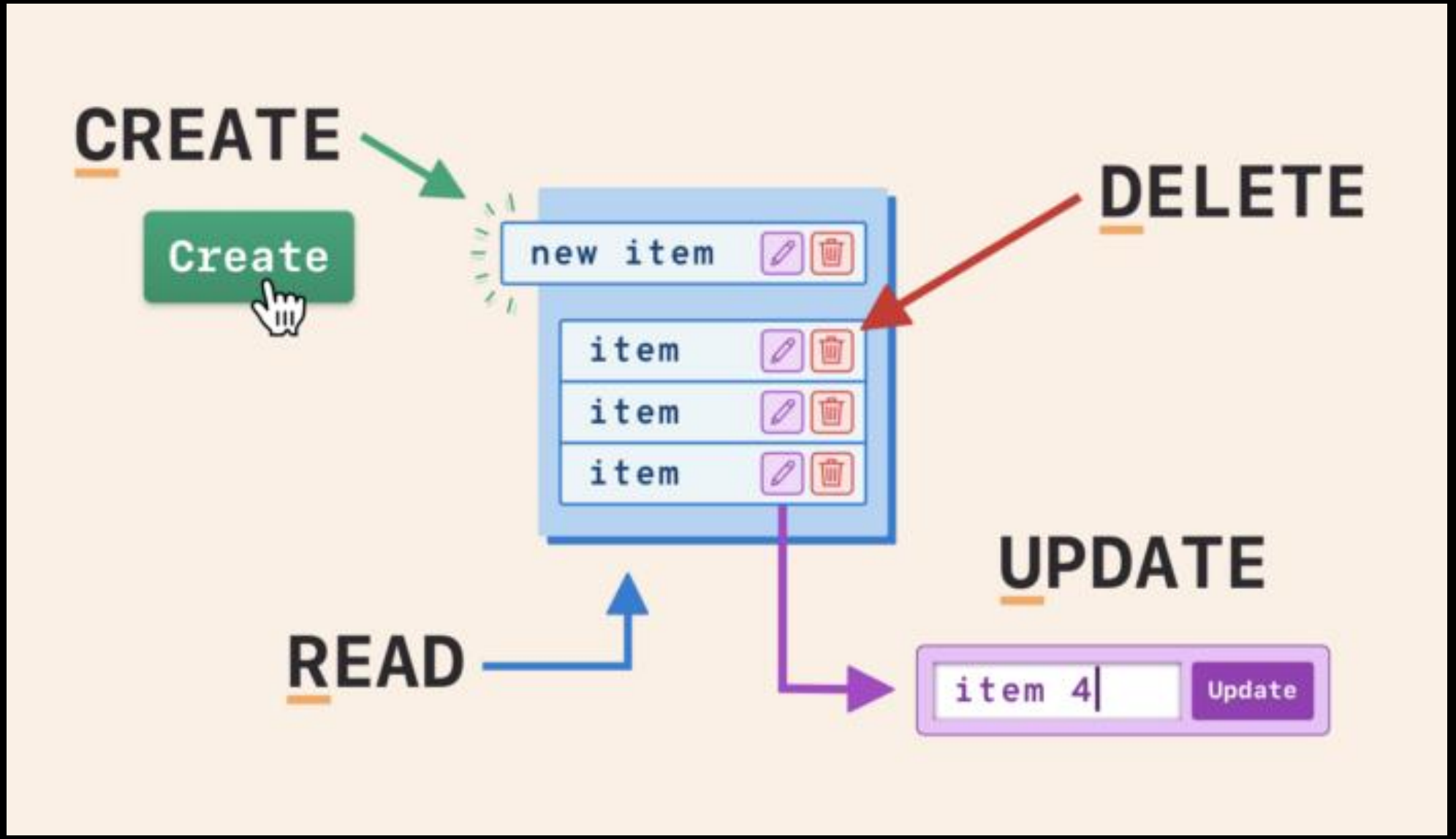
Werkt het niet? Kijk eens of er wat in je terminal staat?

```
require('dotenv').config() // Add info from .env file to process.env

const { MongoClient, ServerApiVersion, ObjectId, CommandStartedEvent } =
require('mongodb')

// Construct URL used to connect to database from info in the .env file
const uri = `mongodb+srv://${process.env.DB_USERNAME}:${process.env.DB_PASSWORD}@
${process.env.DB_HOST}/${process.env.DB_NAME}?retryWrites=true&w=majority`

// Create a MongoClient
const client = new MongoClient(uri, {
    serverApi: {
      version: ServerApiVersion.v1,
      strict: true,
      deprecationErrors: true,
    }
})

// Try to open a database connection
client.connect()
    .then((res) => {
        console.log('Database connection established')
    })
    .catch((err) => {
        console.log(`Database connection error - ${err}`)
        console.log(`For uri - ${uri}`)
    })
```



Theorie

Database - CRUD

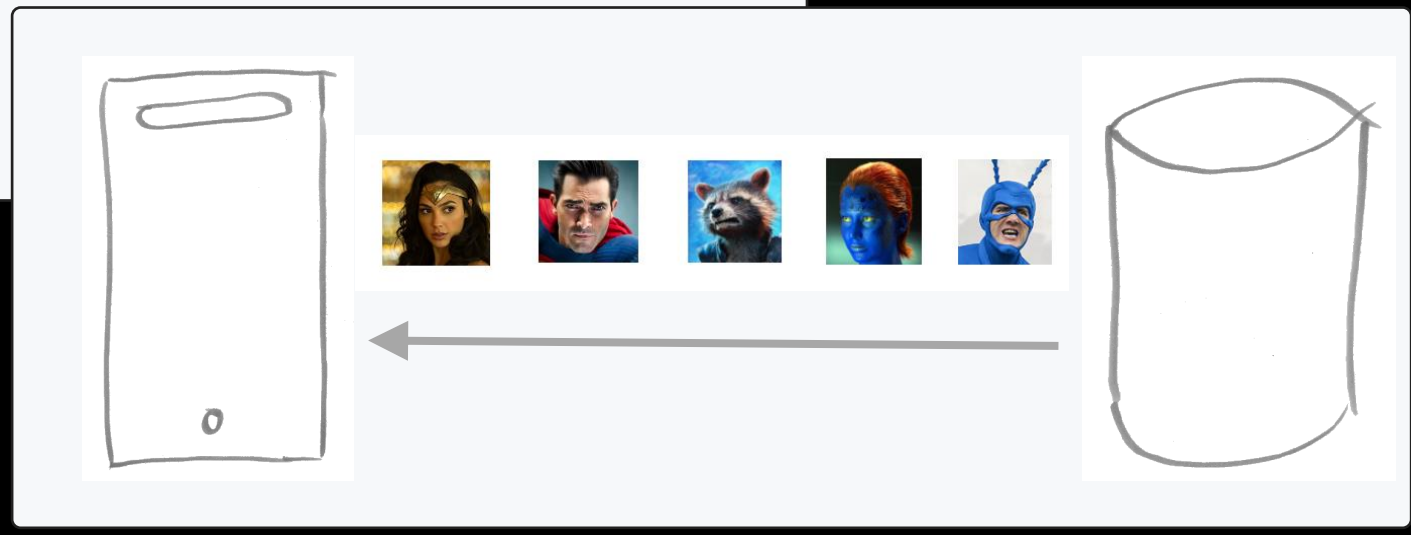


Source: CRUD Operations Explained by Avelon Pang, June 14, 2021

find

index.js

```
…

const db = client.db(process.env.DB_NAME)
const collection = db.collection(process.env.DB_COLLECTION)

async function listAllMovies(req, res) {
    data = await collection.find().toArray()

    res.render('list.ejs', {data: data})
}

…
```



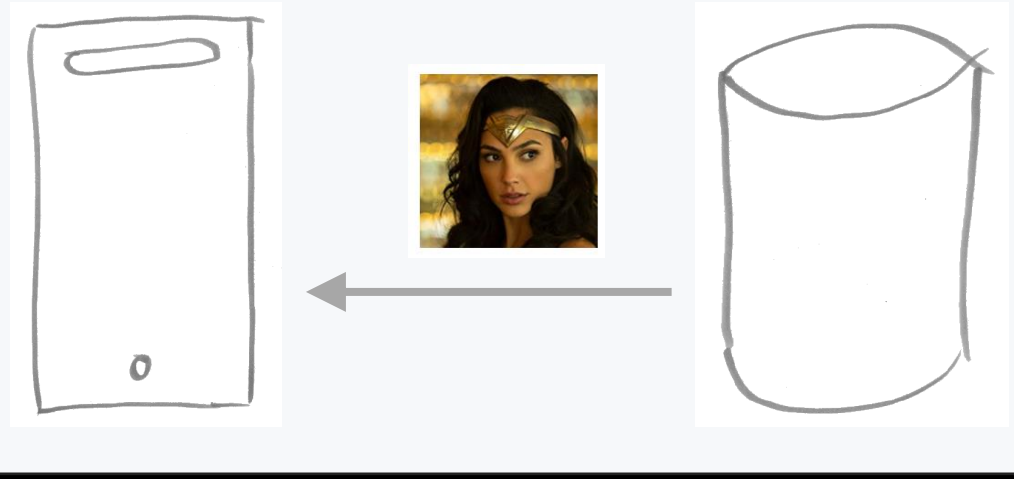
findOne

index.js

```
…

const db = client.db(process.env.DB_NAME)
const collection = db.collection(process.env.DB_COLLECTION)

async function findMovie(req, res) {
    data = await collection.findOne({
        title: req.params.title
    })

    res.render('detail.ejs', {data: data})
}

…
```

localhost/movie/wonder_woman

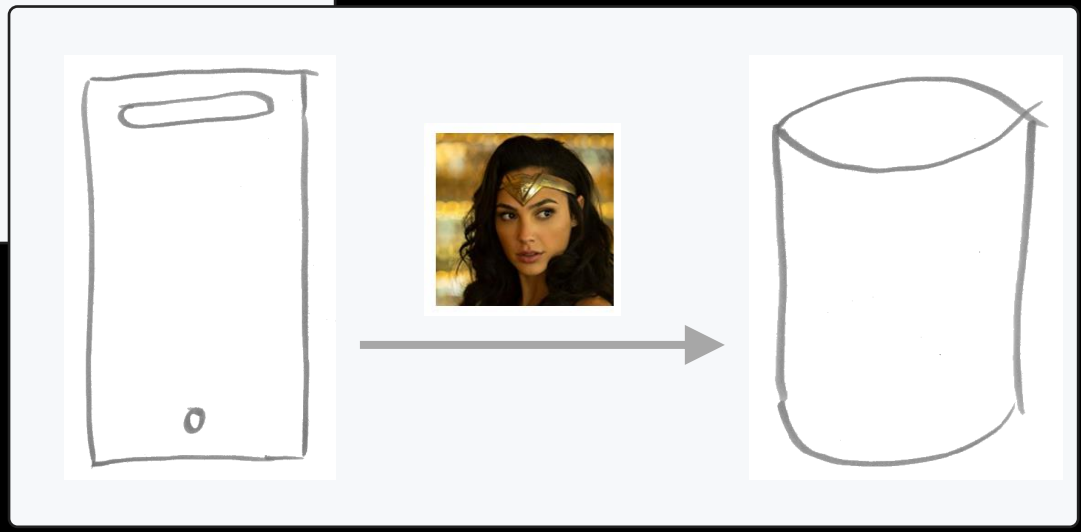
Wonder Woman



insertOne

index.js

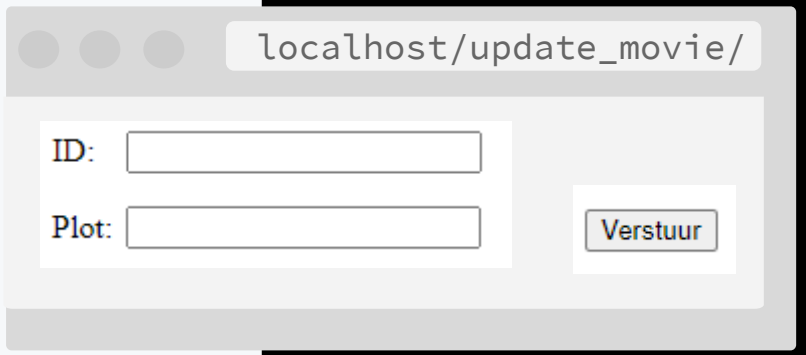
```
const db = client.db(process.env.DB_NAME)
const collection = db.collection(process.env.DB_COLLECTION)

async function addMovie(req, res) {
    result = await collection.insertOne({
        title: req.body.title,
        plot: req.body.plot,
        description: req.body.description
    })

    console.log(`Added with _id: ${result.insertedID`)
    res.render('added.ejs')
}

…
```

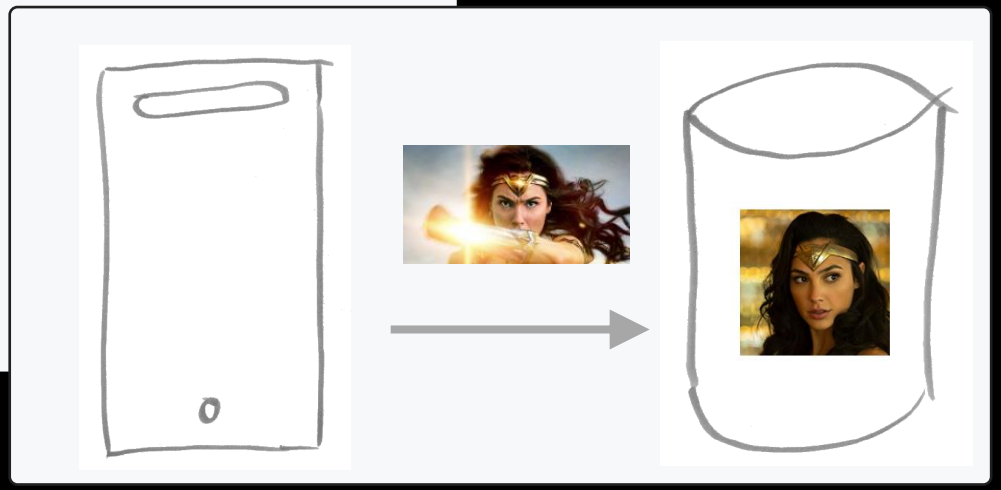


update

index.js

```
const db = client.db(process.env.DB_NAME)
const collection = db.collection(process.env.DB_COLLECTION)

async function updateMovie(req, res) {
    const result = await collection.updateOne(
        _id: ObjectId(req.body.id),
        {$set: {plot: req.body.plot}}
    )

    console.log(`Items found: ${result.matchedCount},
       items updated: ${result.modifiedCount}`)
    res.render('movie_updated.ejs', {id: req.body.id})
}

...
```

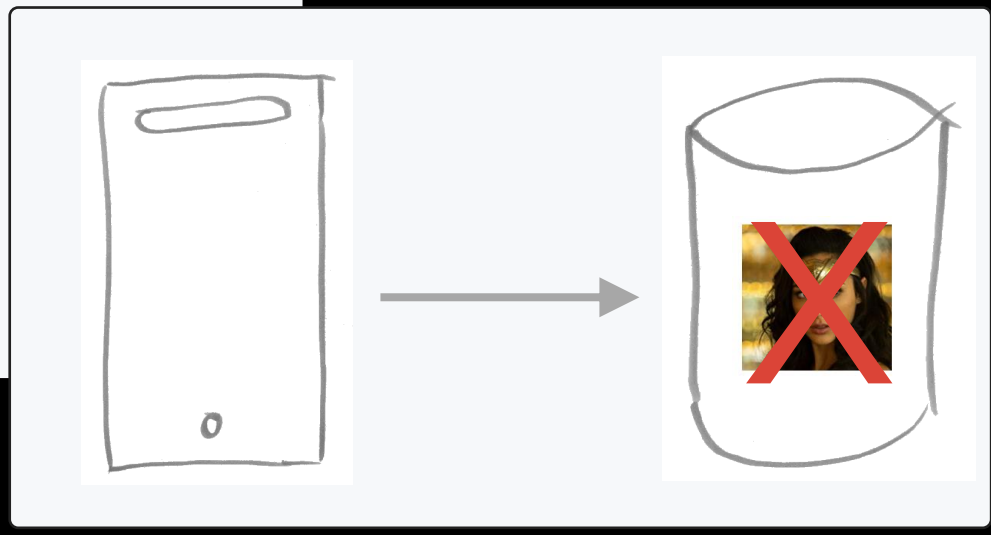


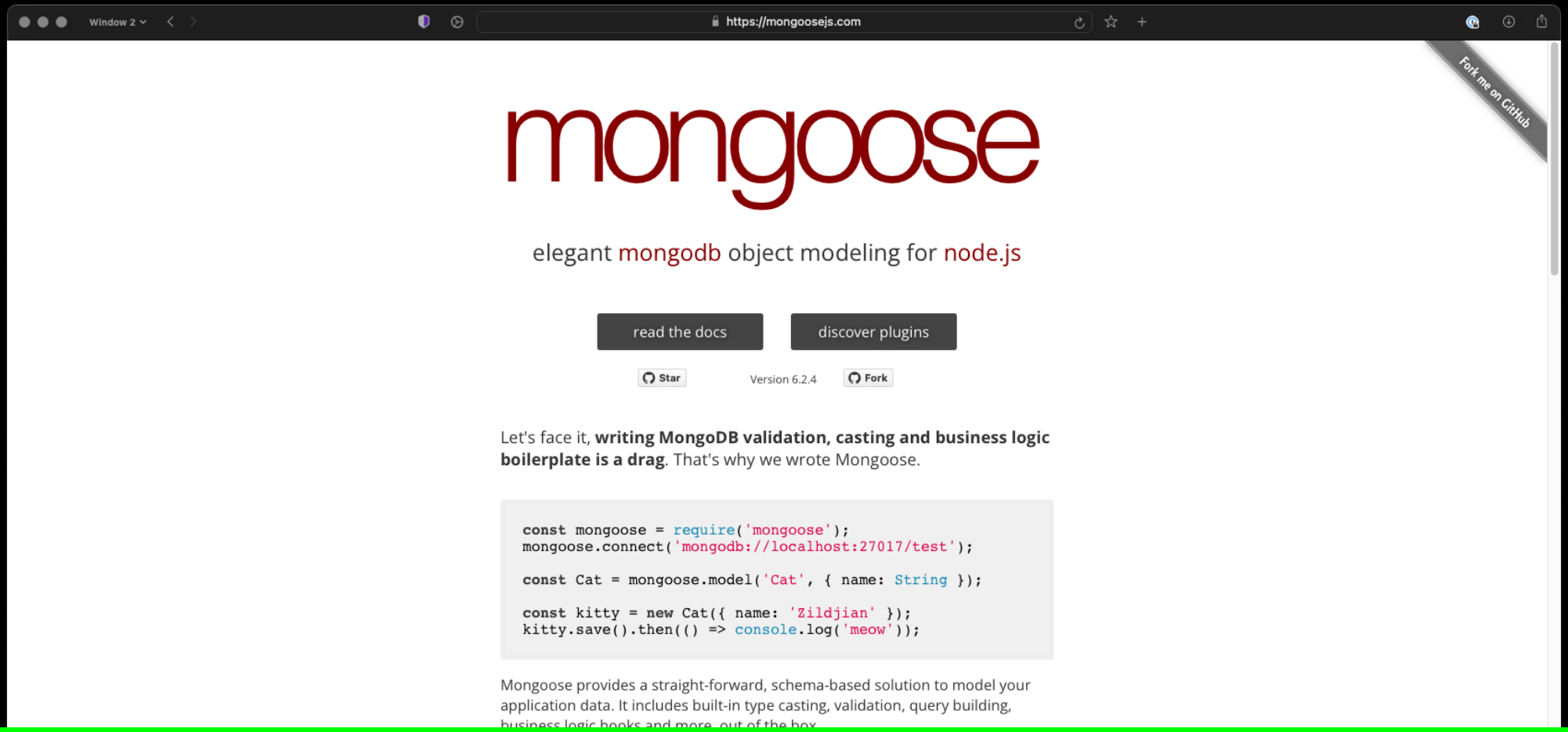


delete

index.js

```
const db = client.db(process.env.DB_NAME)
const collection = db.collection(process.env.DB_COLLECTION)


function deleteMovie(req, res) {
    const result = await collection.deleteOne({
        _id: ObjectId(req.body.id)
    })

    console.log(`Items deleted: ${result.deletedCount}`)
    res.render('movie_deleted.ejs', {id: req.body.id})
}

…
```





Pick **mongoDB (default driver)** over Mongoose.