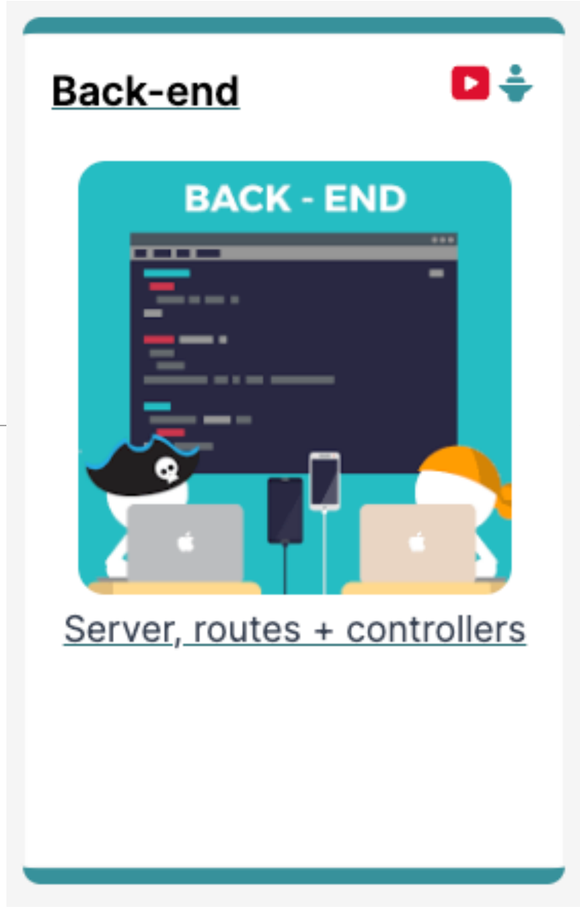
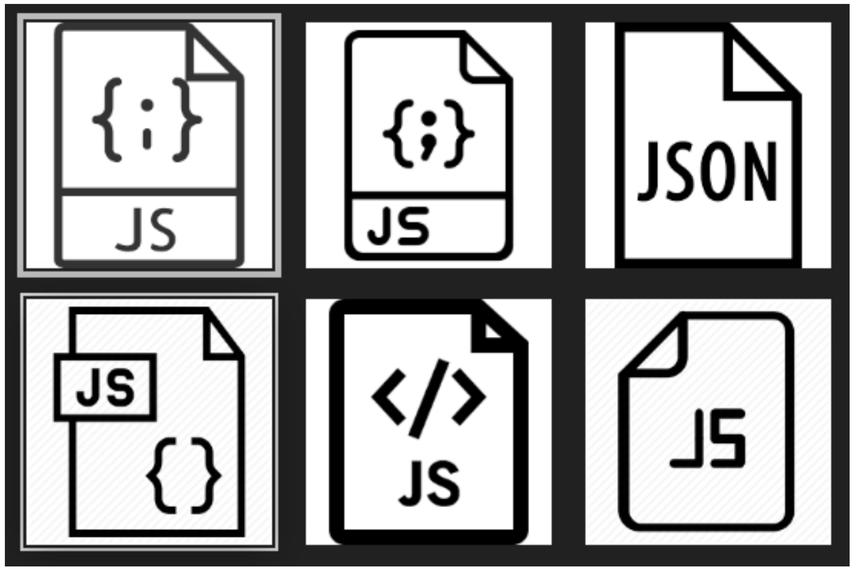
Back-end



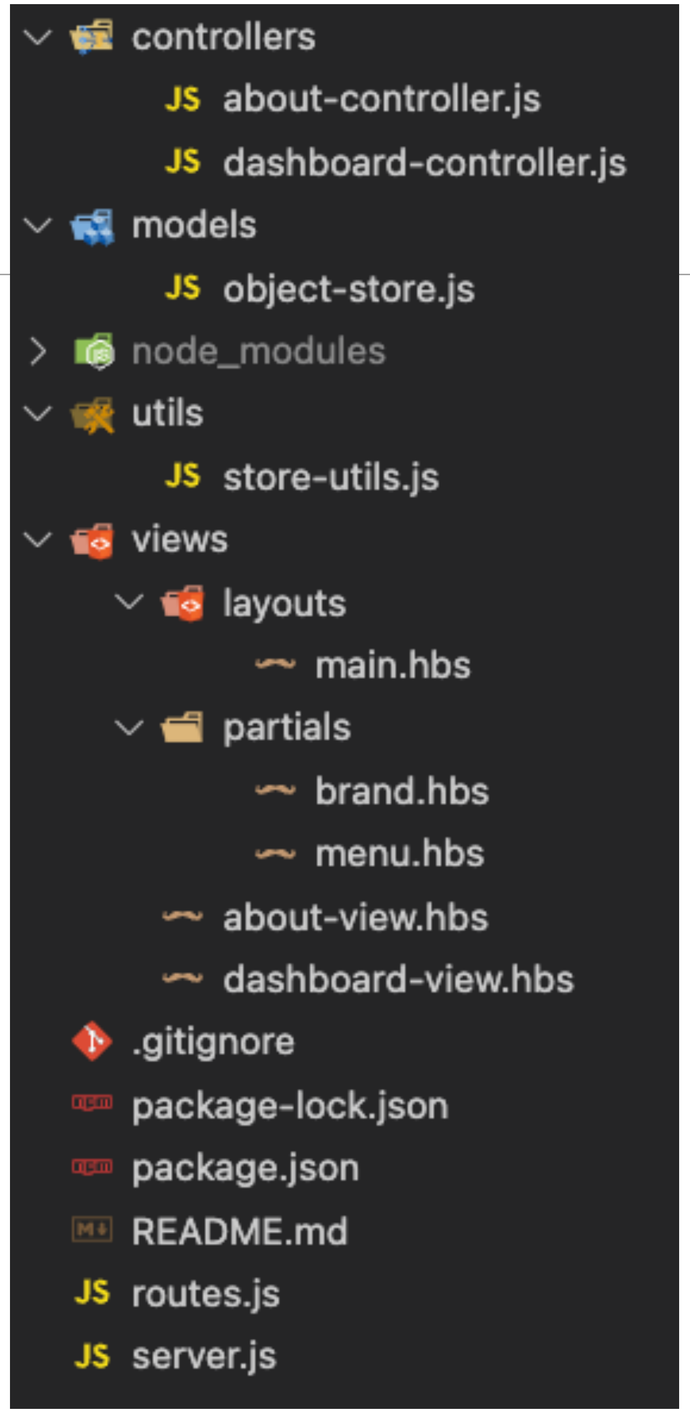
Javascript Modules

- To structure an application coherently, the backend consists of separate Javascript files.
- Objects declared in these files must be
  - exported by one file
  - imported by another
- In order to keep each module focused on a specific responsibility

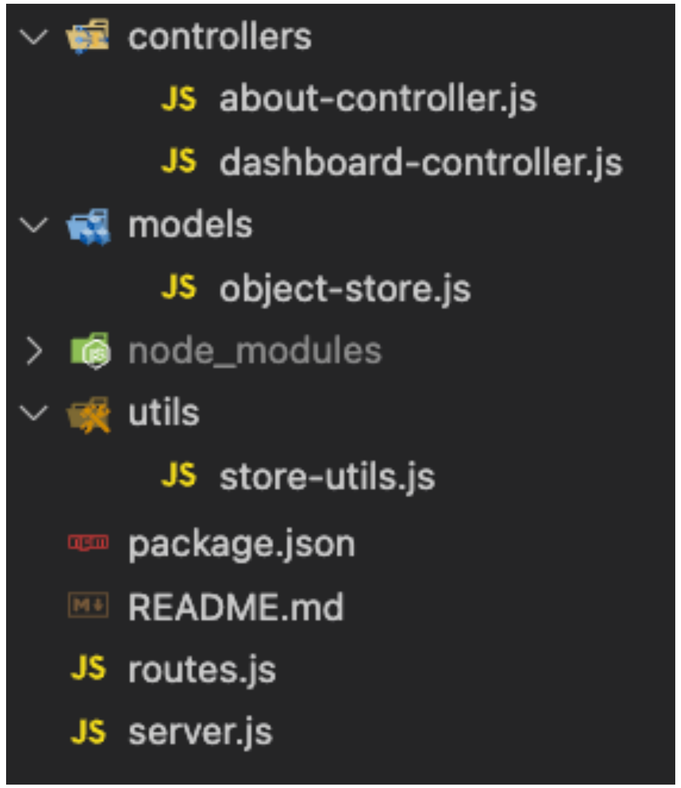


Application Structure

- App implements Routes + Model/View/Controller Architecture
- These objects collaborate to support structured, predictable application workflow



Back-end



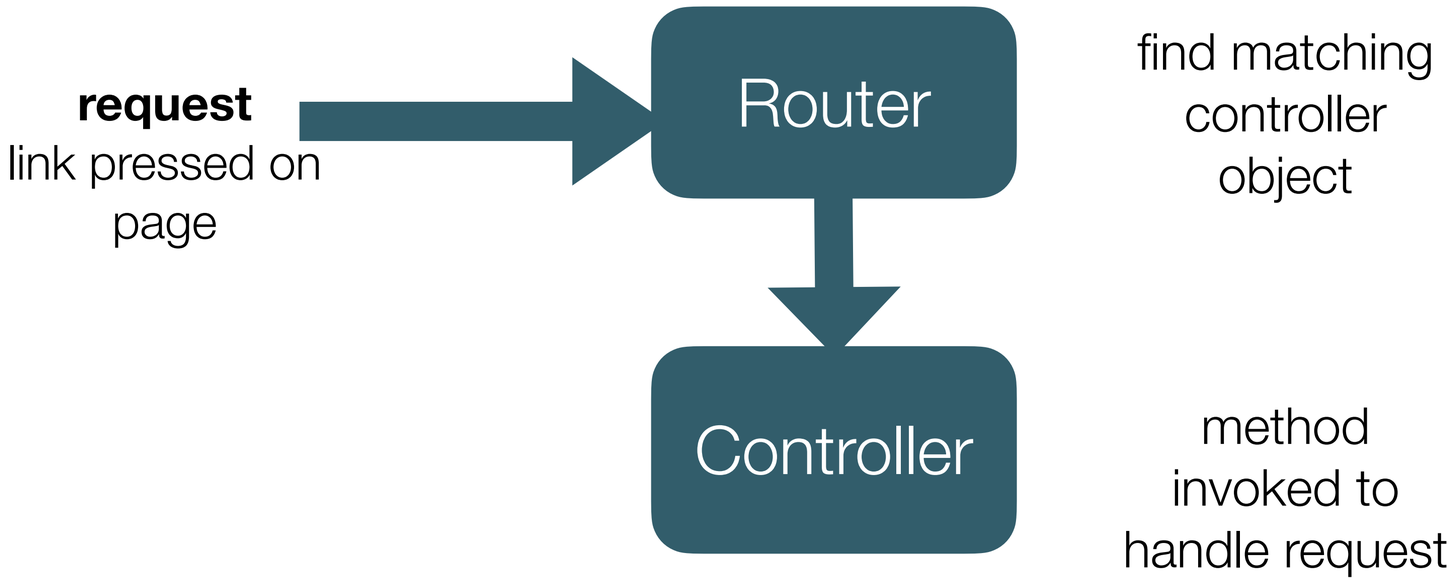
- All written in Javascript + JSON
- Consists of:
  - **Server** - main entry point
  - **Routes** - supported urls
  - **Controllers** - objects to handle the routes
  - **Models** - Core information models represented by the application
  - **Config** - package.json

Request/Response Lifecycle

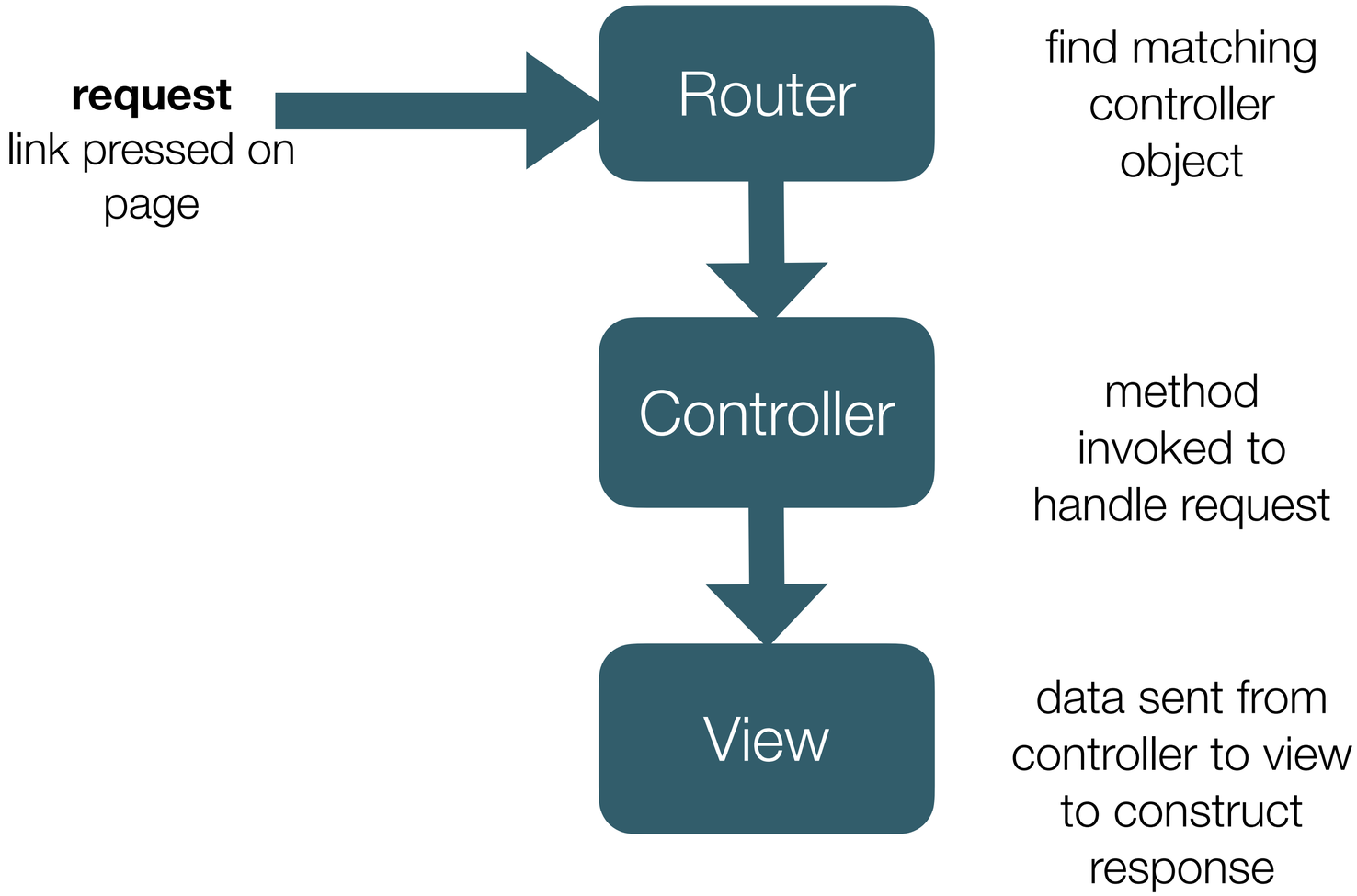
1. **Request** - link pressed on page
2. **Router** - find matching controller object
3. **Controller** - method invoked to handle request
4. **View** - data sent from controller to view to construct response
5. **Response** - complete page rendered into browser

Router/Controller/View

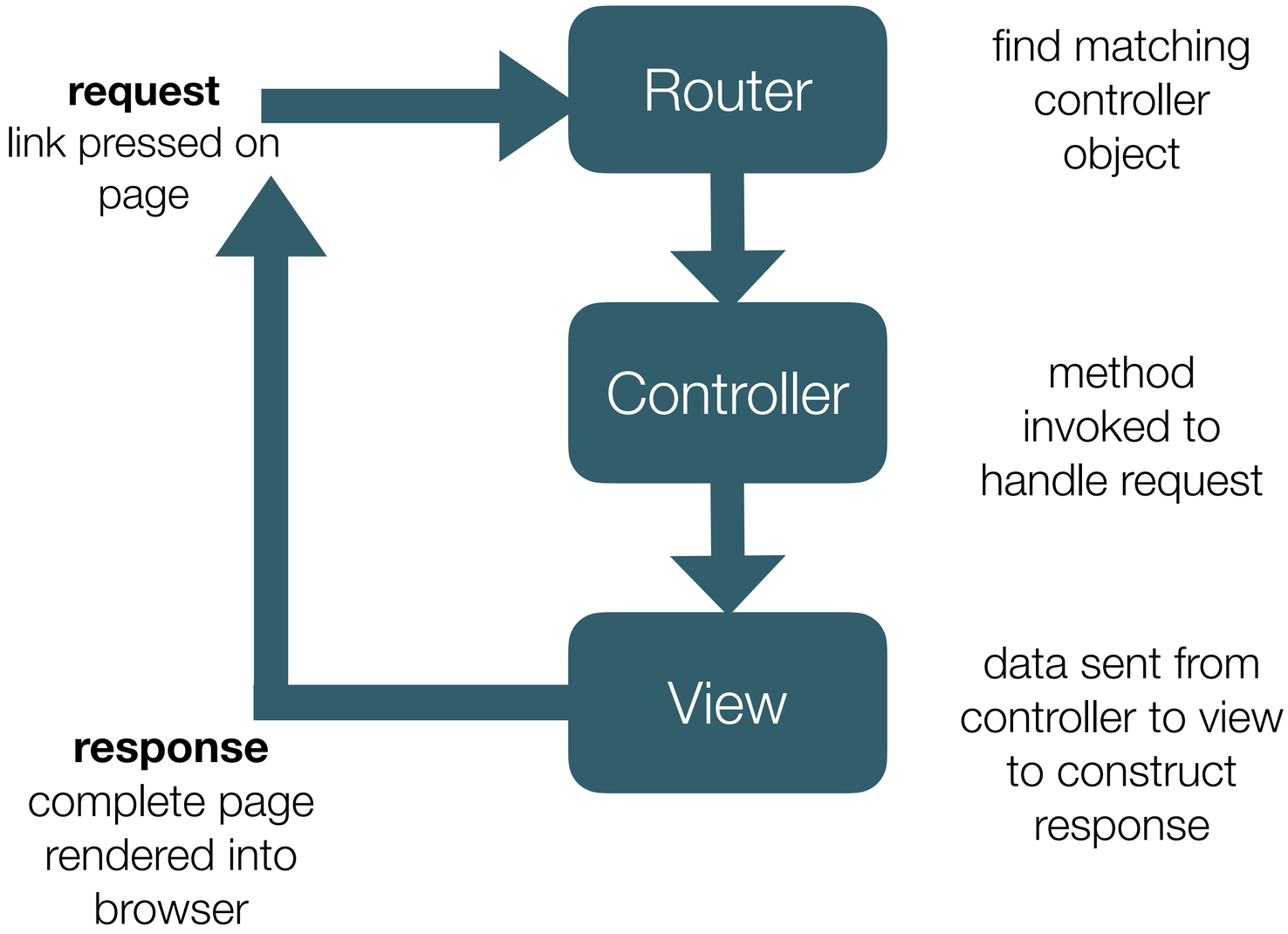
Router/Controller/View



Router/Controller/View

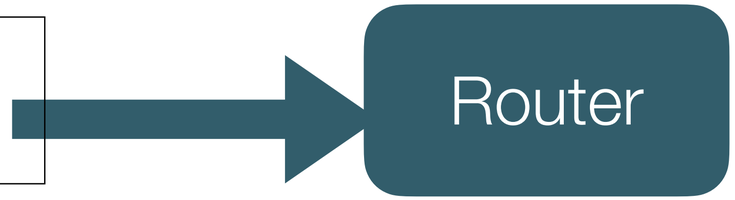


Router/Controller/View



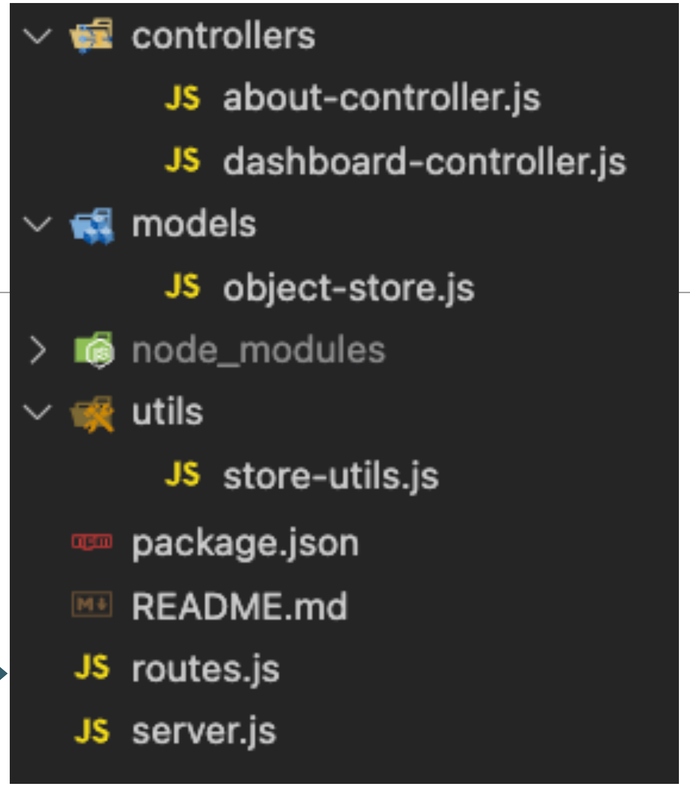
Request - link pressed on page

```
...
 <a id="dashboard" class="button" href="/dashboard"> Dashboard </a>
 <a id="about" class="button" href="/about"> About </a>
...
```



- Requests defined in links in views:
  - href in <a> tags
  - href in Menus
  - href in Buttons
  - action links in forms

Router - find matching controller object



routes.js

Import controller objects:

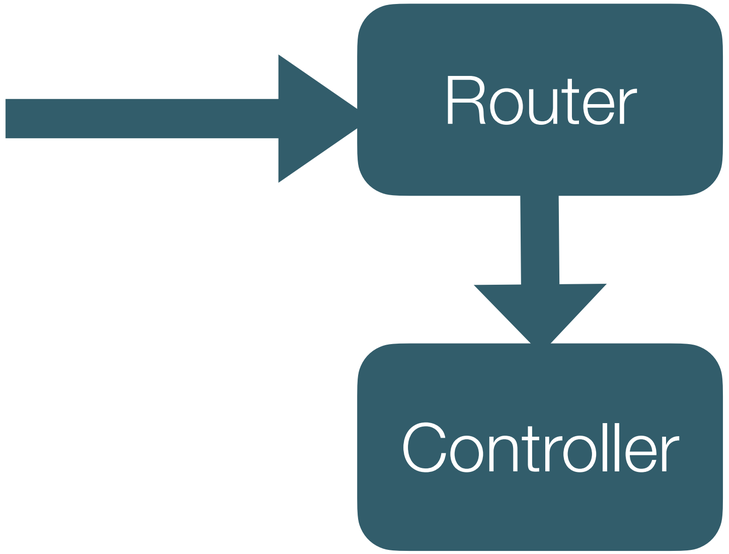
Match these two objects with each of these 'links'

```
import express from "express";
import { dashboardController } from "./controllers/dashboard-controller.js";
import { aboutController } from "./controllers/about-controller.js";

export const router = express.Router();

router.get("/", dashboardController.index);
router.get("/dashboard", dashboardController.index);
router.get("/about", aboutController.index);
```

Router Behaviour

If user selects these links…

…then call the corresponding controller methods



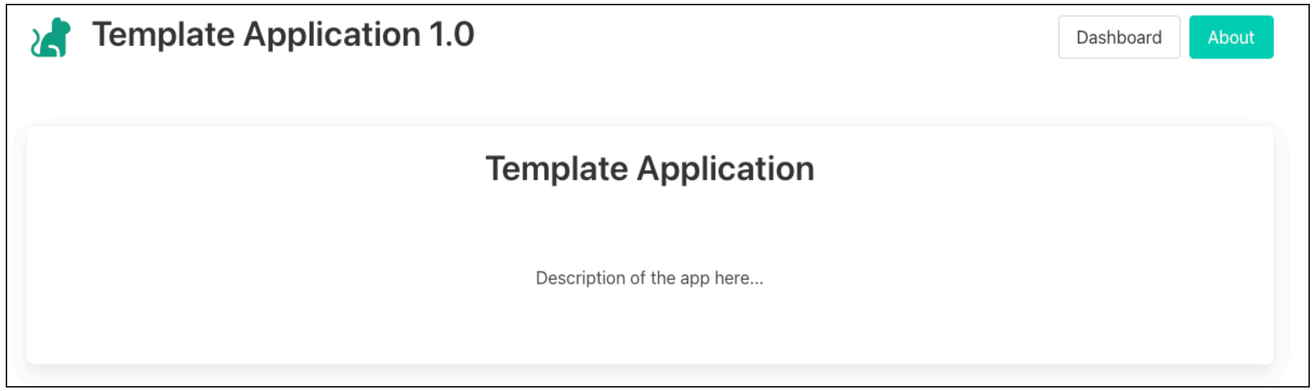

```
'/'          → dashboardController.index
/dashboard'  → dashboardController.index
/about'      → aboutController.index
```

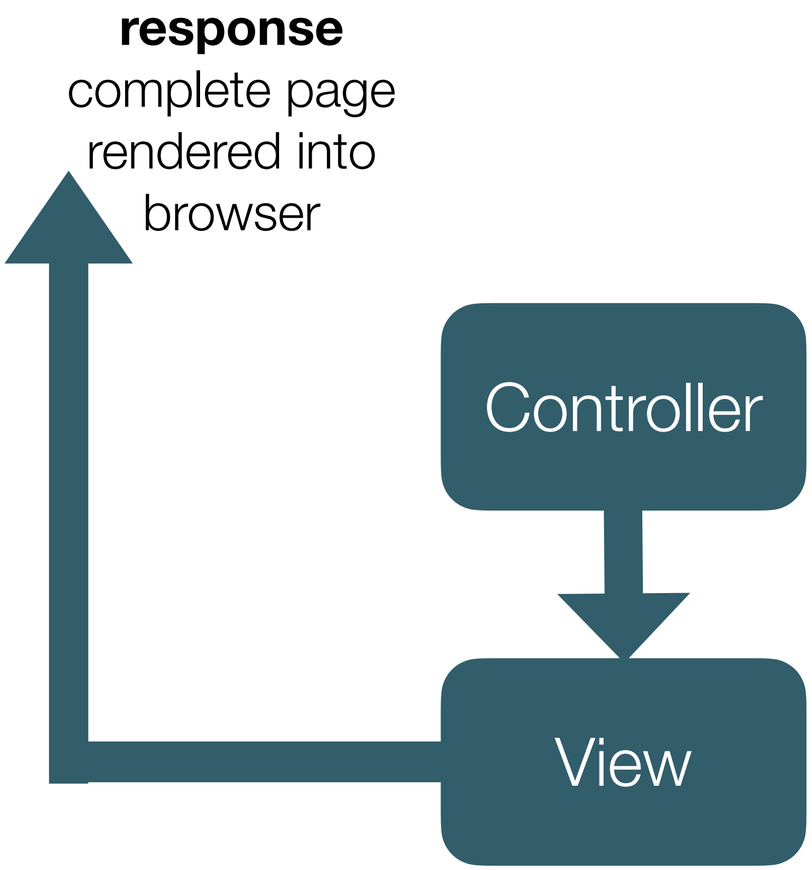
Controller method invoked to handle request

about-controller.js

```
export const aboutController = {
  index(request, response) {
    const viewData = {
      title: "About This Application",
    };
    console.log("about rendering");
    response.render("about-view", viewData);
  },
};
```

The About controller





The ‘About’ controller object -

index method parameters

- Has a single method - index, which has 2 parameters:
  - **request** : object containing details of the user request
  - **response**: object to be used to send response back to browser

```
export const aboutController = {

  index(request, response) {

    const viewData = {
      title: "About This Application",
    };

    console.log("about rendering”);

    response.render("about-view", viewData);

  },

};
```

The ‘About’ controller **index function body**

Create an object called **viewData**, containing a single property: **title**

logs a message to the console (glitch) console, not chrome console)

```
export const aboutController = {

  index(request, response) {

    const viewData = {
      title: "About This Application",
    };

    console.log("about rendering”);

    response.render("about-view", viewData);

  },

};
```

Data sent from controller to view to construct response

Calls **render** method on **response** with 2 parameters:

name of view to render **(about)**

object to inject into the view prior to rendering it (**viewData**)

```
export const aboutController = {

  index(request, response) {

    const viewData = {
      title: "About This Application",
    };

    console.log("about rendering”);

    response.render("about-view", viewData);

  },

};
```

Back-end + Front-End

about.js

```
export const aboutController = {
  index(request, response) {
    const viewData = {
      title: "About This Application",
    };
    console.log("about rendering");
    response.render("about-view", viewData);
  },
};
```

about-view.hbs

```
{{> menu active="about"}}

<section class="box is-3 has-text-centered">
  <h3 class="title">
    Template Application
  </h3>
  <div class="section">
    Description of the app here...
  </div>
</section>
```

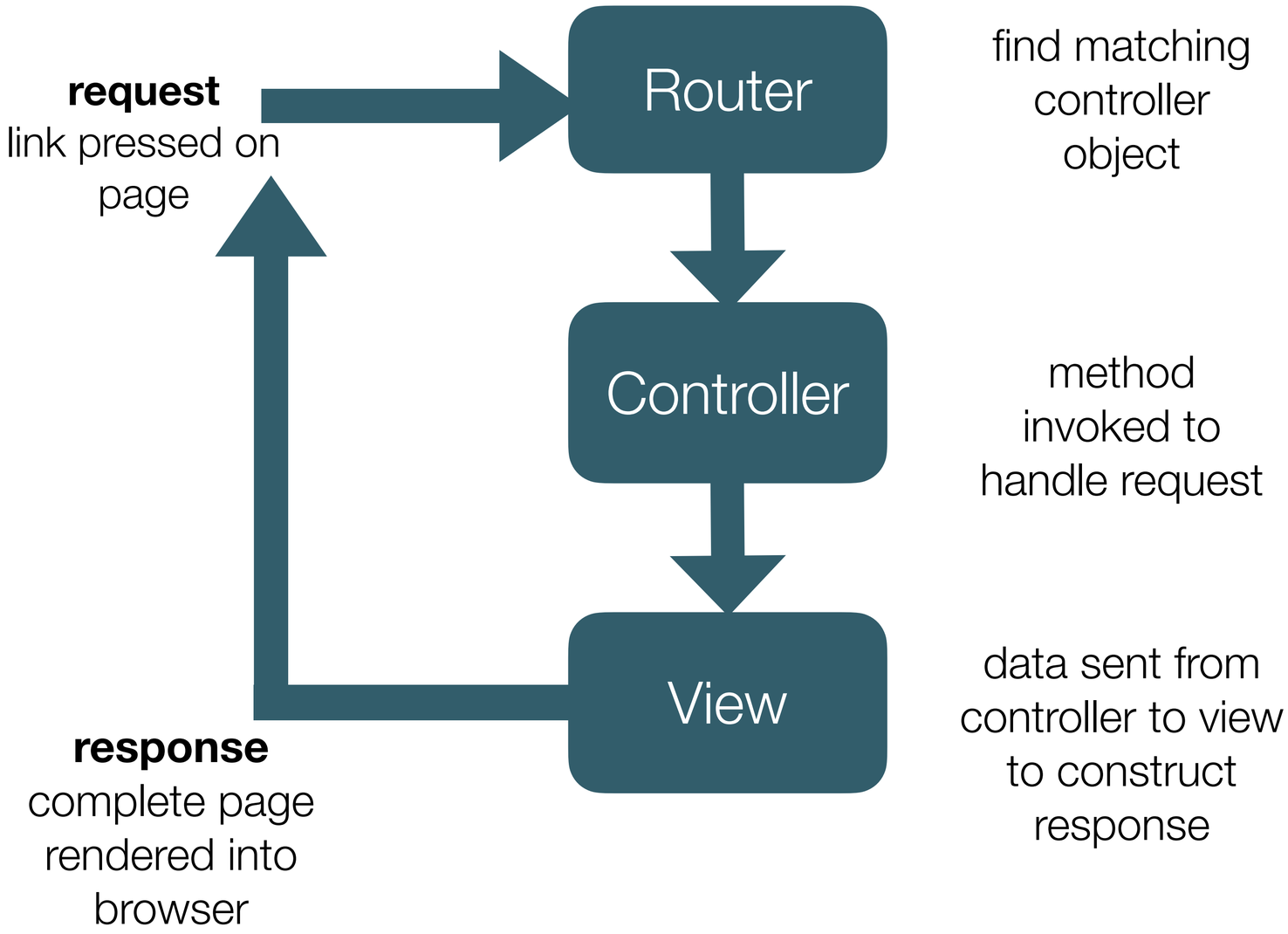
menu.hbs

```
<nav class="navbar mb-6">
  <div class="navbar-brand">
    {{> brand}}
  </div>
  <div class="navbar-menu" id="navMenu">
    <div class="navbar-end">
      <div class="navbar-item">
        <div class="buttons">
          <a id="dashboard" class="button" href="/dashboard"> Dashboard </a>
          <a id="about" class="button" href="/about"> About </a>
        </div>
      </div>
    </div>
  </div>
</nav>

<script>
  document.getElementById("{{active}}").classList.add("is-primary");
</script>
```

main.hbs

```
<!DOCTYPE html>
<html lang="en-IE">

<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <title>{{title}}</title>
  <link rel="stylesheet" href="https://cdn.jsdeliv....bulma.min.css">
</head>

<body>
  <div class="container">
    {{{body}}}
  </div>
</body>

</html>
```

Router/Controller/View



Dashboard Controller

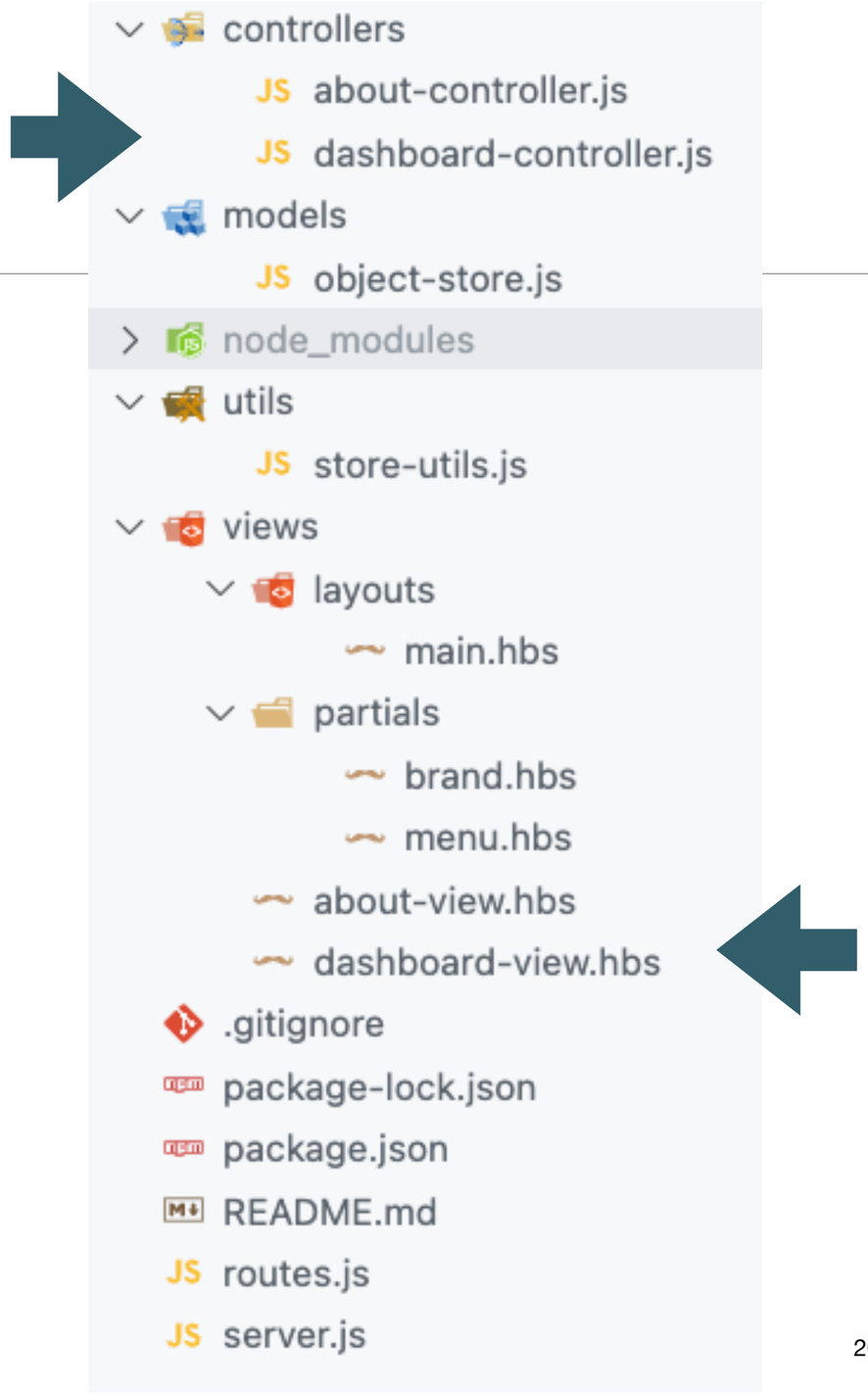
```
export const dashboardController = {

  async index(request, response) {

    const viewData = {
      title: "Template Application",
    };

    console.log("dashboard rendering”);

    response.render("dashboard-view", viewData);
  },
};
```

Application Structure

2 Controllers

which will render

2 matching views



dashboard-controller.js

```
export const dashboardController = {

  async index(request, response) {
    const viewData = {
      title: "Template Application",
    };
    console.log("dashboard rendering”);
    response.render("dashboard-view", viewData);
  },

};
```

routes.js

```
router.get("/dashboard", dashboardController.index);
router.get("/about", aboutController.index);
```

about-controller.js

```
export const aboutController = {

  index(request, response) {
    const viewData = {
      title: "About This Application",
    };
    console.log("about rendering”);
    response.render("about-view", viewData);
  },

};
```

controllers/views

dashboard-controller.js

```
export const dashboardController = {

  async index(request, response) {
    const viewData = {
      title: "Template Application",
    };
    console.log("dashboard rendering”);
    response.render("dashboard-view", viewData);
  },

};
```

dashboard-view.hbs

```
{{> menu active="dashboard"}}

<section class="box has-text-centered">
  <h3 class="is-3 title">
    Main Dashboard
  </h3>
  <div class="section">
    <p>
      This is the main dashboard view
    </p>
  </div>
</section>
```

about-controller.js

```
export const aboutController = {

  index(request, response) {
    const viewData = {
      title: "About This Application",
    };
    console.log("about rendering”);
    response.render("about-view", viewData);
  },

};
```

about-view.hbs

```
{{> menu active="about"}}

<section class="box is-3 has-text-centered">
  <h3 class="title">
    Template Application
  </h3>
  <div class="section">
    Description of the app here...
  </div>
</section>
```

Back-end