

Web Development

Produced
by

Eamonn de Leastar (edeleastar@wit.ie)

Department of Computing, Maths & Physics
Waterford Institute of Technology

<http://www.wit.ie>

<http://elearning.wit.ie>



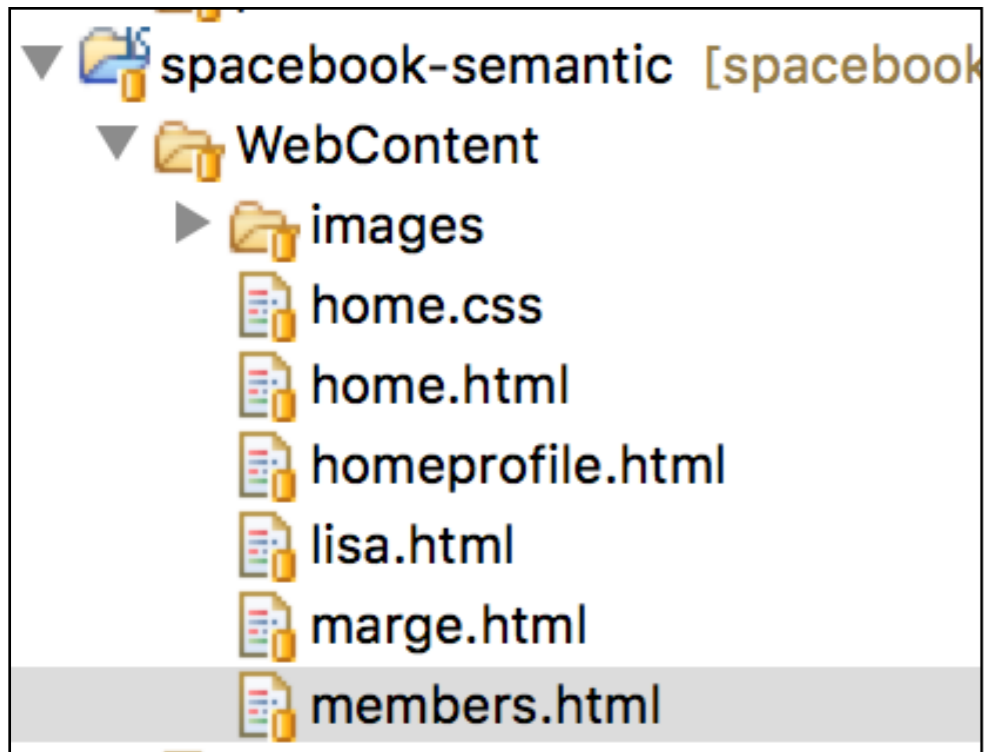
Waterford Institute of Technology
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRCE



Spacebook Skeleton

Web Development

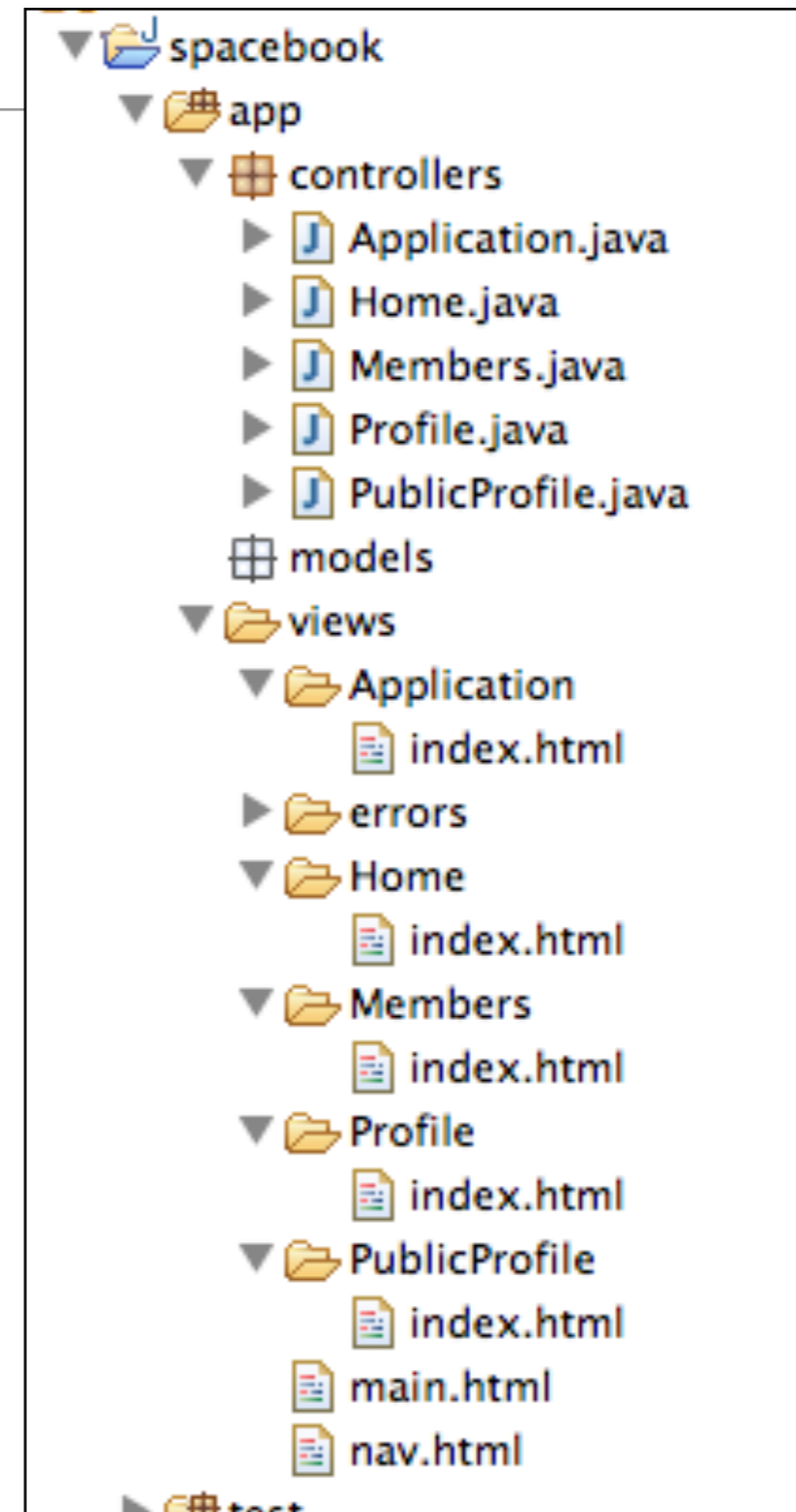
'Mock-Up' spacebook-bootstrap project



- spacebook-semantic is a version of the spacebook site built using Semantic UI libraries
- Incorporates multicolumn layout
- Navigation bar
- Simple lists
- images

spacebook Play project

- A Dynamic Web Application Project

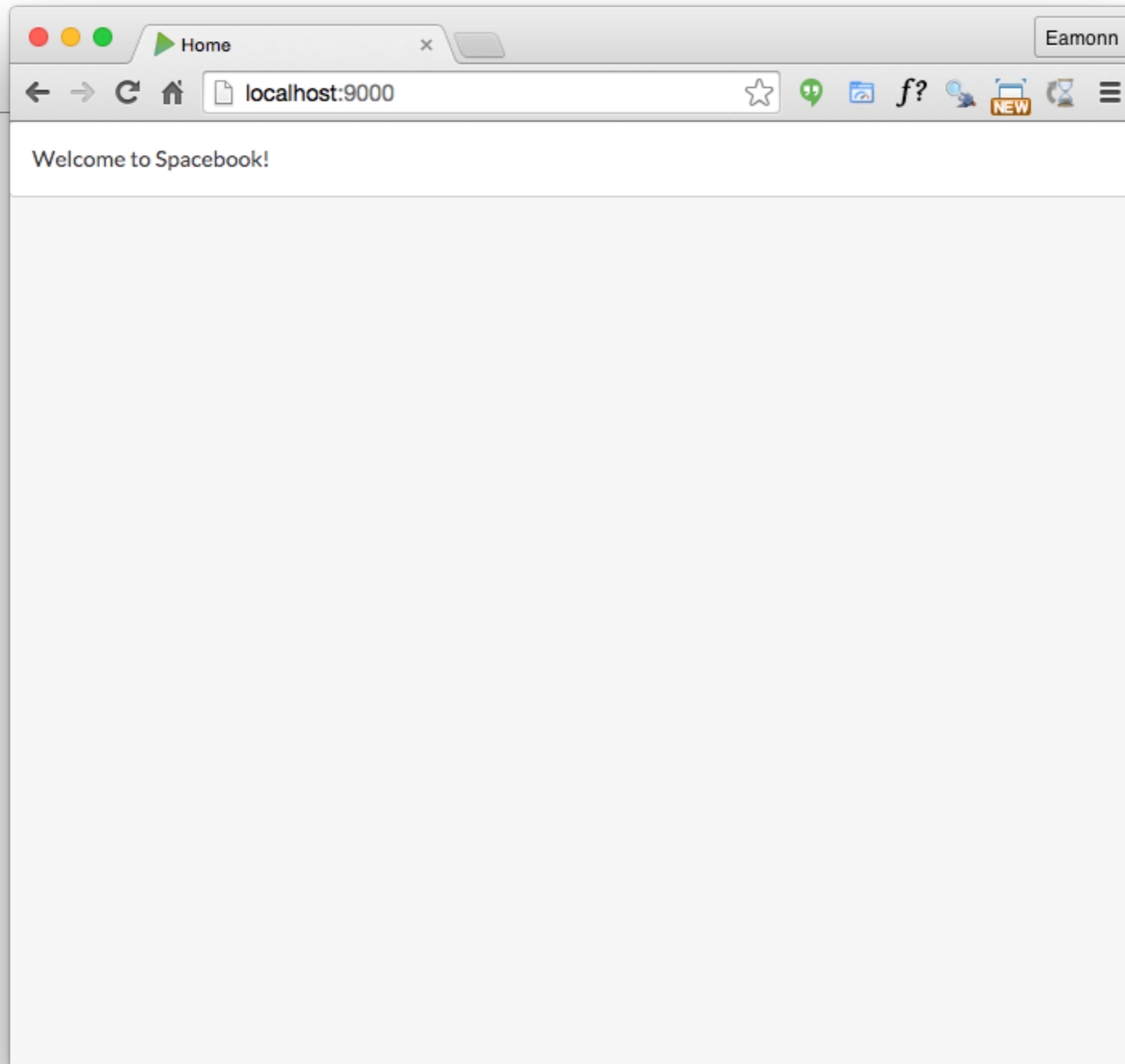


main.html

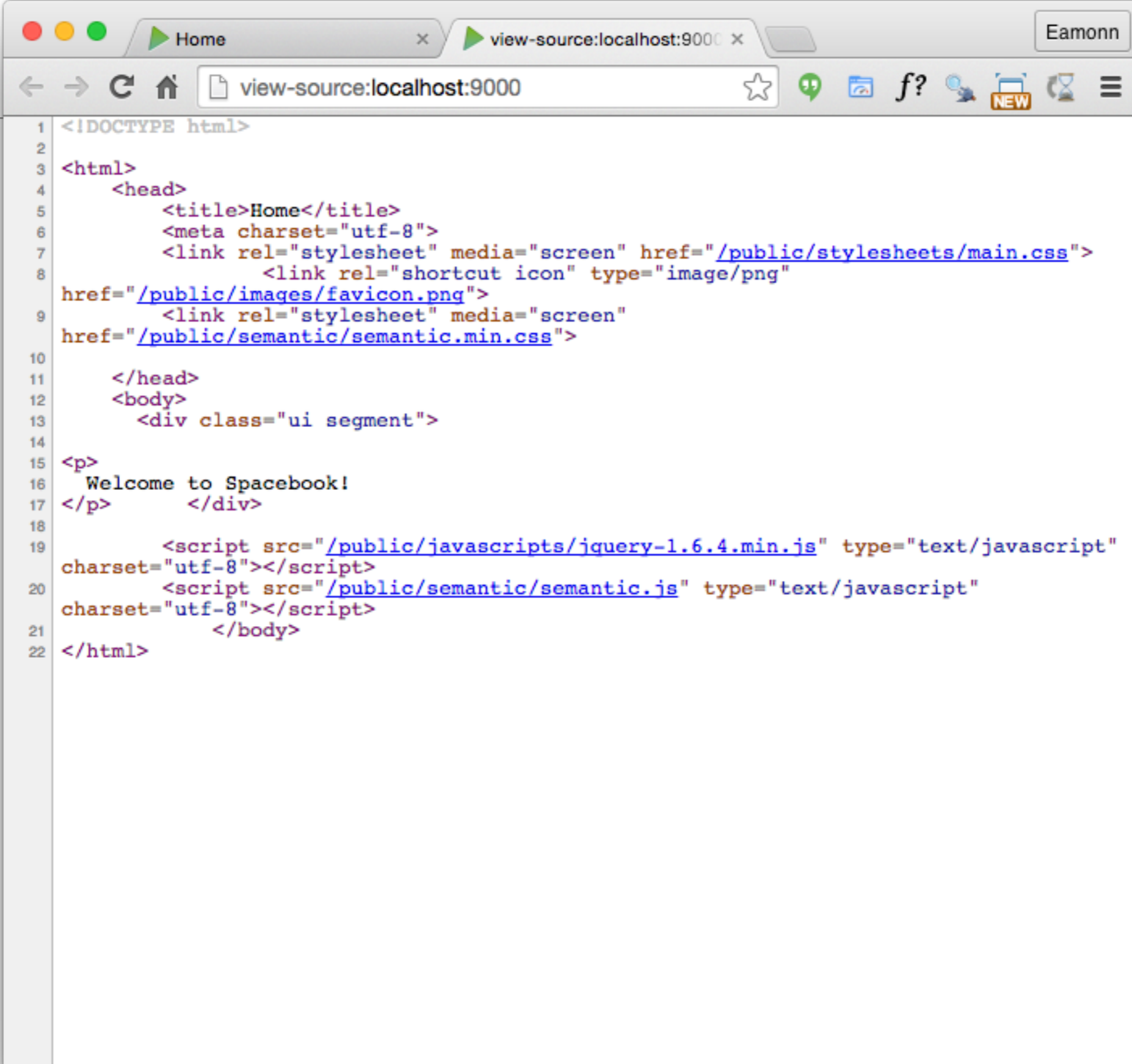
```
<!DOCTYPE html>
<html>
  <head>
    <title>#{get 'title' /}</title>
    <meta charset="#{$_response_encoding}">
    <link rel="stylesheet" type="text/css" href="http://cdnjs.cloudflare.com/ajax/libs/semantic-u
    <script src="http://code.jquery.com/jquery-2.1.1.min.js"></script>
    <script src="http://cdnjs.cloudflare.com/ajax/libs/semantic-ui/2.1.8/semantic.min.js"></scrip
    <link rel="stylesheet" media="screen" href="@{'/public/stylesheets/main.css'}">
    <link rel="shortcut icon" type="image/png" href="@{'/public/images/favicon.png'}">
  </head>
  <body>
    <section class="ui segment">
      #{doLayout /}
    </section>
  </body>
</html>
```

- Link to semantic ui files
- Standard html - except!
 - ‘#’ symbol is not html - what does it mean?
 - ‘@’ symbol also not templ

Styled with Semantic default theme

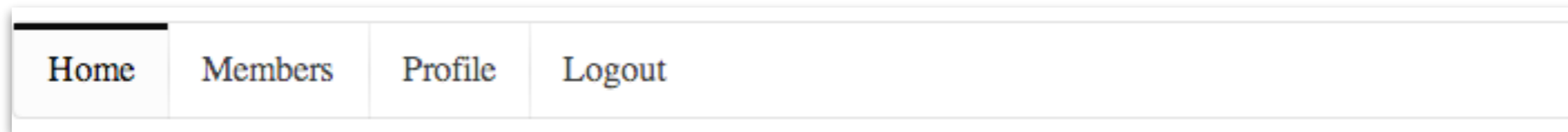


View/source



```
1 <!DOCTYPE html>
2
3 <html>
4   <head>
5     <title>Home</title>
6     <meta charset="utf-8">
7     <link rel="stylesheet" media="screen" href="/public/stylesheets/main.css">
8     <link rel="shortcut icon" type="image/png"
9 href="/public/images/favicon.png">
10    <link rel="stylesheet" media="screen"
11 href="/public/semantic/semantic.min.css">
12  </head>
13  <body>
14    <div class="ui segment">
15      <p>
16        Welcome to Spacebook!
17      </p>
18    </div>
19    <script src="/public/javascripts/jquery-1.6.4.min.js" type="text/javascript"
20 charset="utf-8"></script>
21    <script src="/public/semantic/semantic.js" type="text/javascript"
22 charset="utf-8"></script>
23  </body>
24 </html>
```

menu bar



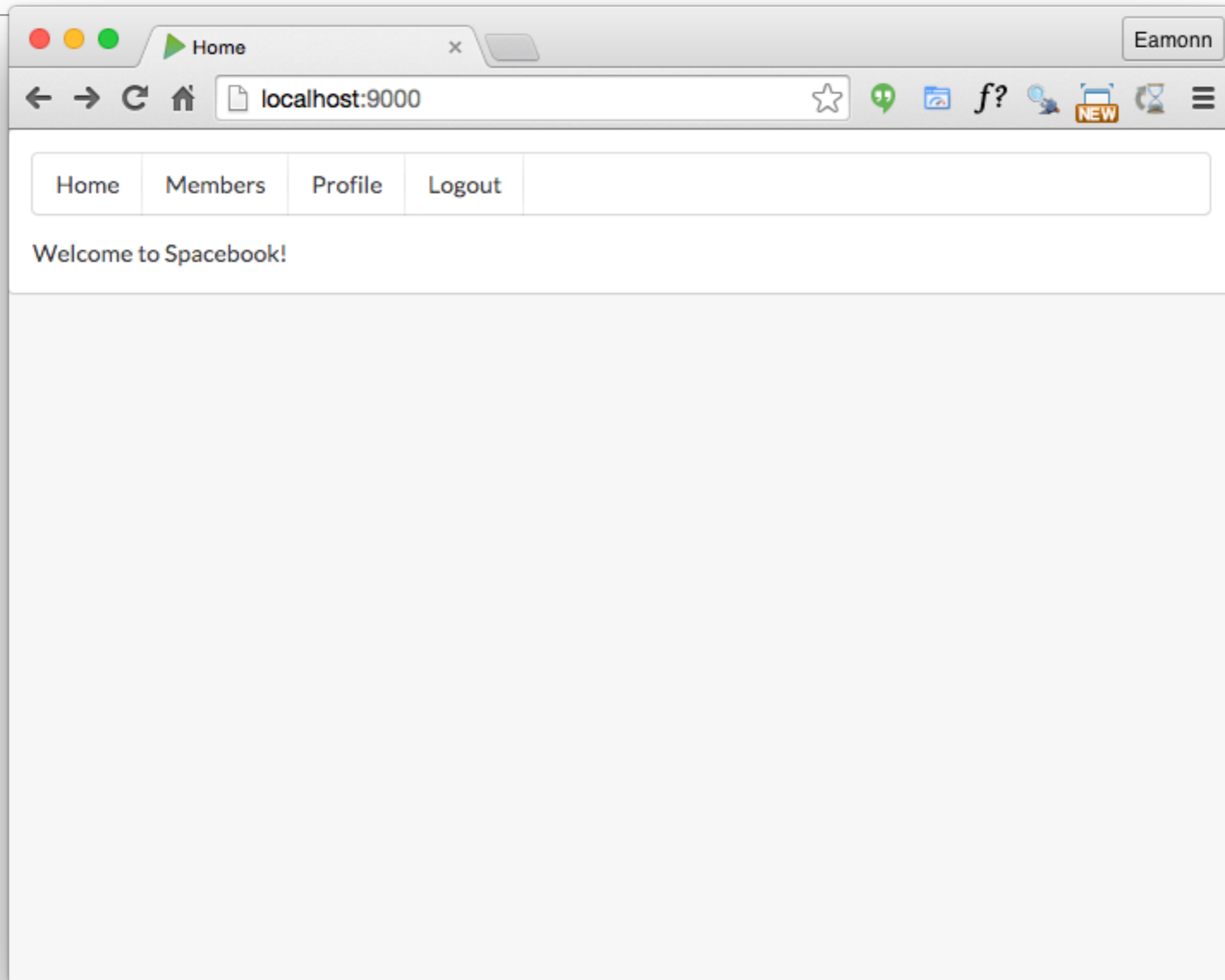
```
<nav class="ui menu">  
  <a class="ui item" href="home.html">Home</a>  
  <a class="ui item" href="members.html">Members</a>  
  <a class="ui item" href="homeprofile.html">Profile</a>  
  <a class="ui item" href="login.html">Logout</a>  
</nav>
```


Menu in a view

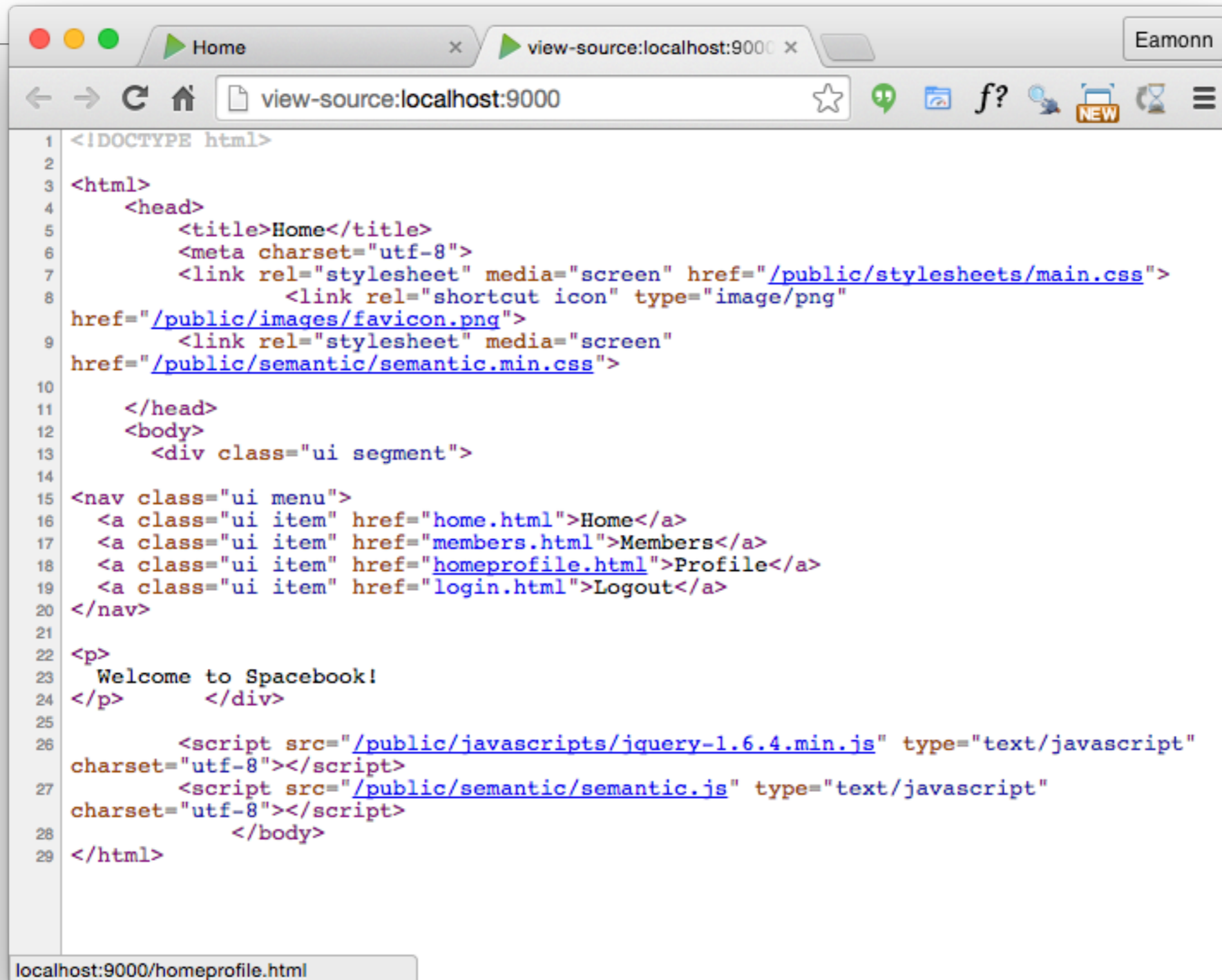
```
#{extends 'main.html' /}  
#{set title:'Home' /}  
  
<nav class="ui menu">  
  <a class="ui item" href="home.html">Home</a>  
  <a class="ui item" href="members.html">Members</a>  
  <a class="ui item" href="homeprofile.html">Profile</a>  
  <a class="ui item" href="login.html">Logout</a>  
</nav>  
  
<p>  
  Welcome to Facebook!  
</p>
```

index.html

Menu now part of the rendered page



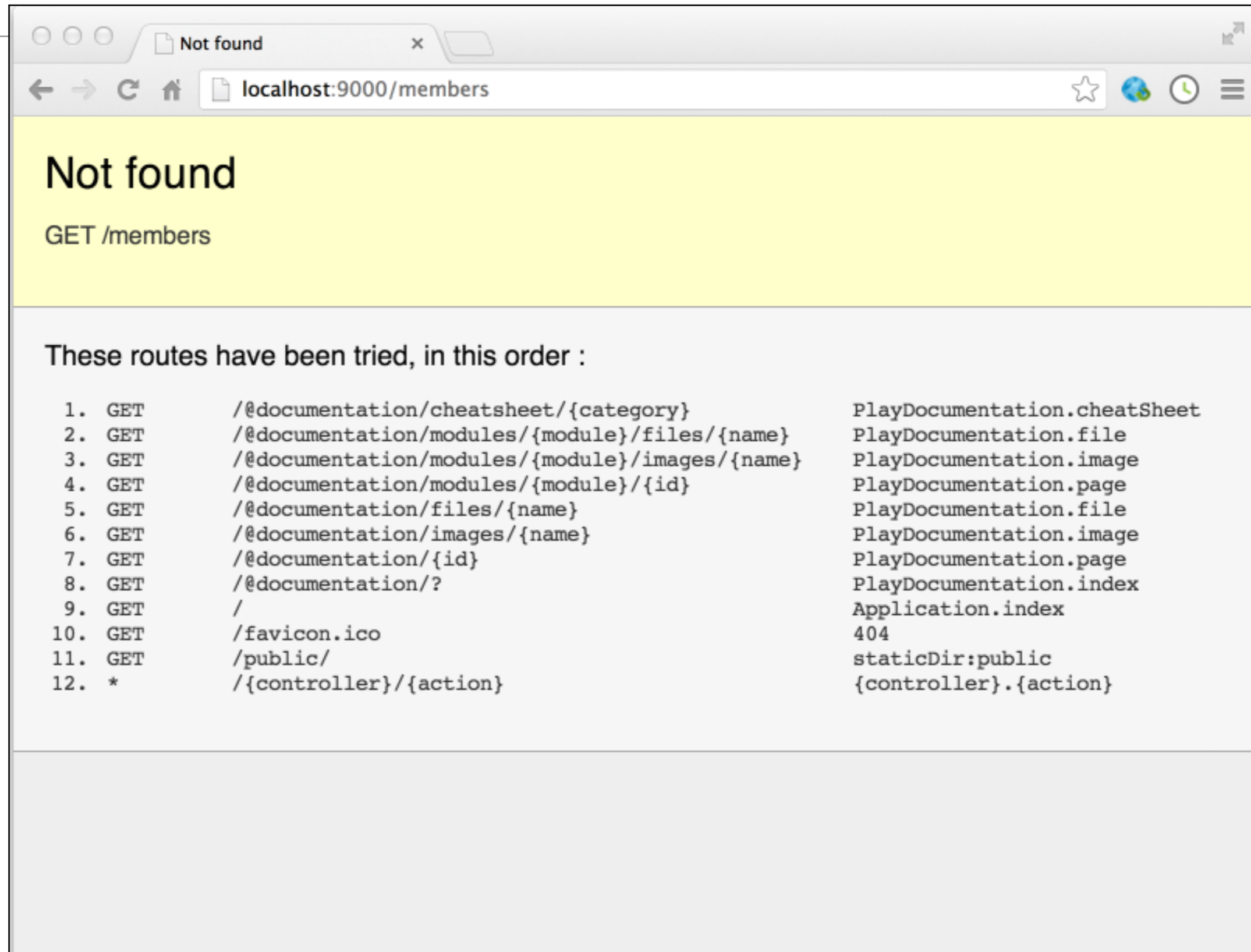
view->source



```
1 <!DOCTYPE html>
2
3 <html>
4   <head>
5     <title>Home</title>
6     <meta charset="utf-8">
7     <link rel="stylesheet" media="screen" href="/public/stylesheets/main.css">
8     <link rel="shortcut icon" type="image/png"
href="/public/images/favicon.png">
9     <link rel="stylesheet" media="screen"
href="/public/semantic/semantic.min.css">
10
11   </head>
12   <body>
13     <div class="ui segment">
14
15     <nav class="ui menu">
16       <a class="ui item" href="home.html">Home</a>
17       <a class="ui item" href="members.html">Members</a>
18       <a class="ui item" href="homeprofile.html">Profile</a>
19       <a class="ui item" href="login.html">Logout</a>
20     </nav>
21
22     <p>
23       Welcome to Spacebook!
24     </p>
25
26     <script src="/public/javascripts/jquery-1.6.4.min.js" type="text/javascript"
charset="utf-8"></script>
27     <script src="/public/semantic/semantic.js" type="text/javascript"
charset="utf-8"></script>
28   </body>
29 </html>
```

localhost:9000/homeprofile.html

Clicking the menu links...



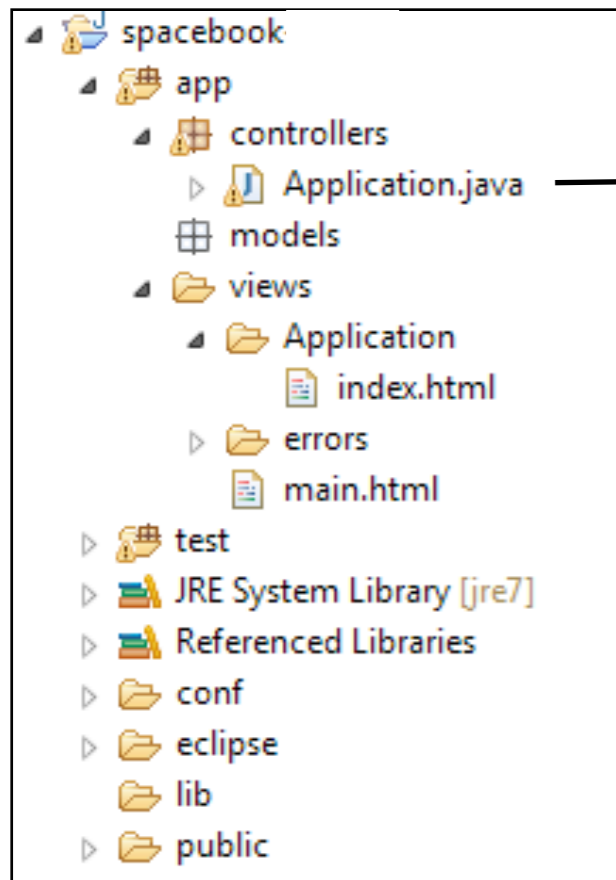
Not found

GET /members

These routes have been tried, in this order :

1.	GET	/@documentation/cheatsheet/{category}	PlayDocumentation.cheatSheet
2.	GET	/@documentation/modules/{module}/files/{name}	PlayDocumentation.file
3.	GET	/@documentation/modules/{module}/images/{name}	PlayDocumentation.image
4.	GET	/@documentation/modules/{module}/{id}	PlayDocumentation.page
5.	GET	/@documentation/files/{name}	PlayDocumentation.file
6.	GET	/@documentation/images/{name}	PlayDocumentation.image
7.	GET	/@documentation/{id}	PlayDocumentation.page
8.	GET	/@documentation/?	PlayDocumentation.index
9.	GET	/	Application.index
10.	GET	/favicon.ico	404
11.	GET	/public/	staticDir:public
12.	*	{controller}/{action}	{controller}.{action}

Controllers



```
package controllers;

import play.*;
import play.mvc.*;

import java.util.*;

import models.*;

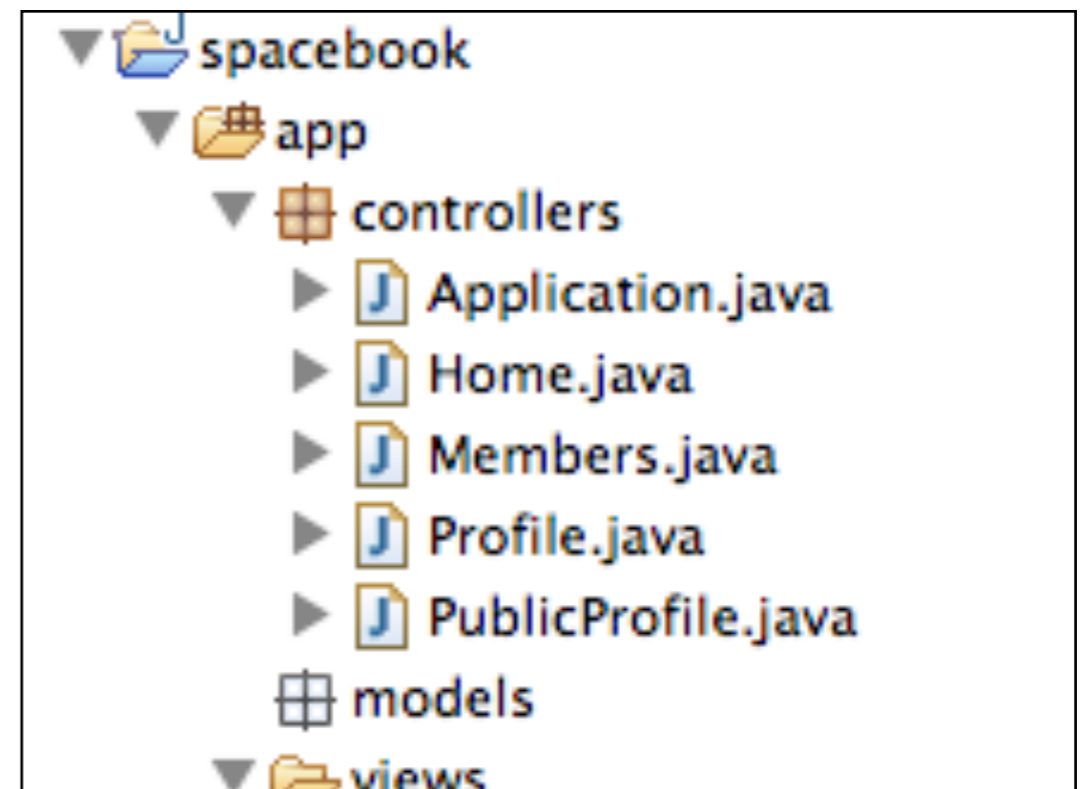
public class Application extends Controller
{
    public static void index()
    {
        render();
    }
}
```

- Controller is a Java class containing:
 - public 'static' methods
- Static -> do not require 'objects', an be invoked independently.

Revised Project

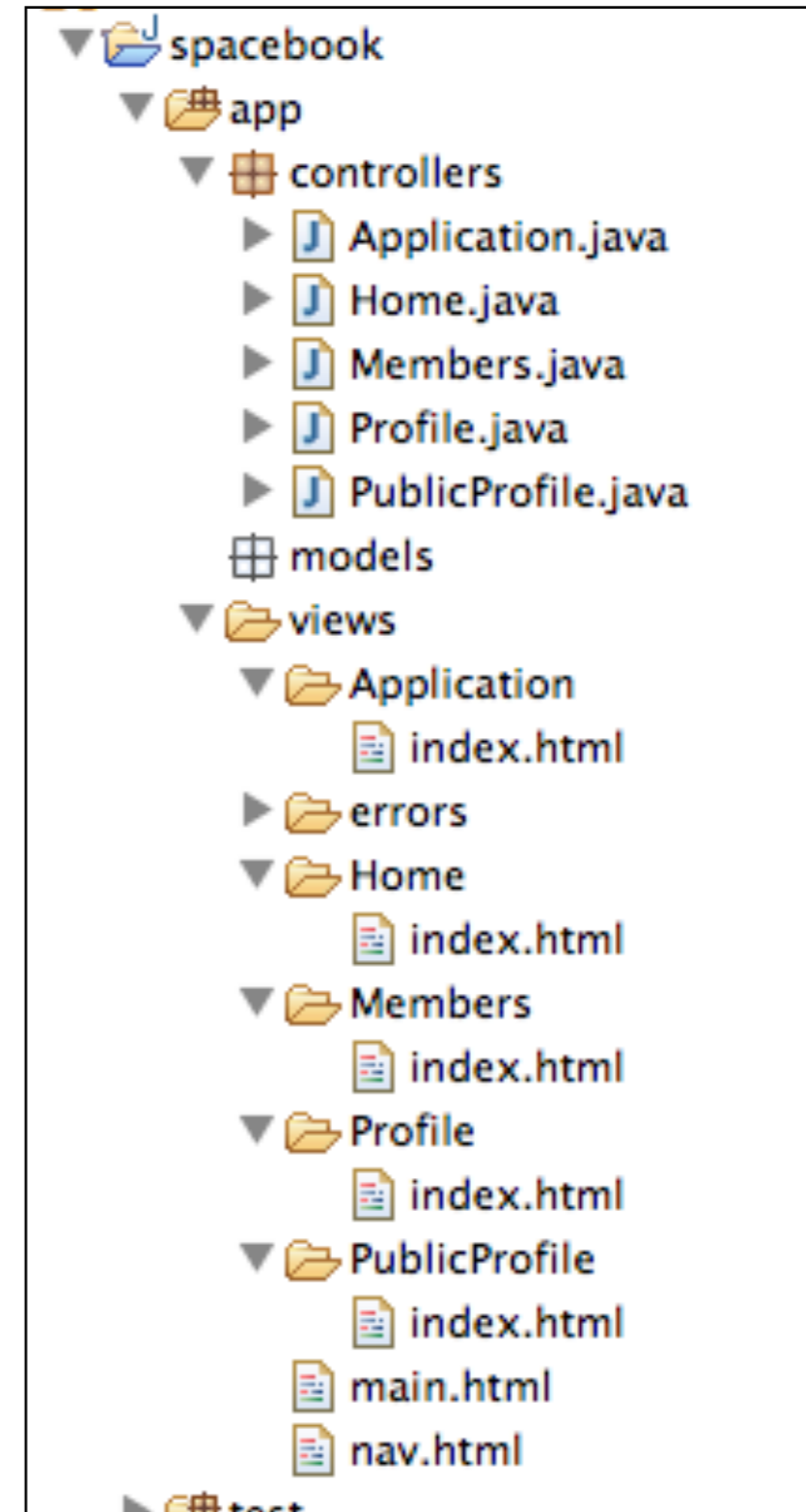
Controllers - One per 'View'

- One way of thinking about controllers is that a separate controller is required to 'supervise' one view.
- Create 4 controllers, one for each of our nav bar items (almost):
 - Home
 - Members
 - Profile
 - PublicProfile
- Each controller can be the same (except for its name)



Controller/View Correspondence

- Each controller must have a corresponding 'view'
- This will be called 'index.html' by default, and be located in a folder - named identically to the controller - in the views folder



Controller 'Wiring' - the routes file

- This file contains a mapping:
 - incoming request -> Java Controller

```
# Routes
# This file defines all application routes (Higher priority routes first)
# ~~~~

# Home page
GET    /                               Application.index

# Ignore favicon requests
GET    /favicon.ico                     404

# Map static resources from the /app/public folder to the /public path
GET    /public/                         staticDir:public

# Catch all
*      /{controller}/{action}          {controller}.{action}
```

Wiring up the controllers

```
# Routes
# This file defines all application routes (Higher priority routes first)
# ~~~~

# Landing page
GET / Home.index

# Home page
GET /home Home.index

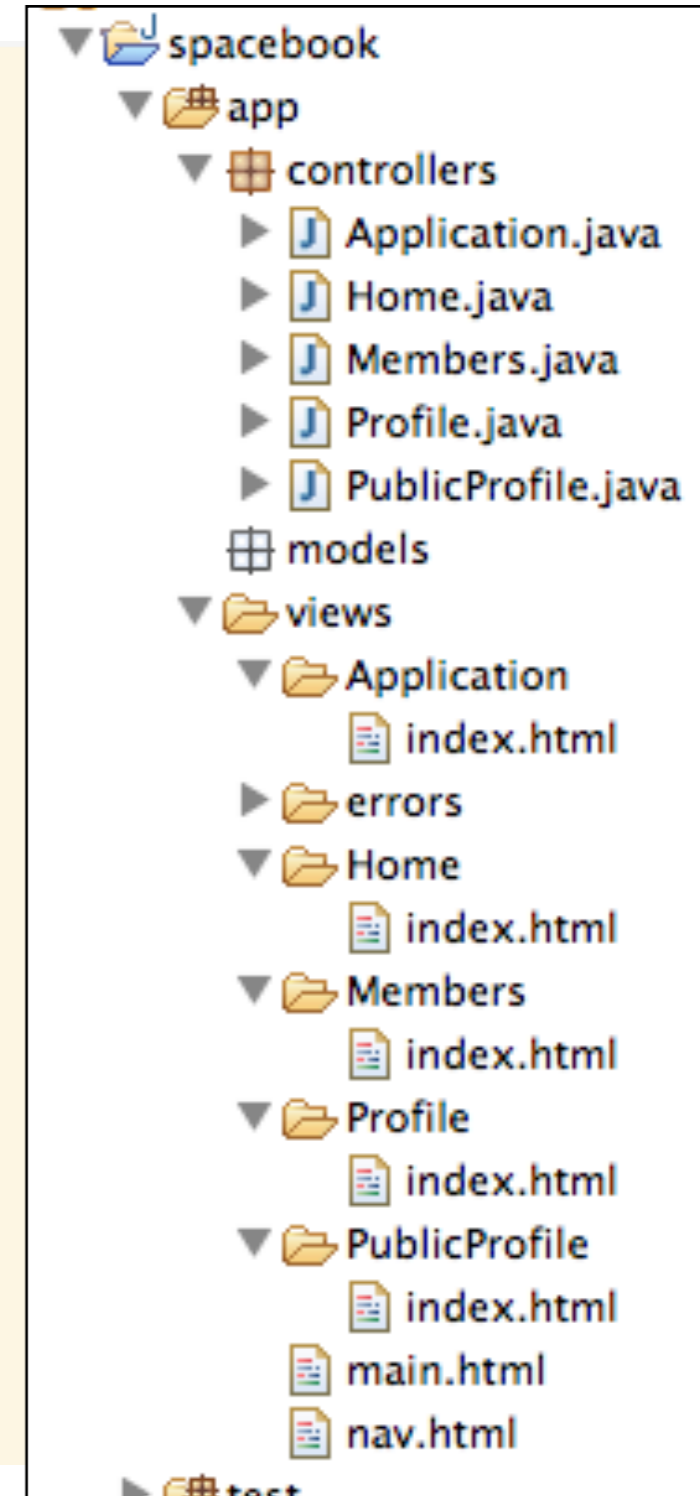
# Members page
GET /members Members.index

# Profile page
GET /profile Profile.index

# Ignore favicon requests
GET /favicon.ico 404

# Map static resources from the /app/public folder to the /public path
GET /public/ staticDir:public

# Catch all
* /{controller}/{action} {controller}.{action}
```



The Controllers

- Much of the 'Programming' of the web application will take place in these classes

```
public class Home extends Controller
{
    public static void index()
    {
        render();
    }
}
```

```
public class Profile extends Controller
{
    public static void index()
    {
        render();
    }
}
```

```
public class Members extends Controller
{
    public static void index()
    {
        render();
    }
}
```

```
public class PublicProfile extends Controller
{
    public static void index()
    {
        render();
    }
}
```

The Views

- Each controller 'renders' each of these views.

```
#{extends 'main.html' /}
#{set title:'Profile' /}
<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

<p>
  Welcome to the Spacebook Profile Page
</p>
```

```
#{extends 'main.html' /}
#{set title:'Home' /}
<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

<p>
  Welcome to the Spacebook Home Page
</p>
```

```
#{extends 'main.html' /}
#{set title:'Members' /}
<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

<p>
  Welcome to the Spacebook Members Page
</p>
```

```

# Routes
# This file defines all application routes (Higher priority routes first)
# ~~~~

# Landing page
GET / Home.index

# Home page
GET /home Home.index

# Members page
GET /members Members.index

# Profile page
GET /profile Profile.index

# Ignore favicon requests
GET /favicon.ico 404

# Map static resources from the /app/public folder to the /public folder
GET /public/ staticDir:public

# Catch all
* /*{controller}/{action} {controller}.action

```

```

public class Home extends Controller
{
    public static void index()
    {
        render();
    }
}

```

```

public class Profile extends Controller
{
    public static void index()
    {
        render();
    }
}

```

```

public class Members extends Controller
{
    public static void index()
    {
        render();
    }
}

```

```

#{extends 'main.html' /}
#{set title:'Profile' /}
<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

<p>
  Welcome to the Spacebook Profile Page
</p>

```

```

#{extends 'main.html' /}
#{set title:'Home' /}
<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

<p>
  Welcome to the Spacebook Home Page
</p>

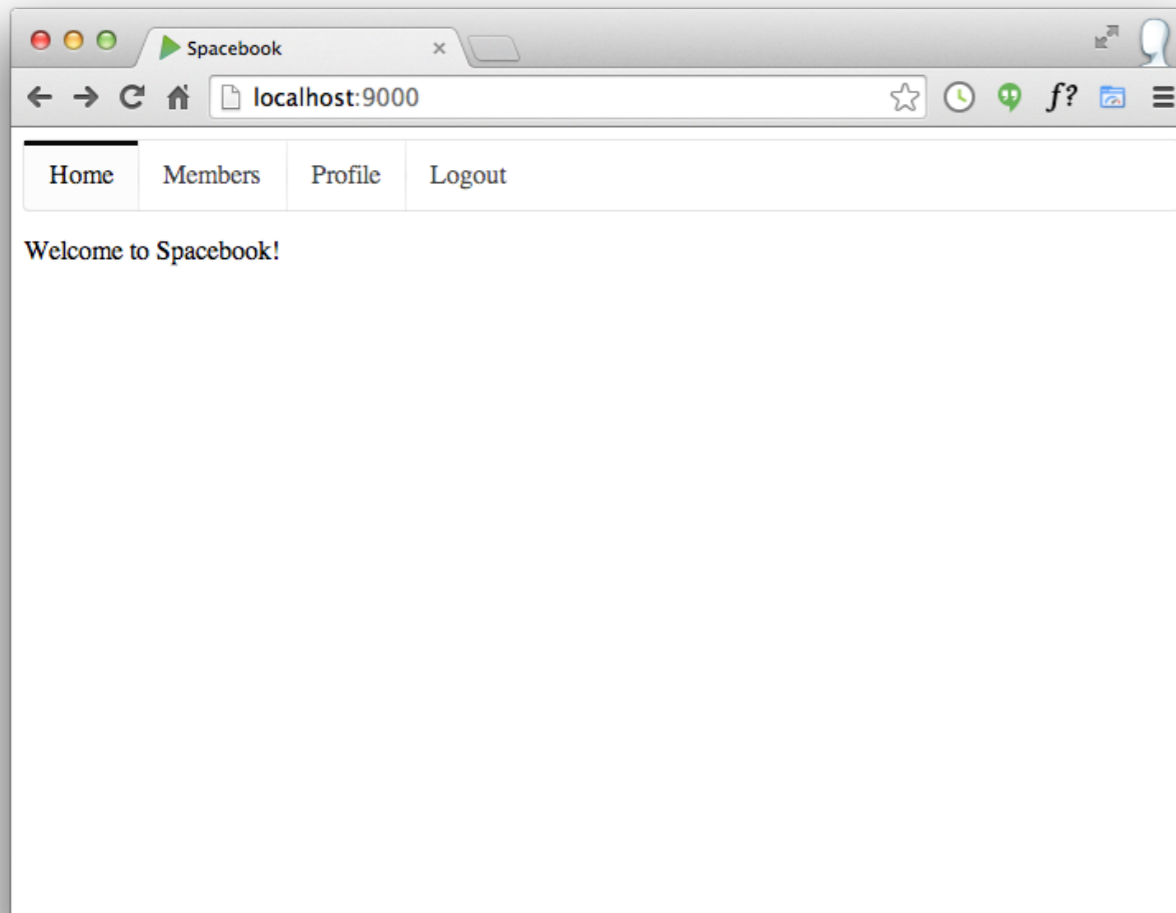
```

```

#{extends 'main.html' /}
#{set title:'Members' /}
<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

<p>
  Welcome to the Spacebook Members Page
</p>

```



Play Request Lifecycle

Lifecycle (1)

- Execute 'play run' in the spacebook folder
- Browse to <http://localhost:9000/home>
- The "home" at the end of this url is

- passed to the 'routes' file

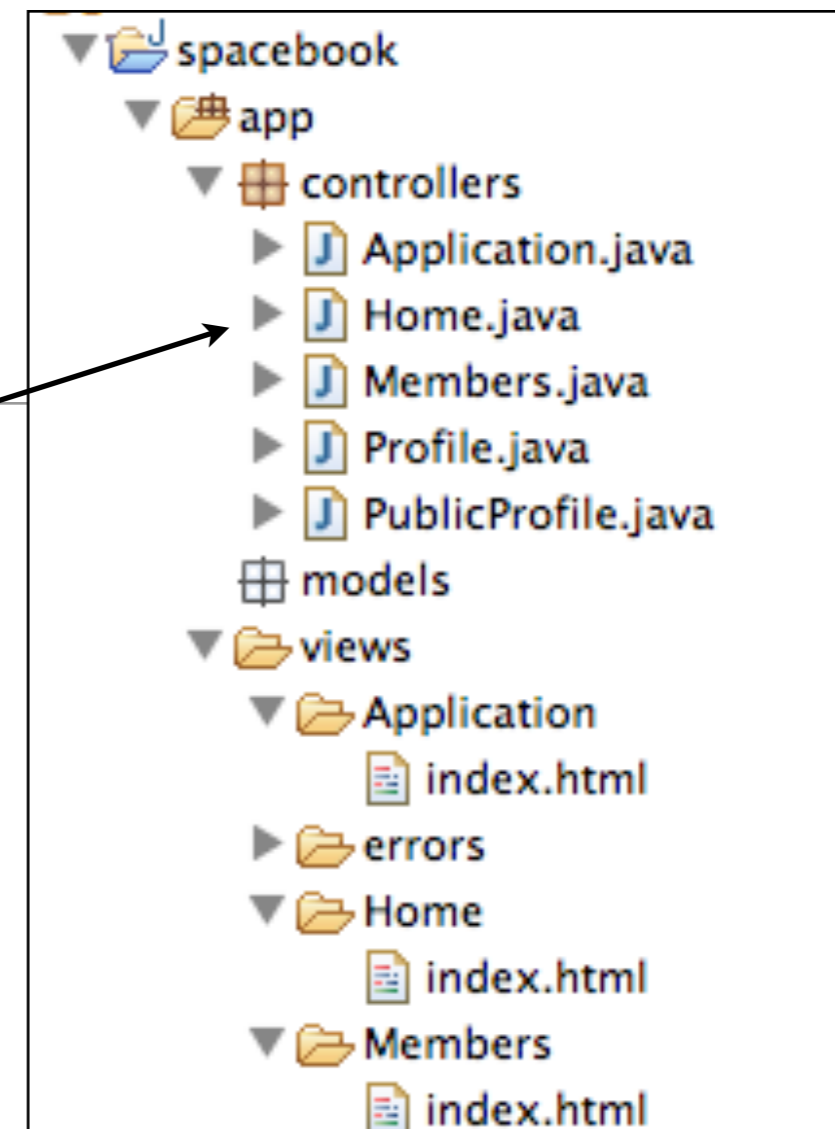
- a match found

GET	/home	Home.index
-----	-------	------------

- which triggers a call to the Java class method 'Home.index()'

Lifecycle (2)

- The Home class is always in the 'controllers' package



- The index() method just calls "render()"

```
package controllers;

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

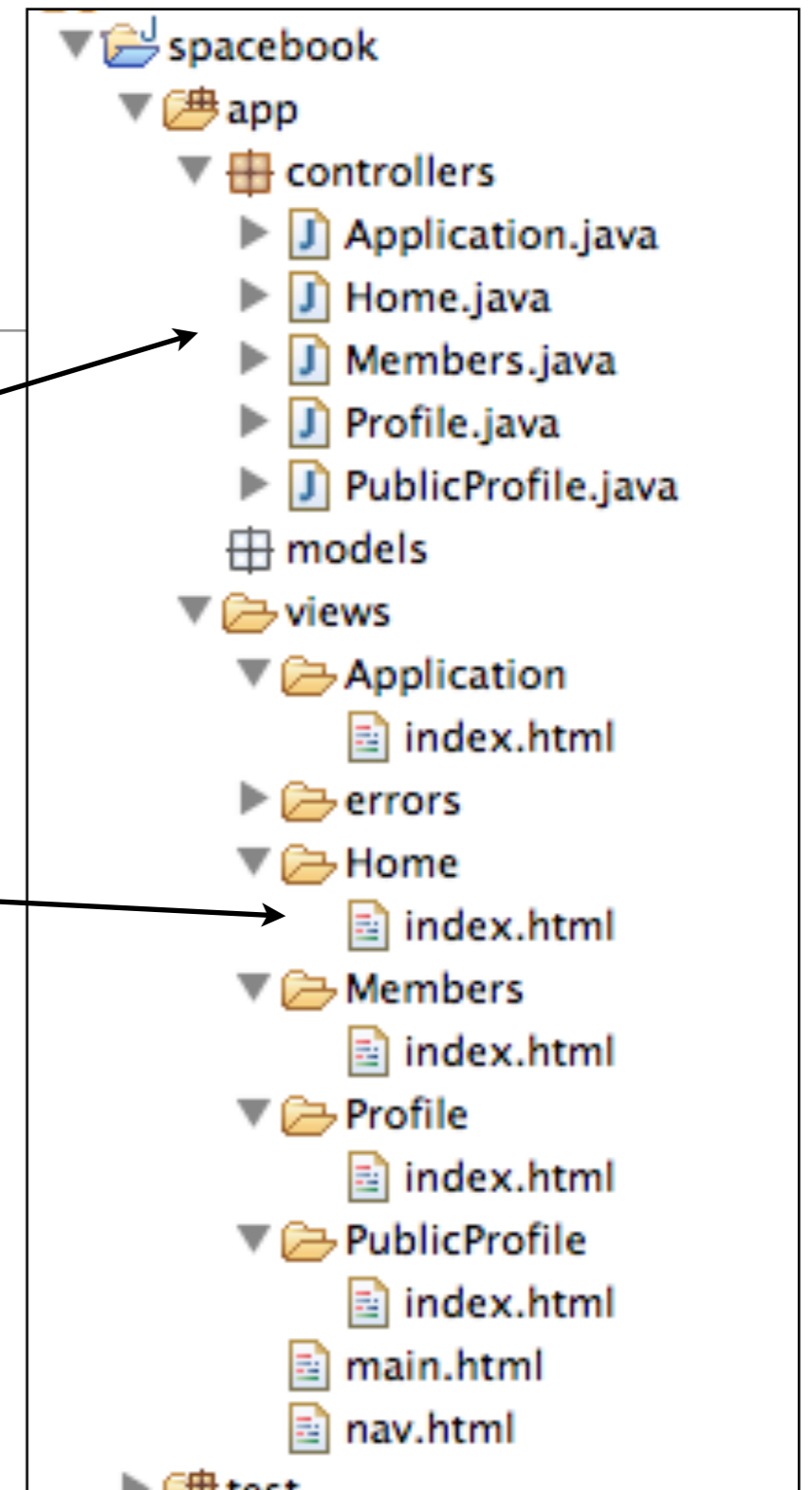
public class Home extends Controller
{
    public static void index()
    {
        render();
    }
}
```


Lifecycle (3)

```
package controllers;

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

public class Home extends Controller
{
    public static void index()
    {
        render();
    }
}
```



- The Home controller is partnered with a 'Home' view
- render() triggers the generation of a this view
- This view will be generated from the file 'index.html' in the "Home" folder in views
- Once generated, it will be passed back to the browser in response to the original request.

Generating the 'Home' view - templates

main.html

```
<!DOCTYPE html>
<html>
  <head>
    <title>#{get 'title' /}</title>
    <meta charset="utf-8">
    <link rel="stylesheet" media="screen" href="@{'/public/semantic/css/semantic.min.css'}">
  </head>
  <body>
    #{doLayout /}
  </body>
</html>
```

index.html

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

<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

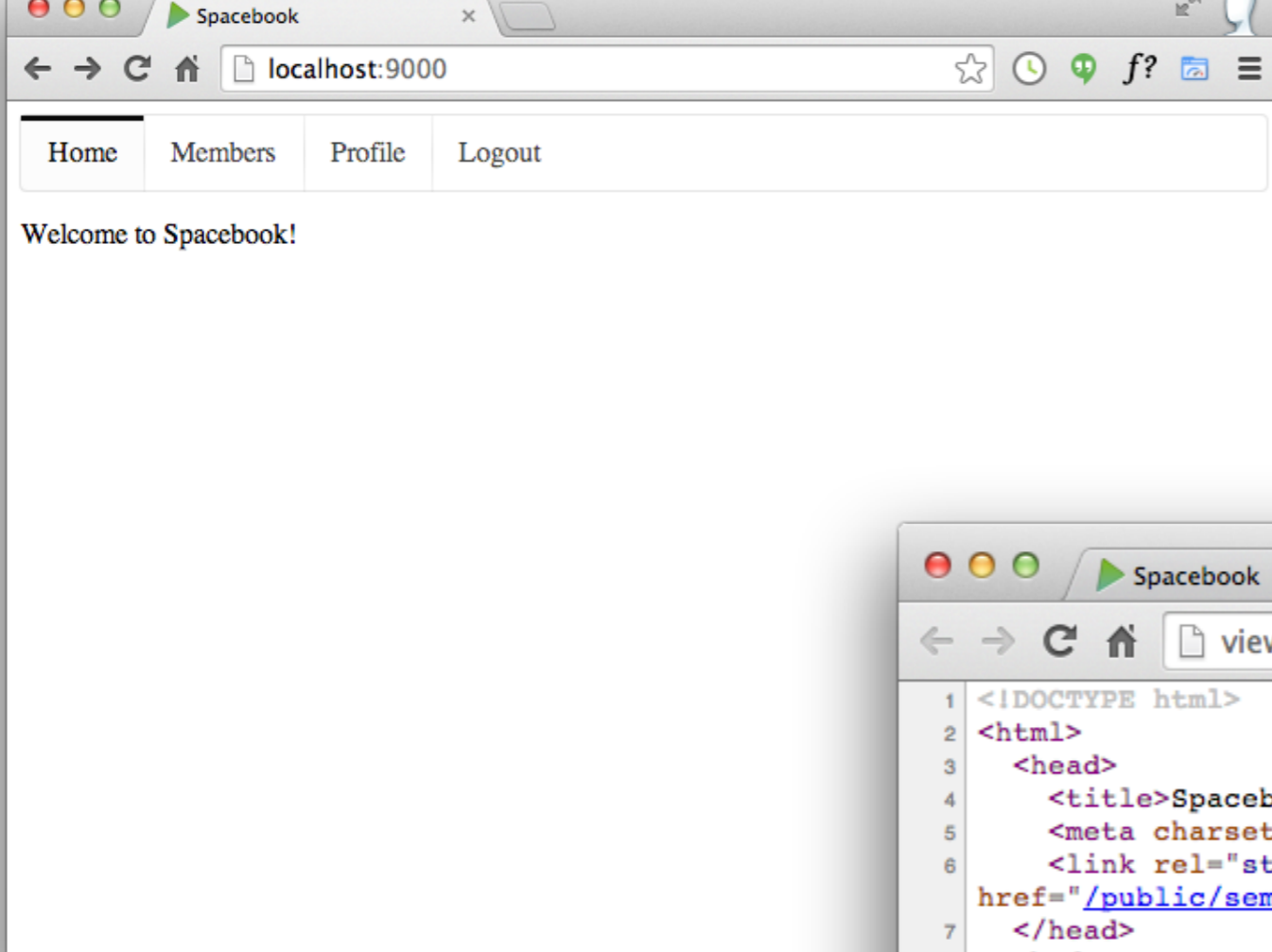
<p>
  Welcome to the Spacebook Home!
</p>
```

Lifecycle (4)

```
#{extends 'main.html' /}  
#{set title:'Home' /}  
  
<nav class="ui menu">  
  <a class="ui active item" href="/home">Home</a>  
  <a class="ui item" href="/members">Members</a>  
  <a class="ui item" href="/profile">Profile</a>  
  <a class="ui item" href="/login">Logout</a>  
</nav>  
  
<p>  
  Welcome to the Spacebook Home!  
</p>
```

```
<!DOCTYPE html>  
<html>  
  <head>  
    //...Not Shown  
  
  </head>  
  <body>  
    #{doLayout /}  
  </body>  
</html>
```

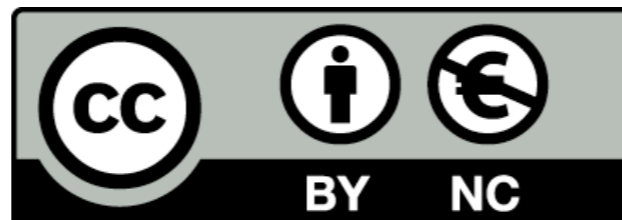
- The home page is integrated into main.html replacing `#{doLayout /}`
- ...the 'title' string is replaced with 'Home' during the page construction



Lifecycle (5)

- Dynamically generated page delivered to the browser
- All reference to 'templates' removed

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Spacebook</title>
5     <meta charset="utf-8">
6     <link rel="stylesheet" media="screen"
7       href="/public/semantic/css/semantic.min.css">
8   </head>
9   <body>
10    <nav class="ui menu">
11      <a class="ui active item" href="home.html">Home</a>
12      <a class="ui item" href="members.html">Members</a>
13      <a class="ui item" href="homeprofile.html">Profile</a>
14      <a class="ui item" href="login.html">Logout</a>
15    </nav>
16
17    <p>
18      Welcome to Spacebook!
19    </p> </body>
20 </html>
```



Except where otherwise noted, this content is licensed under a Creative Commons Attribution-NonCommercial 3.0 License.

For more information, please see <http://creativecommons.org/licenses/by-nc/3.0/>

