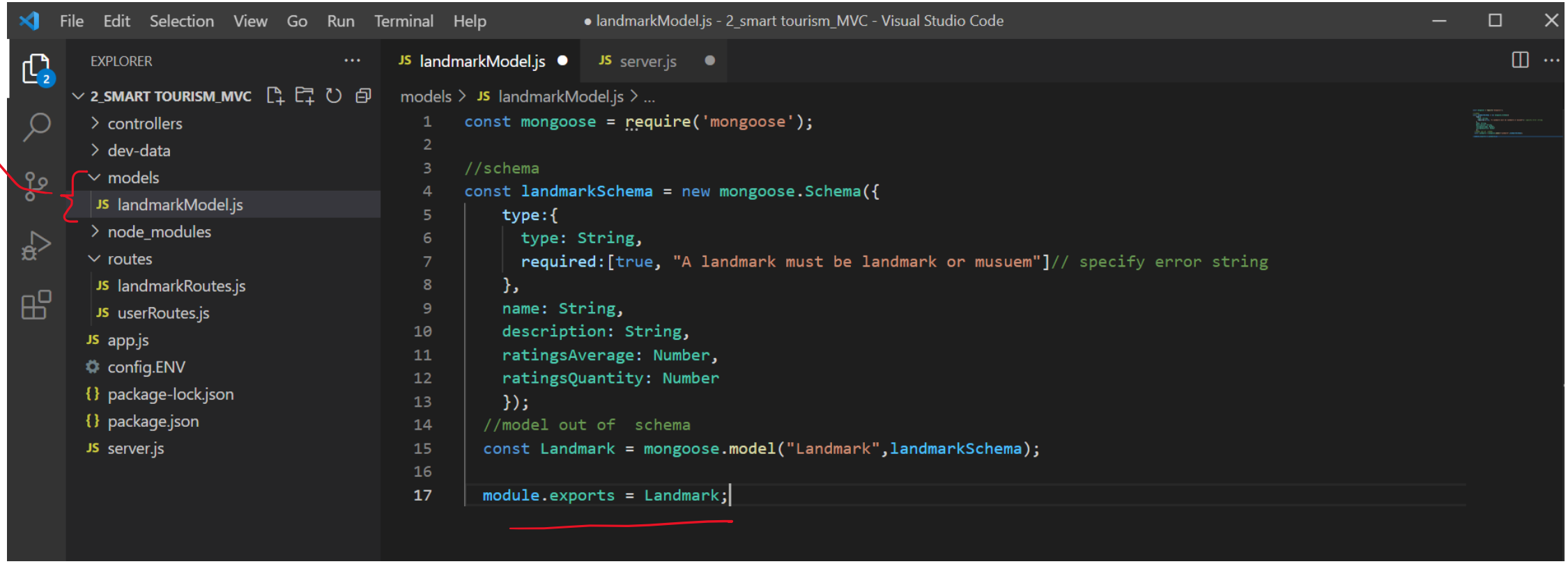
MVC

αποθηκεύουμε τα models για ∀ resource



landmarkModel.js

```
models > landmarkModel.js > <unknown>
1  const mongoose = require('mongoose');
2
3  //schema
4  const landmarkSchema = new mongoose.Schema({
5      type:{
6        type: String,
7        required:[true, "A landmark must be landmark or musuem"]// specify error string
8      },
9      name: String,
10     description: String,
11     ratingsAverage: Number,
12     ratingsQuantity: Number
13     });
14   //model out of  schema
15   var Landmark = mongoose.model("Landmark",landmarkSchema);
16
17   module.exports = Landmark; //export model
```

import model

landmarkController.js

```
controllers > landmarkController.js > getLandmarkById > getLandmarkById
1  const fs = require('fs');
2  const Landmark = require('./../models/landmarkModel');
3
4  //landmarks routehandler
5  //we want to export ALL functions from this module
6  //we are going to put all these functions to the export object
7  exports.getAllLandmarks = (req,res)=>{
8
9      res.status(200).json({
10         status:"success"
11     });
12 }
13
14
15 exports.getLandmarkById = (req,res)=>{
16
17     //req.params stores all parameters that we define in the url
18     console.log(req.params)
19
20     //remember in js when we multiply a string that looks like a number
21     //with a number -> js converts string to number
22     var id = req.params.id*1;
23     res.status(200).json({
24         status:"success",
25         data: {
26             landmark
27         }
28     });
29
30 }
```

import exported functions (route handlers)

app.js

```
1  //import express
2  const express= require('express');
3
4  const landmarkRouter= require('./routes/landmarkRoutes')
5  const userRouter= require('./routes/userRoutes')
6
7  // create app variable -> assigned result of calling express function
8  const app= express();
9
10 //MIDDLEWARES
11 app.use(express.json());
12
13 //here we specify the route(URL) for which we wish to use our middleware(landmarkRouter)
14 app.use('/api/v1/landmarks',landmarkRouter);
15 app.use('/api/v1/users',userRouter);
16
17 //export app to use it in the server.js file
18 module.exports = app;
```

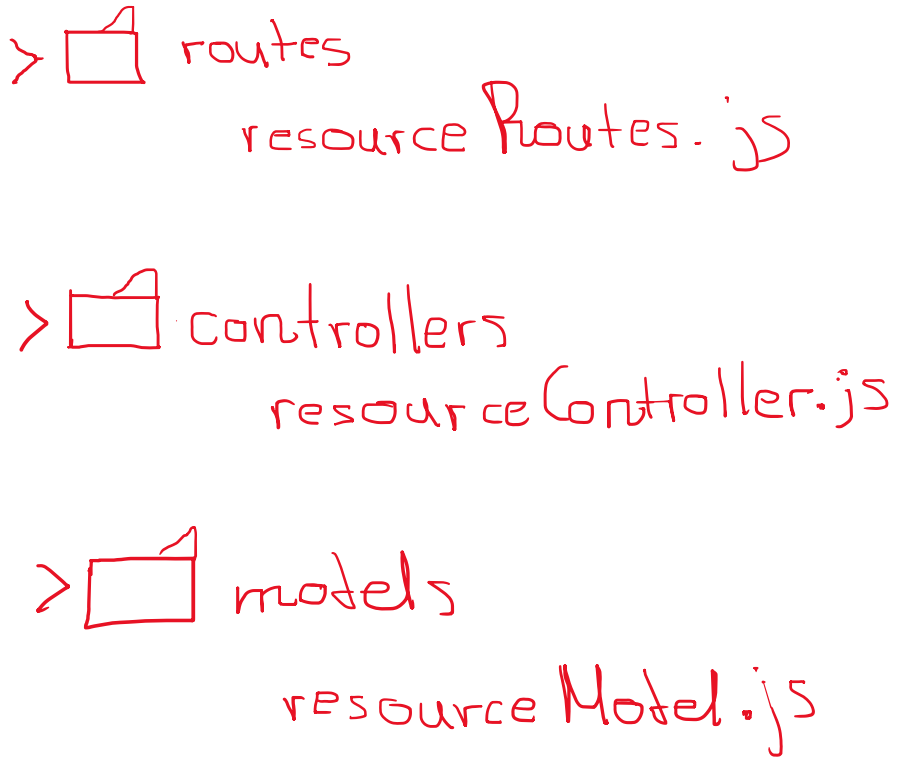
import routers

landmarkRoutes.js

```
1  //import express
2  const express= require('express');
3  //import landmarkController module
4  const landmarkController=require(`${__dirname}/../controllers/landmarkController`);
5  //lets create a new router-> it is a middleware
6  const routes = express.Router();
7
8  //landmark Routes
9  routes.route('/')
10 .get(landmarkController.getAllLandmarks)
11 .post(landmarkController.addLandmark)
12
13 routes.route('/:id')
14 .get(landmarkController.getLandmarkById)
15 .patch(landmarkController.updateLandmarkById)
16 .delete(landmarkController.deleteLandmarkById)
```

Μέχρι τώρα...

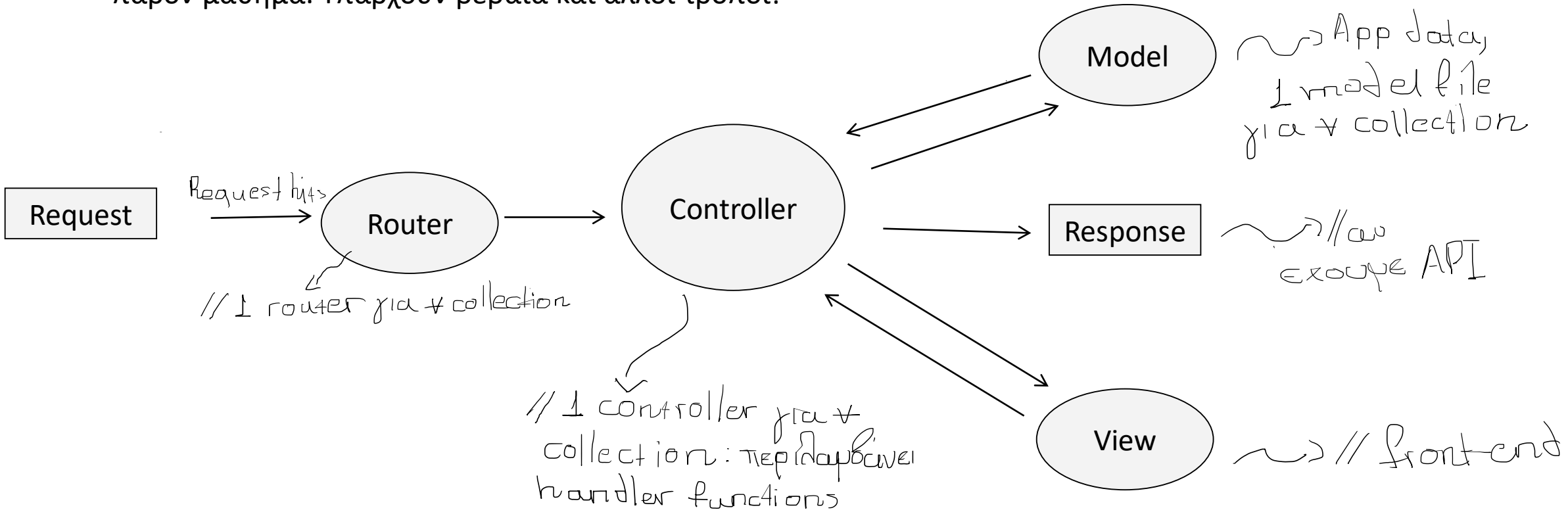
- Άρα για κάθε resource έχουμε:



Request —> Response Cycle

MVC

Παρακάτω έχουμε έναν τρόπο υλοποίησης της αρχιτεκτονικής **mvc** που αξιοποιείται στα project στο παρόν μάθημα. Υπάρχουν βέβαια και άλλοι τρόποι!



Mongoose crud

Εισαγωγή

- Αφού είδαμε την αρχιτεκτονική MVC, και πως μπορεί να διαμορφωθεί μια εφαρμογή με βάση την εν λόγω αρχιτεκτονική, θα δούμε τώρα πως μπορούμε να εφαρμόσουμε τις λεγόμενες CRUD λειτουργίες με το mongoose

- Create
- Read
- Update
- Delete

Create

Create

- Στο προηγούμενο παράδειγμα, είχαμε δει τον παρακάτω τρόπο για να δημιουργούμε έγγραφα στη βάση

```
//lets create a new document out of the model
const testLandmark= new Landmark({
 type: "landmark",
 name: "Acropolis",
 description: "The Acropolis is ….",
 ratingsAverage: 4.9,
 ratingsQuantity: 97
});

//save it to Landmarks collection and we have also access to it
testLandmark.save().catch(err=>{
 console.log("ERROR: "+ err);
});
```

1ο-> δημιουργούμε νέο έγγραφο
2ο -> χρησιμοποιούμε τη μέθοδο save για να το σώσουμε

Άρα καλούμε τη μέθοδο στο έγγραφο…

Το έγγραφο έχει πρόσβαση στη μέθοδο αυτή όπως και σε πολλές άλλες

Create

- Τώρα θα δημιουργήσουμε ένα έγγραφο κατευθείαν χρησιμοποιώντας το μοντέλο
- Επιπλέον, θα χρησιμοποιήσουμε την συνάρτηση async
- Μια async συνάρτηση δηλώνεται με τις λέξεις κλειδιά async/await

Create

- Με το async/await επιτυγχάνουμε ασύγχρονη συμπεριφορά βασισμένη σε «promises»

“The async and await keywords enable asynchronous, promise-based behavior to be written in a cleaner style, avoiding the need to explicitly configure promise chains.”

Source:
https://developer.mozilla.org/enUS/docs/Web/JavaScript/Reference/Statements/async_function

async/await

Οπότε **δηλώνουμε μια συνάρτηση ως async** και με τη λέξη-κλειδί **await αναβάλλουμε** την εκτέλεση του κώδικα.

Προσέξτε ότι μέσα σε μια async συνάρτηση μπορούμε να έχουμε ένα ή περισσότερα await

Αντί για then έχουμε async… κάνουμε έτσι τον κώδικα πιο όμορφο

Async functions:

- are accessible natively in Node: **async keyword** for declaration
- they always return a promise

await keyword is currently restricted to async functions (cannot be used in the global scope)

Create

- Μπορούμε να χρησιμοποιήσουμε το **μοντέλο** απευθείας με την **μέθοδο create**
- Τα μοντέλα Mongoose έχουν μια συνάρτηση create() που χρησιμοποιείται για τη δημιουργία νέων εγγράφων.
- Στη μέθοδο περνάμε τα δεδομένα που θέλουμε να αποθηκεύσουμε :post body (αποθηκεύεται στο req.body)
- Αποθηκεύουμε το νέο έγγραφο στη μεταβλητή newLandmark
- Queries are *thenables* but they are not promises, for more check https://mongoosejs.com/docs/promises.html

Create

- Try/catch syntax: έχει πρόσβαση στο err object
- Από τη μέθοδο create δημιουργείται ένα νέο έγγραφο στη βάση
- Αν κάτι πάει στραβά -> θα τρέξει το catch block
- Στο catch block στέλνουμε πίσω ένα response ότι υπήρξε σφάλμα.
- res.status : 400 -> σημαίνει bad request

POST http://localhost:8080/api/v1/landmarks Send

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```
{
    "type": "landmark",
    "name": "Temple of Olympian Zeus",
    "description": "Behind Hadrian's Arch, stands the captivating temple of Olympian Zeus. The building procces started in the 6th century by Peisistratos and was finally finished 100 years later in 131 AD by Emperor Hadrian. Originally it consisted of 104 Corinthian columns of which only 15 remain standing today. Inside the temple, Hadrian built an enormous gold and ivory statue of Zeus and an equal one of himself. To this day we do not know when the temple was destroyed but like many other large buildings in Greece, it is possible that it was brought down by an earthquake during the mediaeval period and the ruins sold for other building materials.",
    "ratingsAverage": 4.4,
    "ratingsQuantity": 27
}
```

ARISTEA'S ORG - 2021-09-27 > LANDMARKS-APP > DATABASES

Cluster0

VERSION 4.4.9 REGION AWS N. Virginia (us-east-1)

Overview Real Time Metrics Collections Search Profiler Performance Advisor Online Archive

DATABASES: 1 COLLECTIONS: 1 VISUALIZE YOUR DATA REFRESH

+ Create Database

NAMESPACES

landmarks-app

landmarks

landmarks-app.landmarks

COLLECTION SIZE: 2.02KB TOTAL DOCUMENTS: 3 INDEXES TOTAL SIZE: 36KB

Find Indexes Schema Anti-Patterns 0 Aggregation Search Indexes

INSERT DOCUMENT

FILTER { field: 'value' } OPTIONS Apply Reset

QUERY RESULTS 1-3 OF 3

```
_id: ObjectId("6154669aaea2870f5844c820")
type: "landmark"
name: "Acropolis"
description: "The Acropolis is the strongest and most important monument of Ancient ..."
ratingsAverage: 4.9
ratingsQuantity: 97
__v: 0
```

```
_id: ObjectId("615ed49ef544292fd8d20ba1")
type: "landmark"
name: "Hadrian's Arch"
description: "Before starting the climb to get the Parthenon, it is impossible to mi..."
ratingsAverage: 4.2
ratingsQuantity: 34
__v: 0
```

```
_id: ObjectId("615ed724f544292fd8d20ba3")
type: "landmark"
name: "Temple of Olympian Zeus"
description: "Behind Hadrian's Arch, stands the captivating temple of Olympian Zeus...."
ratingsAverage: 4.4
ratingsQuantity: 27
__v: 0
```

Read

Model. find

- find all documents
- MyModel.find({});

- // find all documents named aristea and age >= 32
- MyModel.find({ name: aristea', age: { $gte: 32} })

- // find name LIKE aristea and only selecting the "name" and "friends" fields
- MyModel.find({ name: / aristea /i }, 'name friends’);

- https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_Expressions

Read

```
exports.createLandmark = async (req, res) => {···
};

exports.getAllLandmarks = async (req, res) => {
    try {
     // find method returns an array of all  documents and converts them into JavaScript objects
      const landmarks = await Landmark.find();
      console.log(landmarks);
      // SEND RESPONSE
      res.status(200).json({
        status: 'success',
        results: landmarks.length,
        data: {
            landmarks
        }
      });
    } catch (err) {
      res.status(404).json({
        status: 'fail',
        message: err
      });
    }
};
```

Ερώτηση

- Θα μπορούσα να κάνω το παραπάνω με then?

- Select all data
- Landmark.find({})
  - SELECT * FROM landmarks

- get all data from table without _id
- Landmark. find({}, {_id:0})

- Get all data roll and id field
- Landmark.find({}, {roll:1})
  - SELECT id, roll FROM landmarks

- find specified data fields using where clause

Landmark.find({type:req.params.type},{name:1,_id:0});

SELECT name FROM landmarks WHERE type = req.params.type

- find data using greater than condition

Landmark.find({**ratingsAverage:{ $gt: req.params.type}**},{name:1,_id:0});

SELECT name FROM landmarks WHERE ratingsAverage > req.params.type

Check…

- https://www.mongodb.com/docs/manual/reference/method/db.collection.find/#mongodb-method-db.collection.find
- https://www.mongodb.com/docs/manual/reference/operator/query-comparison/
- https://www.mongodb.com/docs/manual/reference/operator/query/gte/

Read by id

```
routes.route('/:id')
.get(landmarkController.getLandmarkById)
```

έχουμε παράμετρο ID στο route μας

Find the landmark with the given `id`

```
const landmarks = await Landmark.findById(req
.params.id);
```

```
const landmarks = await Landmark.findOne({_id:
req.params.id })
```

Ίδια, διαφορετικός τρόπος!

```
const Landmark = require('./../models/landmarkModel');

//landmarks routehandler
exports.createLandmark = async (req, res) => {···
};

exports.getAllLandmarks = async (req, res) => {···
};


exports.getLandmarkById = async (req, res) => {
    try {
      const landmarks = await Landmark.findById(req.params.id);
      // Tour.findOne({ _id: req.params.id })

      res.status(200).json({
        status: 'success',
        data: {
            landmarks
        }
      });
    } catch (err) {
      res.status(404).json({
        status: 'fail',
        message: err
      });
    }
};
```

αποκτάμε πρόσβαση στο id routehandler -> req.params.id.
req.params object-> used to access **Route parameters**

Select one field

- Θα δούμε στη συνέχεια πως γίνεται να επιλέξουμε συγκεκριμένα πεδία από ένα document

Router ->

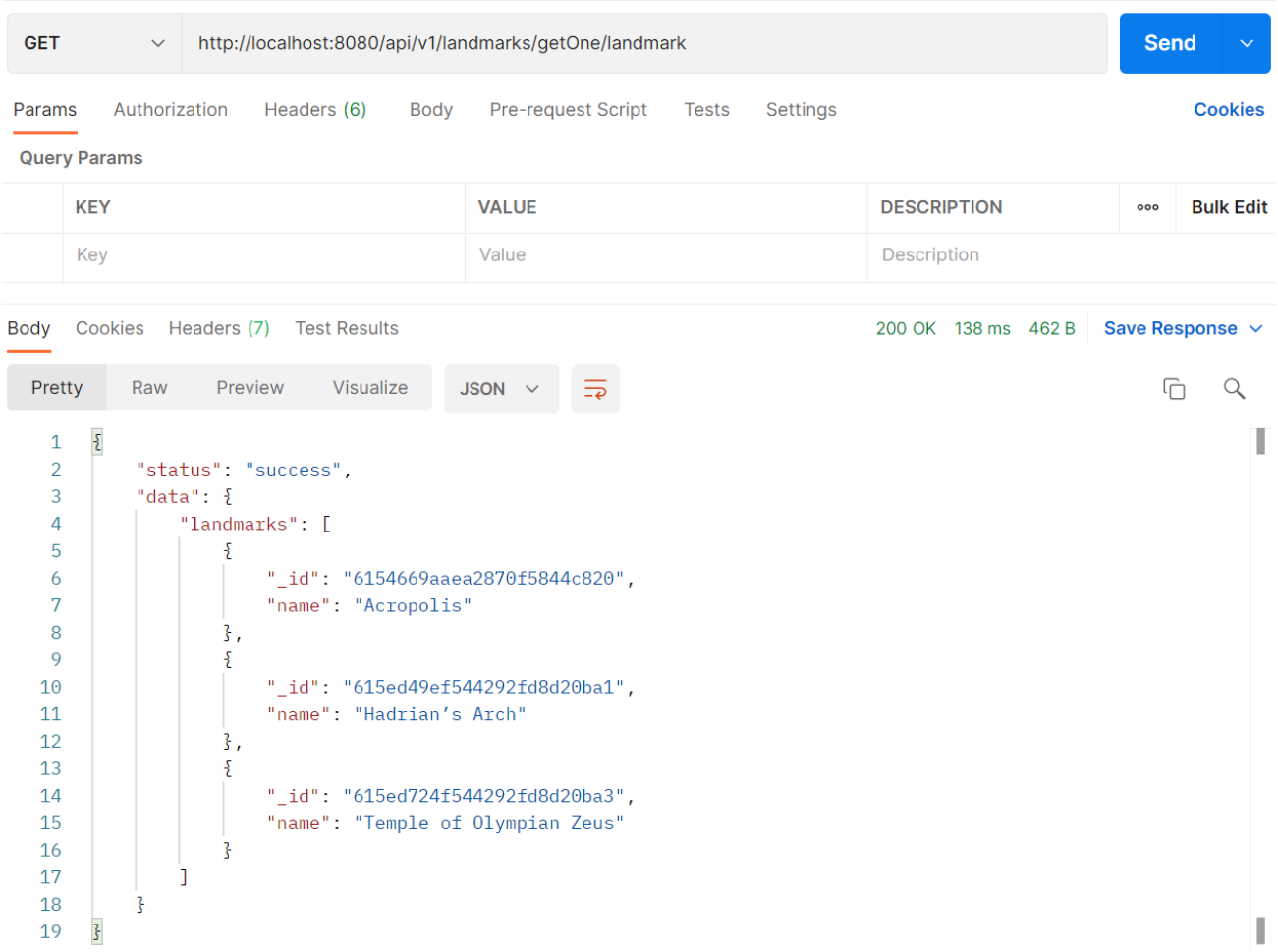
```
routes.route('/getOne/:type')
.get(landmarkController.getLandmarkOneById)
```

```
// routerhandler to get one
exports.getLandmarkOneById = async (req, res) => {
    try {
      const landmarks = await Landmark.find({type:req.params.type},{name:1});
```

τι θα δείξει + id

Select one field

- Θα δούμε στη συνέχεια πως γίνεται να επιλέξουμε συγκεκριμένα πεδία από ένα document



Ερώτηση

- Πως θα κάναμε read by name στο παράδειγμα δλδ?

Ερώτηση

- Πως θα κάναμε read by name?

```
routes.route('/:name')
.get(landmarkController.getLandmarkByName)
```

```
};
exports.getLandmarkByName = async (req, res) => {
    try {
      const landmarks = await Landmark.findOne({name: req.params.name })

      res.status(200).json({
        status: 'success',
        data: {
            landmarks
        }
      });
    } catch (err) {
      res.status(404).json({
        status: 'fail',
        message: err
      });
    }
  };
```

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Update

Update

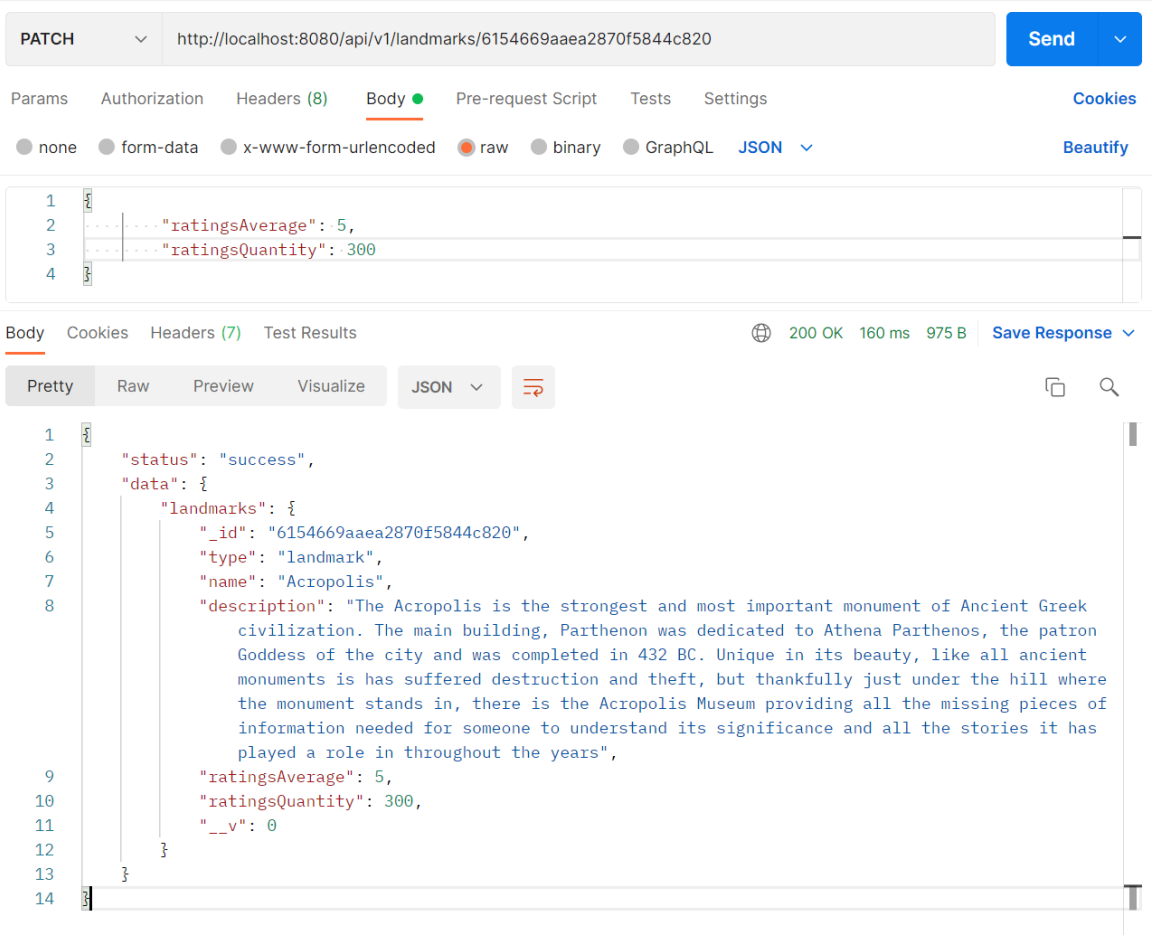
- findByIdAndUpdate() function
  - finds a matching document
  - updates it according to the update arg
  - returns the found document (if any) to the callback.

Update

- **new: *true* ->** *return the document after update was applied.*

- findByIdAndUpdate(id, ...) ⇔ findOneAndUpdate({ _id: id }, ...).
-

Update




```
exports.updateLandmarkById = async (req, res) => {
    try {
      // req.body contains data we want to change
      const landmarks = await Landmark.findByIdAndUpdate(req.params.id, req.body, {
        new: true, // we want this method to  return new updated document to the client
      });

      res.status(200).json({
        status: 'success',
        data: {
            landmarks
        }
      });
    } catch (err) {
      res.status(404).json({
        status: 'fail',
        message: err
      });
    }
```

- PUT ->is used to modify an existing entity
  - it replaces an entity.-> If we don’t include a property that an entity contains, it should be removed

- PATCH -> is used to apply a **partial** modification to a resource.
  - Used to update only the properties we wish

Delete

Delete

```
exports.deleteLandmarkById = async (req, res) => {
    try {
      await Landmark.findByIdAndDelete(req.params.id);

      res.status(204).json({
        status: 'success',
        data: null
      });
    } catch (err) {
      res.status(404).json({
        status: 'fail',
        message: err
      });
    }
  };
```

- https://mongoosejs.com/docs/queries.html
- https://mongoosejs.com/docs/models.html#constructing-documents

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To be continued…