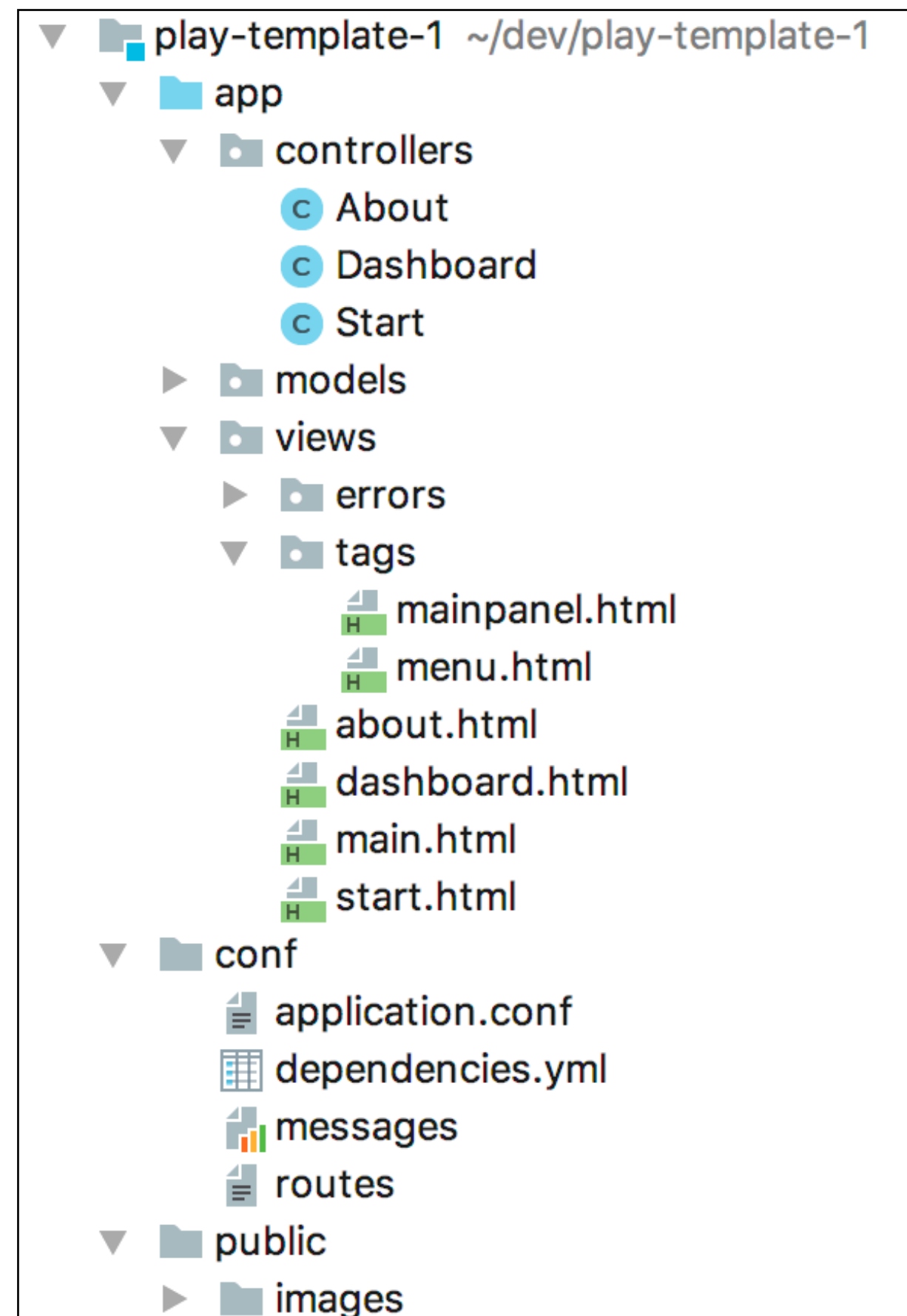


Back-end

---

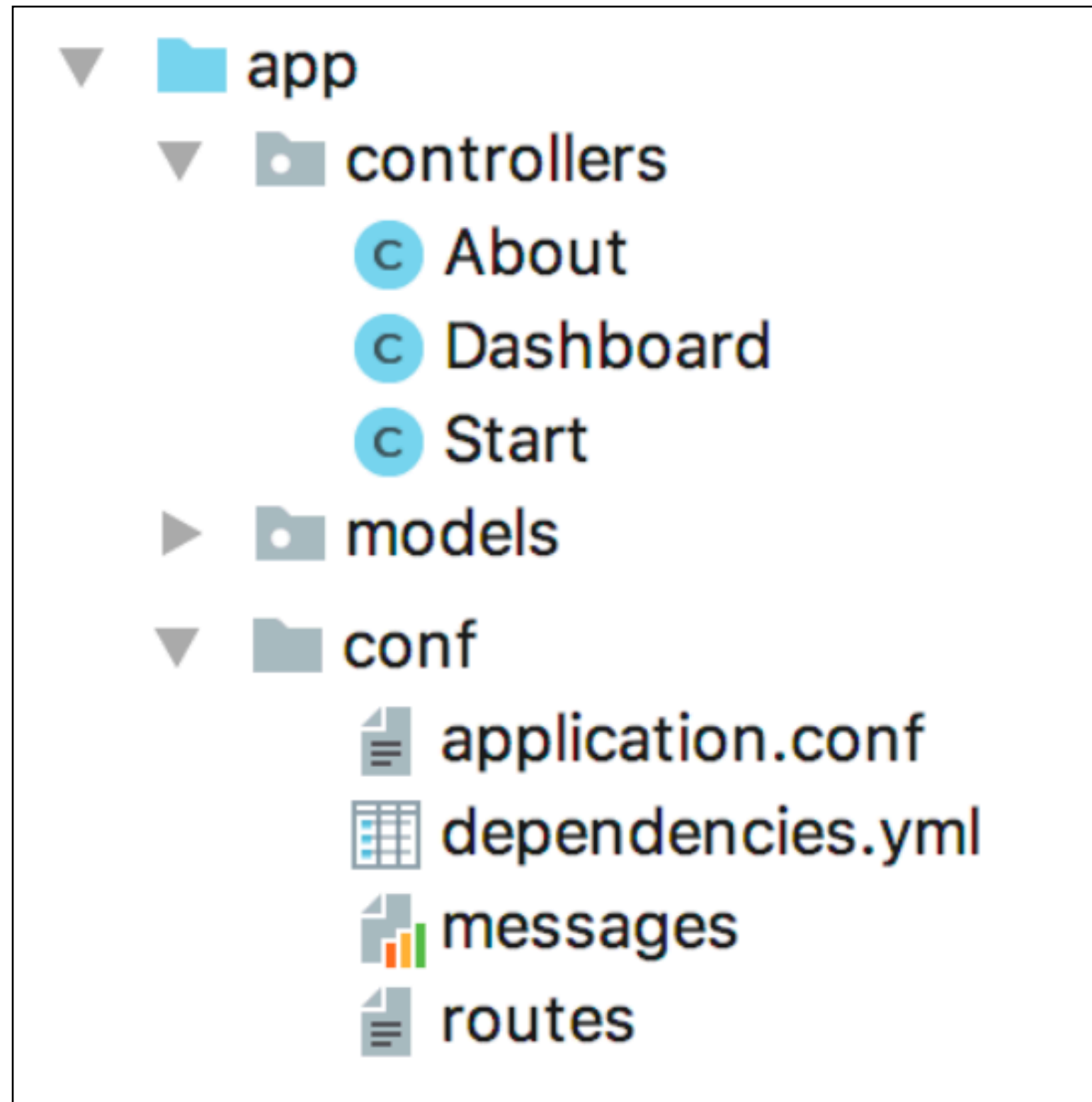


# Application Structure



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

## Back-end

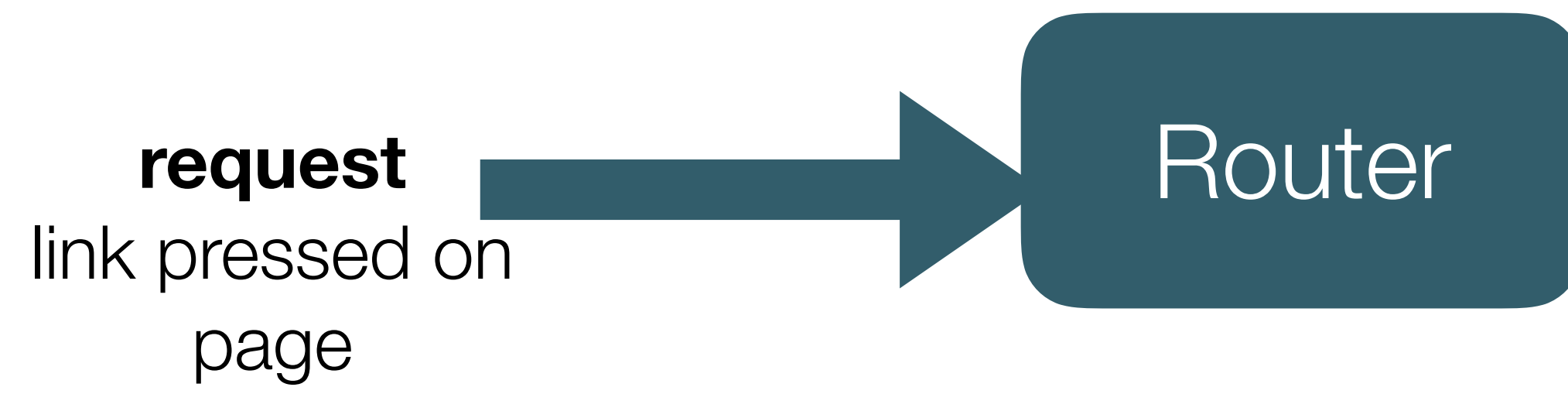


- All written in Java
- Consists of:
  - **Routes** - supported urls
  - **Controllers** - objects to handle the routes
  - **Config** - system wide config of application
- Will include **Models** later...

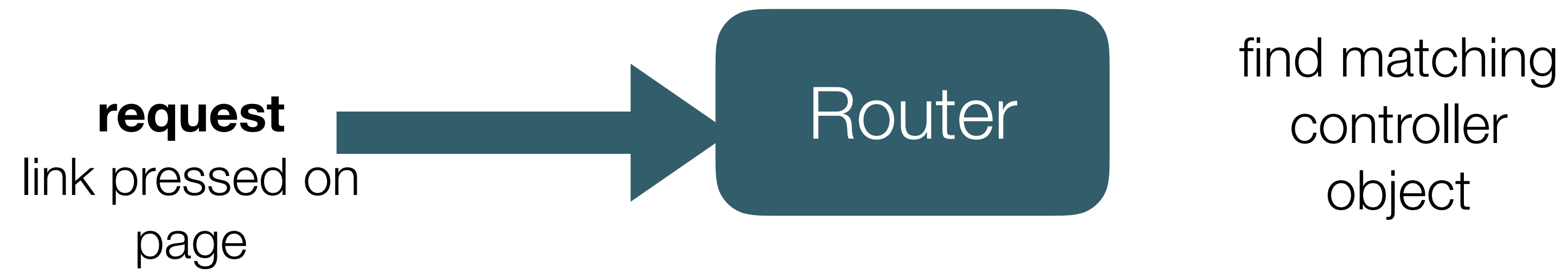
## Request/Response Lifecycle

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

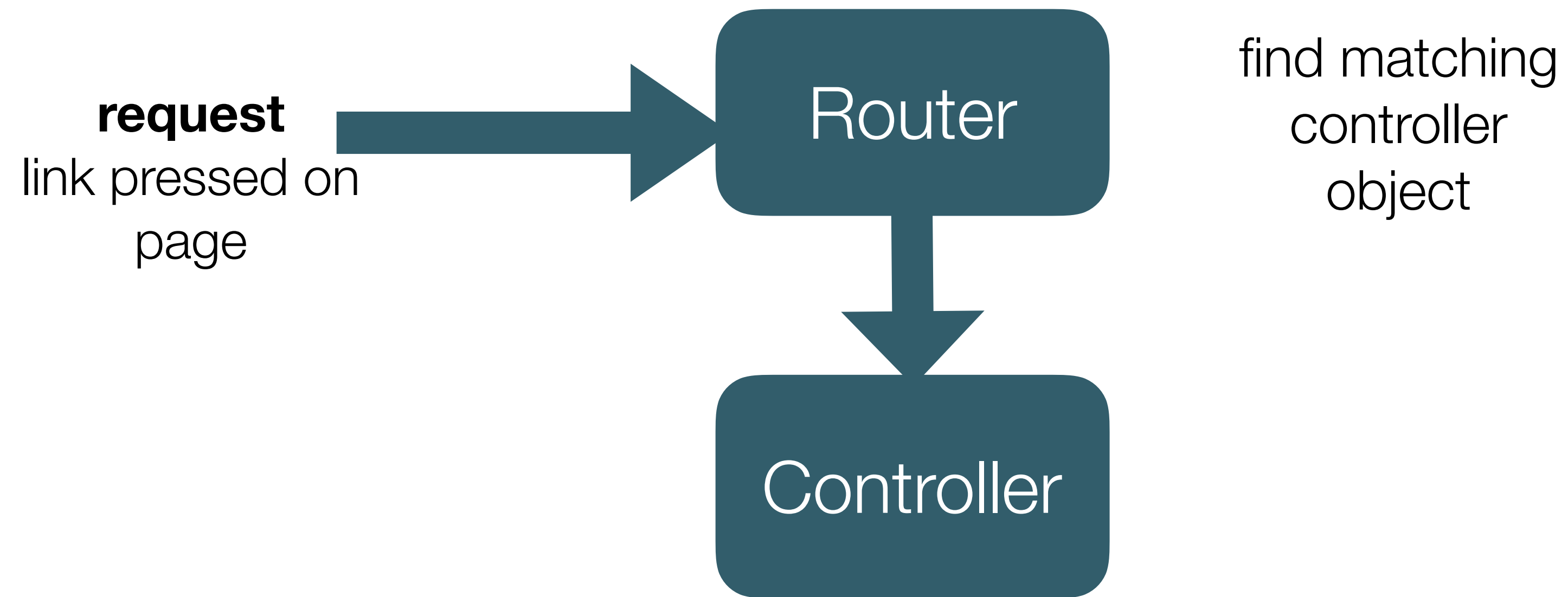
# Router/Controller/View



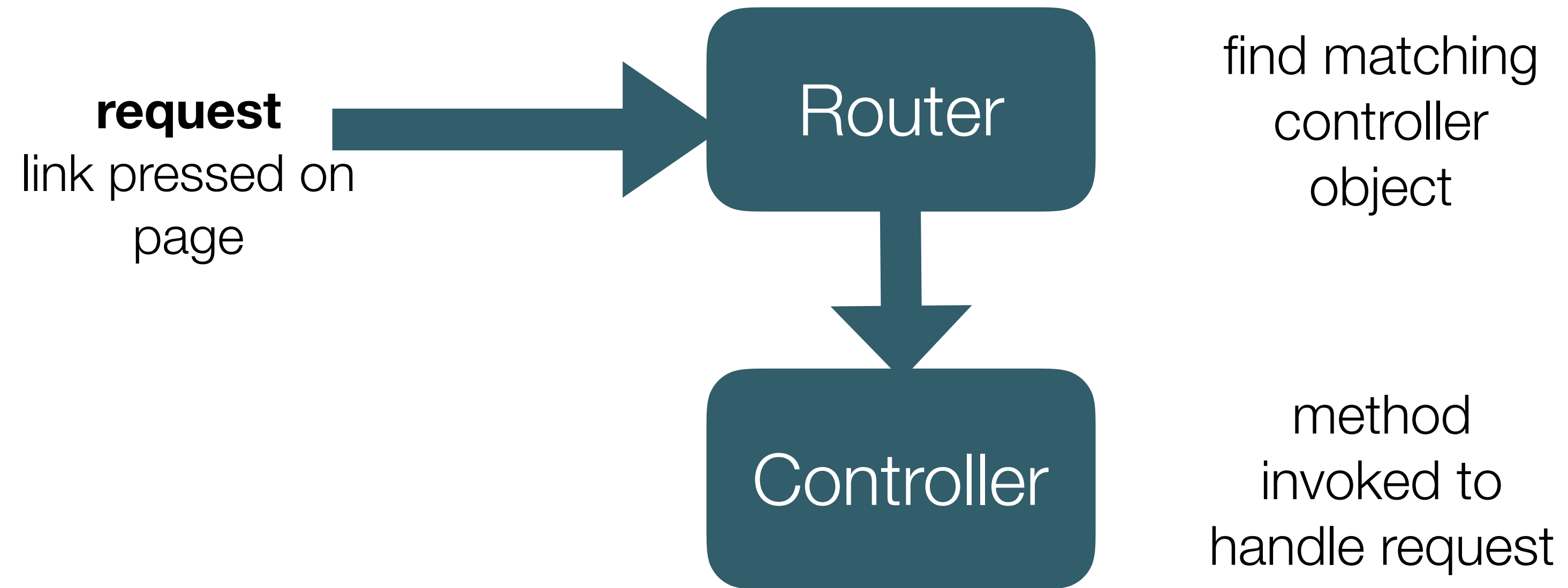
# Router/Controller/View



# Router/Controller/View

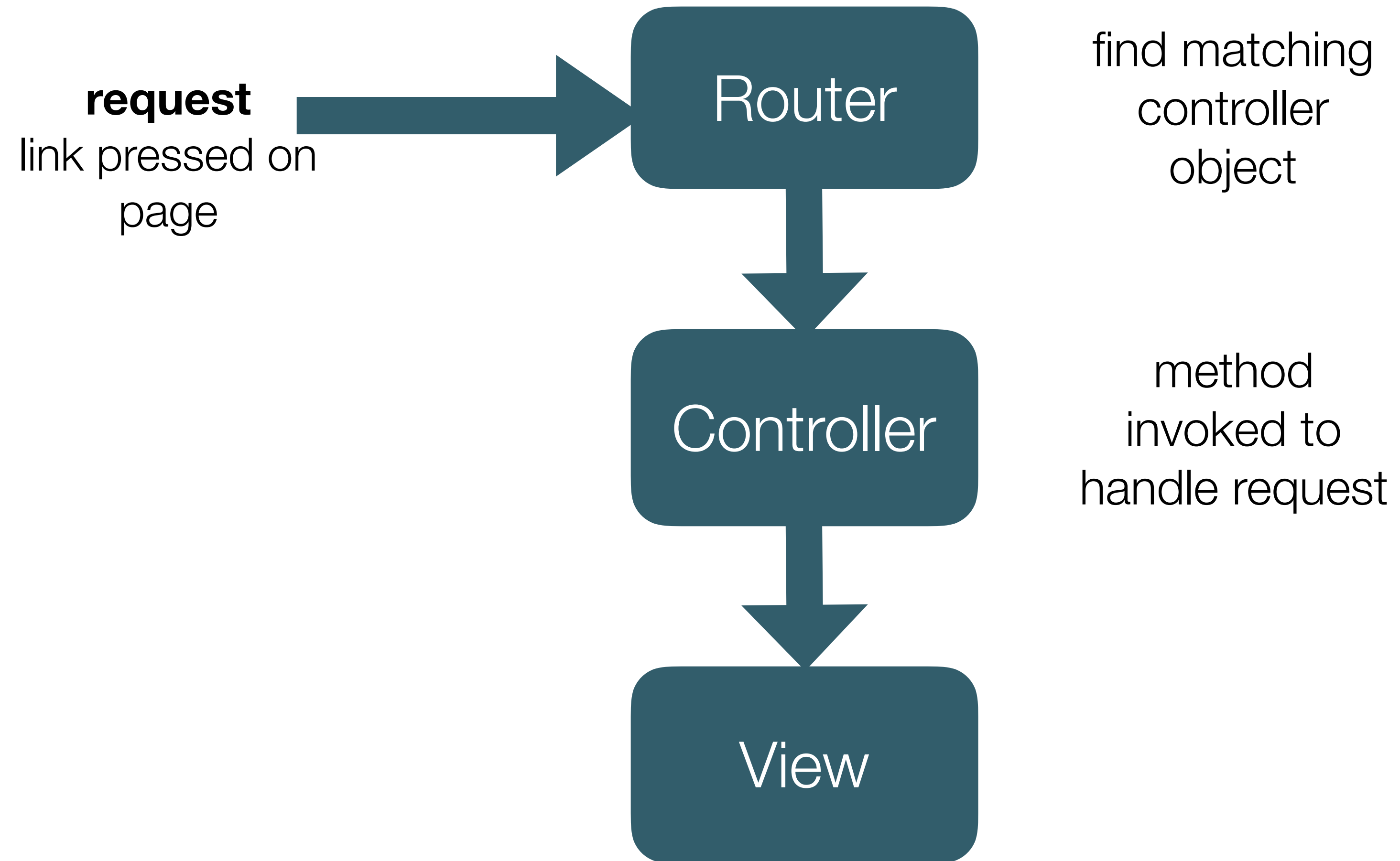


# Router/Controller/View

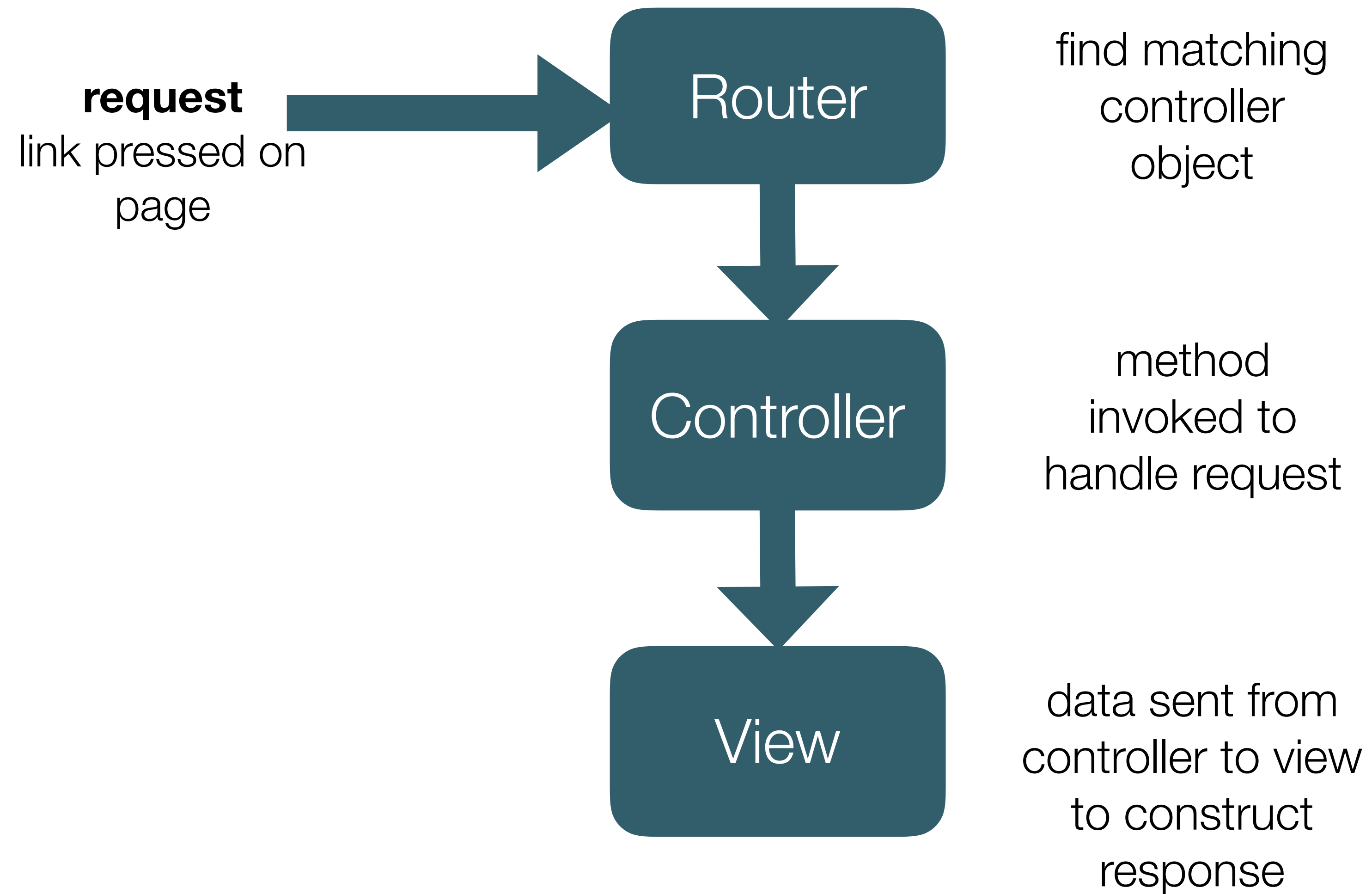




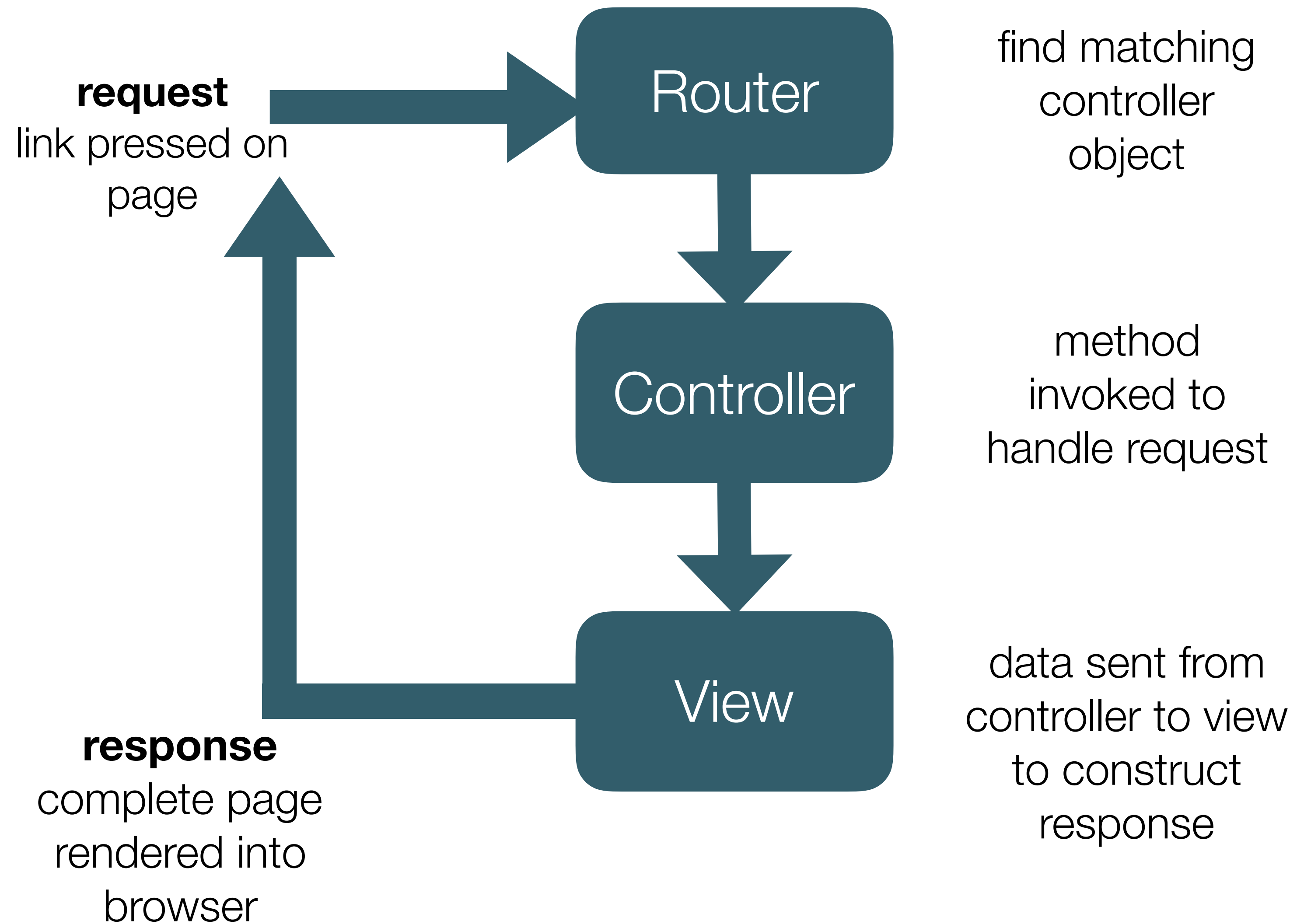
# Router/Controller/View



# Router/Controller/View



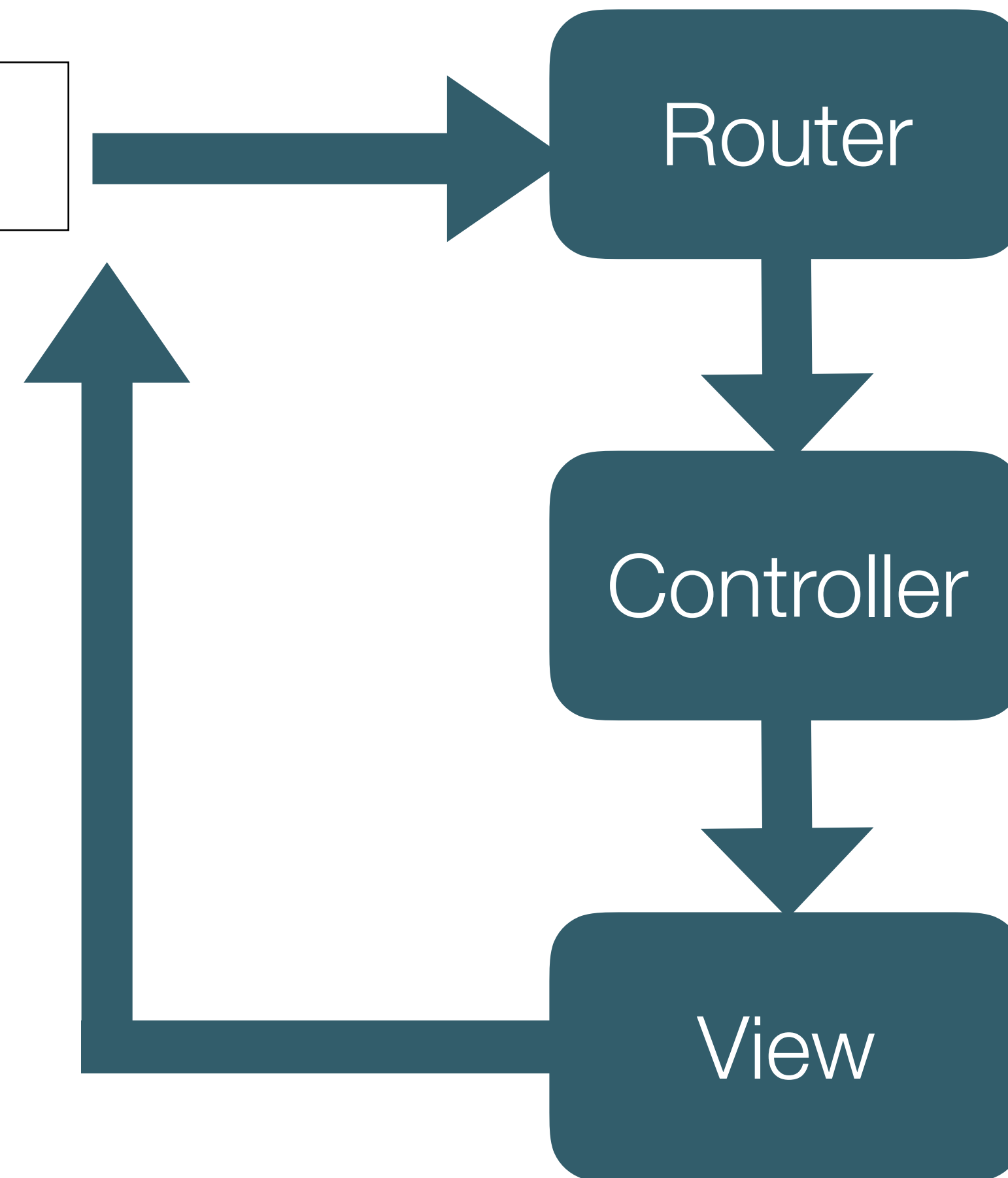
# Router/Controller/View



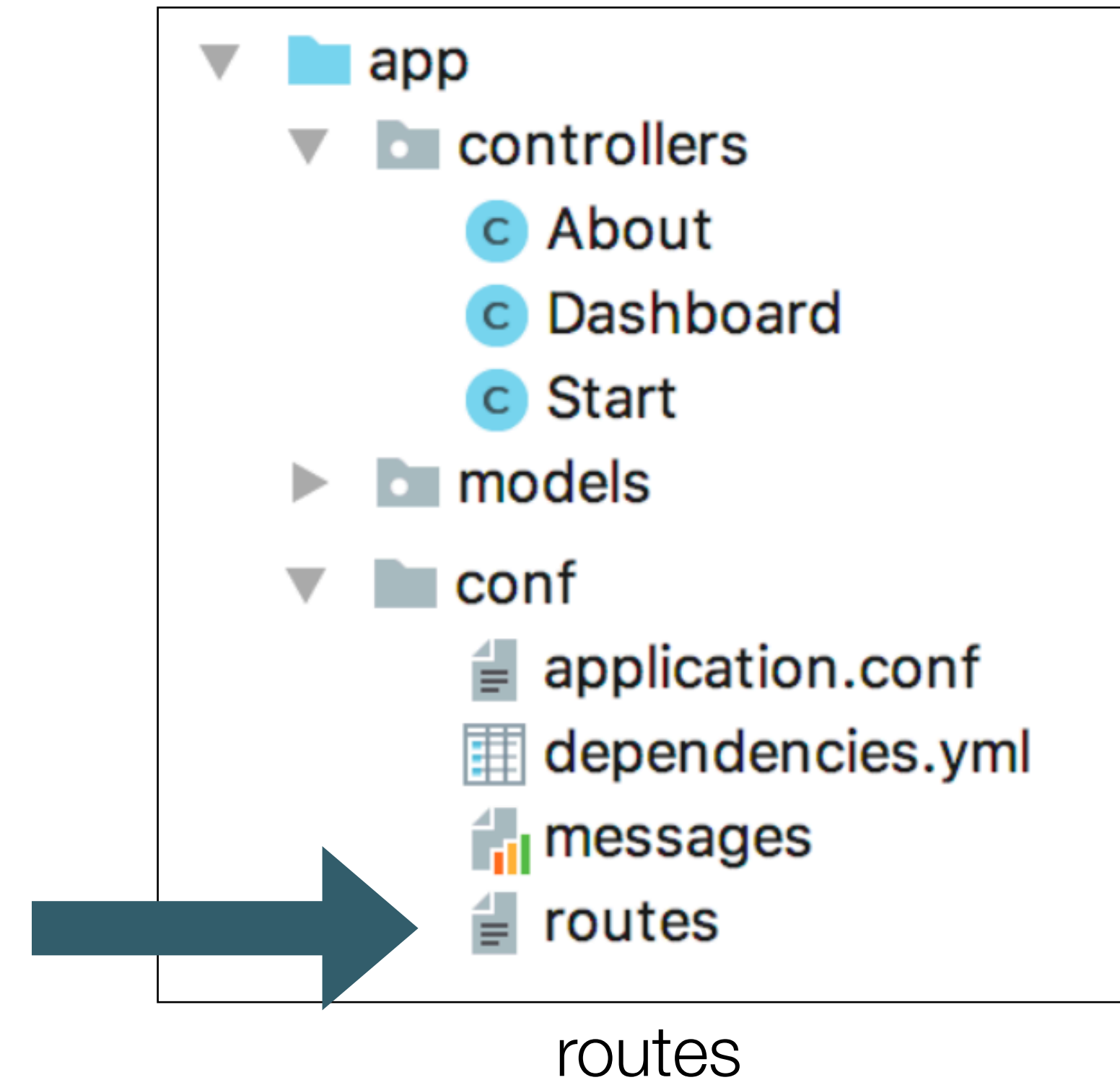
# Request - link pressed on page

```
...  
<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

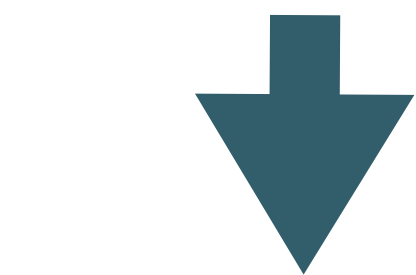


Mach the link patterns with the controler.method

...		
GET	/	Start.index
GET	/dashboard	Dashboard.index
GET	/about	About.index
...		

# Router Behaviour

If user selects these links...



'/'



Start.index

**/'dashboard'**



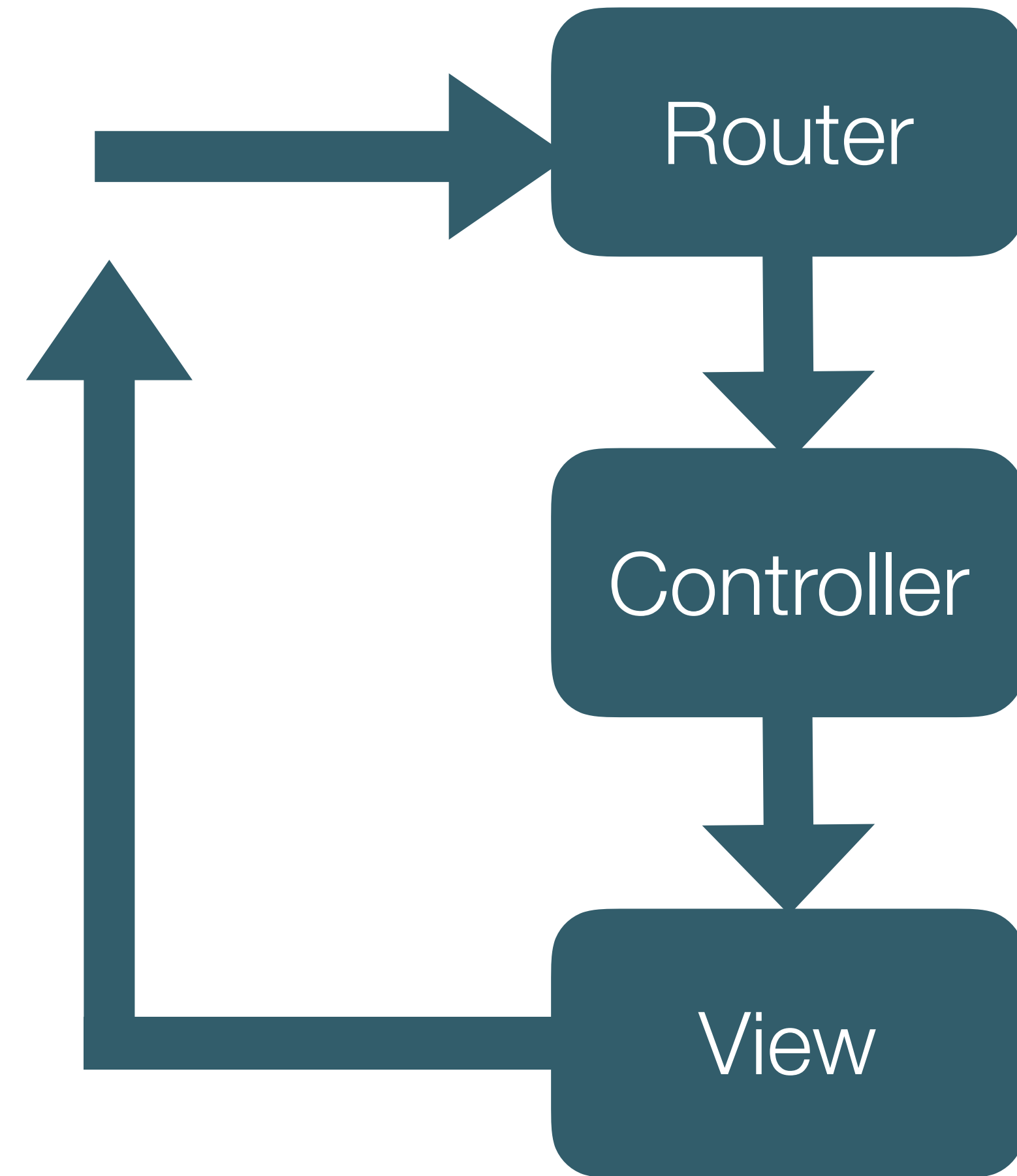
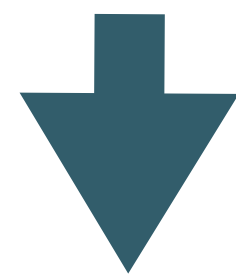
Dashboard.index

**/'about'**



About.index

...then call the corresponding controller methods



# Controller method invoked to handle request

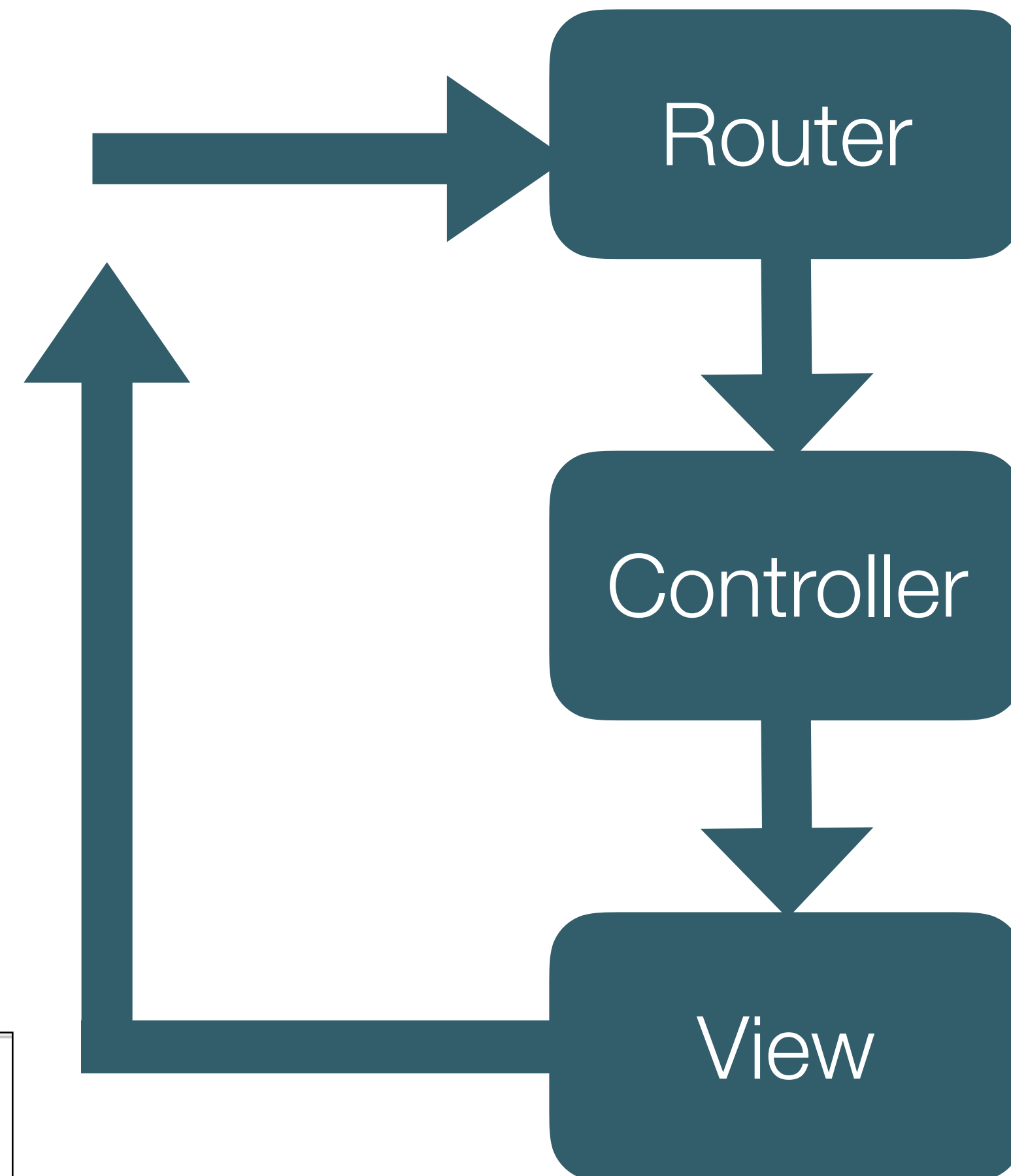
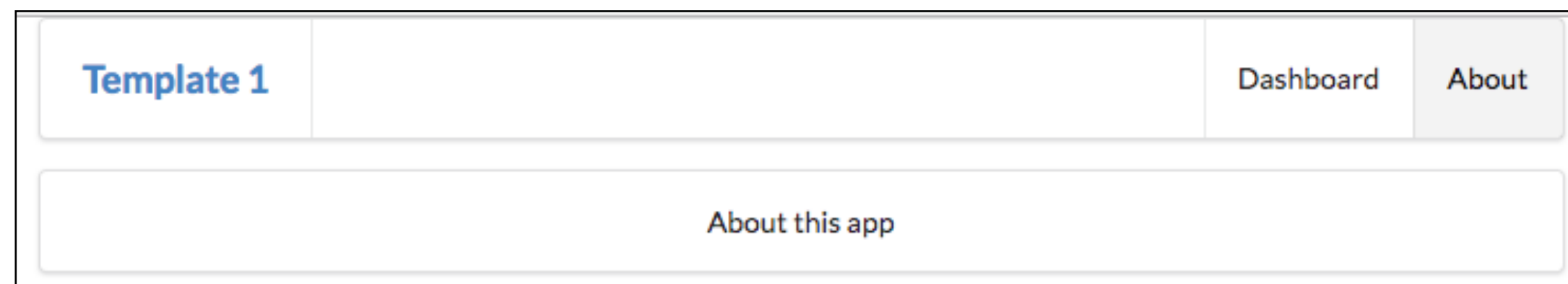
## About.java

```
package controllers;

import play.*;
import play.mvc.*;
import java.util.*;
import models.*;

public class About extends Controller
{
    public static void index() {
        Logger.info("Rendering about");
        render ("about.html");
    }
}
```

## The About controller

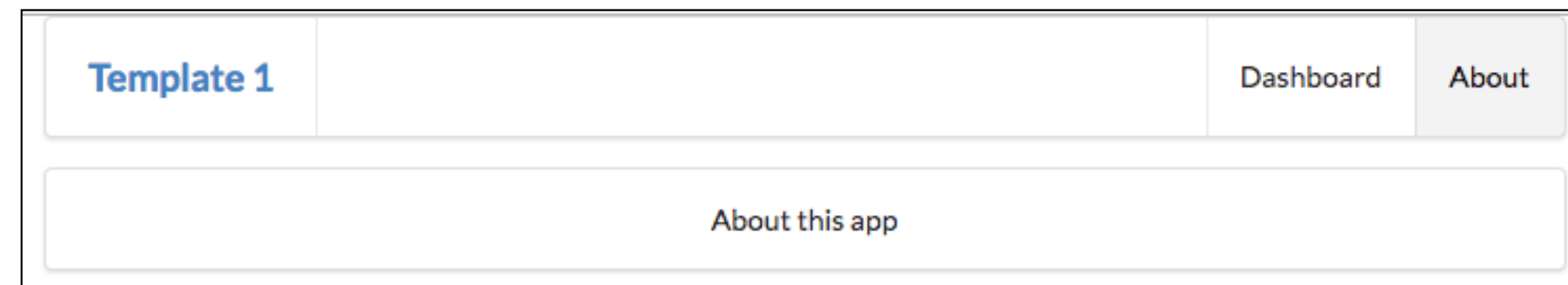


# The 'About' controller index *action*

```
public static void index() {  
    Logger.info("Rendering about");  
    render ("about.html");  
}
```

```
12:28:42,041 INFO ~ Application playlist is not  
12:28:42,127 INFO ~ Rendering Dashboard  
12:28:44,618 INFO ~ Rendering about  
12:28:45,193 INFO ~ Rendering Dashboard  
12:28:46,233 INFO ~ Rendering Start  
12:28:47,233 INFO ~ Rendering Dashboard  
12:29:18,611 INFO ~ Rendering Dashboard  
12:29:46,311 INFO ~ Rendering about  
12:29:47,111 INFO ~ Rendering Dashboard  
12:29:48,199 INFO ~ Rendering Start
```

Log a message  
to the console



Render the 'about' view

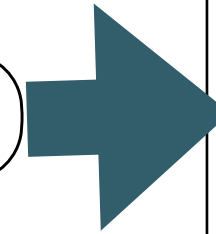


about.js

# Back-end + Front-End

about.html

```
public static void index() {  
    Logger.info("Rendering about");  
    render ("about.html");  
}
```



```
#{extends 'main.html' /}  
#{set title:'About' /}  
  
#{menu id:"about"/}  
  
<section class="ui center aligned middle aligned segment">  
    <p>  
        About this app  
    </p>  
</section>
```



menu.html

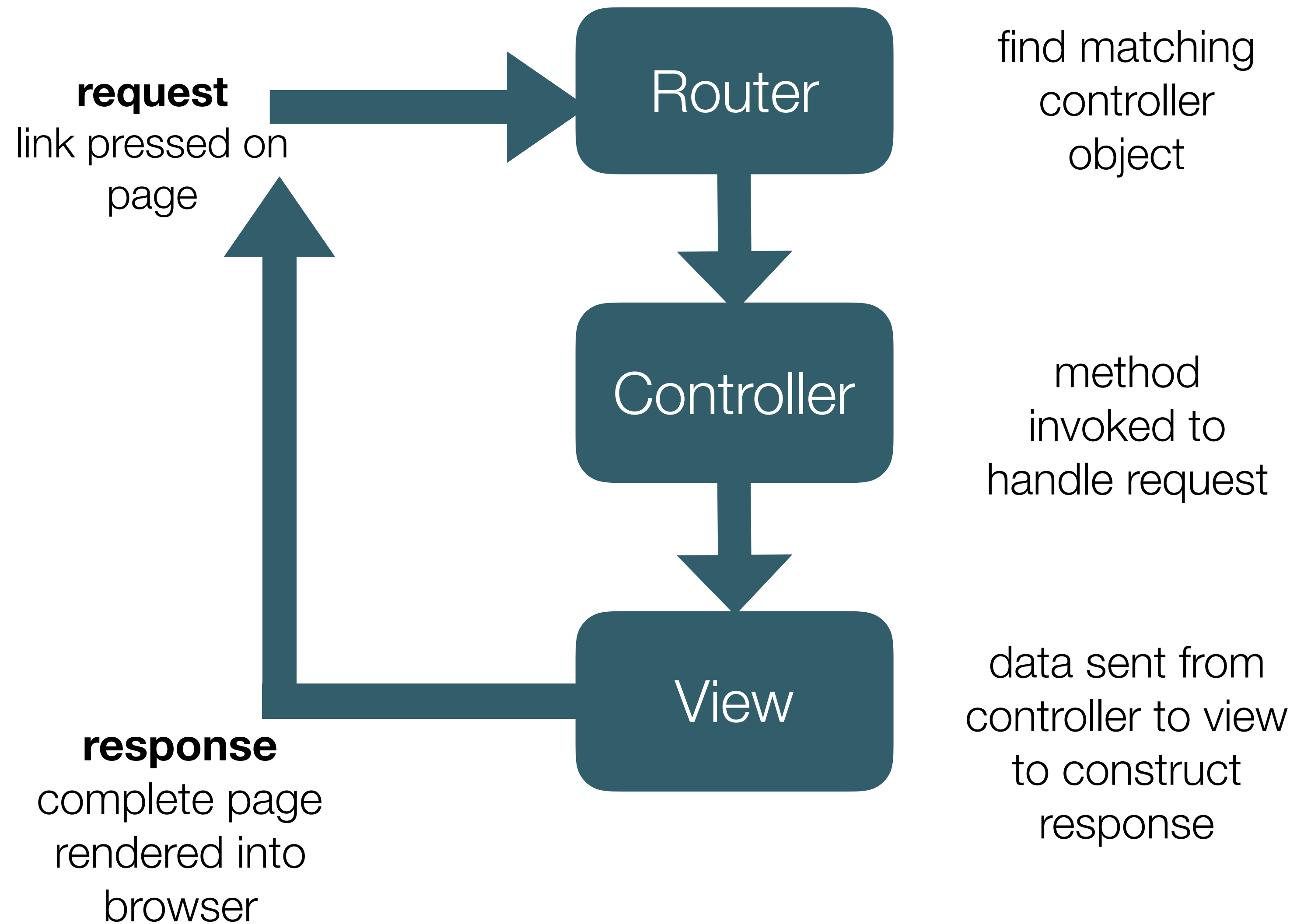


main.html

```
<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>
```

```
<!DOCTYPE html>  
<html>  
    <head>  
        <title>#{get 'title' /}</title>  
        <script type="text/javascript" src="https://cdnjs.cloudflare.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>  
        <script type="text/javascript" src="https://cdnjs.cloudflare.com/ajax/libs/jquery-ui/1.12.1/jquery-ui.min.js"></script>  
        <link type="text/css" href="https://cdnjs.cloudflare.com/ajax/libs/semantic-ui/2.2.8/semantic.min.css"></link>  
    </head>  
    <body>  
        <section class="ui container">  
            #{doLayout /}  
        </section>  
    </body>
```

# Router/Controller/View



# Dashboard Controller

```
package controllers;

import play.Logger;
import play.mvc.Controller;

public class Dashboard extends Controller
{
    public static void index() {
        Logger.info("Rendering Dashboard");
        render ("dashboard.html");
    }
}
```

# Start Controller

```
package controllers;

import play.Logger;
import play.mvc.Controller;

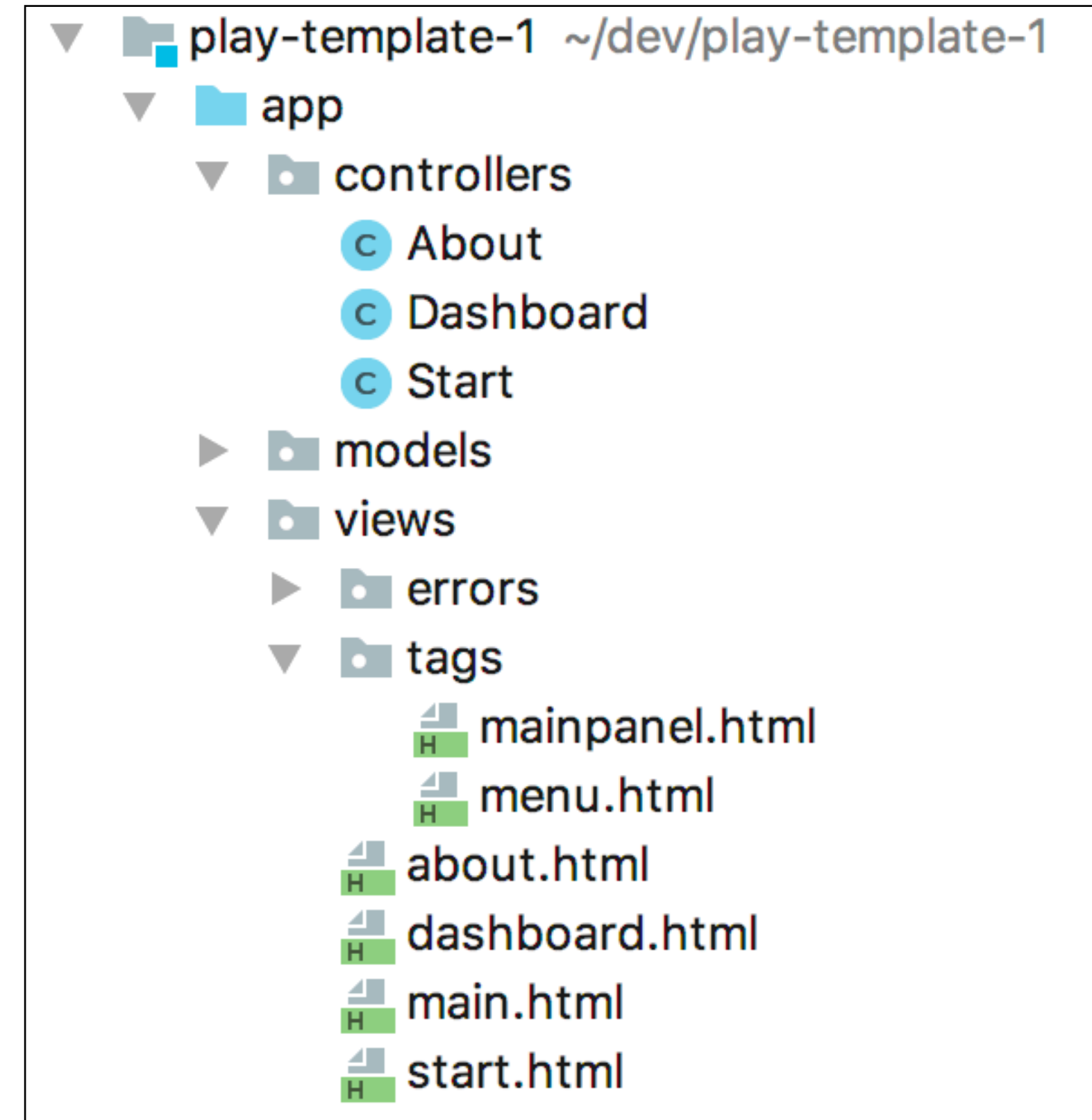
public class Start extends Controller
{
    public static void index() {
        Logger.info("Rendering Start");
        render ("start.html");
    }
}
```

# Application Structure

3 Controllers

which will render

3 matching views



# routes/controllers

Start.java

```
package controllers;  
...  
public class About extends Controller  
{  
    public static void index() {  
        Logger.info("Rendering about");  
        render ("about.html");  
    }  
}
```

Dashboard.java

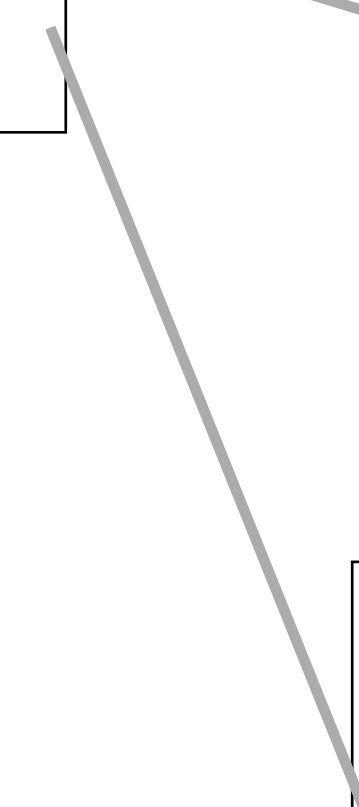
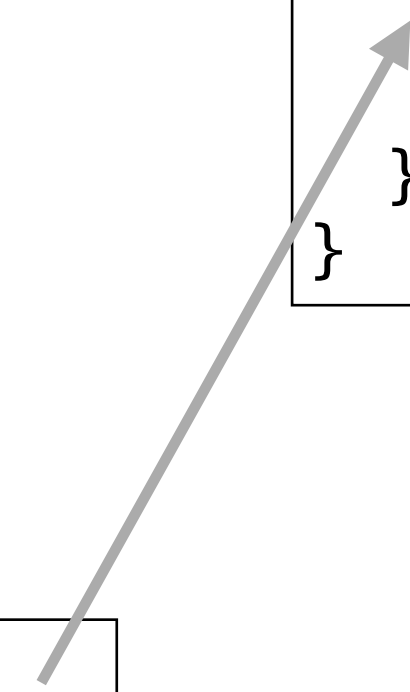
```
package controllers;  
...  
public class Dashboard extends Controller  
{  
    public static void index() {  
        Logger.info("Rendering Dashboard");  
        render ("dashboard.html");  
    }  
}
```

About.java

```
package controllers;  
...  
public class Start extends Controller  
{  
    public static void index() {  
        Logger.info("Rendering Start");  
        render ("start.html");  
    }  
}
```

routes.js

```
...  
GET    /           Start.index  
GET    /dashboard Dashboard.index  
GET    /about     About.index  
...
```



# controllers/views

```
package controllers;
...
public class About extends Controller
{
    public static void index() {
        Logger.info("Rendering about");
        render ("about.html");
    }
}
```

```
start.html
#{extends 'main.html' /}
#{set title:'About' /}

#{menu id:"start"/}

<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>
```

```
package controllers;
...
public class Dashboard extends Controller
{
    public static void index() {
        Logger.info("Rendering Dashboard");
        render ("dashboard.html");
    }
}
```

```
dashboard.html
#{extends 'main.html' /}
#{set title:'Dashboard' /}

#{menu id:"dashboard"/}

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

```
package controllers;
...
public class Start extends Controller
{
    public static void index() {
        Logger.info("Rendering Start");
        render ("start.html");
    }
}
```

```
about.html
#{extends 'main.html' /}
#{set title:'About' /}

#{menu id:"about"/}

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