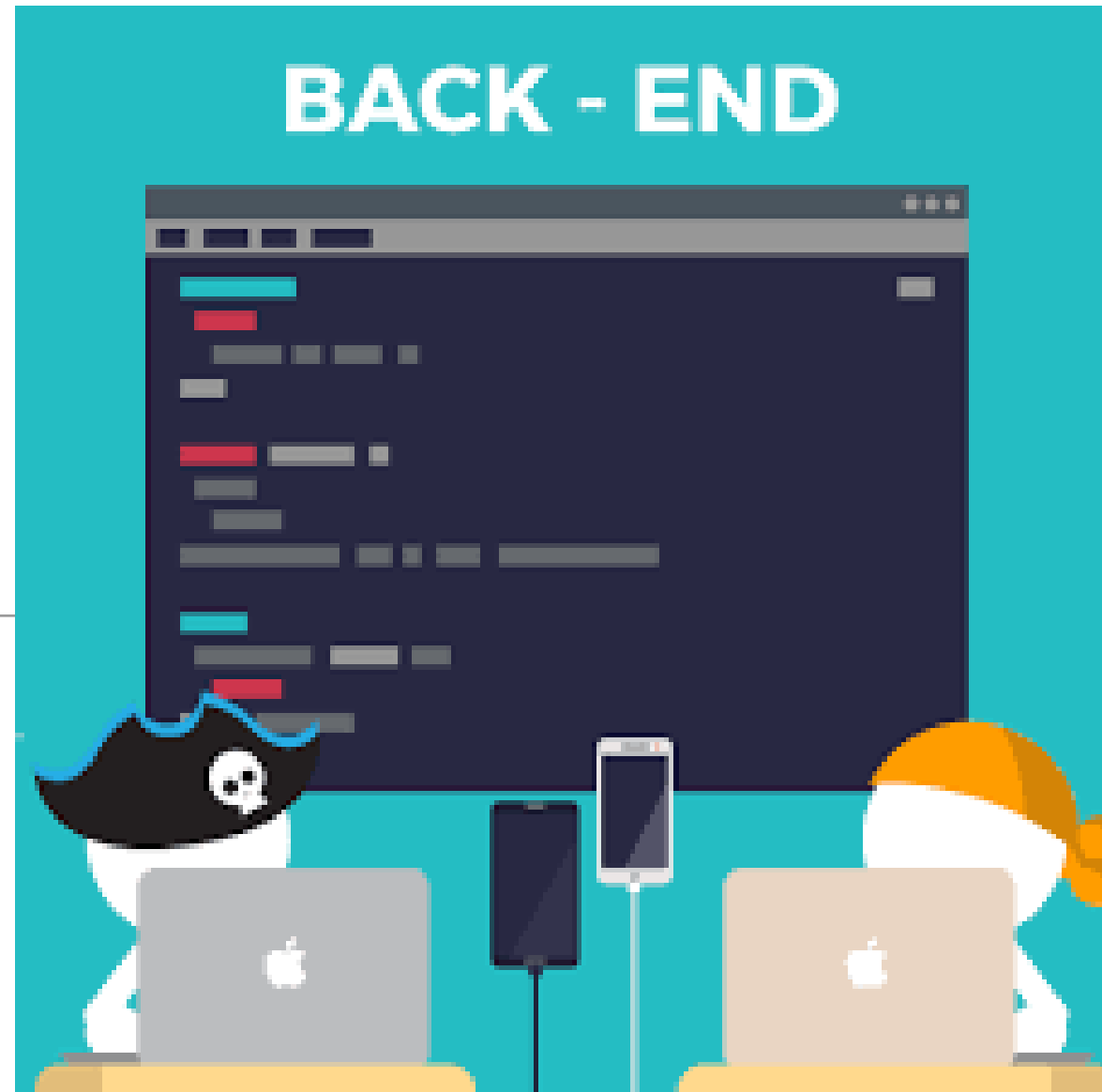


Back-end



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

back-end +

```
⌘ .env  
.gitignore  
.jscsrc  
controllers/about.js  
controllers/dashboard.js  
controllers/start.js  
package.json  
README.md  
routes.js  
server.js
```

front-end +

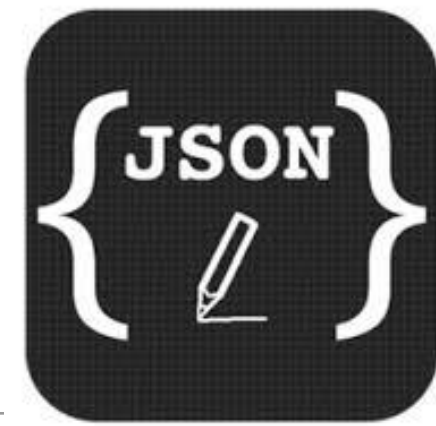
assets

```
views/about.hbs  
views/dashboard.hbs  
views/layouts/main.hbs  
views/partials/mainpanel.hbs  
views/partials/menu.hbs  
views/start.hbs
```

- App implements Routes + Model/View/Controller Architecture
- Back-end + Front-end collaborate to support structured, predictable application workflow

Back-end

JS



- All written in Javascript + JSON
- Consists of:
 - **Server** - main entry point
 - **Routes** - supported urls
 - **Controllers** - objects to handle the routes
 - **Config** - .gitignore, .jscsrc, env, package.json, readme.md
- Will include **Models** later...

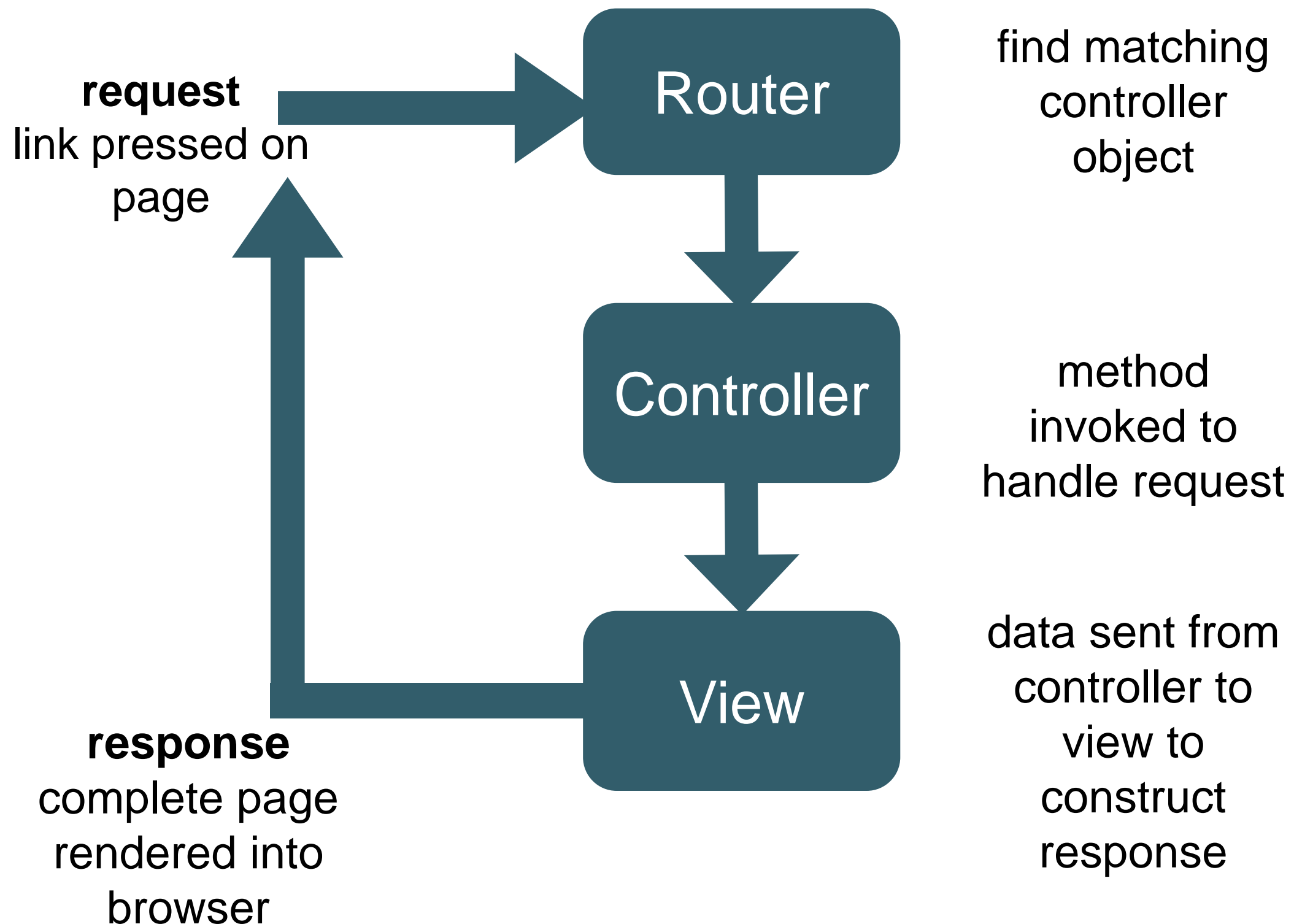
back-end +

```
.env  
.gitignore  
.jscsrc  
controllers/about.js  
controllers/dashboard.js  
controllers/start.js  
package.json  
README.md  
routes.js  
server.js
```

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

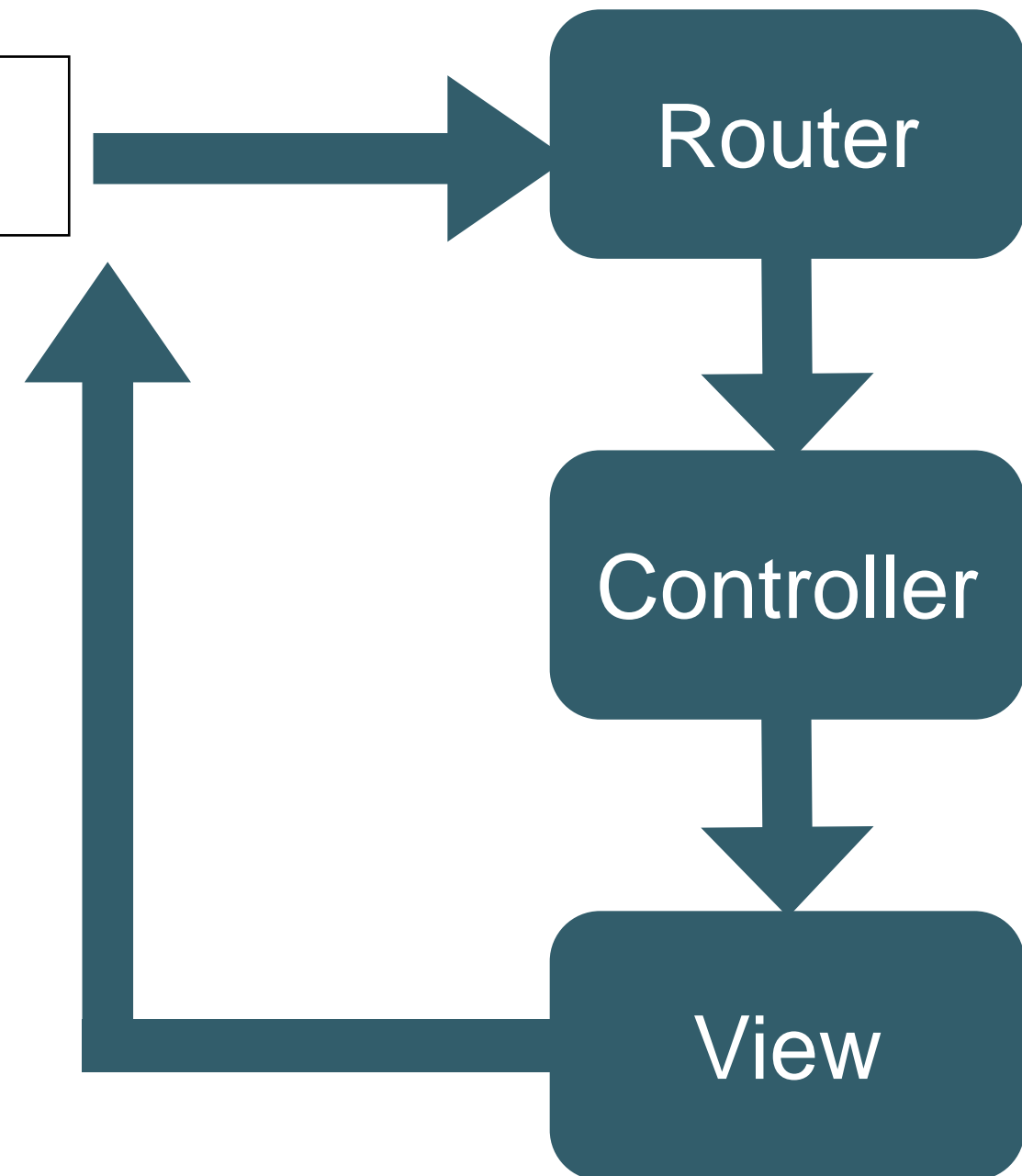


Request - link pressed on page

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

back-end +

```
.env  
.gitignore  
.jscsrc  
controllers/about.js  
controllers/dashboard.js  
controllers/start.js  
package.json  
README.md  
routes.js  
server.js
```

routes.js

Import 3
objects:

```
...  
const start    = require('./controllers/start.js');  
const dashboard = require('./controllers/dashboard.js');  
const about    = require('./controllers/about.js');
```

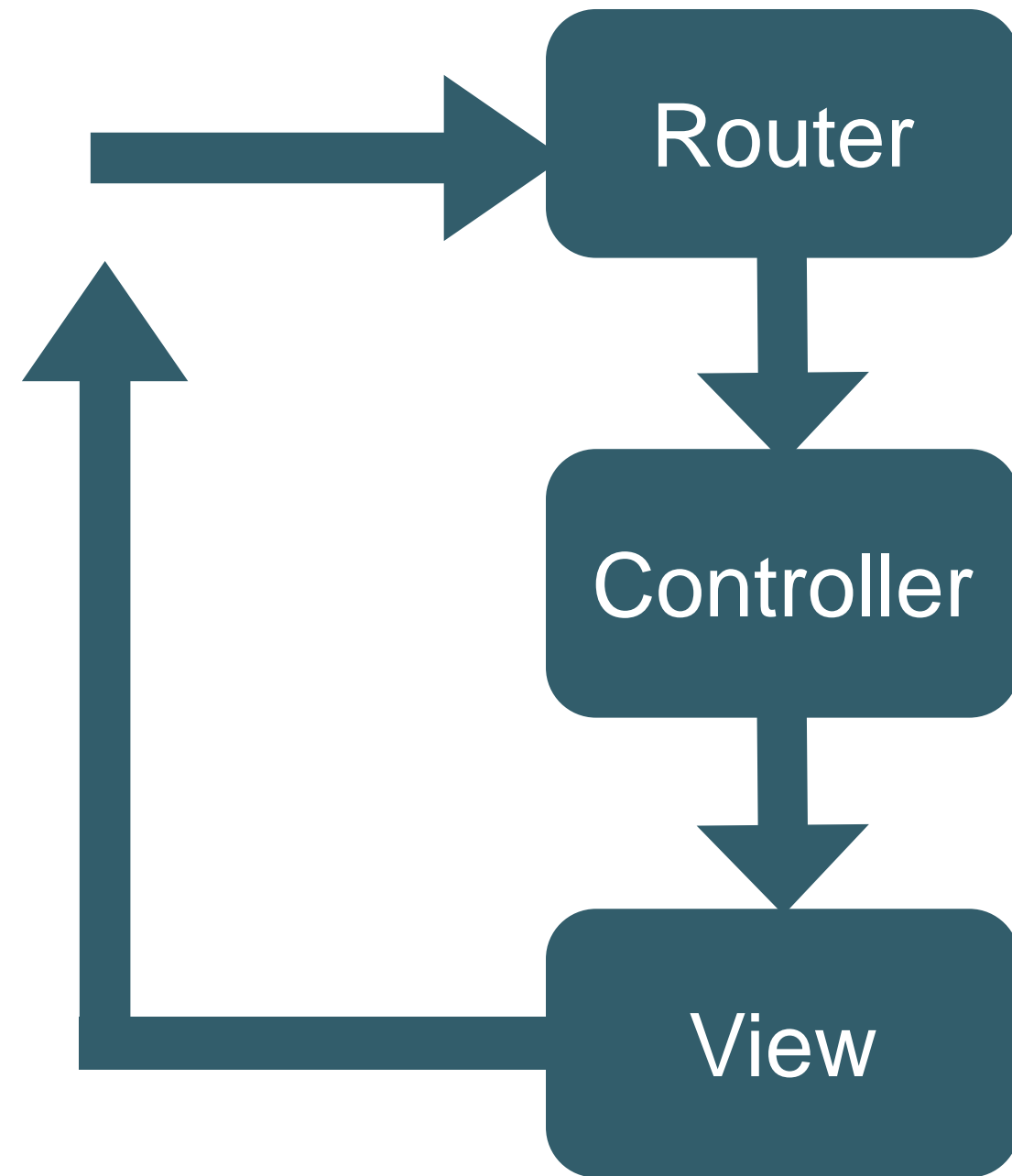
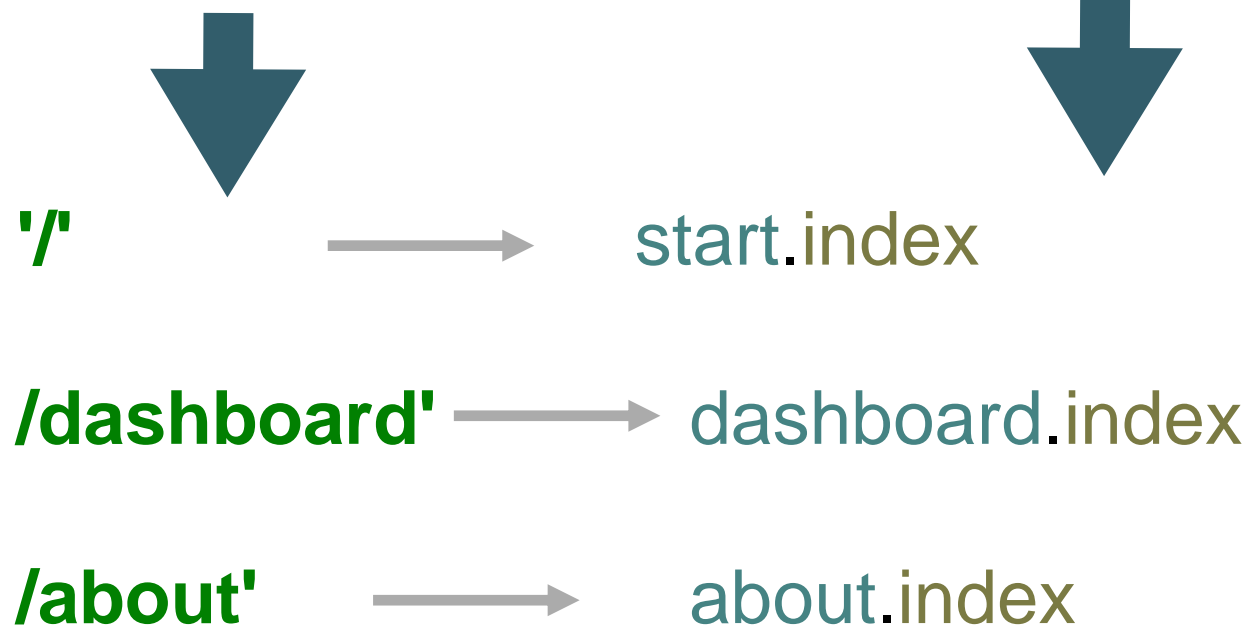
Match these
three objects
with each of
these 'links'

```
router.get('/',      start.index);  
router.get('/dashboard', dashboard.index);  
router.get('/about',  about.index);  
...
```


Router Behaviour

If user selects these links...

...then call the corresponding controller methods

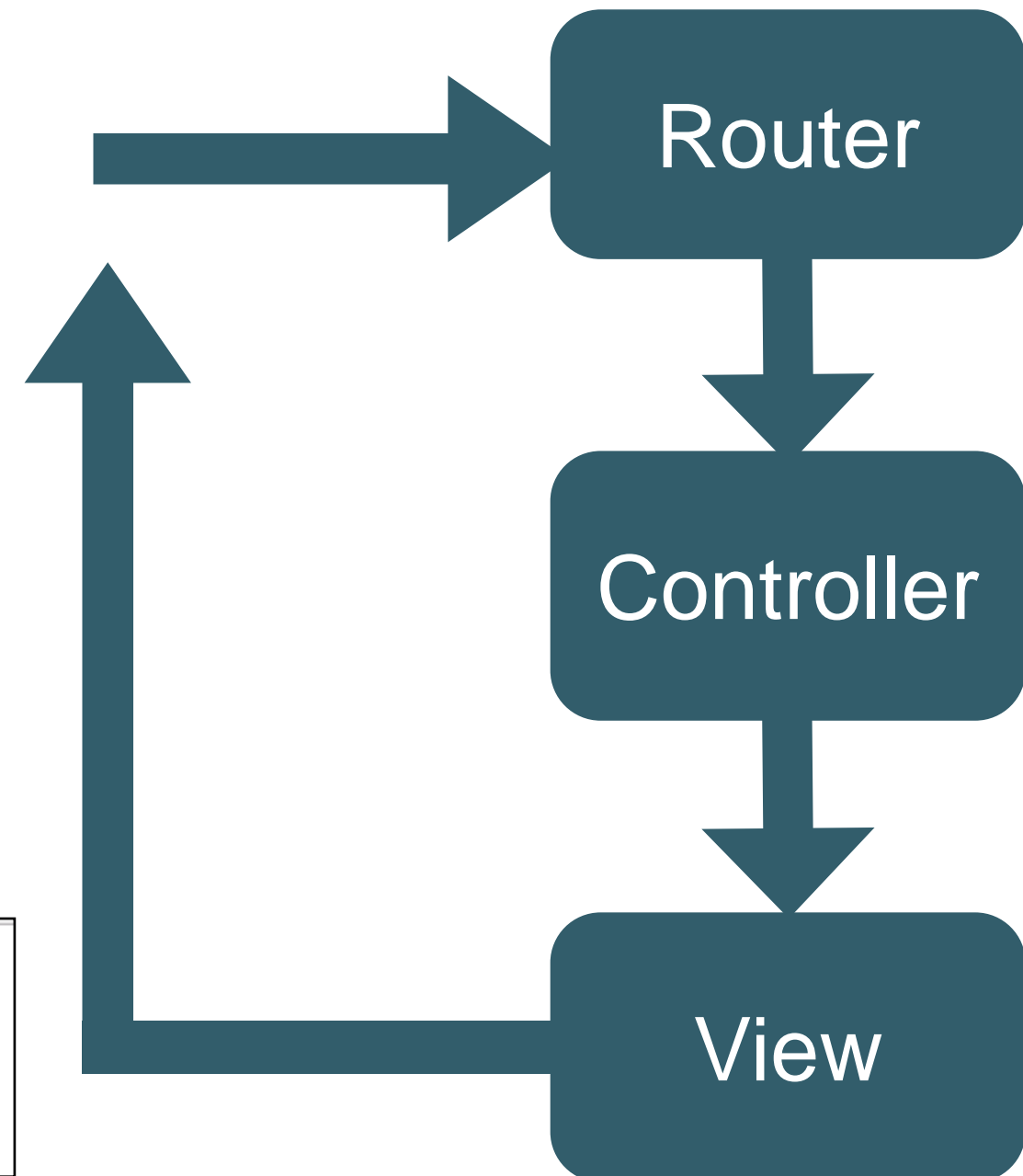
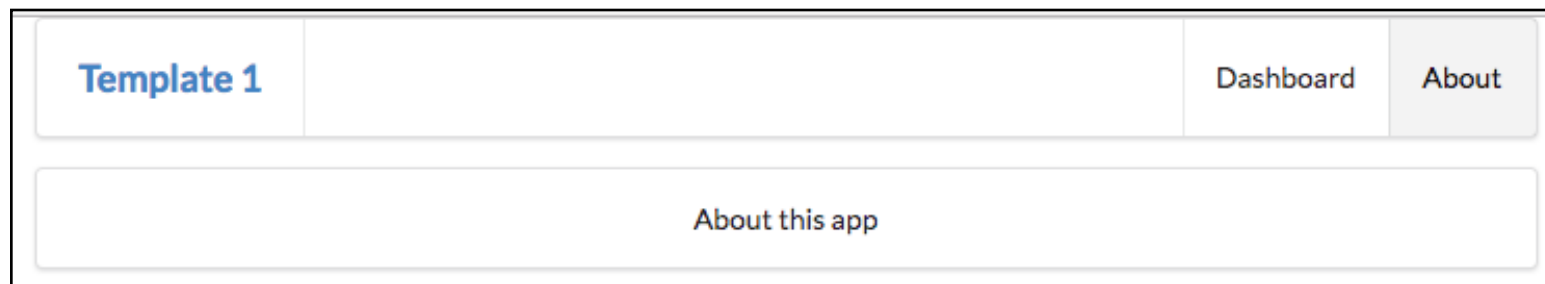


Controller method invoked to handle request

about.js

```
const about = {  
  index(request, response) {  
    logger.info('about rendering');  
    const viewData = {  
      title: 'About Template 1',  
    };  
    response.render('about', 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

```
const about = {  
  index(request, response) {  
    logger.info('about rendering');  
  
    const viewData = {  
      title: 'About Template 1',  
    };  
  
    response.render('about', viewData);  
  
  },  
};
```

The 'About' controller **index** function body

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

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

```
const about = {  
  index(request, response) {  
    logger.info('about rendering');  
    const viewData = {  
      title: 'About Template 1',  
    };  
    response.render('about', 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)

```
const about = {  
  index(request, response) {  
    logger.info('about rendering');  
    const viewData = {  
      title: 'About Template 1',  
    };  
    response.render('about', viewData);  
  },  
};
```

The About Controller - Complete

strict mode
javascript for safety

import the **logger**
so we can use it

Export the **about**
object to it can be
used by the router

```
'use strict';

const logger = require('../utils/logger');

const about = {
  index(request, response) {
    logger.info('about rendering');
    const viewData = {
      title: 'About Template 1',
    };
    response.render('about', viewData);
  },
};

module.exports = about;
```

about.js

```
'use strict';

const logger = require('../utils/logger');

const about = {
  index(request, response) {
    logger.info('about rendering');
    const viewData = {
      title: 'About Template 1',
    };
    response.render('about', viewData);
  },
};

module.exports = about;
```

Back-end + Front-End

about.hbs

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

<section class="ui center aligned middle aligned segment">
  <p>
    About this app
  </p>
</section>
```

menu.hbs

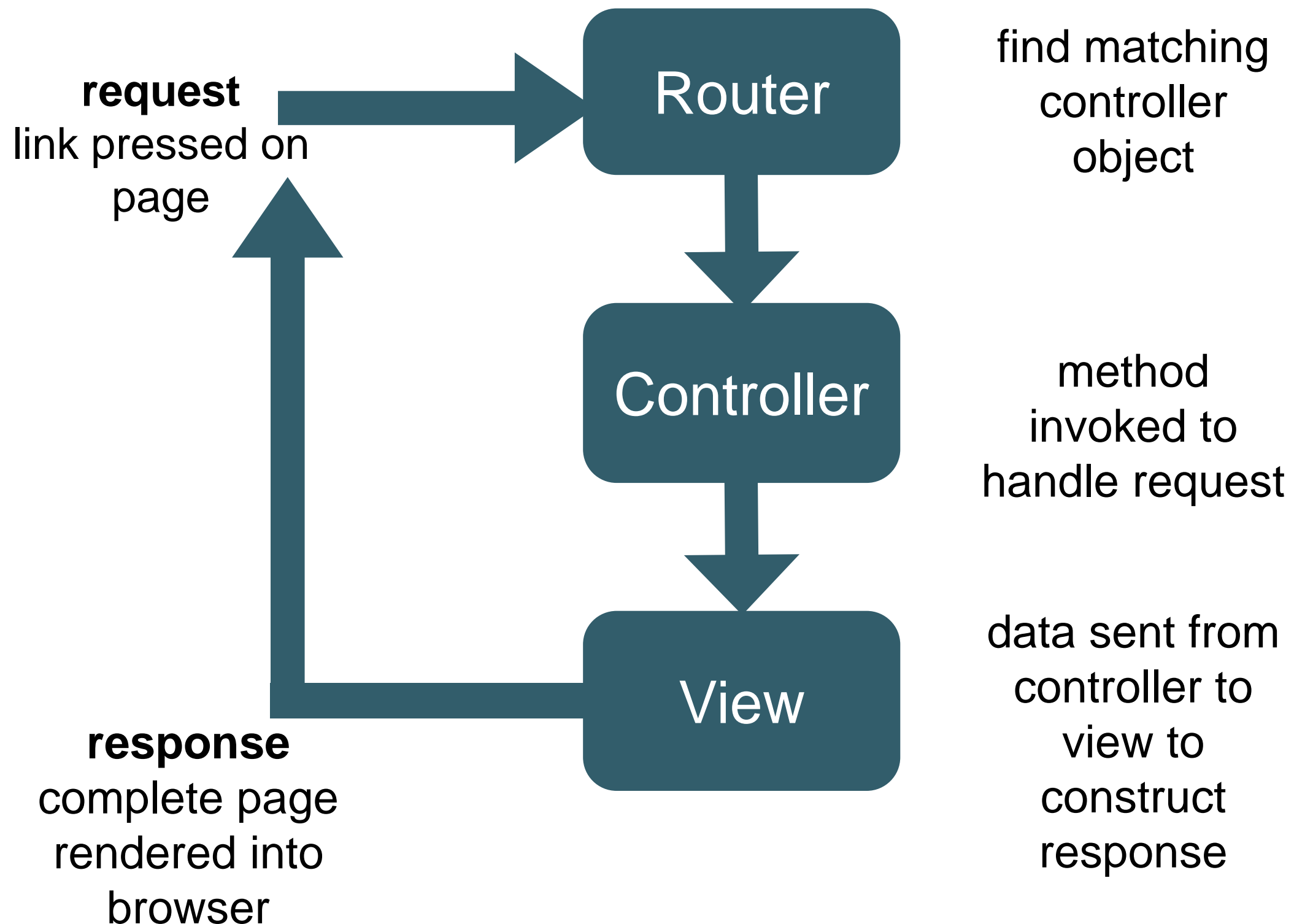
```
<nav class="ui menu">
  <header class="ui header item"> <a href="/"> Template 1 </a></header>
  <div class="right menu">
    <a id="dashboard" class="item" href="/dashboard"> Dashboard </a>
    <a id="about" class="item" href="/about"> About </a>
  </div>
</nav>

<script>
  $("#{{id}}").addClass("active item");
</script>
```

main.hbs

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <title> {{title}} </title>
    <meta charset="UTF-8">
    <script type="text/javascript" src="https://cdn
    <link rel="stylesheet" href="https://cdnjs.clou
    <script type="text/javascript" src="https://cdn
    <link rel="stylesheet" type="text/css" href="/s
  </head>
  <body>
    <section class="ui container">
      {{{body}}}
```

Router/Controller/View



Dashboard Controller

```
'use strict';

const logger = require('../utils/logger');

const dashboard = {

  index(request, response) {

    logger.info('dashboard rendering');
    const viewData = {
      title: 'Template 1 Dashboard',
    };
    response.render('dashboard', viewData);

  },

};

module.exports = dashboard;
```

Start Controller

```
'use strict';

const logger = require('../utils/logger');

const start = {

  index(request, response) {

    logger.info('start rendering');
    const viewData = {
      title: 'Welcome to Template 1',
    };
    response.render('start', viewData);
  },

};

module.exports = start;
```

Application Structure

3 Controllers
which will render
3 matching views

back-end +

```
&#x2192; .env  
.gitignore  
.jscsrc  
controllers/about.js  
controllers/dashboard.js  
controllers/start.js  
package.json  
README.md  
routes.js  
server.js
```

front-end +

assets

```
views/about.hbs  
views/dashboard.hbs  
views/layouts/main.hbs  
views/partials/mainpanel.hbs  
views/partials/menu.hbs  
views/start.hbs
```

routes/controllers

routes.js

```
...  
router.get('/', start.index);  
router.get('/dashboard', dashboard.index);  
router.get('/about', about.index);  
...
```

```
'use strict';  
  
const logger = require('../utils/logger');  
  
const start = {  
  index(request, response) {  
    logger.info('start rendering');  
    const viewData = {  
      title: 'Welcome to Template 1',  
    };  
    response.render('start', viewData);  
  },  
};  
  
module.exports =
```

start.js

dashboard.js

```
'use strict';  
  
const logger = require('../utils/logger');  
  
const dashboard = {  
  index(request, response) {  
    logger.info('dashboard rendering');  
    const viewData = {  
      title: 'Template 1 Dashboard',  
    };  
    response.render('dashboard', viewData);  
  },  
},
```

```
'use strict';  
  
const logger = require('../utils/logger');  
  
const about = {  
  index(request, response) {  
    logger.info('about rendering');  
    const viewData = {  
      title: 'About Template 1',  
    };  
    response.render('about', viewData);  
  },  
};  
  
module.exports = about;
```

about.js

controllers/views

start.js

start.hbs

dashboard.js

dashboard.hbs

about.hbs

about.js

```
'use strict';

const logger = require('../utils/logger');

const start = {
  index(request, response) {
    logger.info('start rendering');
    const viewData = {
      title: 'Welcome to Template 1',
    };
    response.render('start', viewData);
  },
};
```

```
'use strict';

const logger = require('../utils/logger');

const dashboard = {
  index(request, response) {
    logger.info('dashboard rendering');
    const viewData = {
      title: 'Template 1 Dashboard',
    };
    response.render('dashboard', viewData);
  },
};
```

```
'use strict';

const logger = require('../utils/logger');

const about = {
  index(request, response) {
    logger.info('about rendering');
    const viewData = {
      title: 'About Template 1',
    };
    response.render('about', viewData);
  },
};
```

```
{{> menu}}

<section class="ui center aligned middle aligned segment">
  <h1 class="ui header">
    Welcome to Template 1
  </h1>
  <p>
    To be replaced with content...
  </p>
</section>
```

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

<section class="ui segment">
  {{> mainpanel}}
</section>
```

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

<section class="ui center aligned middle aligned segment">
  <p>
    About this app
  </p>
</section>
```