Web Development

Produced by

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http://elearning.wit.ie

Waterford Institute *of* Technology
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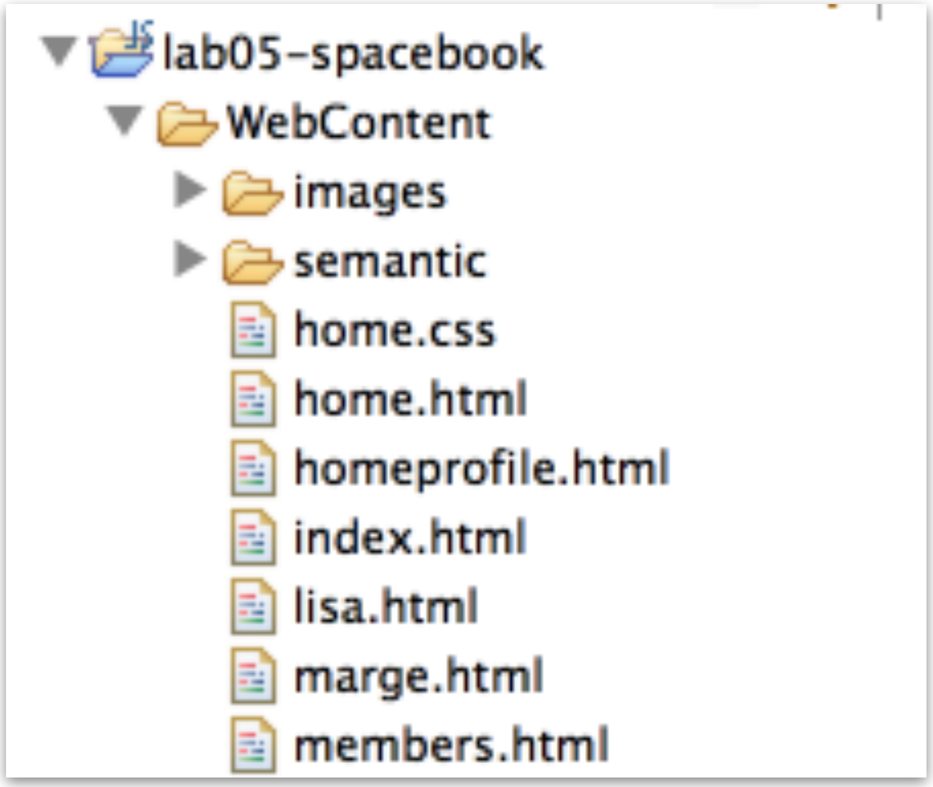
eLearning
support unit

Spacebook Skeleton

Web Development

‘Mock-Up’ spacebook-bootstrap project

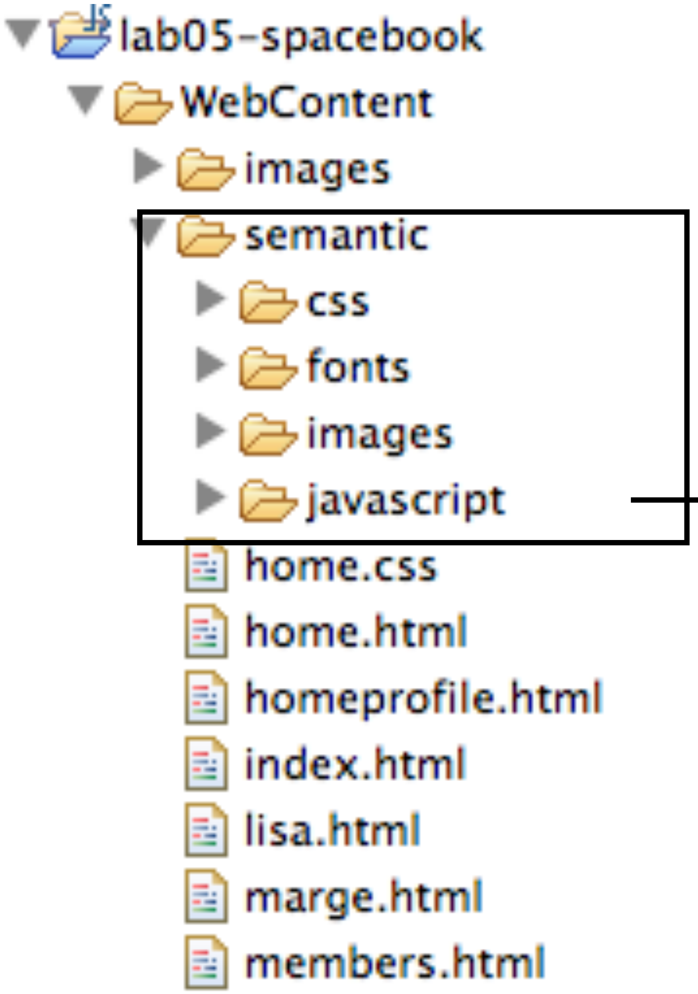


```
▼ lab05-spacebook
  ▼ WebContent
    ▶ images
    ▶ semantic
      home.css
      home.html
      homeprofile.html
      index.html
      lisa.html
      marge.html
      members.html
```

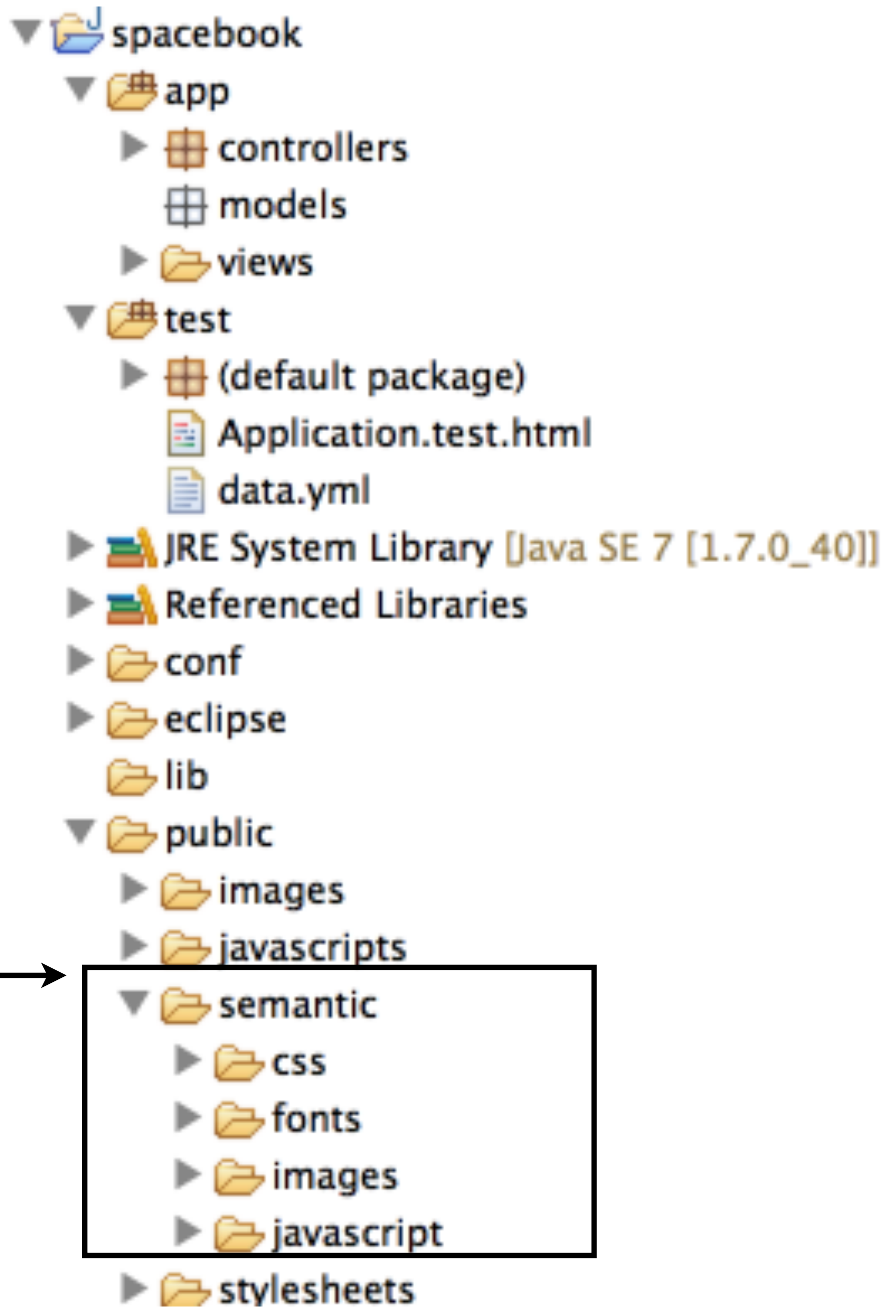
- lab05-spacbook is a version of the spacebook site built using Semantic UI libraries
- Incorporates multicolumn layout
- Navigation bar
- Simple lists
- images

Migrate Static ‘assets’ to play project

- These are the bootstrap css file + associated stock images/icons/javascript

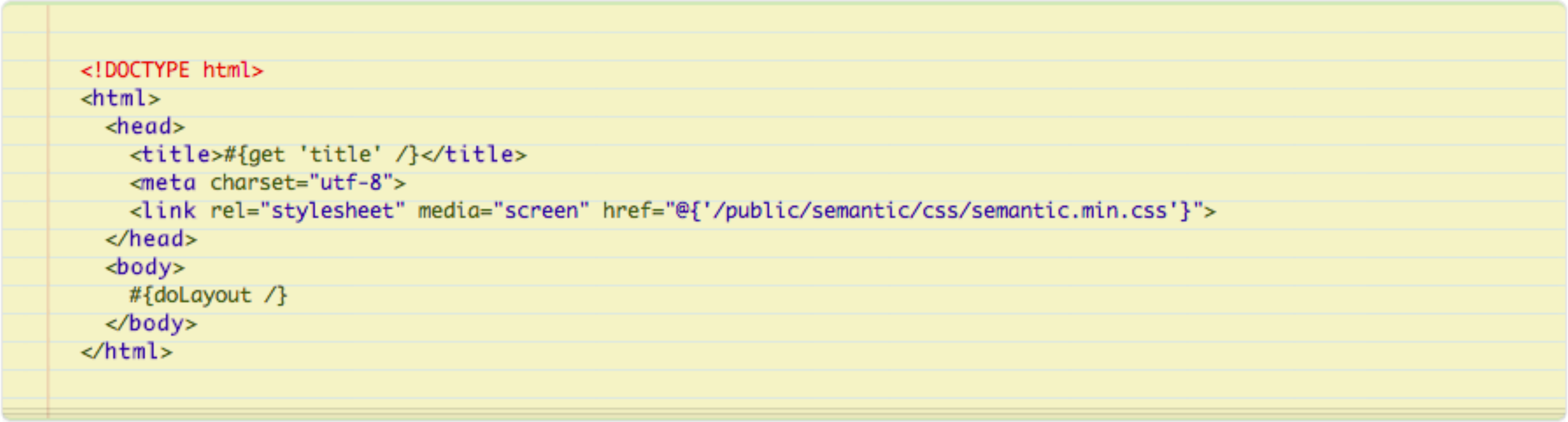


```
▼ lab05-spacebook
  ▼ WebContent
    ▶ images
    ▼ semantic
      ▶ css
      ▶ fonts
      ▶ images
      ▶ javascript
      home.css
      home.html
      homeprofile.html
      index.html
      lisa.html
      marge.html
      members.html
```



```
▼ spacebook
  ▼ app
    ▶ controllers
      models
    ▶ views
  ▼ test
    ▶ (default package)
      Application.test.html
      data.yml
  ▶ JRE System Library [Java SE 7 [1.7.0_40]]
  ▶ Referenced Libraries
  ▶ conf
  ▶ eclipse
    lib
  ▼ public
    ▶ images
    ▶ javascripts
    ▼ semantic
      ▶ css
      ▶ fonts
      ▶ images
      ▶ javascript
    ▶ stylesheets
```

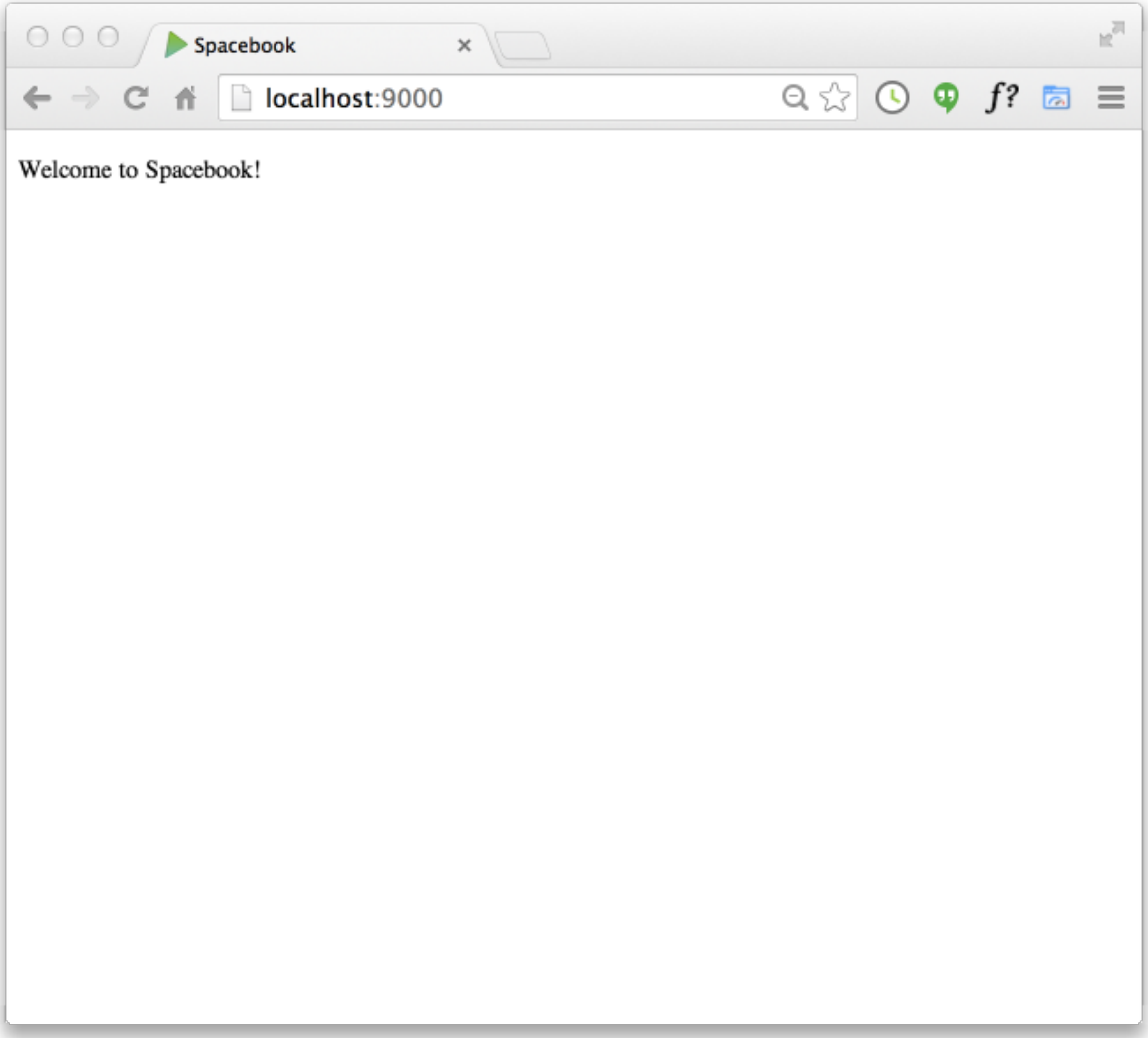
Simplify ‘main.html’



```
<!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>
```

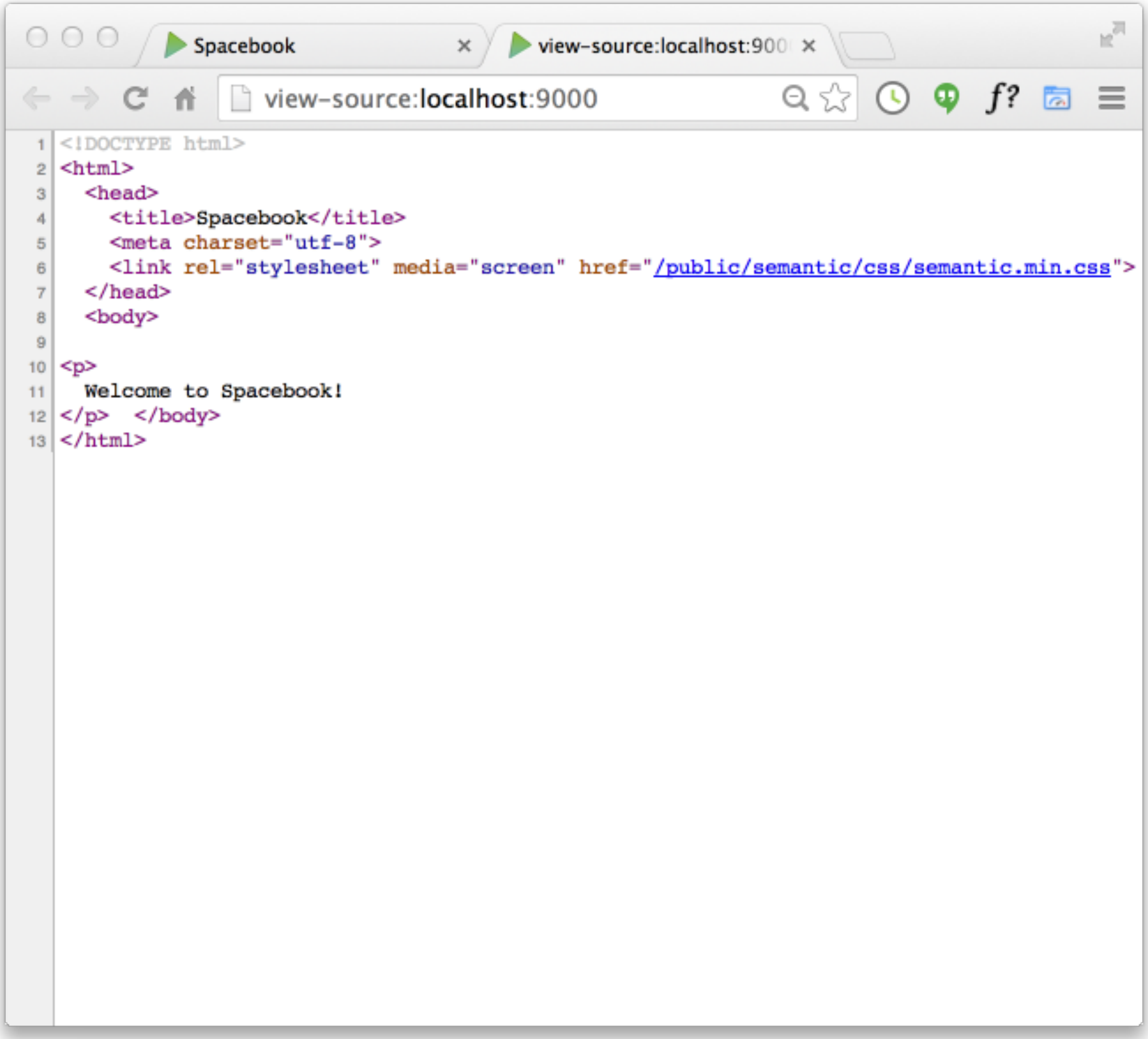
- This page now explicitly loads the bootstrap css file.
- Standard html - except!
  - ‘#’ symbol is not html - what does it mean?

Styled with Bootstrap default theme



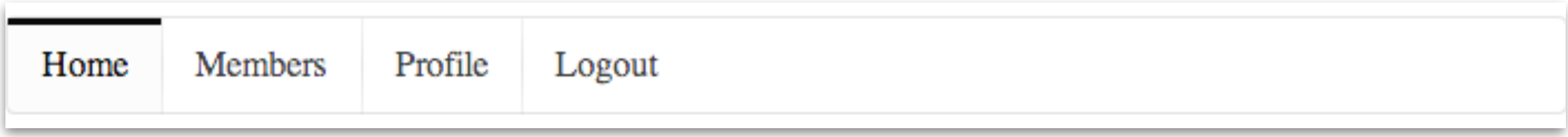
Welcome to Spacebook!

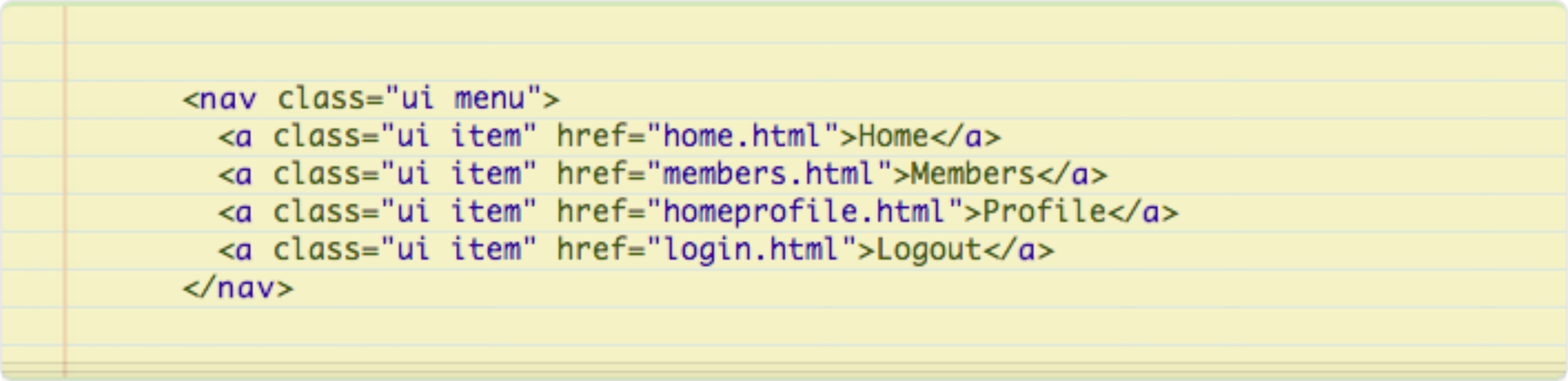
View/source



```
<!DOCTYPE html>
<html>
  <head>
    <title>Spacebook</title>
    <meta charset="utf-8">
    <link rel="stylesheet" media="screen" href="/public/semantic/css/semantic.min.css">
  </head>
  <body>

<p>
  Welcome to Spacebook!
</p>   </body>
</html>
```

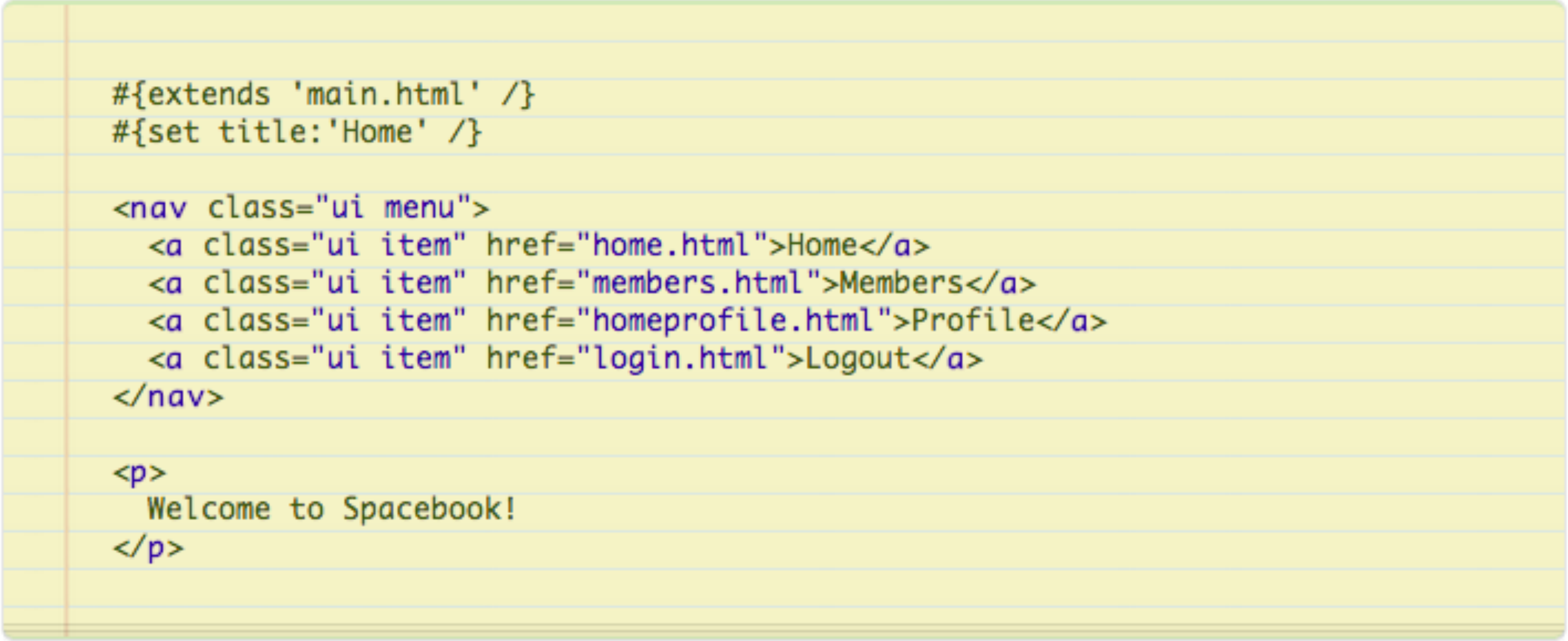
menu bar





```
<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>
```

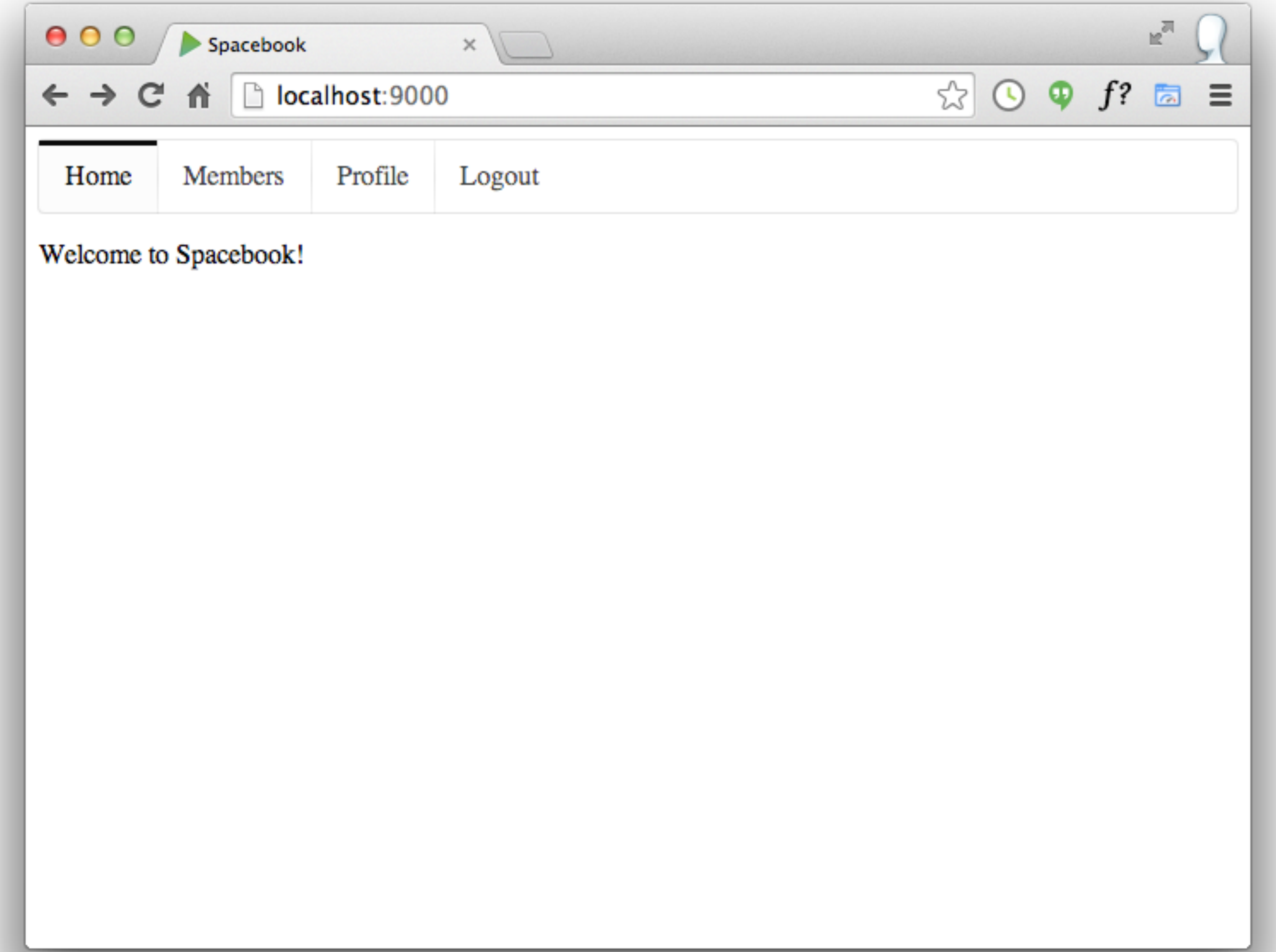
Menu in a view



```
#{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 Spacebook!
</p>
```

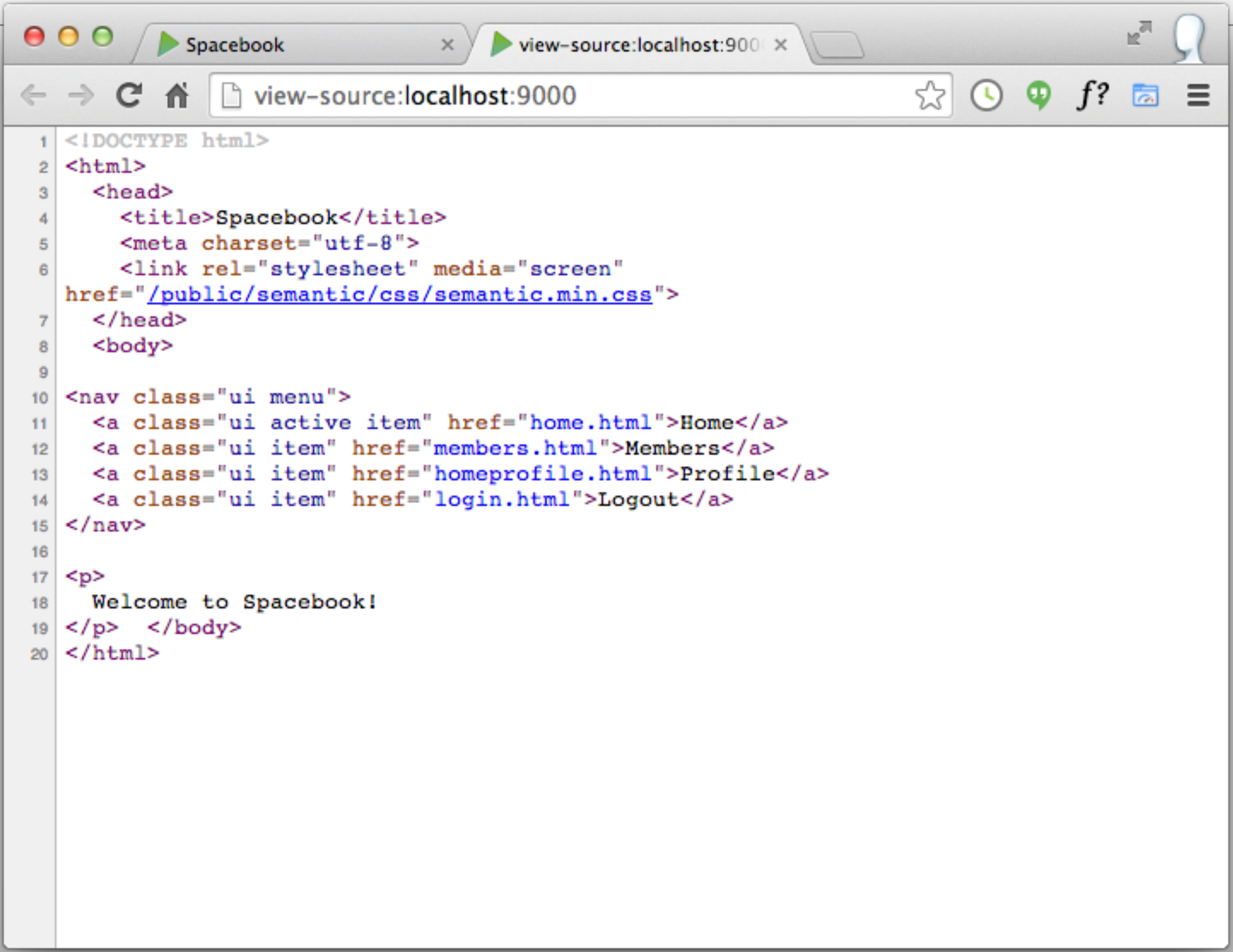
index.html

Menu now part of the rendered page



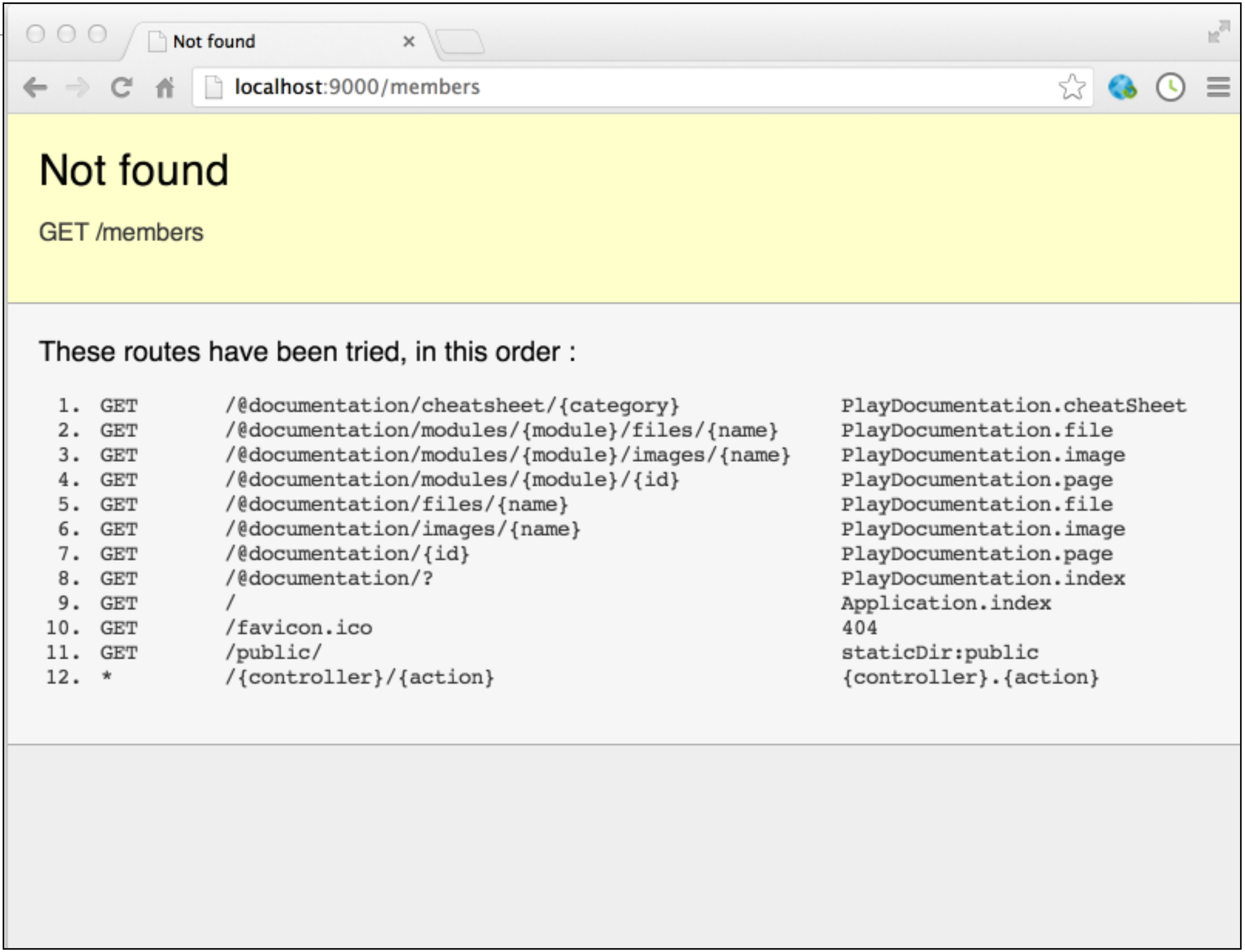
Welcome to Spacebook!

view->source



```html
<!DOCTYPE html>
<html>
  <head>
    <title>Spacebook</title>
    <meta charset="utf-8">
    <link rel="stylesheet" media="screen"
href="/public/semantic/css/semantic.min.css">
  </head>
  <body>

<nav class="ui menu">
  <a class="ui active 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 Spacebook!
</p>  </body>
</html>
```

Clicking the menu links...



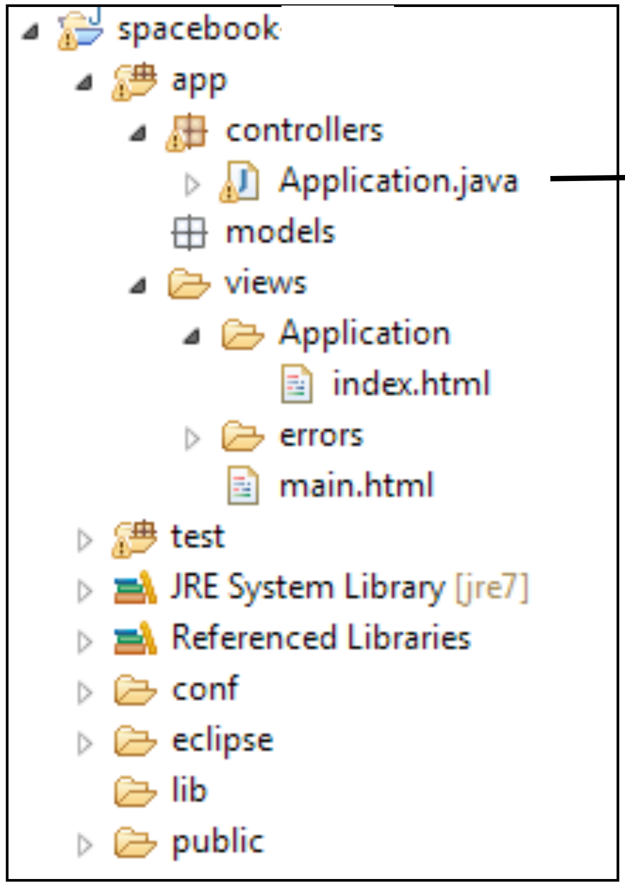
Not found

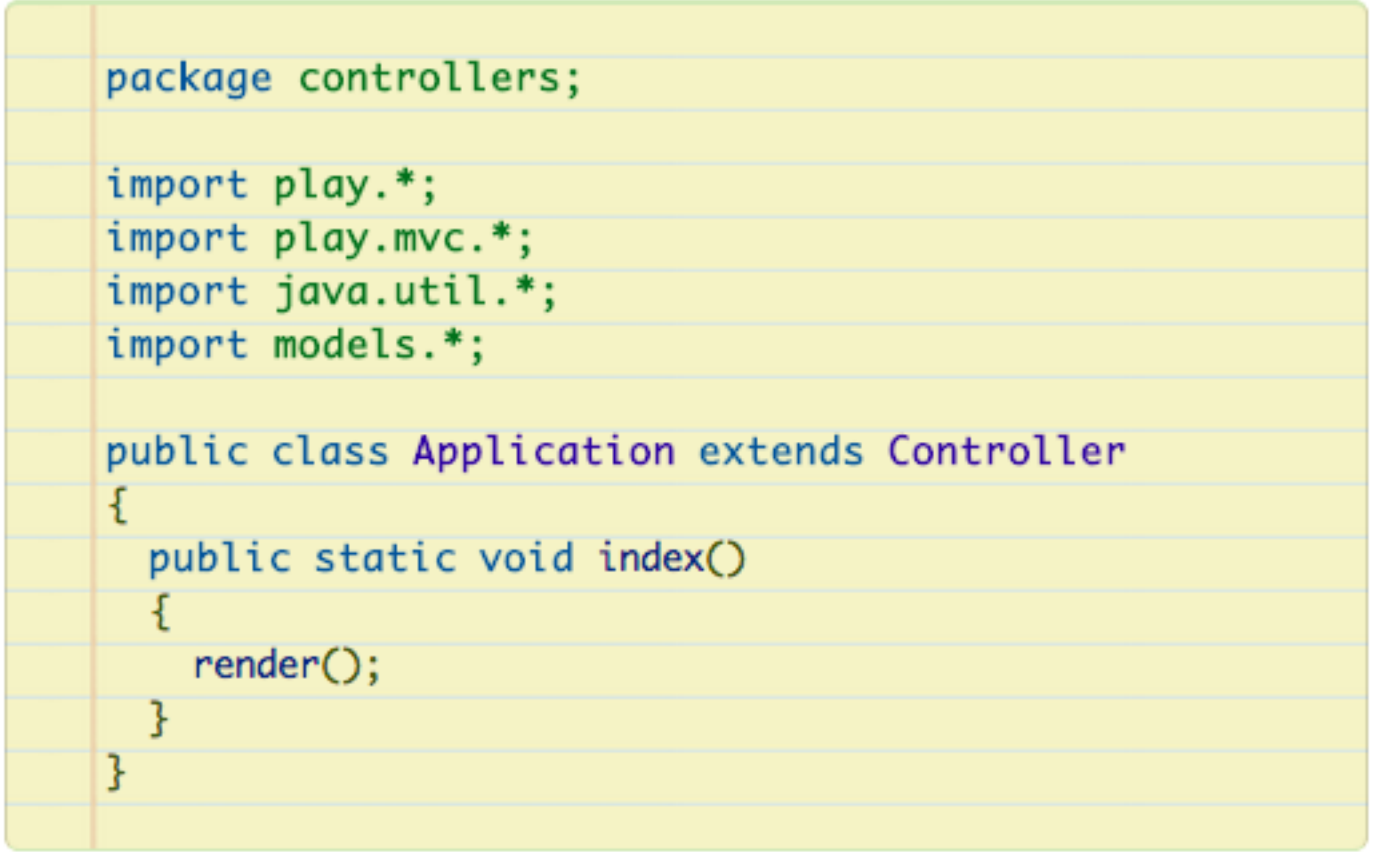
GET /members

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





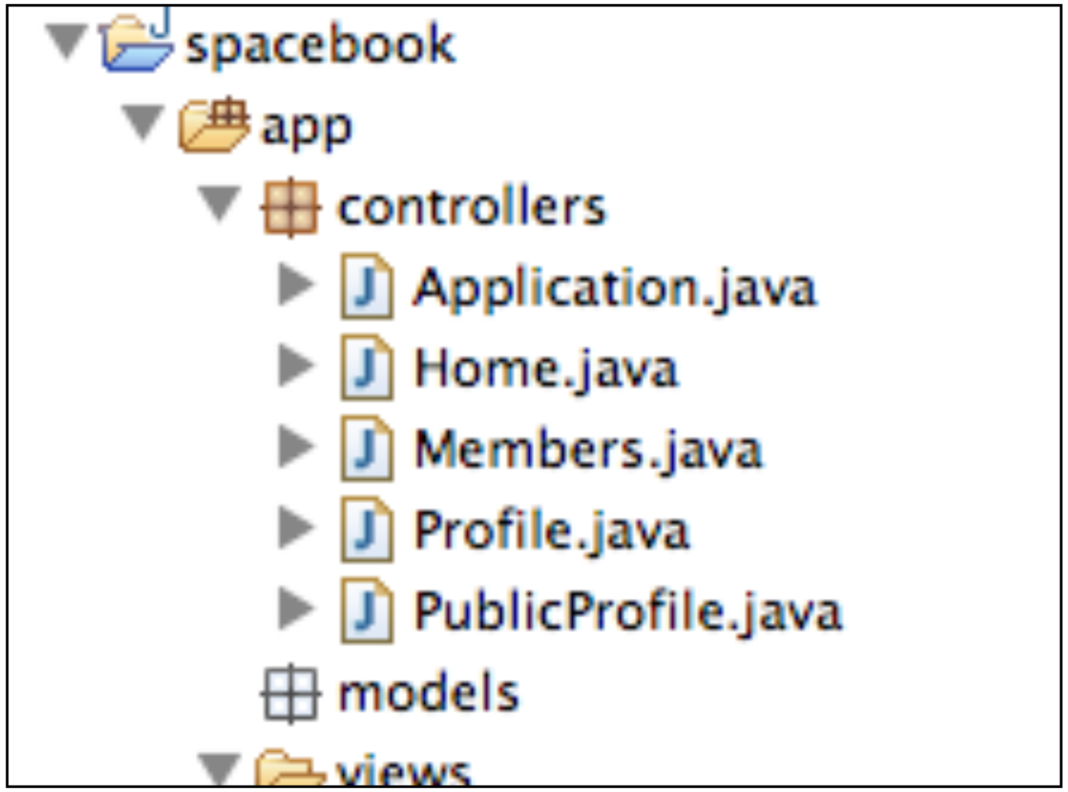
```
package controllers;

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’

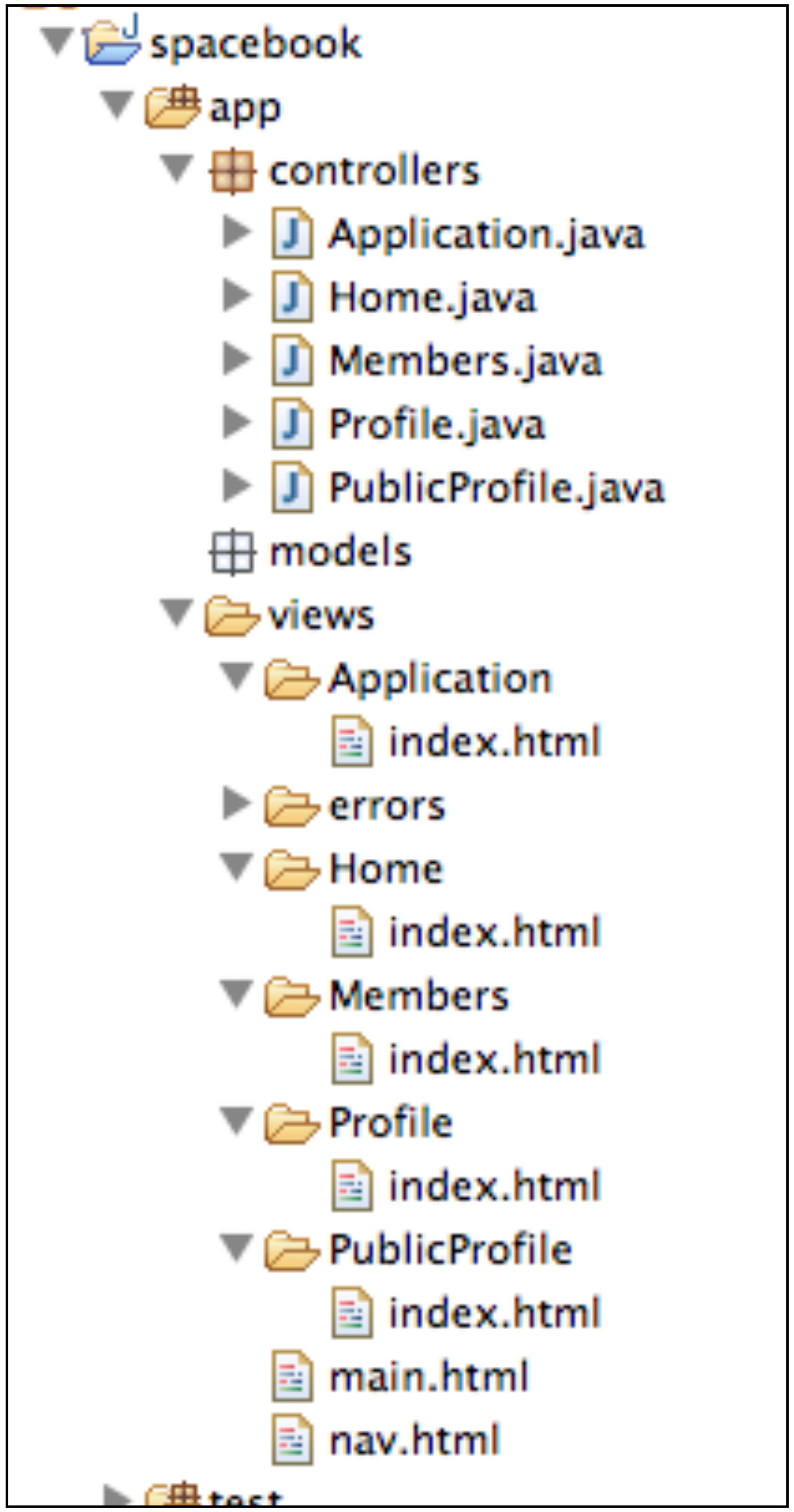
- One way of thinking about controllers is that a separate controller is required to ‘supervise’ one view.
- Create 4 controllers, one for each of our nav bar items (almost):
  - Home
  - Members
  - Profile
  - PublicProfile
- Each controller can be the same (except for its name)



```
spacebook
  app
    controllers
      Application.java
      Home.java
      Members.java
      Profile.java
      PublicProfile.java
    models
    views
```

Controller/View Correspondence

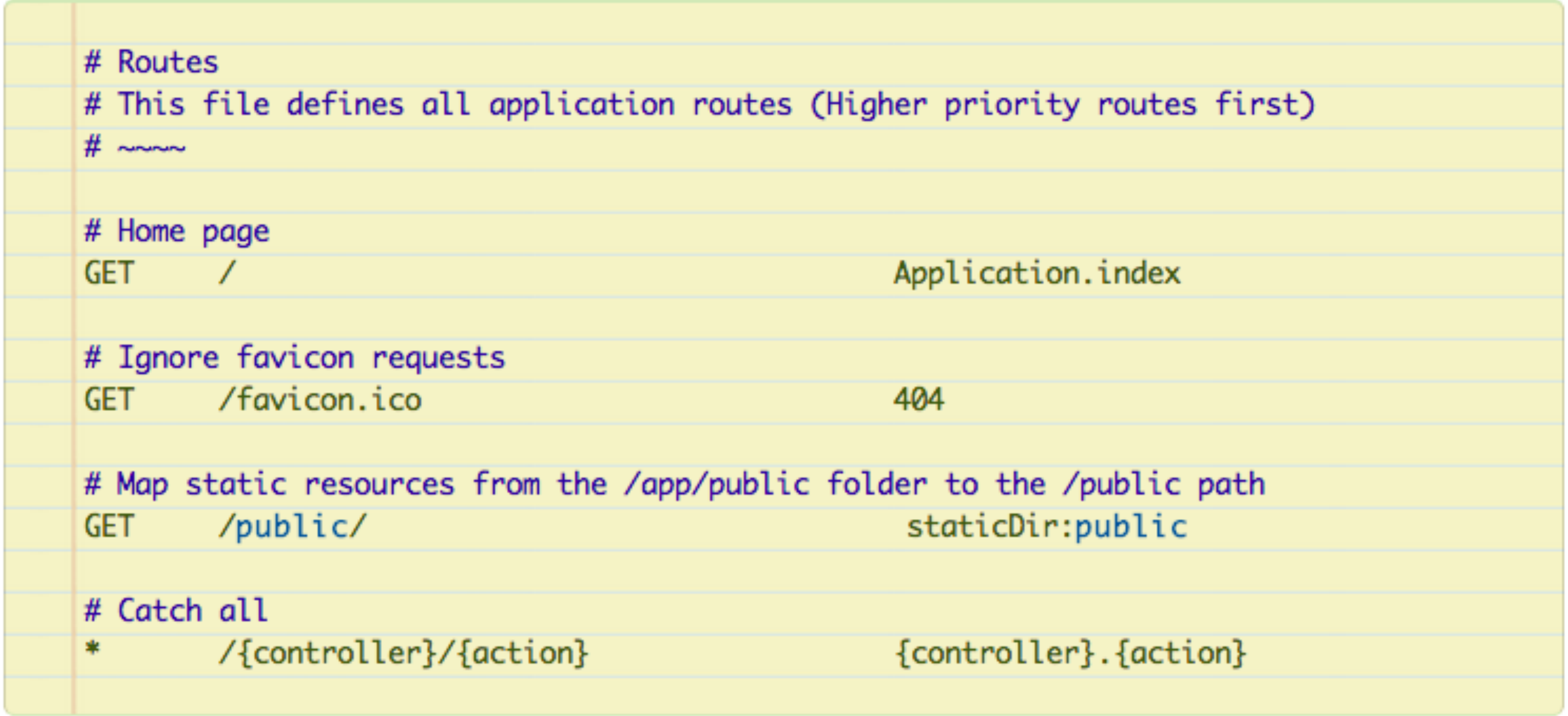
- Each controller must have a corresponding ‘view’
- This will be called ‘index.html’ by default, and be located in a folder - named identically to the controller - in the views folder



```
▼ spacebook
  ▼ app
    ▼ controllers
      ▶ Application.java
      ▶ Home.java
      ▶ Members.java
      ▶ Profile.java
      ▶ PublicProfile.java
      models
    ▼ views
      ▼ Application
          index.html
      ▶ errors
      ▼ Home
          index.html
      ▼ Members
          index.html
      ▼ Profile
          index.html
      ▼ PublicProfile
          index.html
        main.html
        nav.html
  ▶ test
```

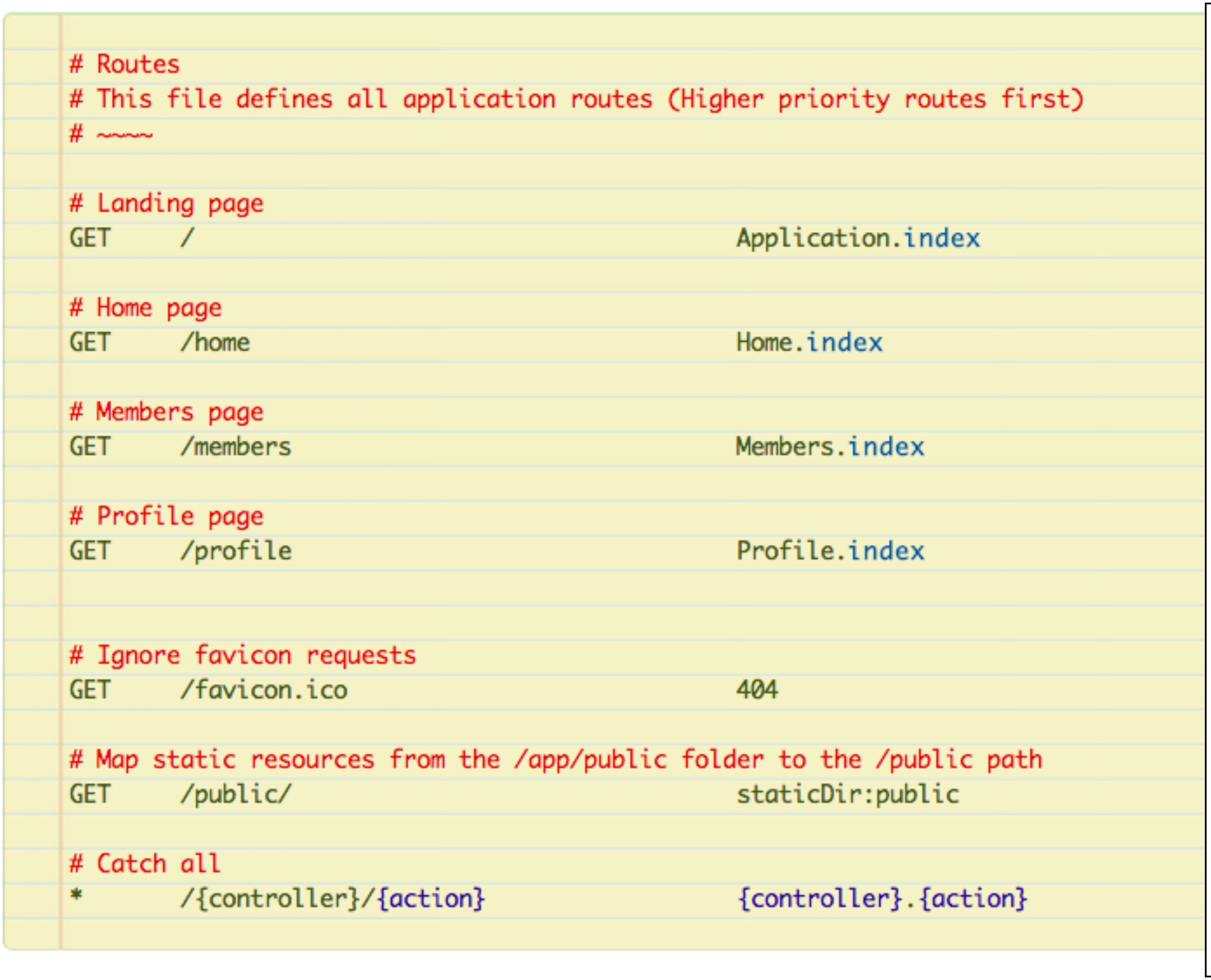
Controller ‘Wiring’ - the routes file

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

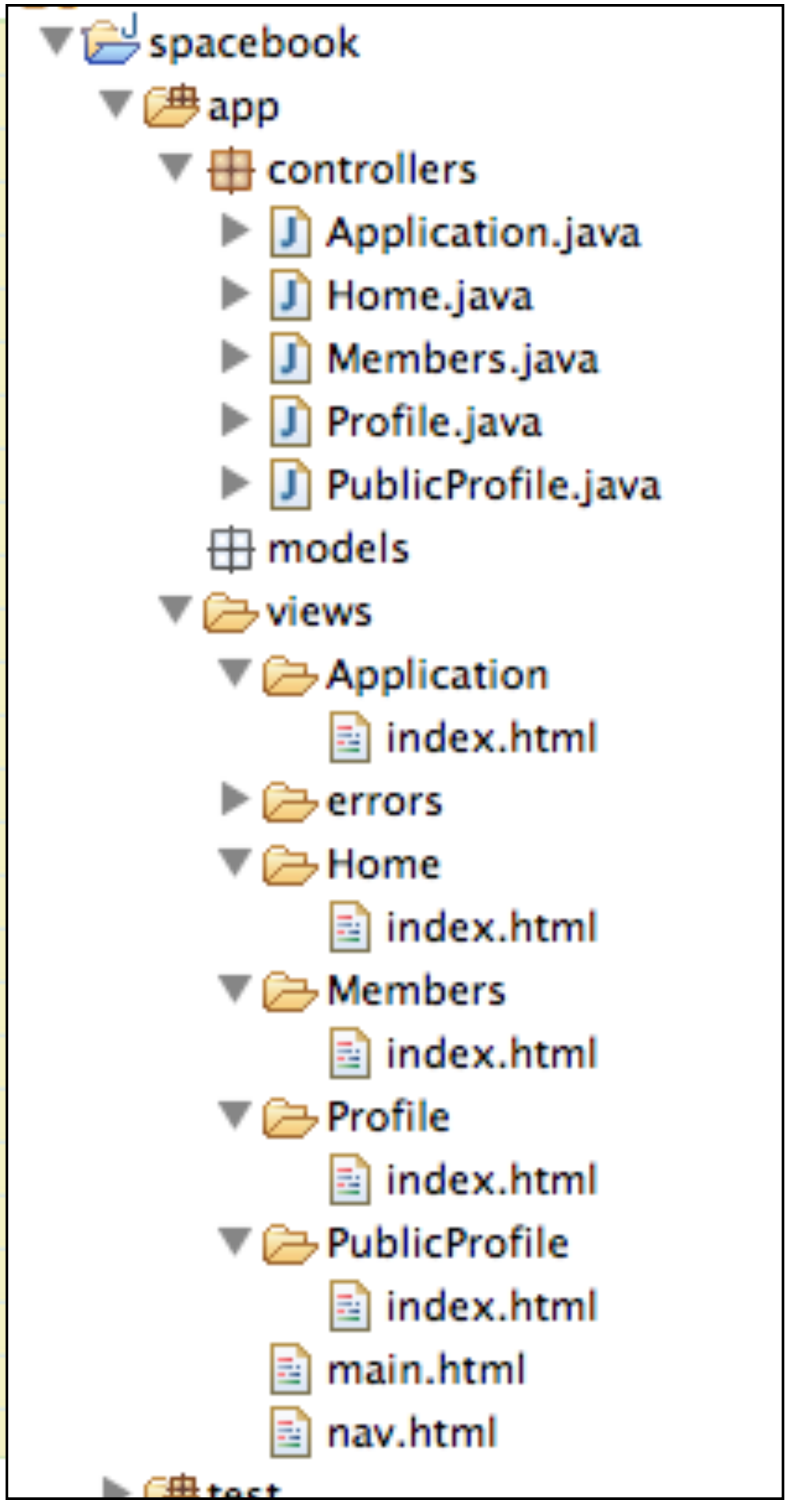


```
# Routes
# This file defines all application routes (Higher priority routes first)
# ~~~~

# 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     /                                       Application.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}
```



```
▼ spacebook
    ▼ app
        ▼ controllers
            ▶ Application.java
            ▶ Home.java
            ▶ Members.java
            ▶ Profile.java
            ▶ PublicProfile.java
          models
        ▼ views
            ▼ Application
                  index.html
            ▶ errors
            ▼ Home
                  index.html
            ▼ Members
                  index.html
            ▼ Profile
                  index.html
            ▼ PublicProfile
                  index.html
              main.html
              nav.html
    ▶ test
```

The Controllers

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

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

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

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

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

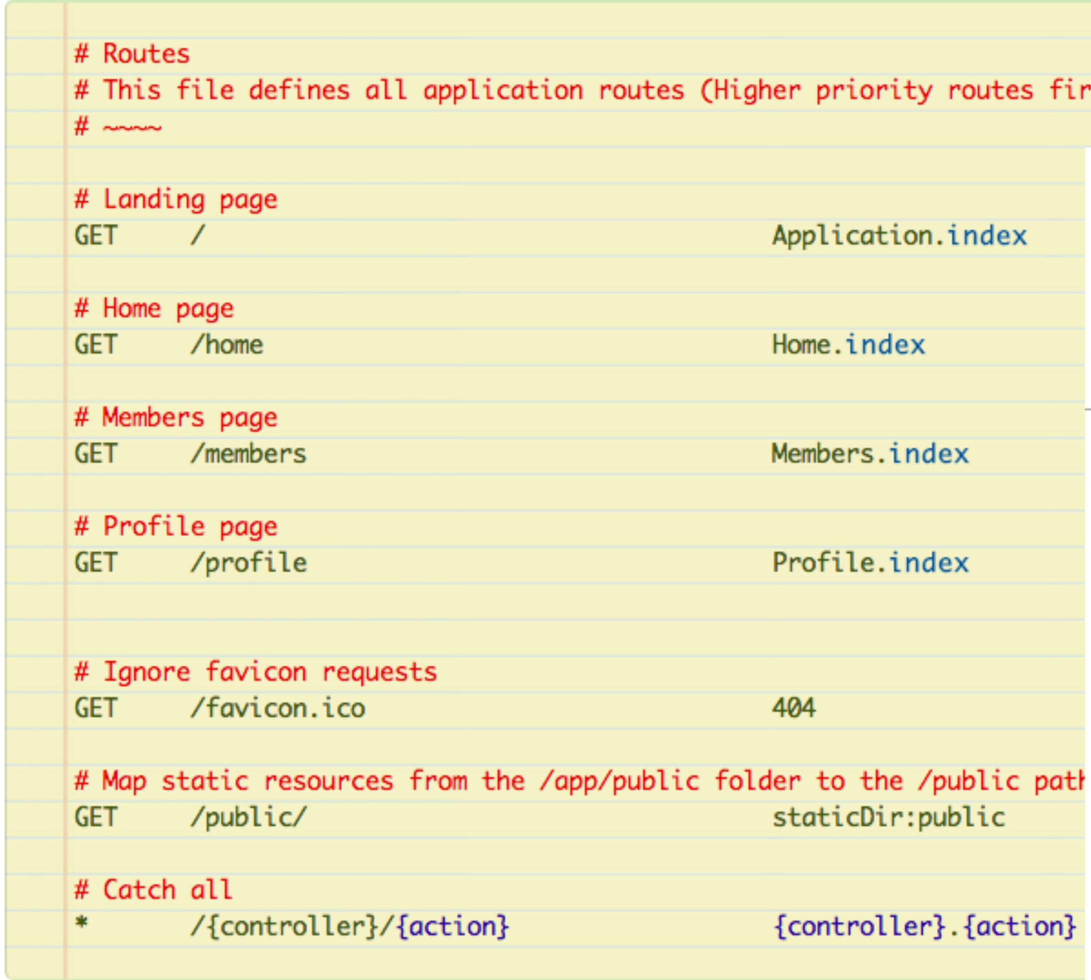
The Views

- Each controller ‘renders’ each of these views.

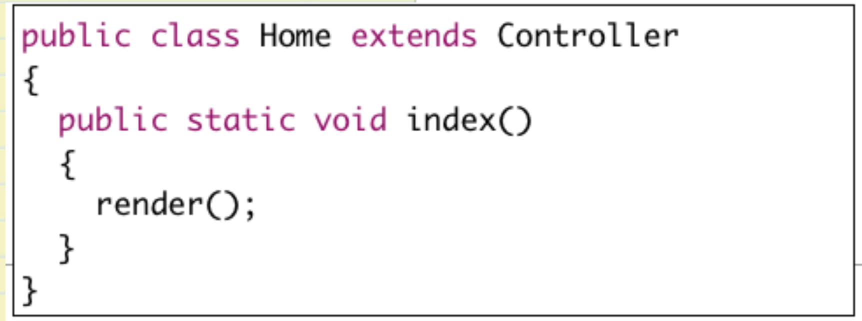
```
#{extends 'main.html' /}
#{set title:'Profile' /}
<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

<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>
```

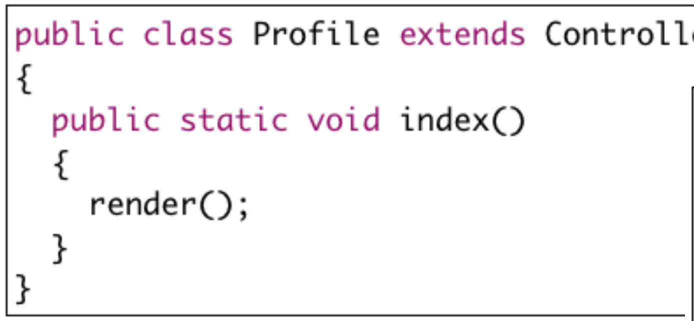
```
#{extends 'main.html' /}
#{set title:'Members' /}
<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

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



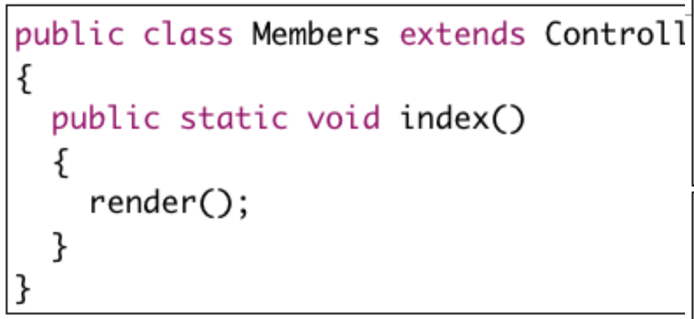
```
# Routes
# This file defines all application routes (Higher priority routes first)
# ~~~~

# Landing page
GET     /                                       Application.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}
```



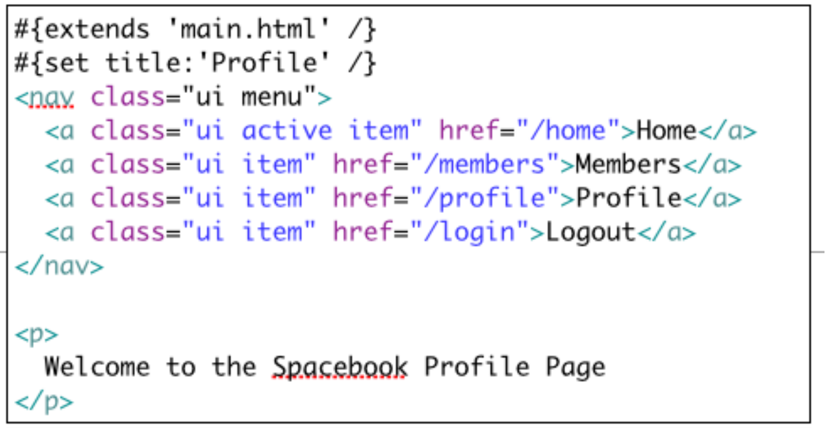
```
public class Home extends Controller
{
  public static void index()
  {
    render();
  }
}
```



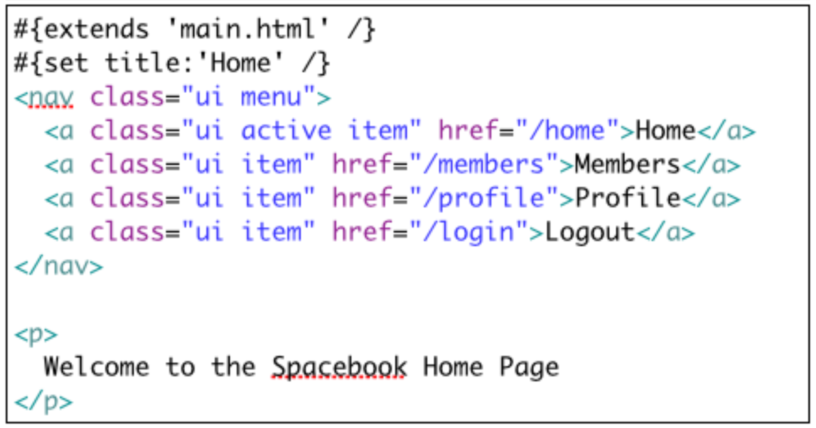
```
public class Profile extends Controller
{
  public static void index()
  {
    render();
  }
}
```



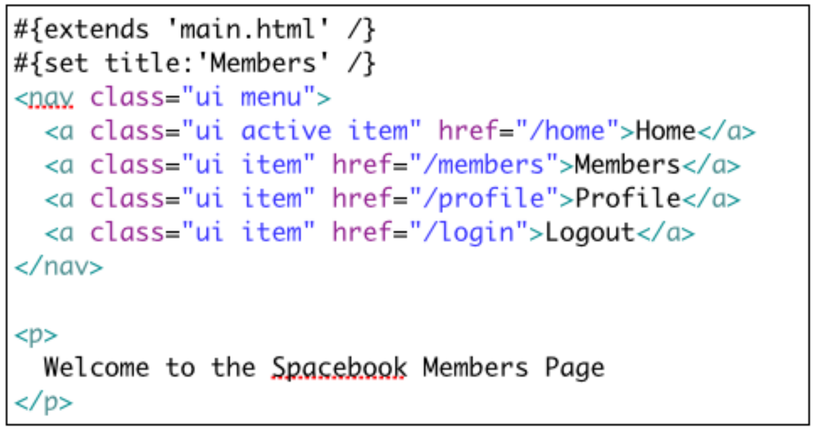
```
public class Members extends Controll
{
  public static void index()
  {
    render();
  }
}
```



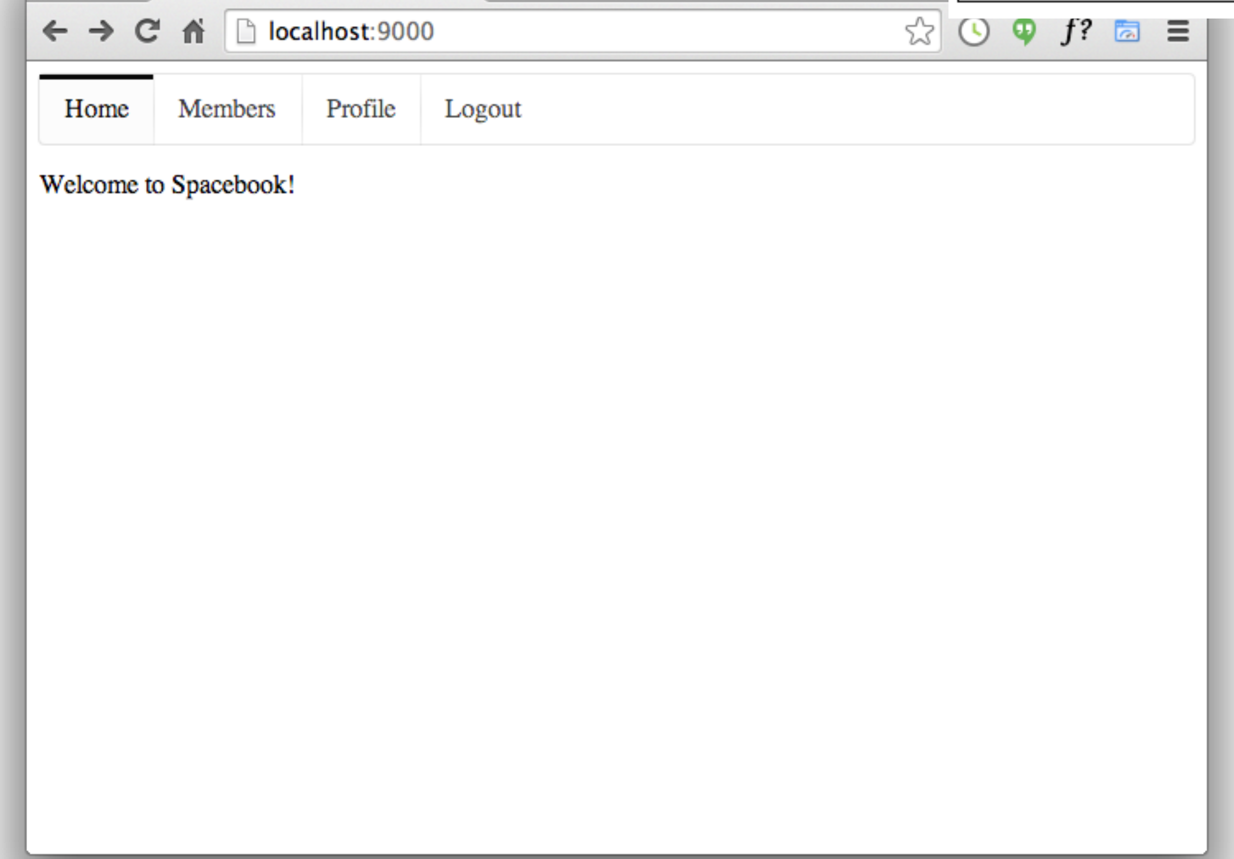
```
#{extends 'main.html' /}
#{set title:'Profile' /}
<nav class="ui menu">
  <a class="ui active item" href="/home">Home</a>
  <a class="ui item" href="/members">Members</a>
  <a class="ui item" href="/profile">Profile</a>
  <a class="ui item" href="/login">Logout</a>
</nav>

<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>
```



Welcome to Spacebook!

Play Request Lifecycle

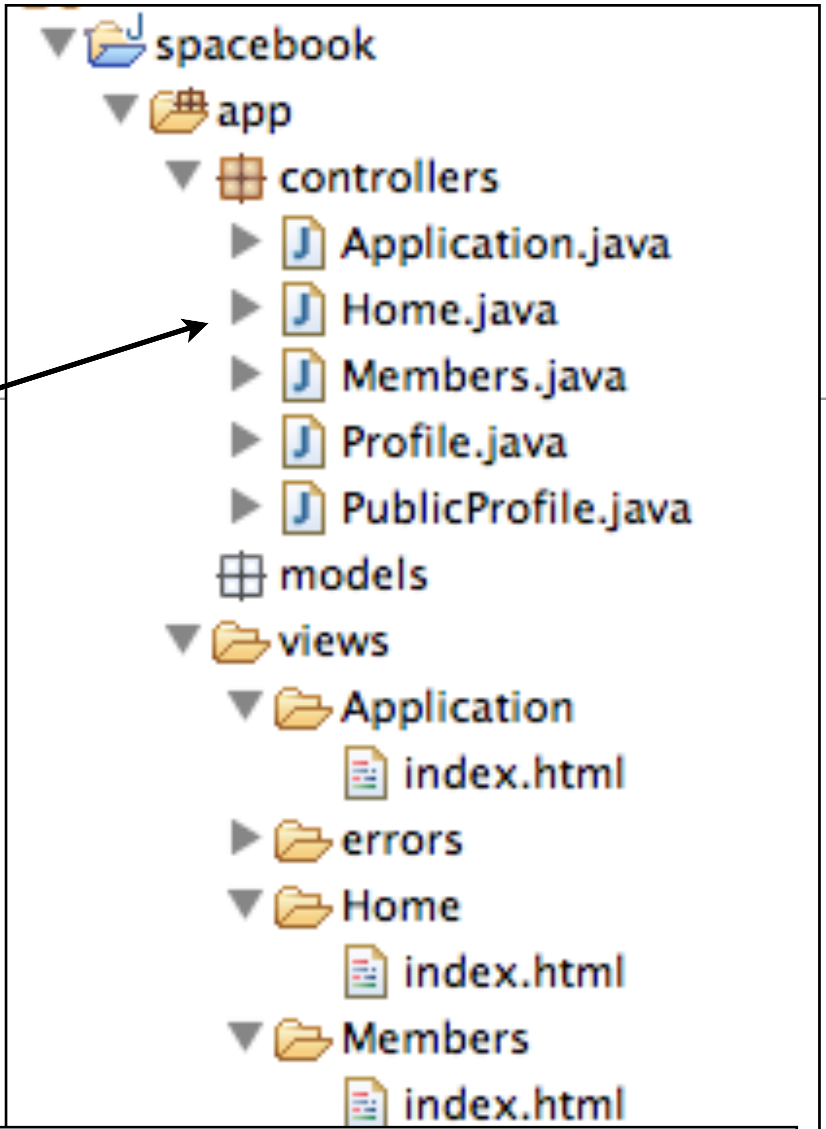
Lifecycle (1)

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

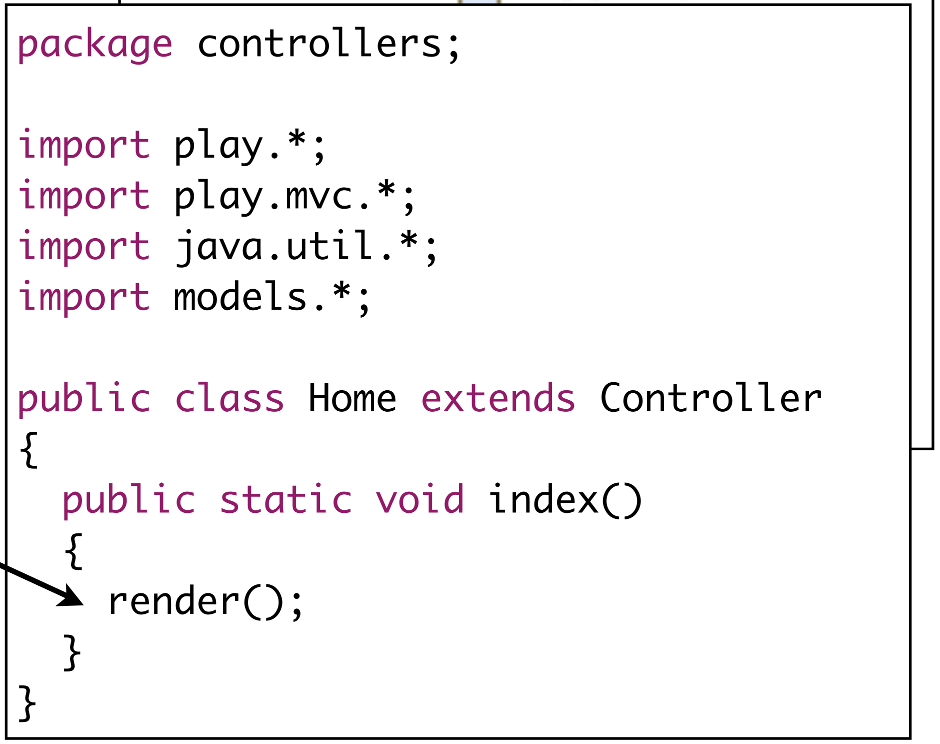
```
GET     /home                  Home.index
```

Lifecycle (2)

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



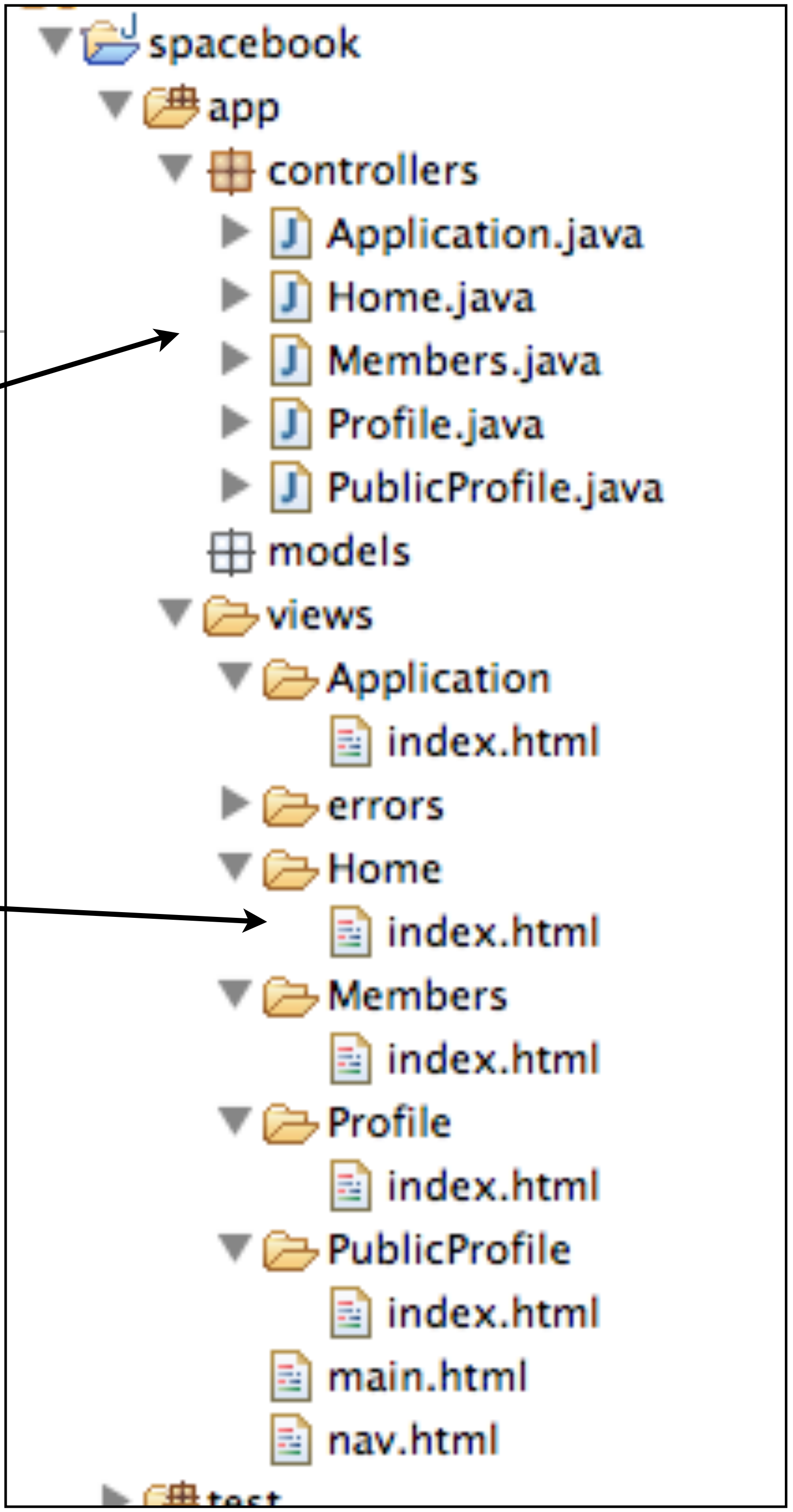
- The index() method just calls "render()"



```
package controllers;

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

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

Lifecycle (3)

```java
package controllers;

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

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



```
spacebook
  app
    controllers
      Application.java
      Home.java
      Members.java
      Profile.java
      PublicProfile.java
    models
    views
      Application
        index.html
      errors
      Home
        index.html
      Members
        index.html
      Profile
        index.html
      PublicProfile
        index.html
      main.html
      nav.html
  test
```

- 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

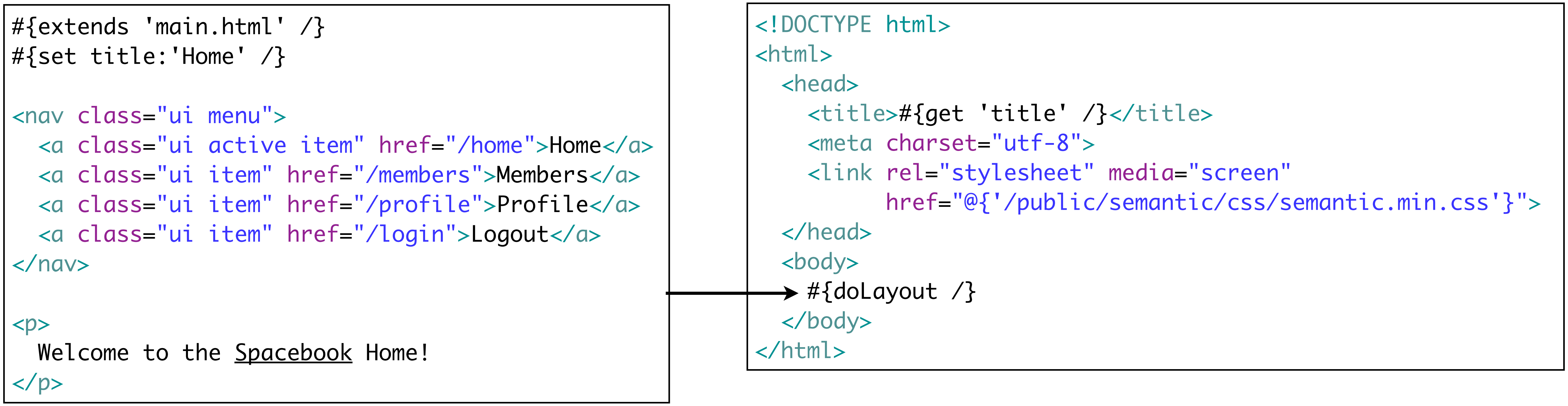
main.html

```
<!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>
```

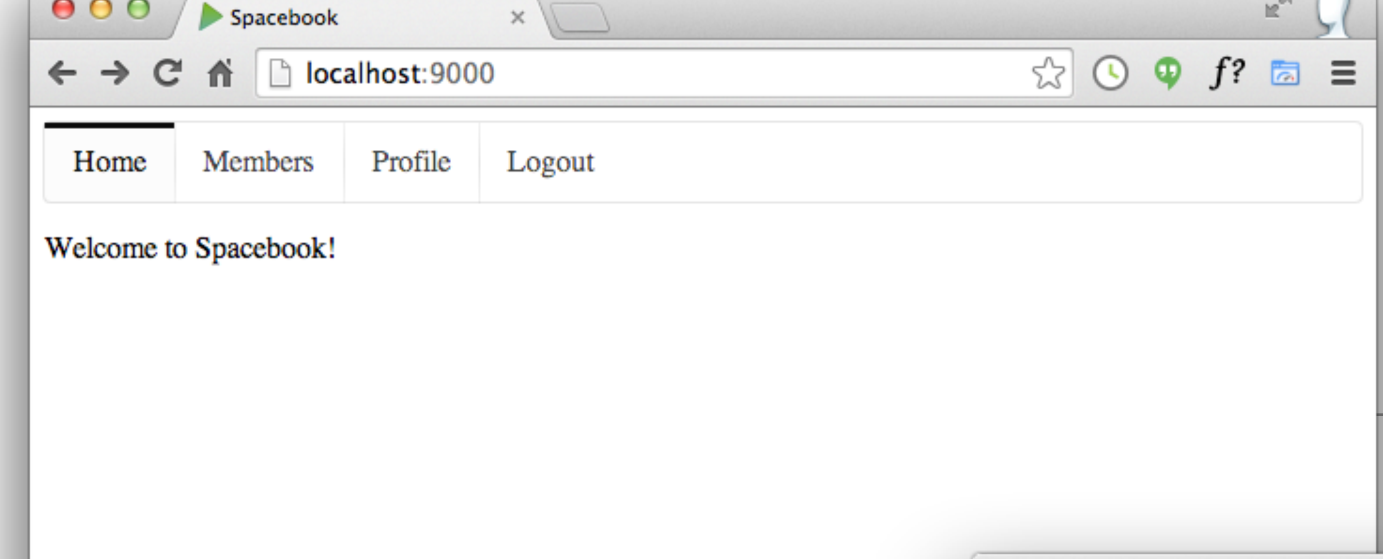
Lifecycle (4)



```
#{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>
    <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>
```

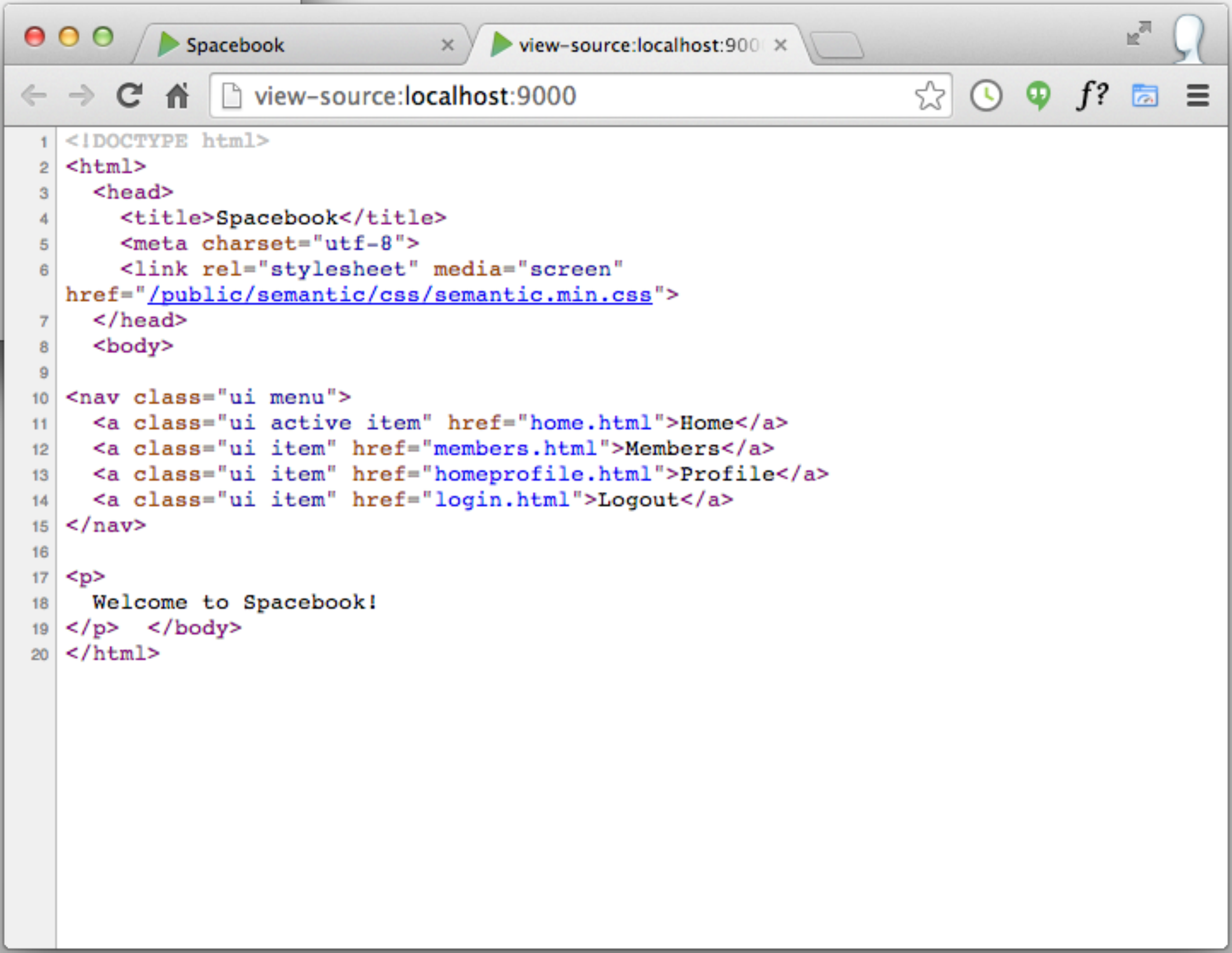
- The home page is integrated into main.html replacing #{doLayout /}
- ...the ‘title’ string is replaced with ‘Home’ during the page construction



Welcome to Spacebook!

Lifecycle (5)

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



```
<!DOCTYPE html>
<html>
  <head>
    <title>Spacebook</title>
    <meta charset="utf-8">
    <link rel="stylesheet" media="screen"
href="/public/semantic/css/semantic.min.css">
  </head>
  <body>

<nav class="ui menu">
  <a class="ui active 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 Spacebook!
</p>   </body>
</html>
```

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eLearning
support unit