Video 4.6

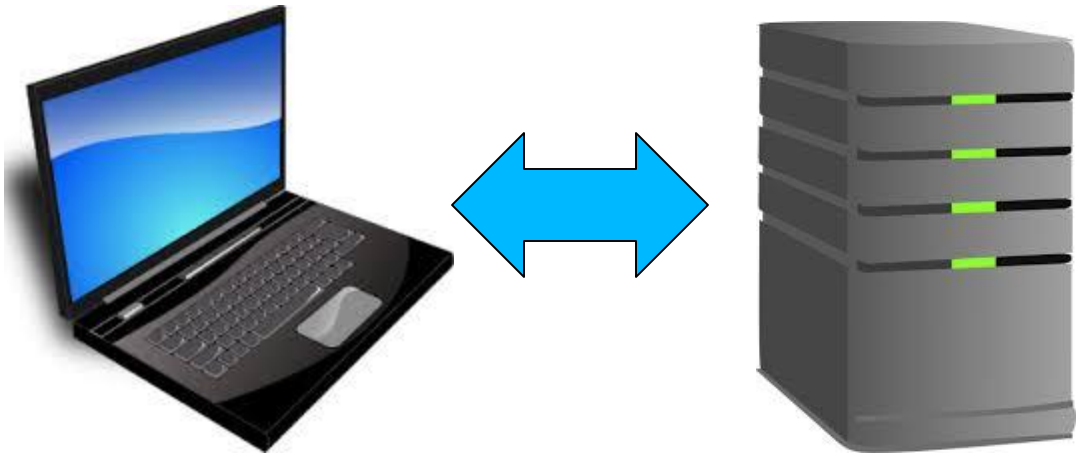
MongoDB: Setup and Insert

Chris Murphy

Review

- Node.js and Express allow us to build server-side web apps in JavaScript

- We can get data from the user via the URL query parameters or from form data



Client **Server**

Client **Server** **Database**

What is a NoSQL Database?

- A **NoSQL Database** is a database that does not use SQL, the traditional method of storing data

- In SQL, data is stored in tables and rows. This is also known as a relational database

- NoSQL Databases attempt to address some of the shortcomings of SQL and other relational databases by organizing and storing data differently

What is MongoDB?

- **MongoDB** is one NoSQL Database that is designed for use with JavaScript apps

- MongoDB stores **collections** of **documents** rather than tables of rows

SQL Database

- A SQL table of Users might look like this:

Name	Age	Country	Occupation
Jane Doe	30	United States	Programmer
John Smith	25	Canada	Doctor
Kim Jones	27	France	Painter

MongoDB Documents

- A MongoDB **collection** of User documents might look like this:

```
{
    name: 'Jane Doe',
    age: 30,
    country: 'United States',
    occupation: 'Programmer'
}
```

```
{
    name: 'John Smith',
    age: 25,
    country: 'Canada',
    occupation: 'Doctor'
}
```

```
{
    name: 'Kim Jones',
    age: 27,
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    occupation: 'Painter'
}
```

Using MongoDB with a Node.js app

1. Install MongoDB locally or create an account on a remote service

2. Install packages locally to allow your JavaScript programs to access your MongoDB instance

3. Write JavaScript to describe the Schema (blueprint for Documents) that you will use in the Collection

4. Use the Schema to access MongoDB in your app

Installing MongoDB

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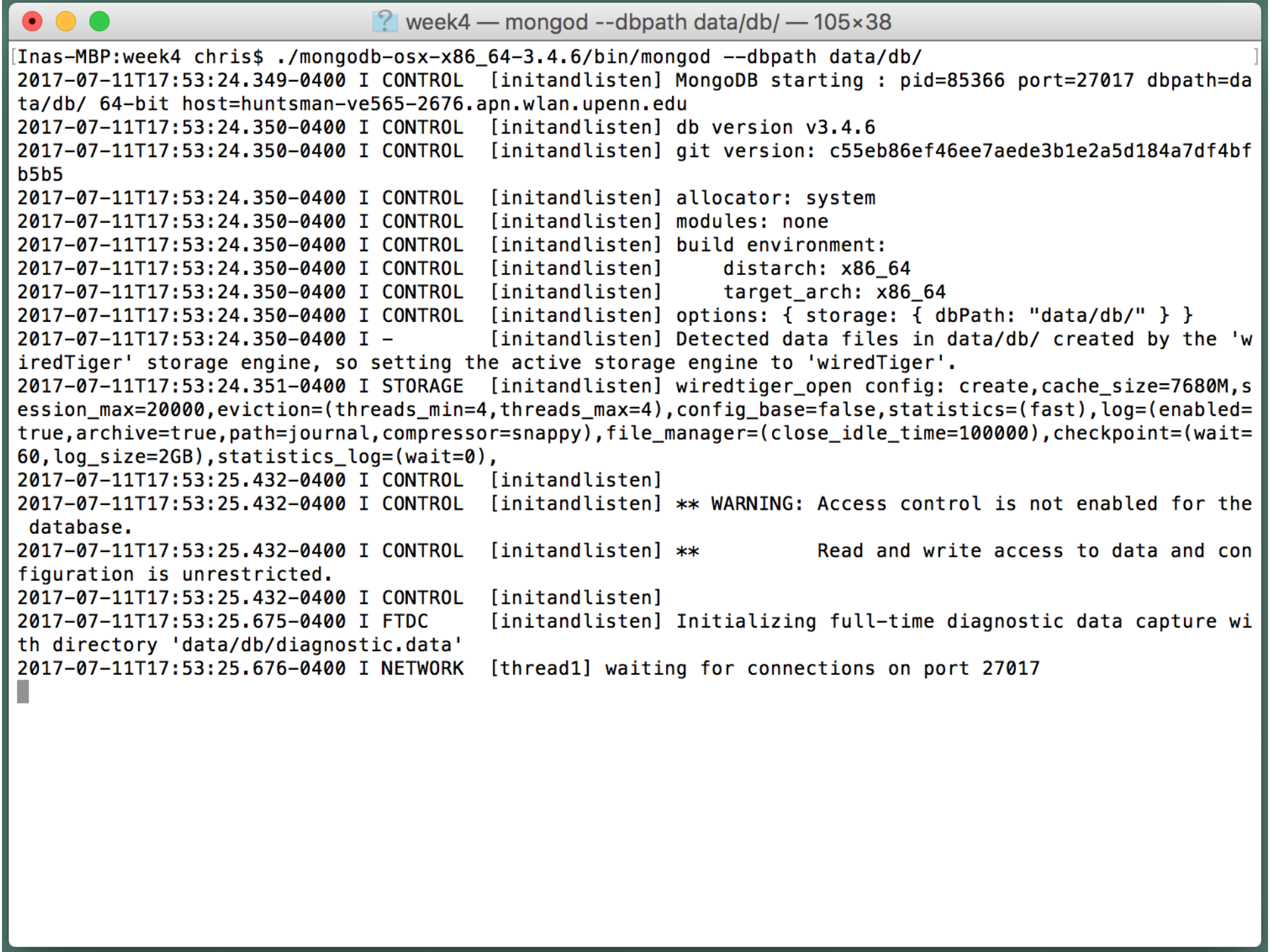
- Follow these instructions to create a new empty database and run the MongoDB server
- When you start it, it will tell you which port it is using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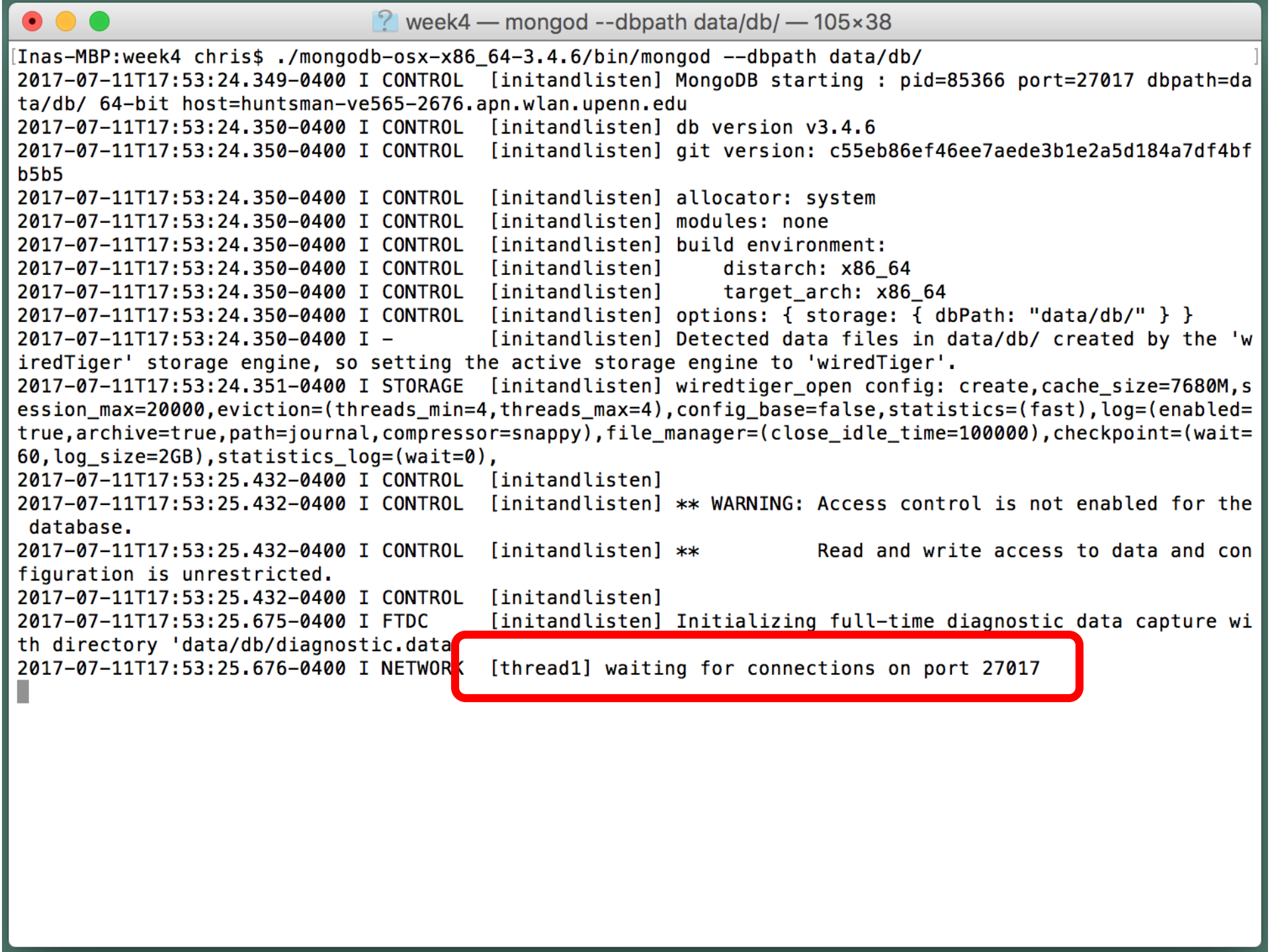
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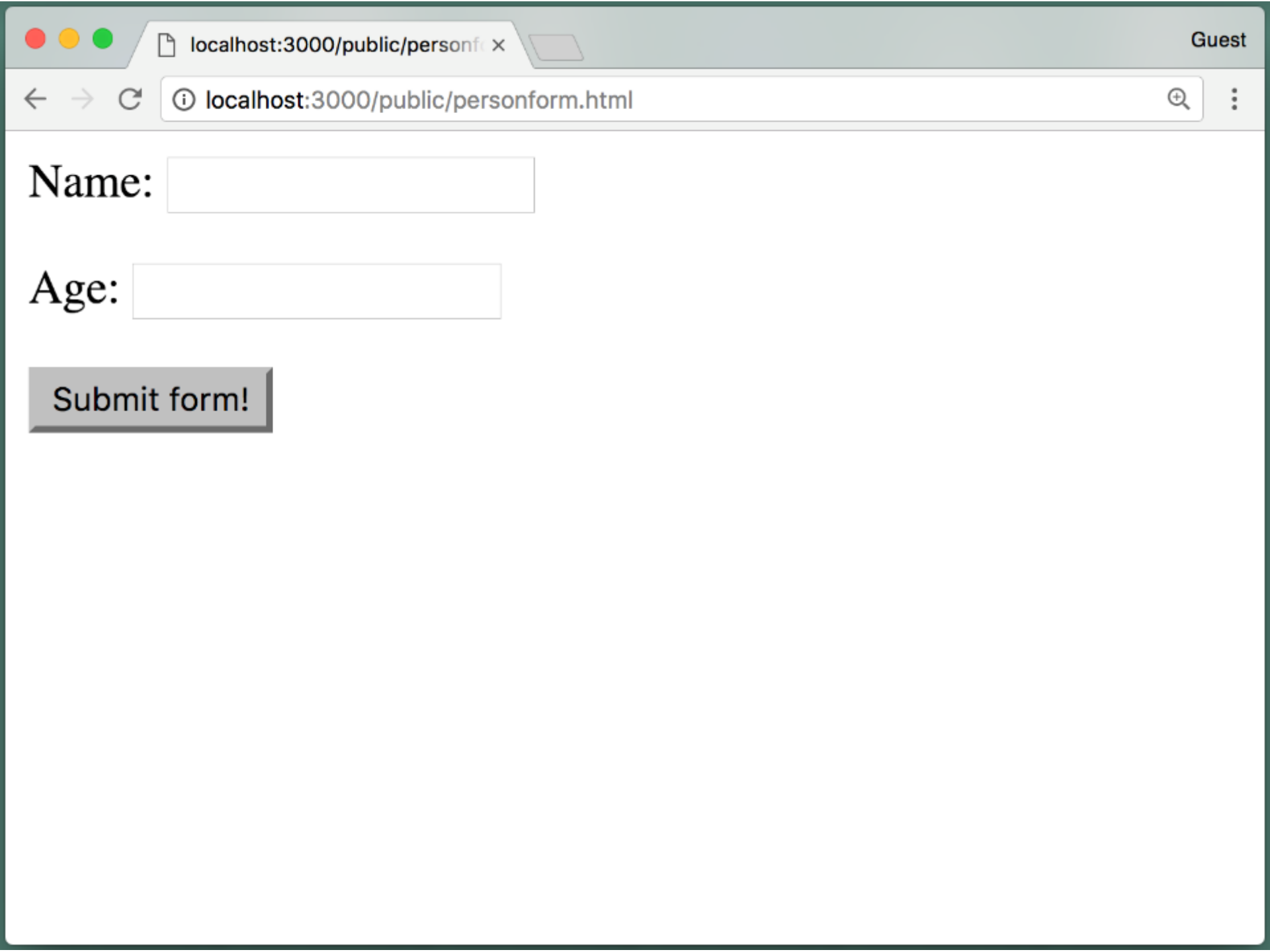
- Alternatively, you may use an online service, e.g. MongoDB Atlas

Installing Drivers for MongoDB

- You can access MongoDB directly from your Node app using the **MongoClient**

- Alternatively, you can install helper packages such as **Mongoose** to simplify some tasks:

```
npm install mongoose --save
```


localhost:3000/public/personf
Guest
localhost:3000/public/personform.html
Name:
Age:
Submit form!

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<html>
<body>

<form action='/create' method='post'>

Name: <input name='name'>
<p>

Age: <input name='age'>
<p>

<input type=submit value='Submit form!'>

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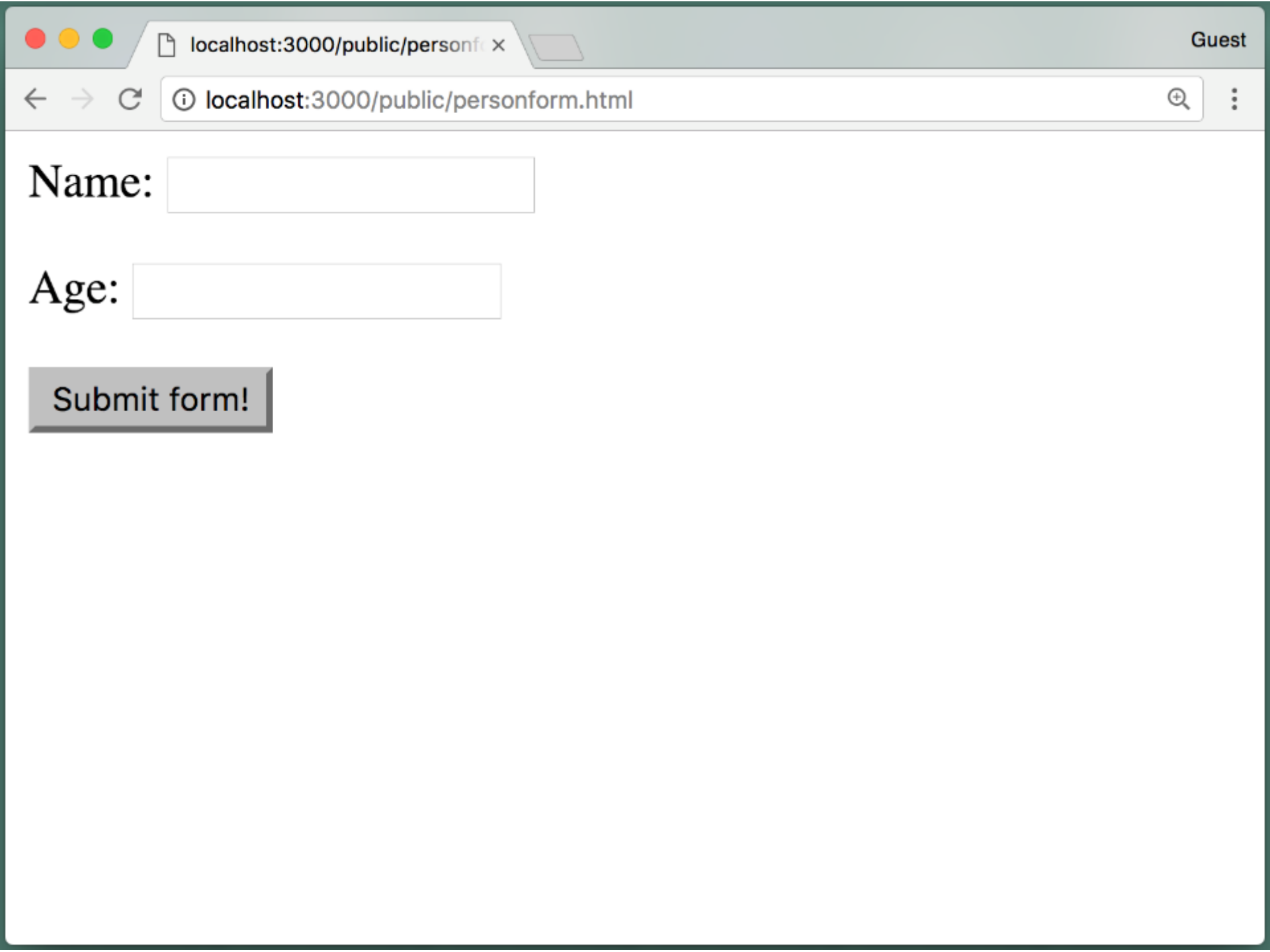
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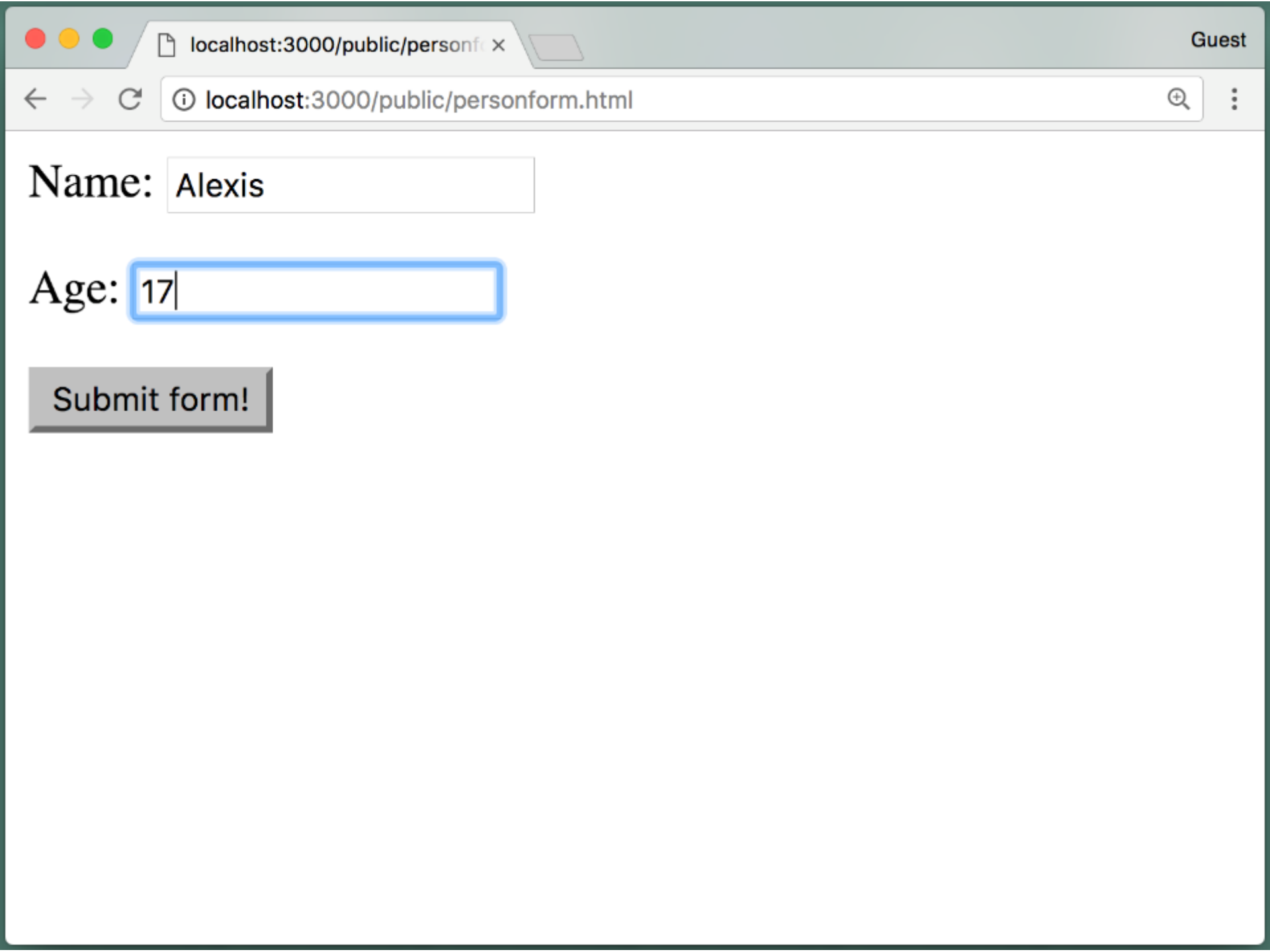
localhost:3000/public/personf
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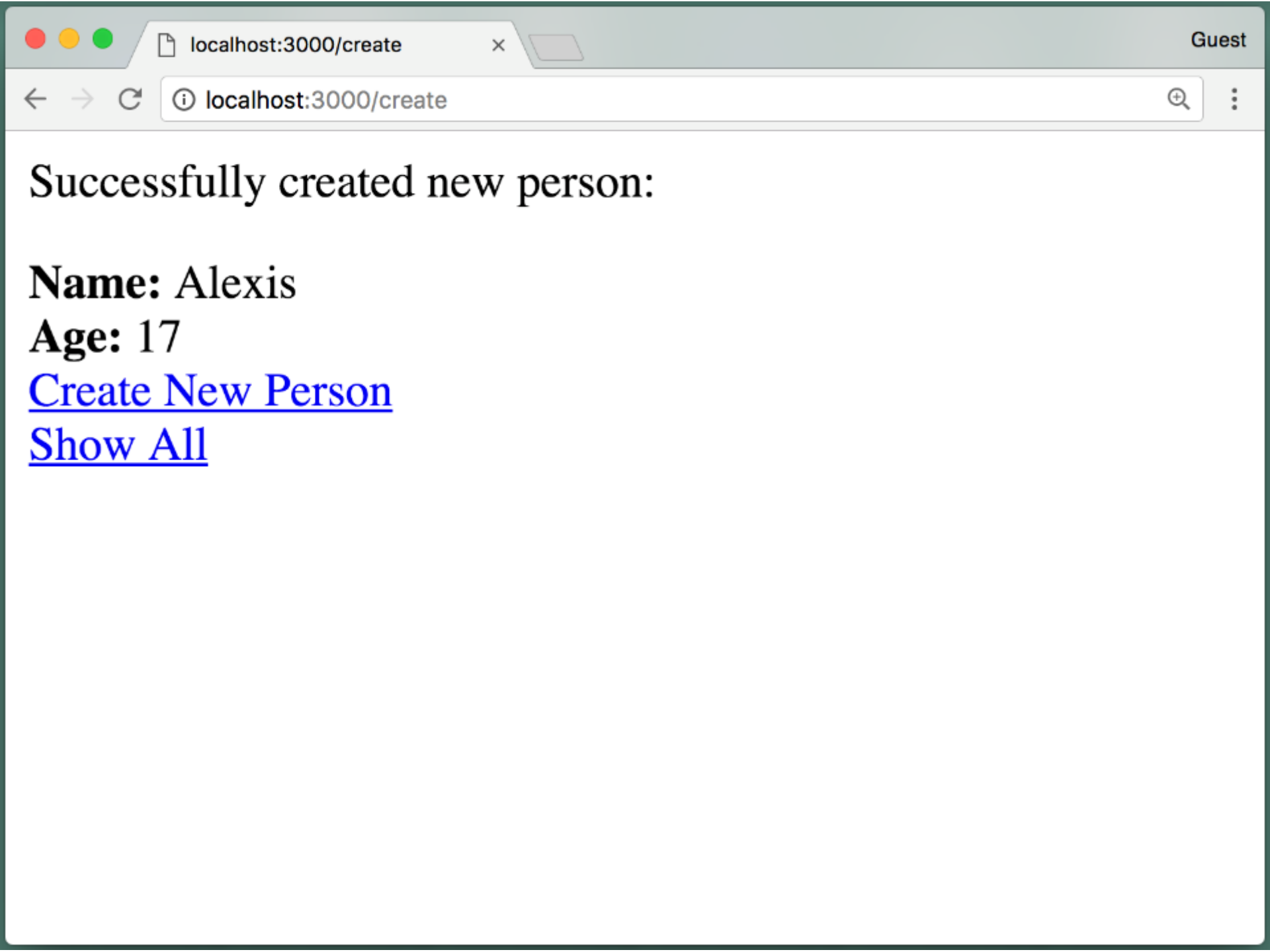
Name:
Alexis
Age:
17
Submit form!



Successfully created new person:

Name: Alexis
Age: 17
Create New Person
Show All

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/* This is Person.js */

var mongoose = require('mongoose');

// note: your host/port number may be different!
mongoose.connect('mongodb://localhost:27017/myDatabase');

var Schema = mongoose.Schema;

var personSchema = new Schema( {
      name: {type: String, required: true, unique: true},
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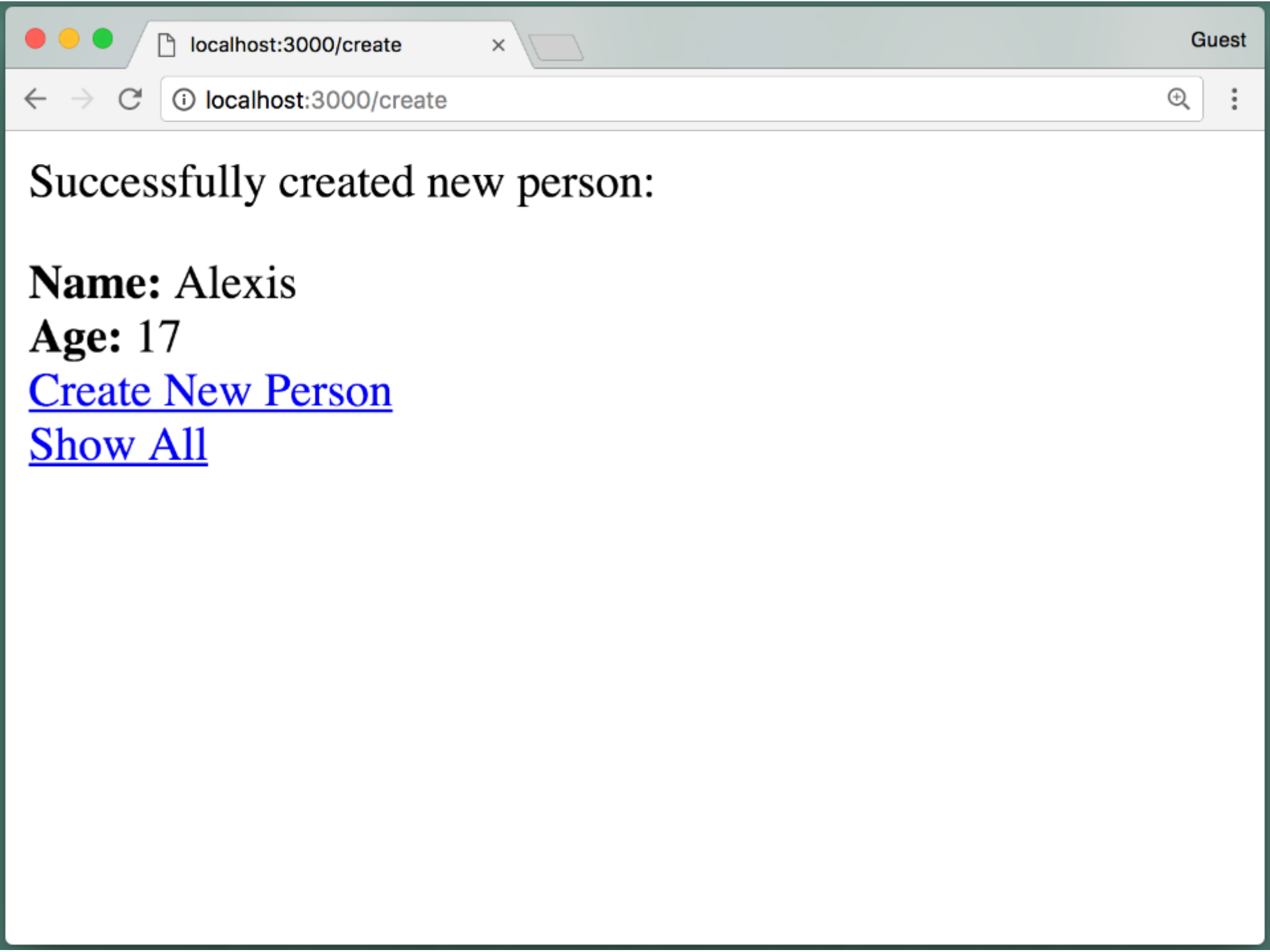

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var app = express();

app.set('view engine', 'ejs');

var bodyParser = require('body-parser');
app.use(bodyParser.urlencoded({ extended: true }));

var Person = require('./Person.js');

. . .

// this is at the bottom

app.use('/public', express.static('public'));

app.use('/', (req, res) =>
   { res.redirect('/public/personform.html'); } );

app.listen(3000,  () =>
   { console.log('Listening on port 3000'); } );
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/* This is index.js */

var express = require('express');
var app = express();

app.set('view engine', 'ejs');

var bodyParser = require('body-parser');
app.use(bodyParser.urlencoded({ extended: true }));

var Person = require('./Person.js');

. . .

// this is at the bottom

app.use('/public', express.static('public'));

app.use('/', (req, res) =>
   { res.redirect('/public/personform.html'); } );

app.listen(3000,  () =>
   { console.log('Listening on port 3000'); } );
```

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var app = express();

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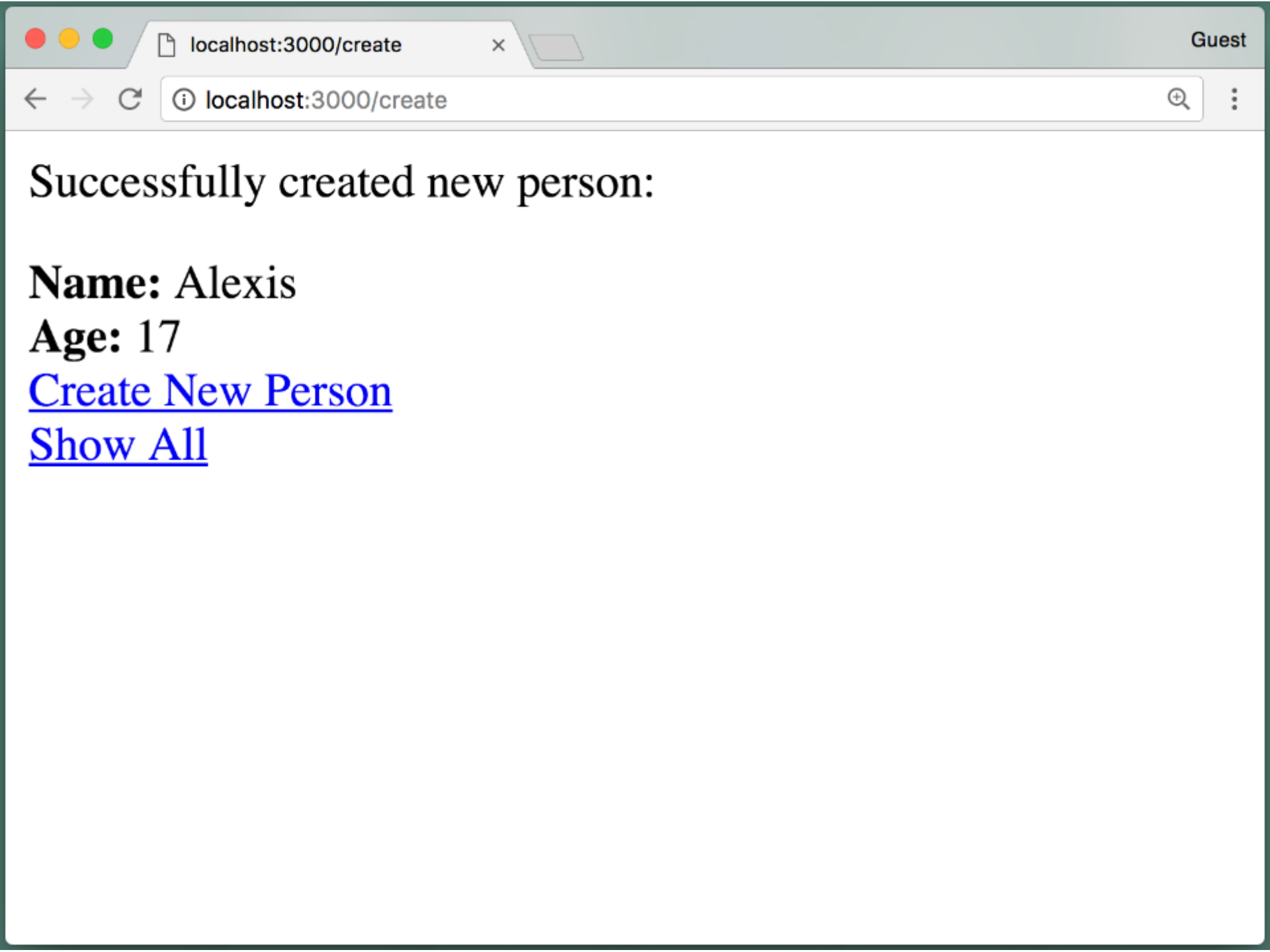
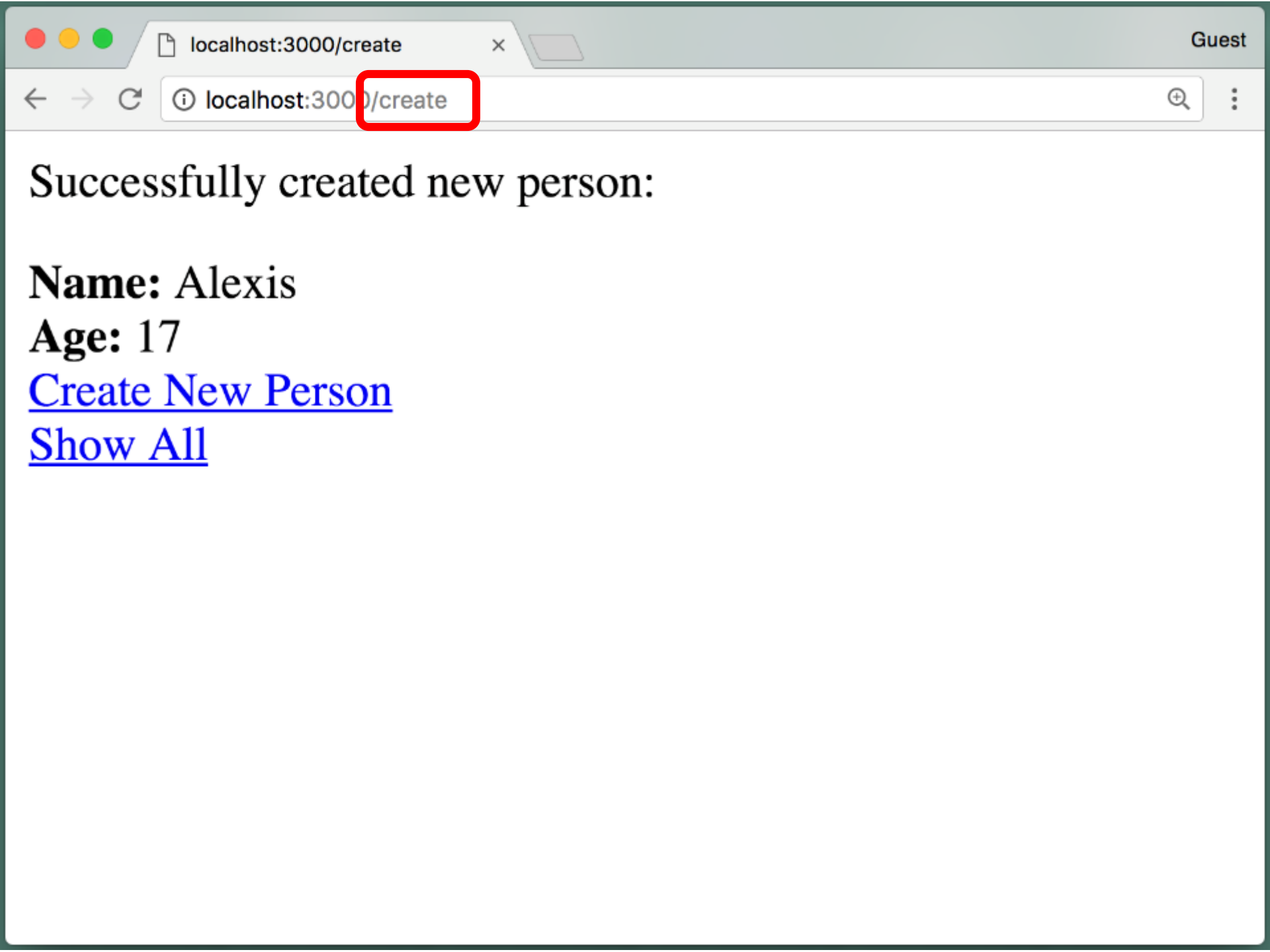


Successfully created new person:

Name: Alexis
Age: 17
Create New Person
Show All


localhost:3000/create
Guest
localhost:3000/create
Successfully created new person:
Name: Alexis
Age: 17
Create New Person
Show All

```
app.use('/create', (req, res) => {

   var newPerson = new Person ({ // defined in Person.js
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      age: req.body.age,
   });

   newPerson.save( (err) => {
      if (err) {
         res.type('html').status(500);
         res.send('Error: ' + err);
      }
      else {
         res.render('created', { person: newPerson });
      }
   });
});
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         res.render('created', { person: newPerson });
      }
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});
```

```
<html>
<body>

<form action='/create' method='post'>

Name: <input name='name'>
<p>

Age: <input name='age'>
<p>

<input type=submit value='Submit form!'>

</form>

</body>
</html>
```

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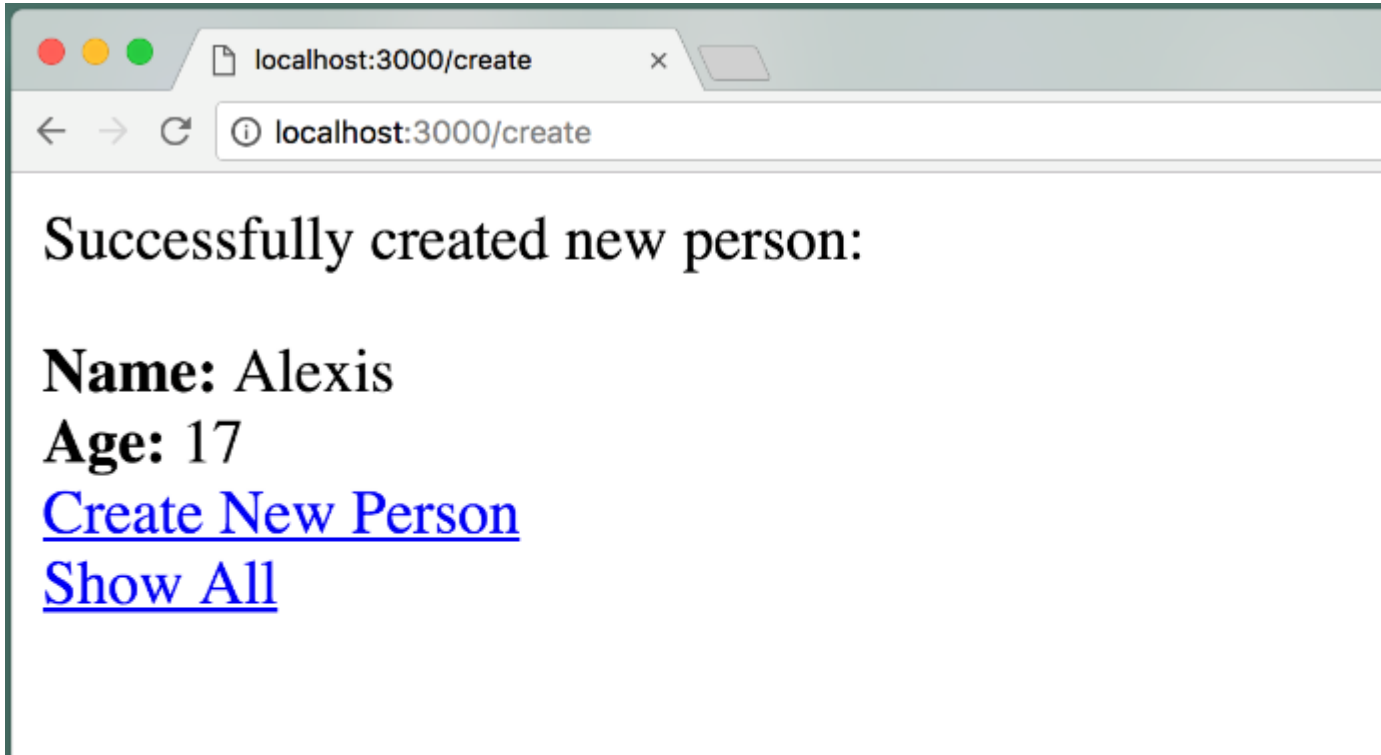
```
<!-- This is views/created.ejs -->

Successfully created new person:
<p>
<b>Name:</b> <%= person.name %>
<br>
<b>Age:</b> <%= person.age %>
<br><a href='/public/personform.html'>Create New Person</a>
<br><a href='/all'>Show All</a>
```



Penn Engineering

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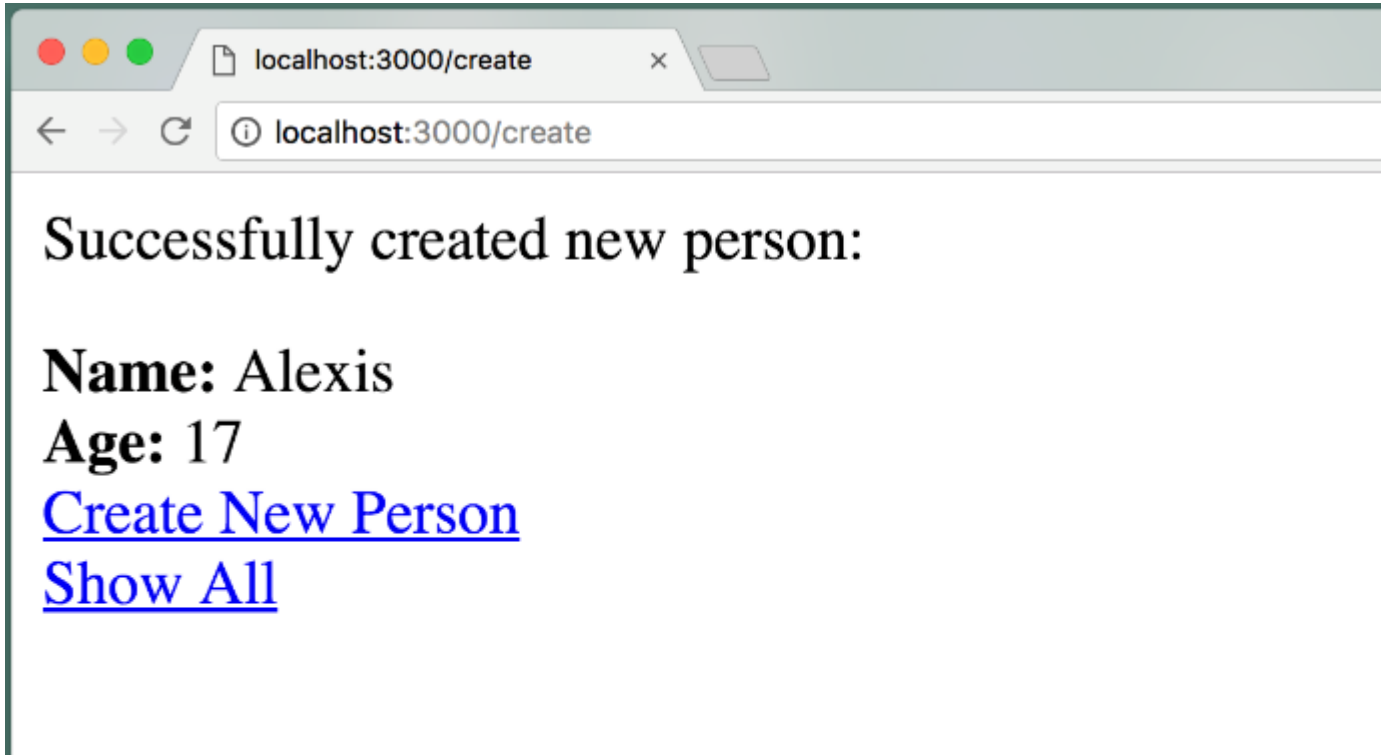

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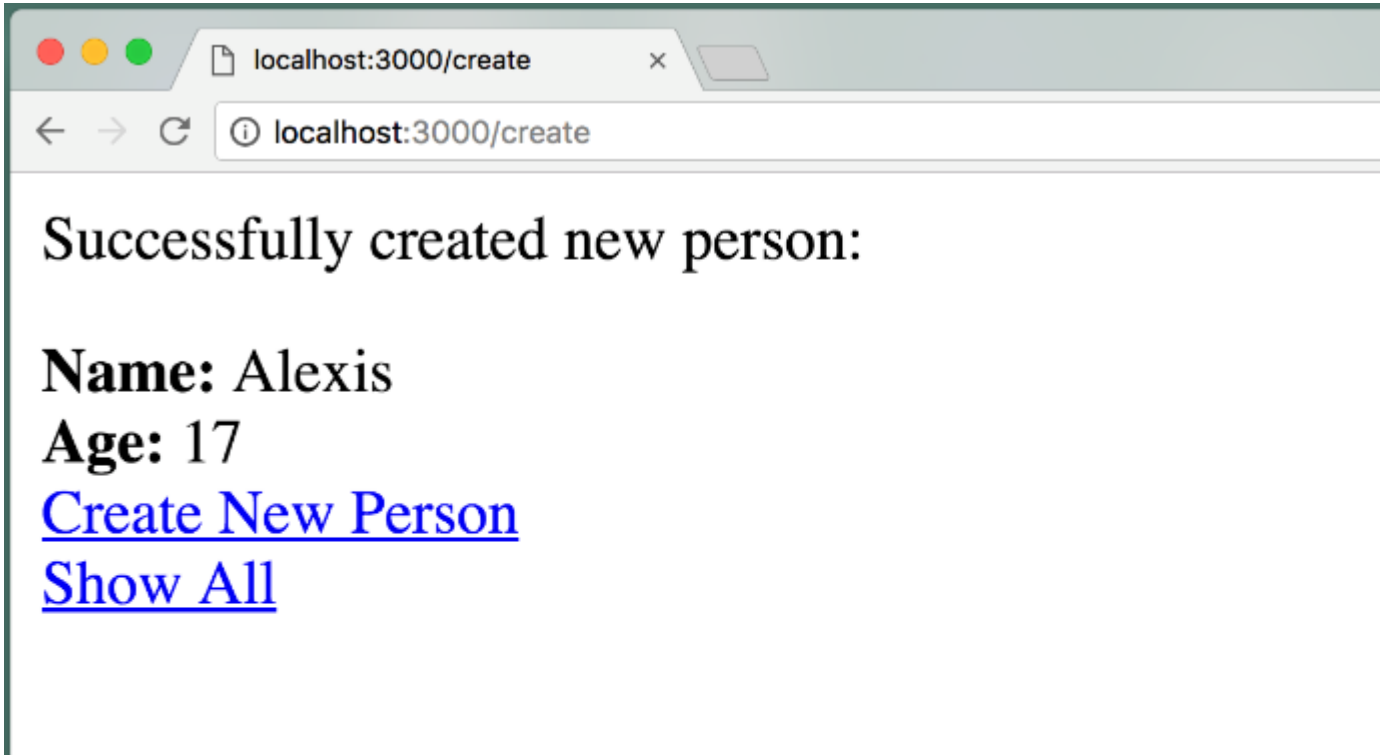

Penn Engineering

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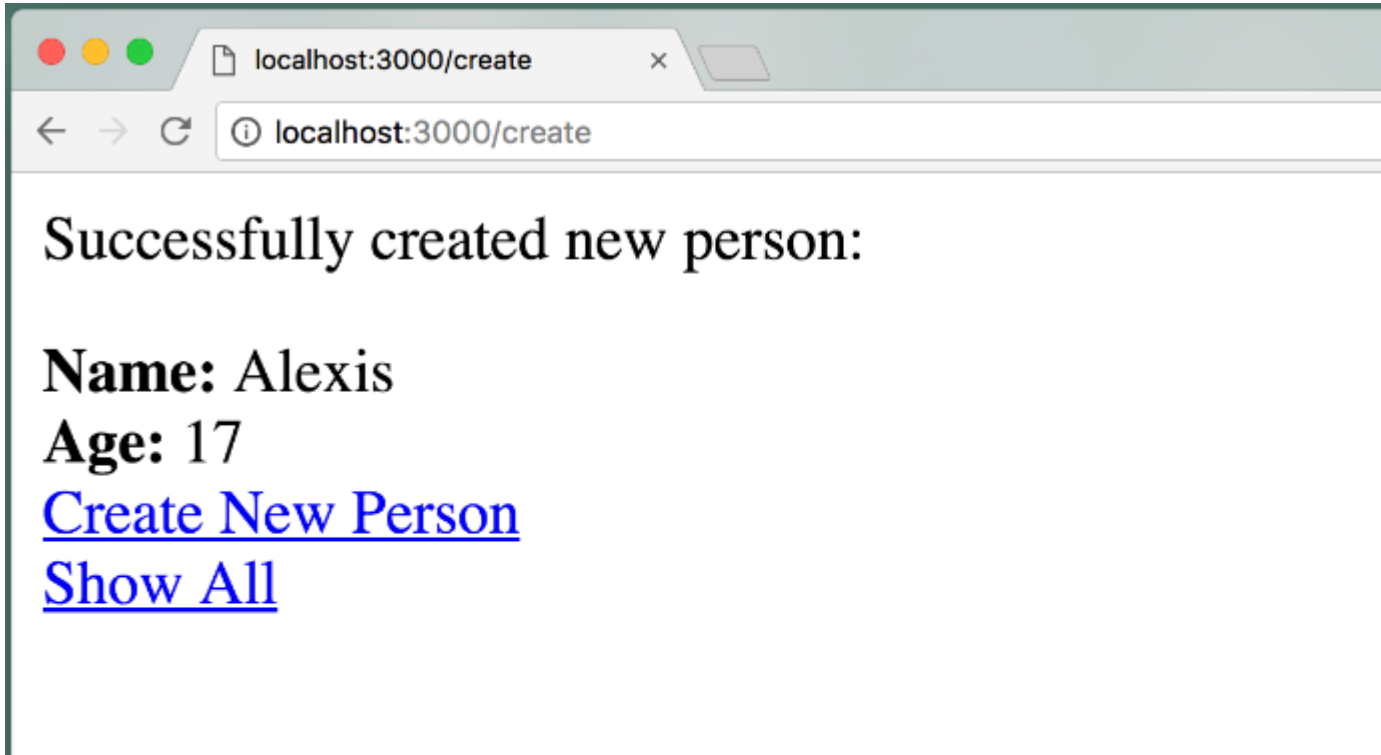

Penn Engineering

week4 — mongo — 105×38

```
Inas-MBP:week4 chris$ ./mongodb-osx-x86_64-3.4.6/bin/mongo
MongoDB shell version v3.4.6
connecting to: mongodb://127.0.0.1:27017
2017-07-11T18:18:06.603-0400 I NETWORK  [thread1] connection accepted from 127.0.0.1:64042 #3 (2 connecti
ons now open)
2017-07-11T18:18:06.603-0400 I NETWORK  [conn3] received client metadata from 127.0.0.1:64042 conn3: { ap
plication: { name: "MongoDB Shell" }, driver: { name: "MongoDB Internal Client", version: "3.4.6" }, os:
{ type: "Darwin", name: "Mac OS X", architecture: "x86_64", version: "15.5.0" } }
MongoDB server version: 3.4.6
Server has startup warnings:
2017-07-11T17:53:25.432-0400 I CONTROL  [initandlisten]
2017-07-11T17:53:25.432-0400 I CONTROL  [initandlisten] ** WARNING: Access control is not enabled for the
 database.
2017-07-11T17:53:25.432-0400 I CONTROL  [initandlisten] **          Read and write access to data and con
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2017-07-11T17:53:25.432-0400 I CONTROL  [initandlisten]
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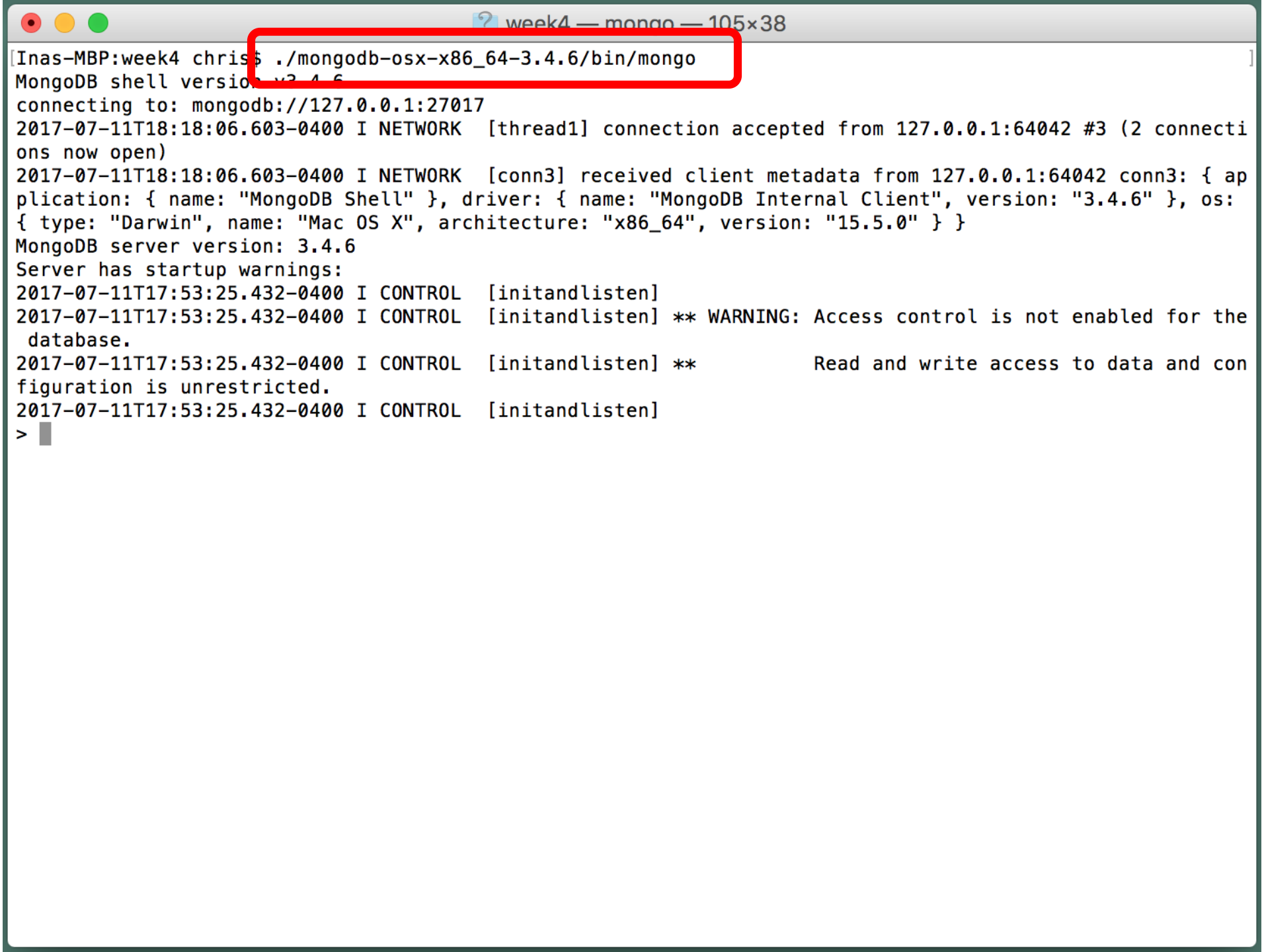
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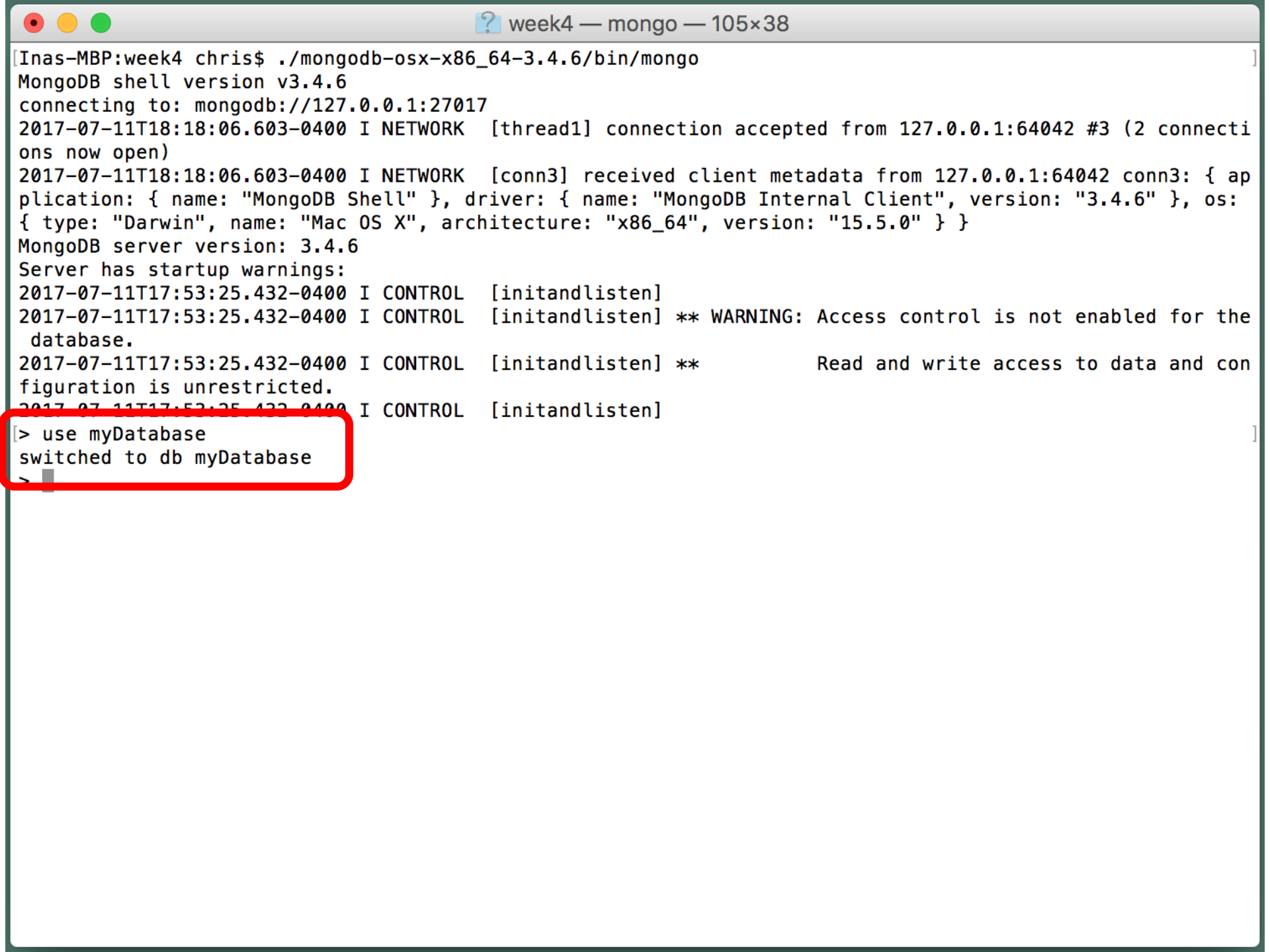
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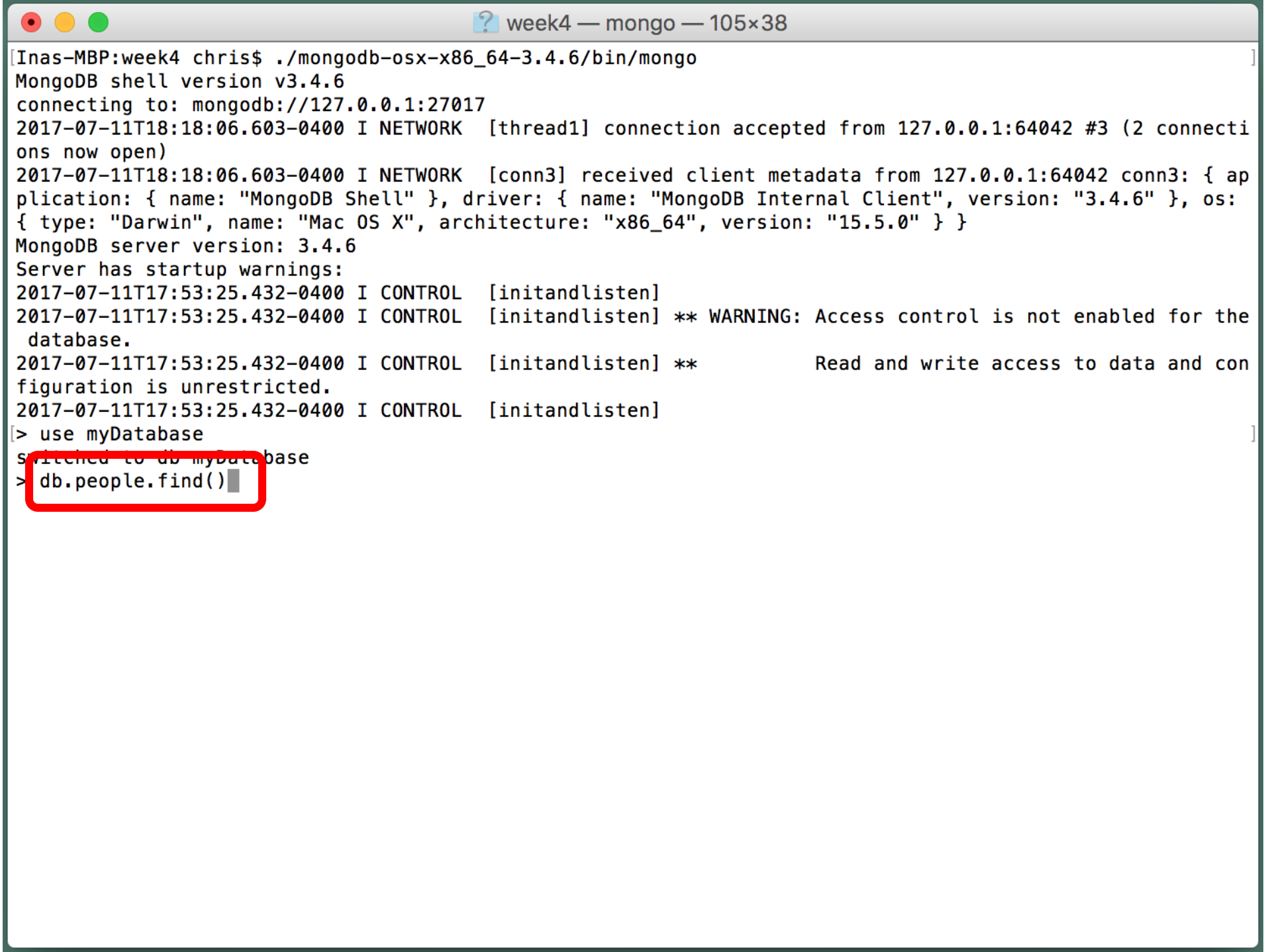
> use myDatabase
switched to db myDatabase
>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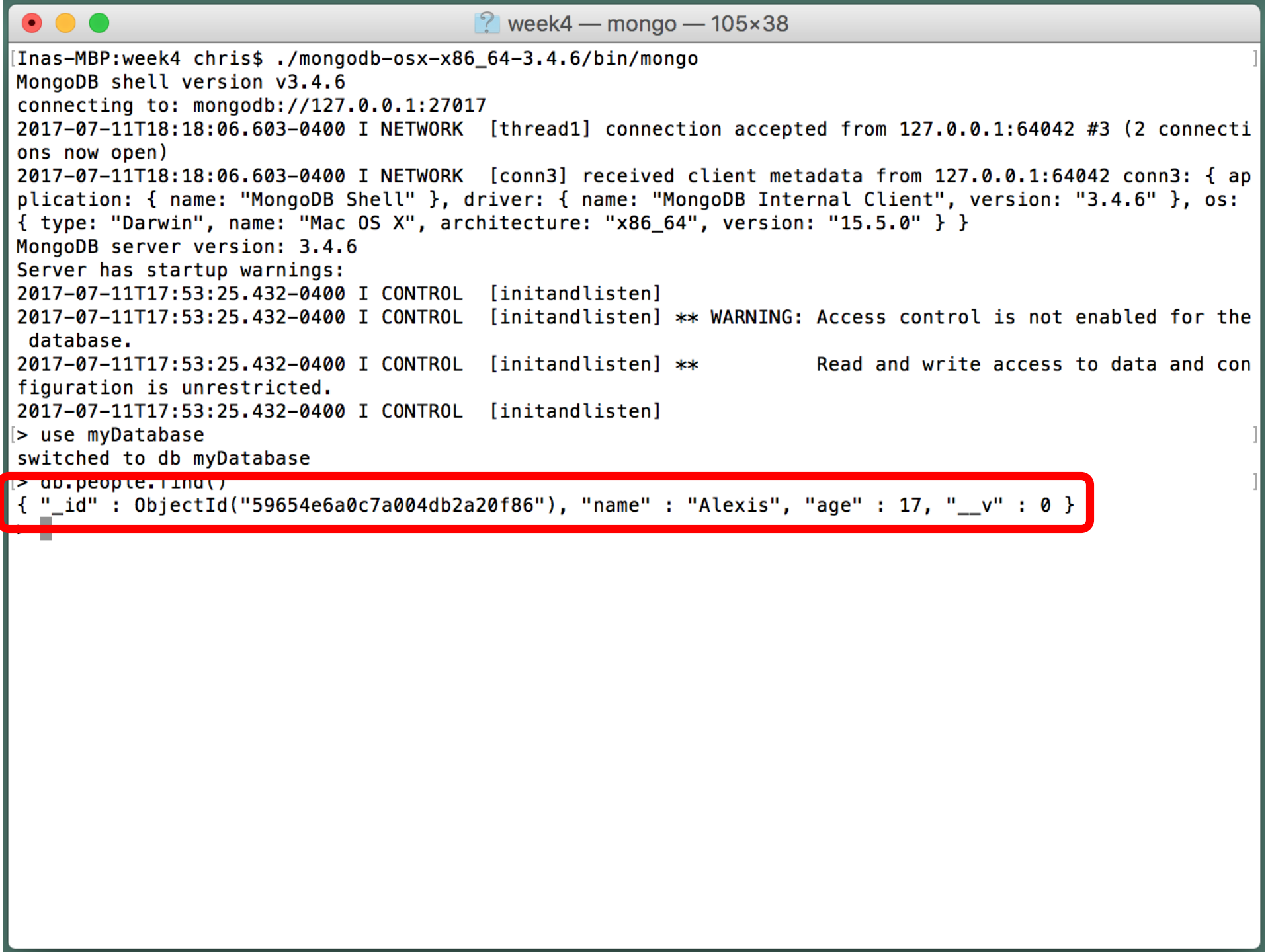
> use myDatabase
switched to db myDatabase
> db.people.find()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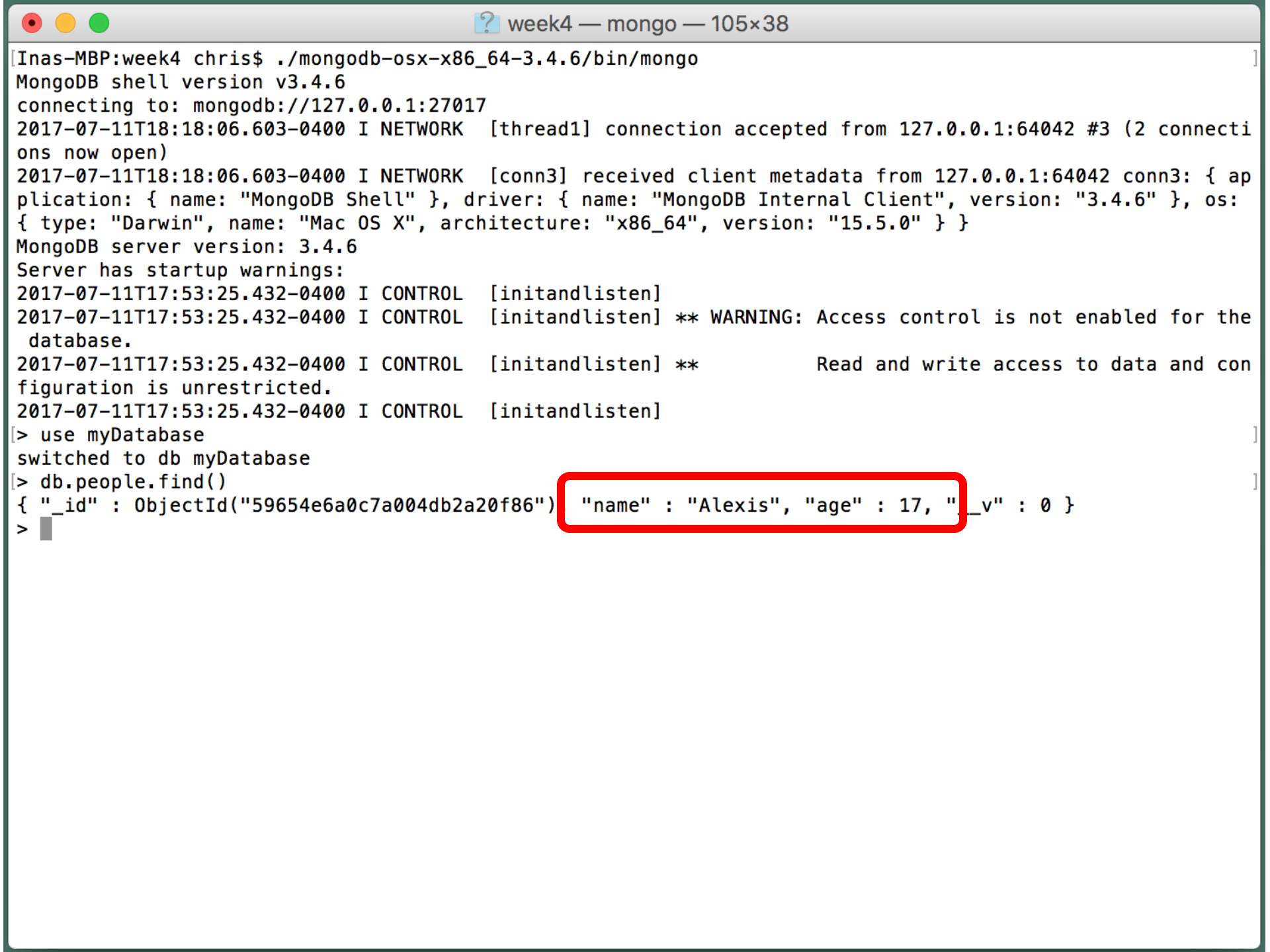
2017-07-11T17:53:25.432-0400 I CONTROL [initandlisten]
> use myDatabase
switched to db myDatabase
> db.people.find()
{ "_id" : ObjectId("59654e6a0c7a004db2a20f86"), "name" : "Alexis", "age" : 17, "__v" : 0 }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Summary

- **MongoDB** is a NoSQL Database that is designed for use with JavaScript apps
- MongoDB stores **collections** of **documents**
- We can access MongoDB from our Node/Express app using libraries such as Mongoose
- We define a **Schema** and then can create new documents using the **`save`** function