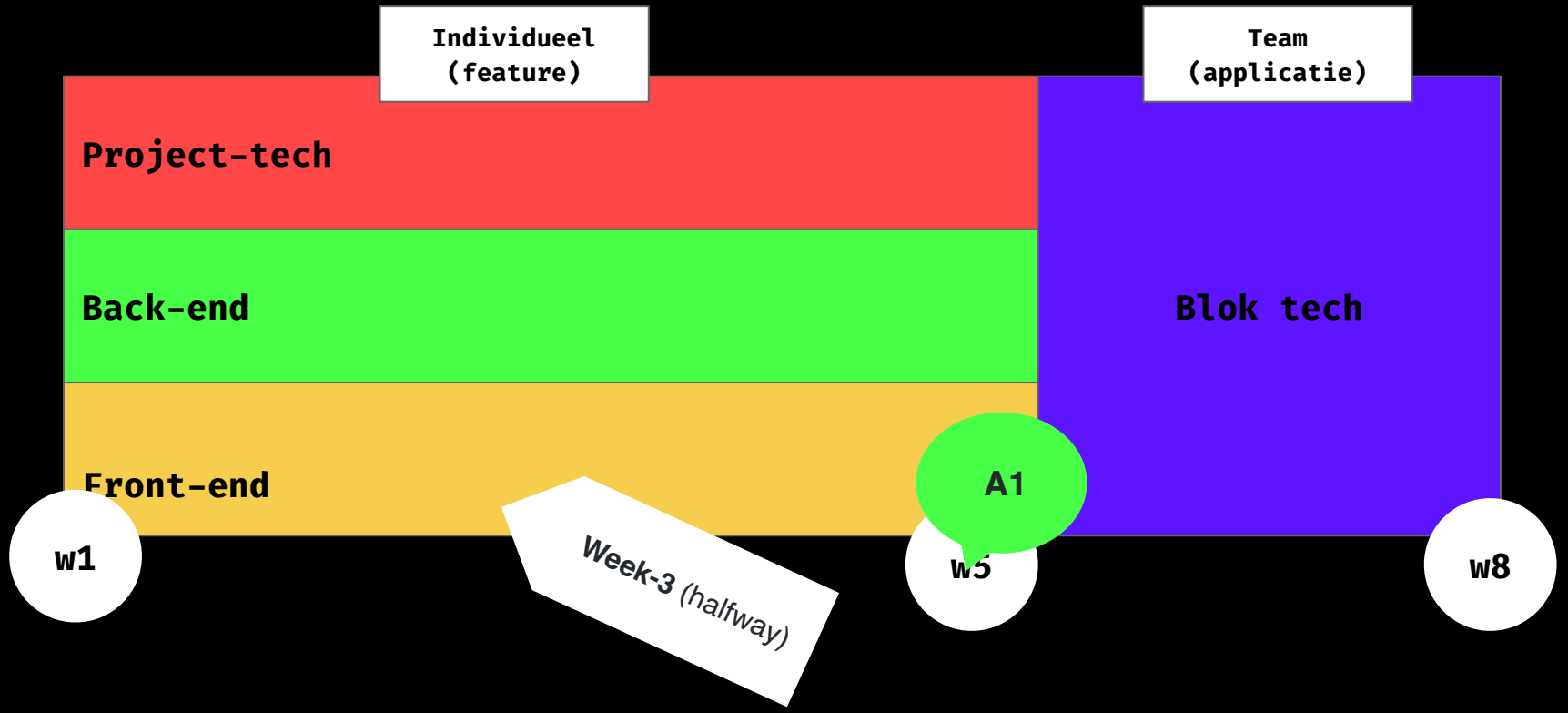
back-end

HTTP & Forms

lab 3/8

Stand-up!

Show what you did


Individueel
(feature)
Team
(applicatie)
Project-tech
Back-end
Front-end
Blok tech
A1
w1
Week-3 (halfway)
w5
w8

today

I. ~~Stand-up~~
II. HTTP
III. Forms (+ files)
IV. Connect

HTTP

http

?

The Hypertext Transfer Protocol (HTTP) is an application protocol for distributed, collaborative, and hypermedia information systems. […]

Hypertext is structured text that uses logical links (hyperlinks) between nodes containing text.

wikipedia.org

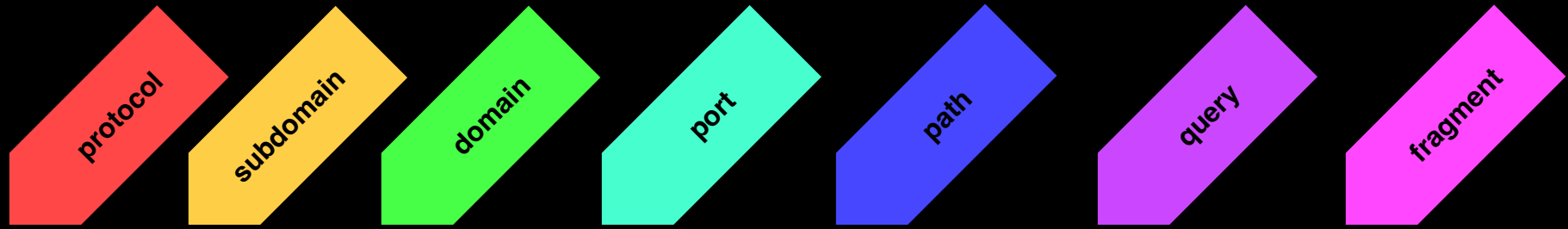
http

A Uniform Resource Locator (URL) […] is a reference to a web resource that specifies its location on a computer network and a mechanism for retrieving it.

wikipedia.org

http

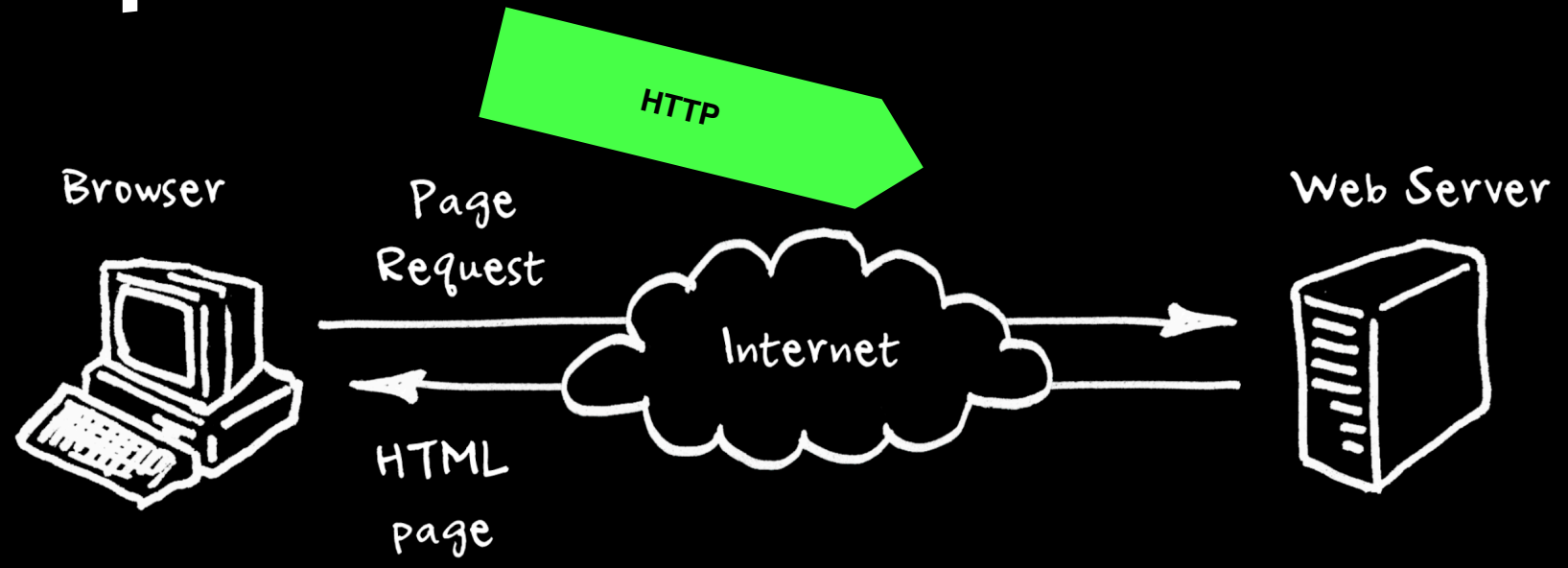
url



http://test.example.com:3000/users/search?q=test&w=all#results

http

req/res



http

response

HTTP/1.1

status code & status message

Date: Mon, 19 Feb 2018 15:40:02 GMT

Last-Modified: Tue, 13 Feb 2018 20:18:22 GMT

Content-Length: 29769

Content-Type: text/html

<!DOCTYPE html… (here comes the 29769 bytes of the requested web page)

http

status

Category	Range	Example
❖ **Information**	**1··**	101 Switching Protocols
❖ **Success**	**2··**	200 OK, 201 Created
❖ **Redirect**	**3··**	301 Moved Permanently
❖ **Client error**	**4··**	400 Bad Request, 404 Not Found
❖ **Server Error**	**5··**	500 Internal Server Error

http

methods

- **Create**: PUT, POST
- **Read**: GET
- **Update**: PATCH
- **Delete**: DELETE

http

get

```
>        /users/1 HTTP/1.1
> Host: example.com
>
< HTTP/1.1 200 OK
<
< {"id":1,"name":"Anna","age":22}
```

bash

```
$ curl example.com/users/1

{"id":1,"name":"Anna","age":22}

$
```

Request a resource

http

post

```
>          /users HTTP/1.1
> Host: example.com
>
> {"name":"Bisma","age":19}
>
< HTTP/1.1 201 Created
< Location: /users/2
<
< {"id":2,"name":"Bisma","age":19}
```

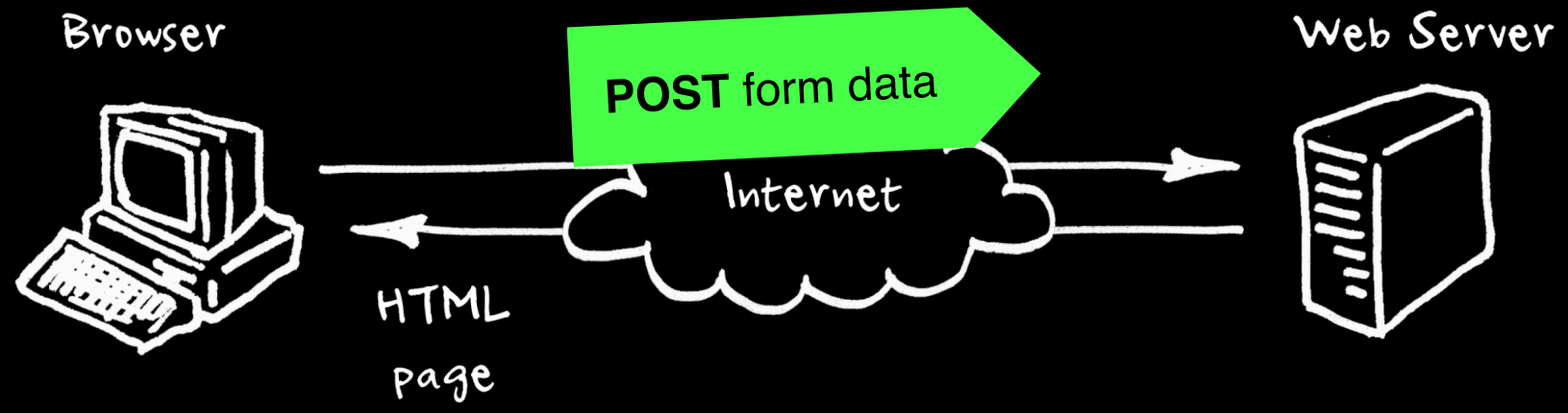
bash

```
$ curl example.com/users \
→ --request POST \
→ --data \
→ '{"name":"Bisma","age":19}'

{"id":2,"name":"Bisma","age":19}

$
```

Submit a resource

http

get/post



http

post

- **Text** text/plain, text/html, text/javascript, …
- **Image** image/jpeg, image/png, …
- **Audio** audio/webm, audio/ogg, …
- **Video** video/webm, video/ogg, …
- **Application** application/pdf, application/octet-stream,…

Developer Tools - https://news.google.com/

Elements | Console | Sources | Network | Performance | »

View: | Preserve log | Disable cache | Offline

Filter | Regex | Hide data URLs

All | XHR | JS | CSS | Img | Media | Font | Doc | WS | Manifest | Other

1000ms 2000ms 3000ms 4000ms 5000ms 6000ms

Name	Sta...	Domain	Type	Init...	Size	Time	Waterfall 5.00 s
news.goo...	200	news.goo...	docum...	Oth...	16...	56...	
rs=AA2Yr...	200	www.gsta...	script	(ind...	(fro...	4ms	
cb=gapi.l...	200	apis.goog...	script	rs=...	(fro...	3ms	

112 requests | 184KB transferred | Finish: 5.88s | DOMContentLoaded: 667ms | Load: 744ms

Live demo **network tab**

Forms

localhost:8000/add

Add a new movie

Title

Plot

Description

add

Add a movie

Express

view/add.ejs

```
<% include head.ejs %>
<title>Add a movie - My movie website</title>
<h1>Add a new movie</h1>
<form action=/ method=post>
  <label>Title <input name=title></label>
  <label>
    Plot (short)
    <input name=plot>
  </label>
  <label>
    Description (long)
    <textarea
      name=description
      rows=5
    ></textarea>
  </label>
  <button>Add</button>
</form>
```

Send a **POST** request…

Express

form

slug

```
// Files
express-server/
 ├── node_modules/
 ├── static/
 |    └── index.css
 ├── view/
 |    ├── add.ejs
 |    ├── detail.ejs
 |    ├── head.ejs
 |    ├── list.ejs
 |    └── not-found.ejs
 ├── index.js
 └── package.json
```

bash

```
$ npm install slug body-parser

+ body-parser@1
+ slug@0.9.1
added 2 pa .214s

$
```

slug makes a string (such as a title) URL safe.

Express

form

body

```
// Files
express-server/
 ├── node_modules/
 ├── static/
 |   └── index.css
 ├── view/
 |   ├── add.ejs
 |   ├── detail.ejs
 |   ├── head.ejs
 |   ├── list.ejs
 |   └── not-found.ejs
 ├── index.js
 └── package.json
```

bash

```
$ npm install slug body-parser

+ body-parser@1.18.2
+ slug@0.9.1
added 2 packages in 1.214s

$
```

body-parser parses most things you give it (json, forms, etc)

Express

index.js

```
var express = require('express')
var find = require('array-find')
var slug = require('slug')
var bodyParser = require('body-par

…

express()
  .use(express.static('s
  .use(bodyParser.u  (extended: true}))
  .set('view engin
  .set('views', 'vie
  .get('/', movies)
  .post('/', add)
  .get('/add', form)
  .get('/:id', movie)
  .use(notFound)
  .listen(8000)

…
```

Handle a **post** request to /

Express

index.js

```
…

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

function add(req, res) {
  var id = slug(req.body.title).toLowerCase()

  data.push({
    id: id,
    title: req.body.title,
    plot: req.body.plot,
    description: req.body.description
  })

  res.redirect('/' + id)
}

…
```

body-parser parses the data and stores it in **req.body**

Express

Files

files

multer

```
// Files
express-server/
 ├── node_modules/
 ├── static/
 |    ├── index.css
 |    ├── index.js
 |
 ├── view/
 |    ├── add.ejs
 |    ├── detail.ejs
 |    ├── head.ejs
 |    ├── list.ejs
 |    ├── not-found.ejs
 |    └── tail.ejs
 ├── index.js
 └── package.json
```

bash

```
$ npm install multer

+ multer@1.3.0
added 20 packac          1s

$
```

multer is middleware for handling **multipart/form-data**

Express

files

folder

```
// Files
express-server/
 ├── node_modules/
 ├── static/
 |   ├── index.css
 |   ├── index.js
 |   └── upload/
 ├── view/
 |   ├── add.ejs
 |   ├── detail.ejs
 |   ├── head.ejs
 |   ├── list.ejs
 |   ├── not-found.ejs
 |   └── tail.ejs
 ├── index.js
 └── package.json
```

We'll upload files to **static/upload**

bash

```
$ npm install multer

+ multer@1.3.0
added 20 packages in 3.041s
```

Express

view/add.ejs

```
<% include head.ejs %>
<title>Add a movie - My movie website</title>
<h1>Add a new movie</h1>
<form
  action=/
  method=post
  enctype=multipart/form-data
>
  <label>Title <input name=title></label>
  <label>
    Cover
    <input name=cover type=file accept=image/*>
  </label>
  <label>
    Plot (short)
    <input name=plot>
  </label>
  …
  <button>Add</button>
</form>
<% include tail.ejs %>
```

Accept only images

Express

index.ejs

```
…
var multer = require('multer')

…

var upload = multer({dest: 'static/upload/'})

express()
  …
  .post('/', upload.single('cover'), add)
  …

function add(req, res) {
  …
  data.push({
    …
    cover: req.file ? req.file.filename : null,
    …
  })
}

…
```

multer sets **req.file**

Express

localhost:8000/add

Add a new movie

Wonder Woman

Diana, an Amazonian warrior…

Cover **wonder-woman.jpg**

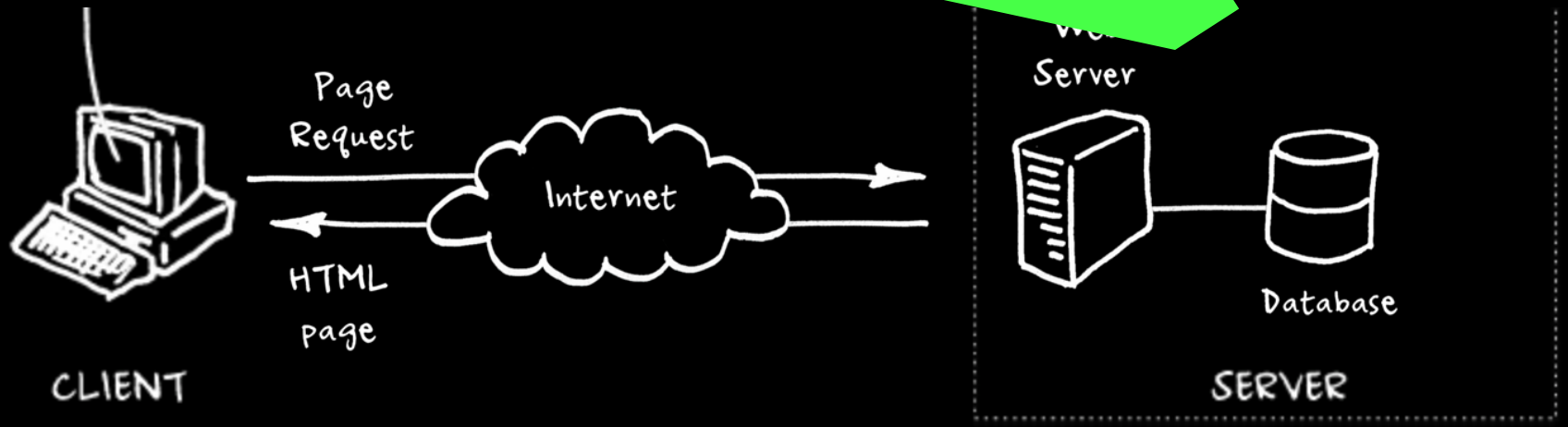
When a pilot crashes and tells of conflict in the outside world, Diana, an Amazonian warrior in training, leaves home …

We can add files!

Express

Connect

Move data to **database** instead of the *server.*



connect

mongodb

MongoDB (from hu**mong**ous) 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. […]

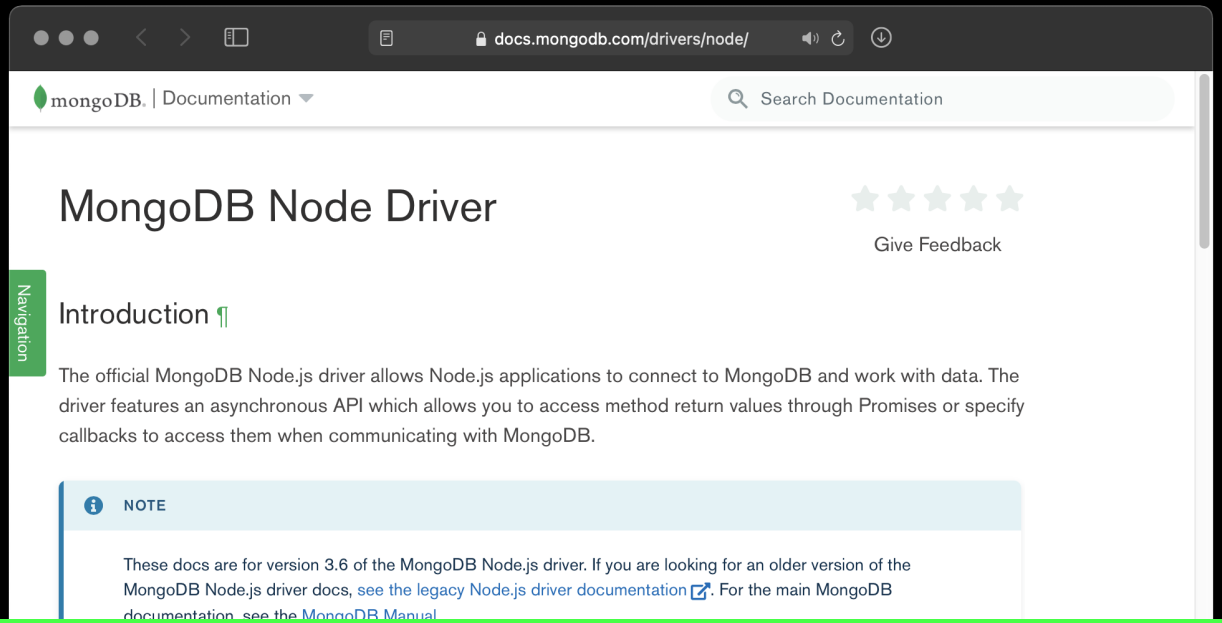
wikipedia.org

connect

mongodb

- JavaScript can be used in queries, aggregation function
- Map-reduce can be used for batch processing of data and aggregation operations
- Manage massive increases in new, rapidly changing data types

https://www.mongodb.com/compare/mongodb-mysql



Note: there are a lot of small steps involved. Read the Mongo guides very carefully. If you miss a step everything will be broken.

bash

```
$ npm install mongodb dotenv

+ mongodb@2.2.33
+ dotenv@4.0.0
added 11 packages in 4.022s

$
```

mongodb wraps **MongoDB** for **Node**

connect

mongodb

```
// Files
mongodb-server/
 ├── node_modules/
 ├── static/
 |   ├── index.css
 |   ├── index.js
 |   └── upload/
 ├── view/
 |   ├── add.ejs
 |   ├── detail.ejs
 |   ├── head.ejs
 |   ├── list.ejs
 |   ├── not-found.ejs
 |   └── tail.ejs

 ├── index.js
 └── package.json
```

.env

```
DB_HOST=localhost
DB_PORT=27017
DB_NAME=mymoviewebsite
DB_USERNAME=dandevri
```

connect

mongodb

```
// Files
mongodb-server/
 ├── node_modules/
 ├── static/
 |   ├── index.css
 |   ├── index.js
 |   └── upload/
 ├── view/
 |   ├── add.ejs
 |   ├── detail.ejs
 |   ├── head.ejs
 |   ├── list.ejs
```

.env

```
DB_HOST=localhost
DB_PORT=27017
DB_NAME=mymoviewebsite
```

Note: Never ever put your **host and password in code or on GitHub**! People will be able to access your database!

connect

mongodb

```
// Files
mongodb-server/
 ├── node_modules/
 ├── static/
 |    ├── index.css
 |    ├── index.js
 |    └── upload/
 ├── view/
 |    ├── add.ejs
 |    ├── detail.ejs
 |    ├── head.ejs
 |    ├── list.ejs
 |    ├── not-found.ejs
 |    └── tail.ejs
 ├── .env

 ├── index.js
 └── package.json
```

.gitignore

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

ii mon

index.js

```
...
var multer = require('multer')
var mongo = require('mongodb')

require('dotenv').config()

var db = null
var url = 'mongodb://' + process.env.DB_HOST + ':' + process.env.DB_PORT

mongo.MongoClient.connect(url, function (err, client) {
  if (err) throw err
  db = client.db(process.env.DB_NAME)
})

...
```

mong
odb

index.js

```
…

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

function add(req, res) {
  var id = slug(req.body.title).toLowerCase()

  data.push({
    id: id,
    title: req.body.title,
    plot: req.body.plot,
    description: req.body.description
  })

  res.redirect('/' + id)
}

…
```

title, **plot**, and **description** come from **name** attributes on inputs

Express

localhost:8000/wonder-woman

Wonder Woman

When a pilot crashes and tells of conflict in the outside world, Diana, an Amazonian warrior in training, leaves home to fight a war, discovering her full powers and true destiny.

…and we can submit the form!

Express

localhost:8000/wonder-woman

Wonder Woman

When a pilot crashes and tells of conflict in the outside world, Diana, an Amazonian warrior in training, leaves home to fight a war, discovering her full powers and true destiny.

remove

…but we cannot **remove** movies?
And we can't **update** them.

Express

Input

input

> Receive input from users on the server and manipulate that data for your own feature using HTTP request methods.

Synopsis

- **Time**: 10:00h
- **Goals**: subgoal 4, subgoal 5, subgoal 6
- **Due**: before week 4

Description

So far we only send data (response) to the client with our server. A one-sided conversation. Now the fun starts, it's time to actually start receiving data from users. For example; users can enter something into an input field or submit whole forms with file uploads.

The description of this assignment is quite vague since the end result will be very specific to your Job Story. Make sure you at least spend the

work on **input and connect**

Input

input

> Receive input from users on the server and manipulate that data for your own feature using HTTP request methods.

Synopsis

- **Time**: 10:00h
- **Goals**: subgoal 4, subgoal 5, subgoal 6
- **Due**: before week 4

Description

Note: *Input* is quite a ‘**large**’ and ‘**vague**’ assignment since the end result will be very specific to your Job Story.

exit;

see you in **lab-4**!