Mobile Application Development

Higher Diploma in Science in Computer Science

Produced by

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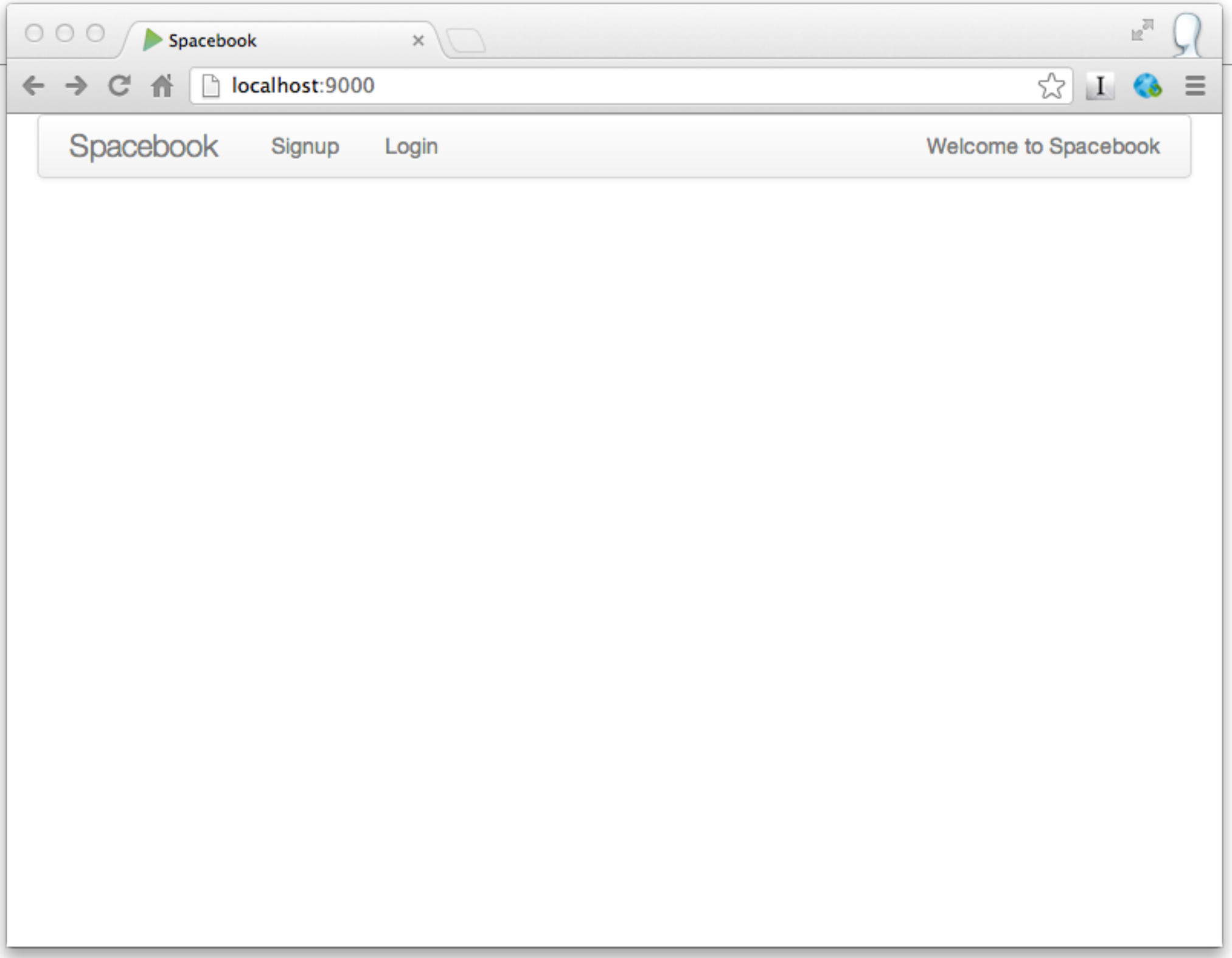
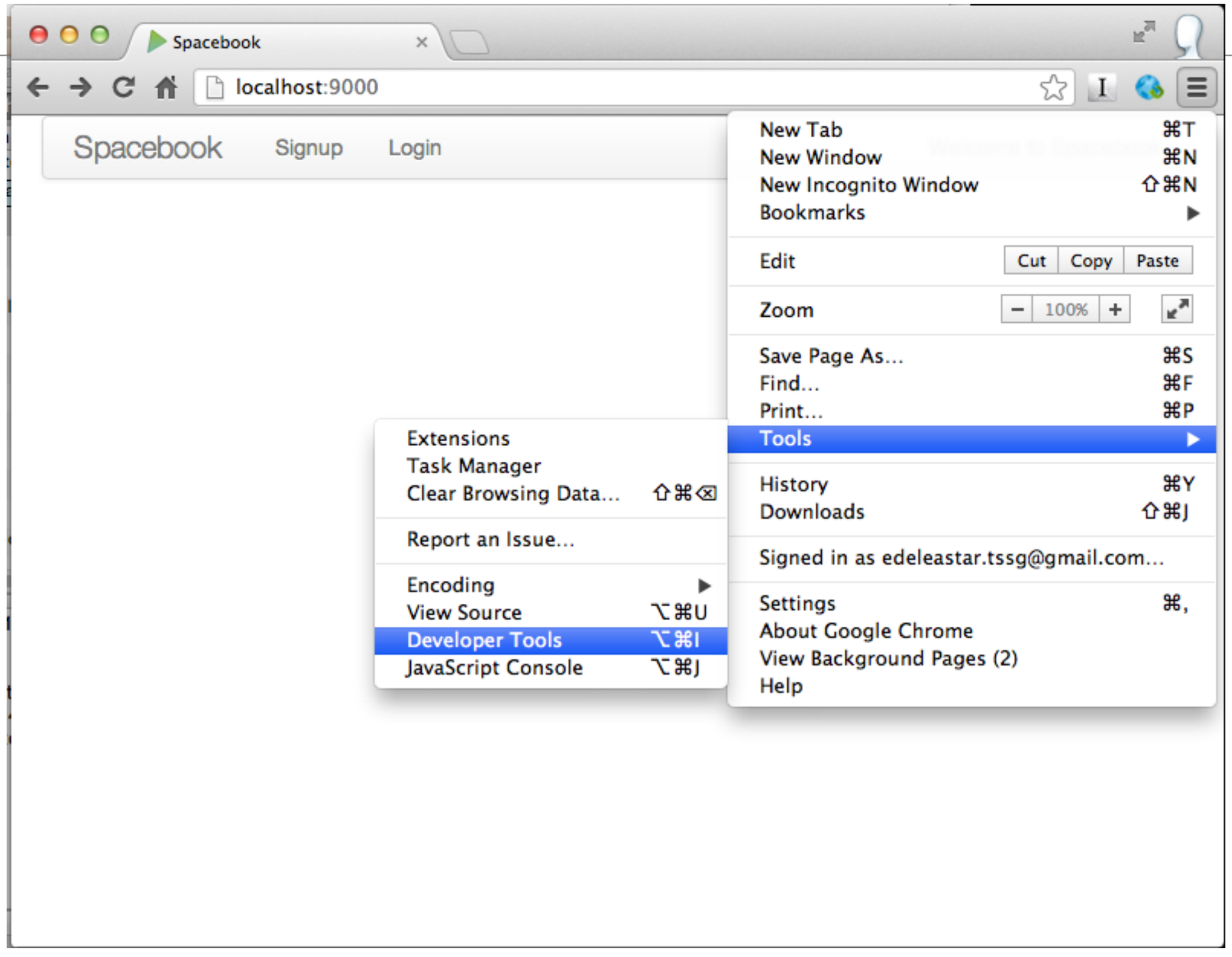
eLearning support unit

Tracing the HTTP messages in a Web App

Spacebook-3 - Standard Chrome Browser



Tools-Developer tools menu option...



Spacebook

localhost:9000

Spacebook Signup Login Welcome to Spacebook

Elements Resources Network Sources Timeline Profiles Audits Console

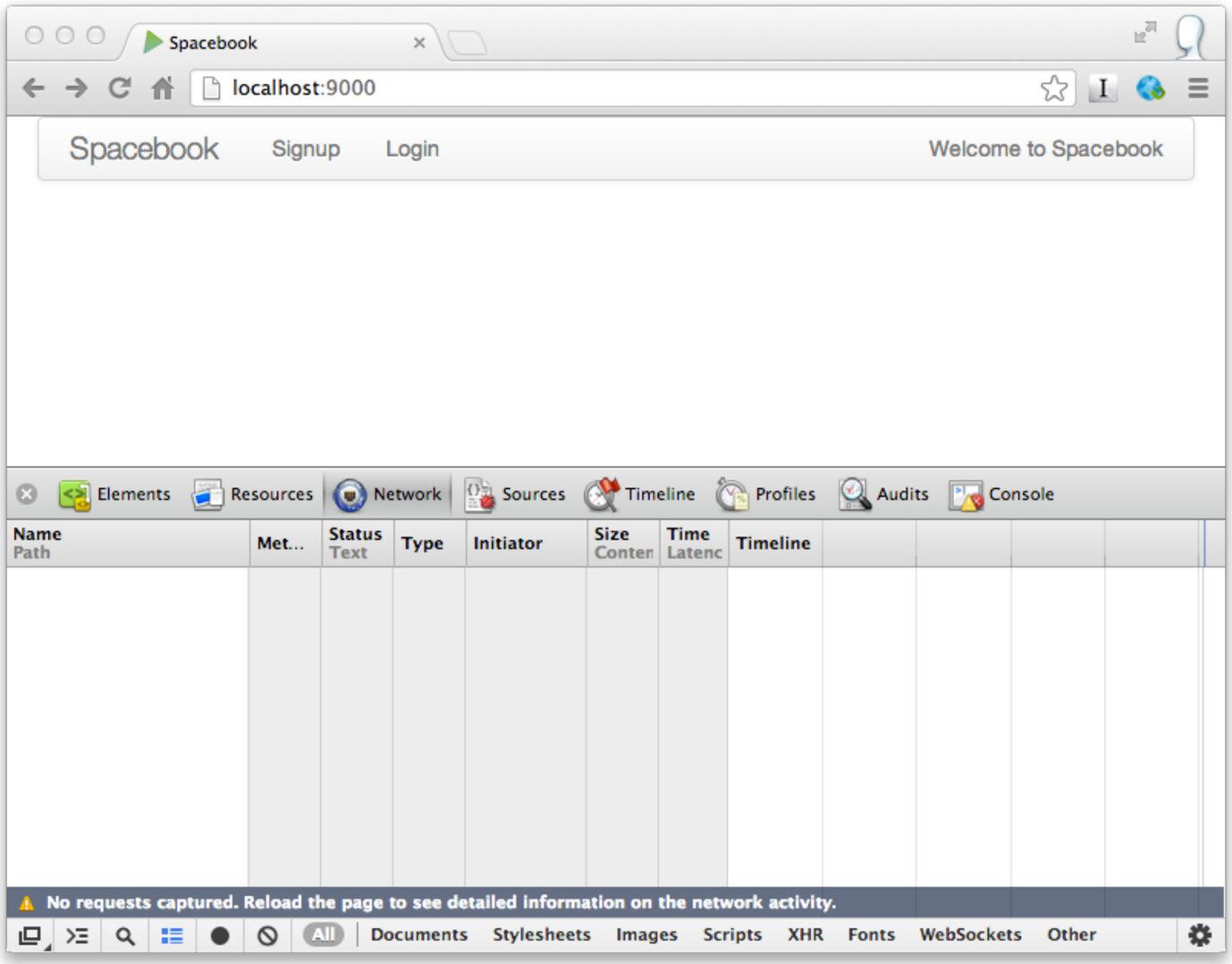
Name Path	Met...	Status Text	Type	Initiator	Size Conten	Time Latenc	Timeline

No requests captured. Reload the page to see detailed information on the network activity.

All | Documents Stylesheets Images Scripts XHR Fonts WebSockets Other

Tracing HTTP Request/Response

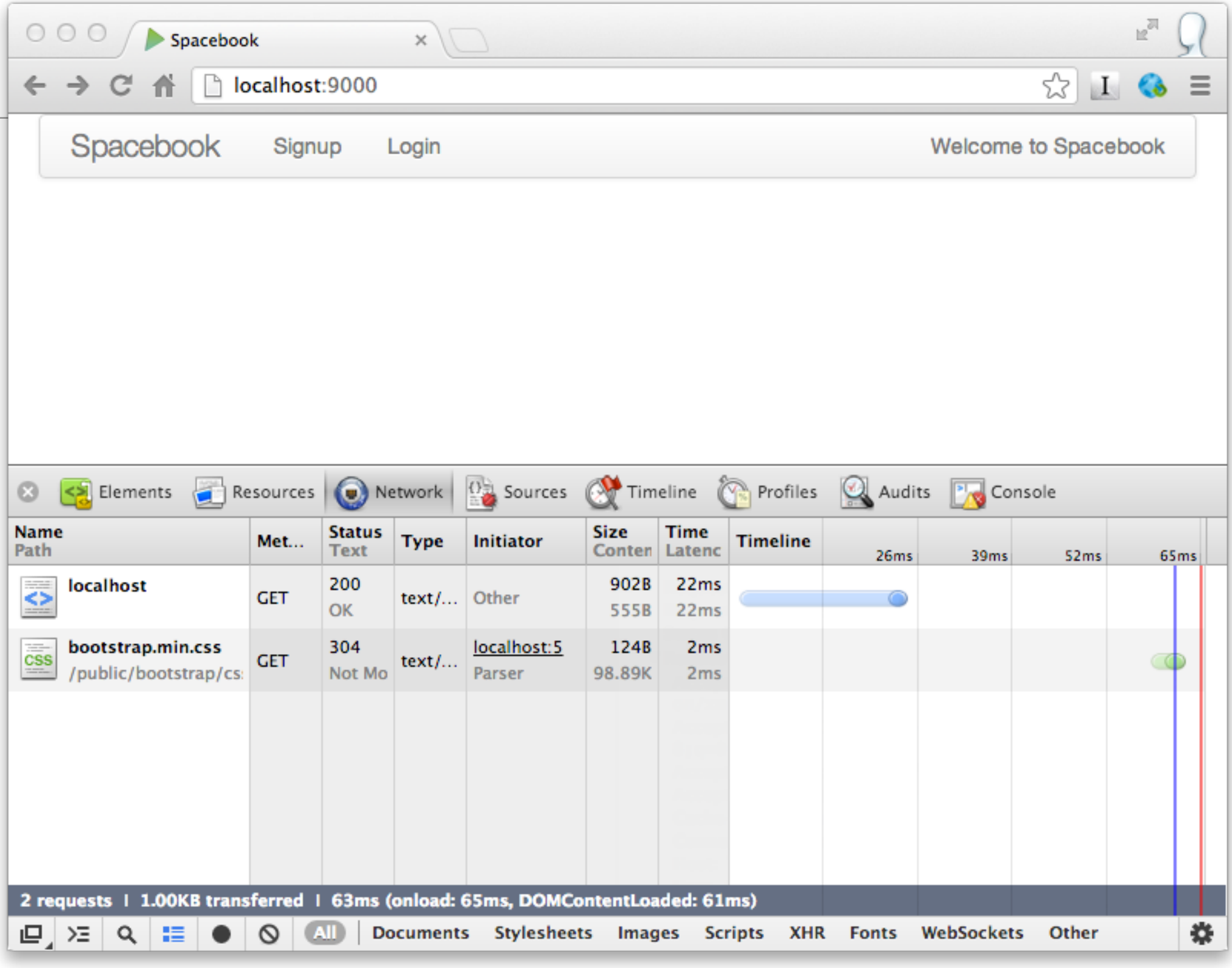
- Operate Browser as normal
- Control panel shows considerable range of diagnostic information, including:
  - Html
  - CSS
  - Javascript
  - Network traces
  - + much more....



Simple Trace Example

- Run spacebook from localost: 9000 as usual.

- “Network” activity shows requests/ responses....



http://localhost:9000 - Request

- This is the actual text sent across the wire:

```
GET /login HTTP/1.1
Host: localhost:9000
Connection: keep-alive
Cache-Control: max-age=0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_2) AppleWebKit/537.17
(KHTML, like Gecko) Chrome/24.0.1312.56 Safari/537.17
Accept-Encoding: gzip,deflate,sdch
Accept-Language: en-US,en;q=0.8
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.3
```

http://localhost:9000 - Response

- This is the actual text sent back from the server....
- Response is ‘200 ok’ + the html for the page

```
HTTP/1.1 200 OK
Server: Play! Framework;1.2.4;dev
Content-Type: text/html; charset=utf-8
Set-Cookie: PLAY_FLASH=;Expires=Mon, 28-Jan-13 17:16:23 GMT;Path=/
Set-Cookie: PLAY_ERRORS=;Expires=Mon, 28-Jan-13 17:16:23 GMT;Path=/
Set-Cookie: PLAY_SESSION=;Expires=Mon, 28-Jan-13 17:16:23 GMT;Path=/
Cache-Control: no-cache
Content-Length: 876

!DOCTYPE html>
<html>
  <head>
    <title> Spacebook </title>
    <link rel="stylesheet" media="screen" href="/public/bootstrap/css/
bootstrap.min.css">
  </head>
  <body>
    <div class="container-fluid">
     <div class="navbar  ">
       <div class="navbar-inner">
         <a class="brand pull-left" href="#">Spacebook</a>
         <ul class="nav">
  <li>                 <a href="/signup"> Signup  </a></li>
  <li class="active">  <a href="/login">  Login    </a></li>
    </ul>
    <p class="navbar-text pull-right"> Login to Spacebook </p>
  </div>
</div>

<form id="login" action="/authenticate" method="POST">
  <label>Email</label>
  <input type="text" name="email" id="email" />

  <label>Password</label>
  <input type="password" name="password"  id="password" />

  <input class="formbutton" type="submit" value="Login" />
</form>
    </div>
  </body>
</html>
```

Developer Tools - http://localhost:9000/login

Elements | Resources | Network | Sources | Timeline | Profiles | Audits | Console

Name
Path

login

bootstrap.min.css
/public/bootstrap/css

Headers | Preview | Response | Cookies | Timing

Request URL: http://localhost:9000/login
Request Method: GET
Status Code: 200 OK

Request Headers view source

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.3
Accept-Encoding: gzip,deflate,sdch
Accept-Language: en-US,en;q=0.8
Cache-Control: max-age=0
Connection: keep-alive
Host: localhost:9000
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_2) AppleWebKit/537.17 (KHTML, like Gecko) Chrome/24.0.1312.56 Safari/537.17

Response Headers view source

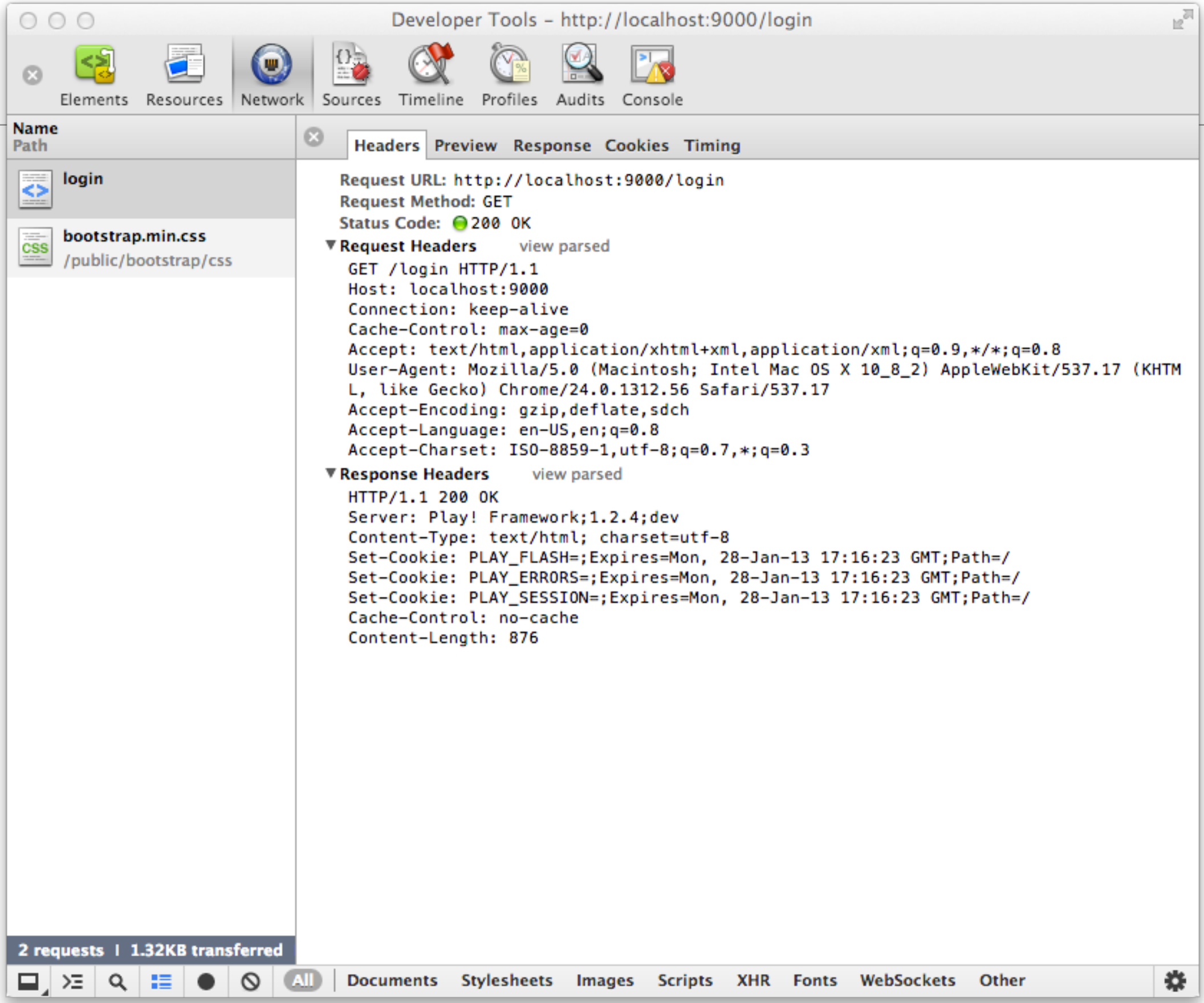
Cache-Control: no-cache
Content-Length: 876
Content-Type: text/html; charset=utf-8
Server: Play! Framework;1.2.4;dev
Set-Cookie: PLAY_FLASH=;Expires=Mon, 28-Jan-13 17:16:23 GMT;Path=/
Set-Cookie: PLAY_ERRORS=;Expires=Mon, 28-Jan-13 17:16:23 GMT;Path=/
Set-Cookie: PLAY_SESSION=;Expires=Mon, 28-Jan-13 17:16:23 GMT;Path=/

2 requests | 1.32KB transferred

All | Documents | Stylesheets | Images | Scripts | XHR | Fonts | WebSockets | Other

- View Source

Developer Tools View of request/response



Developer Tools - http://localhost:9000/login

Elements | Resources | Network | Sources | Timeline | Profiles | Audits | Console

Name
Path

login

bootstrap.min.css
/public/bootstrap/css

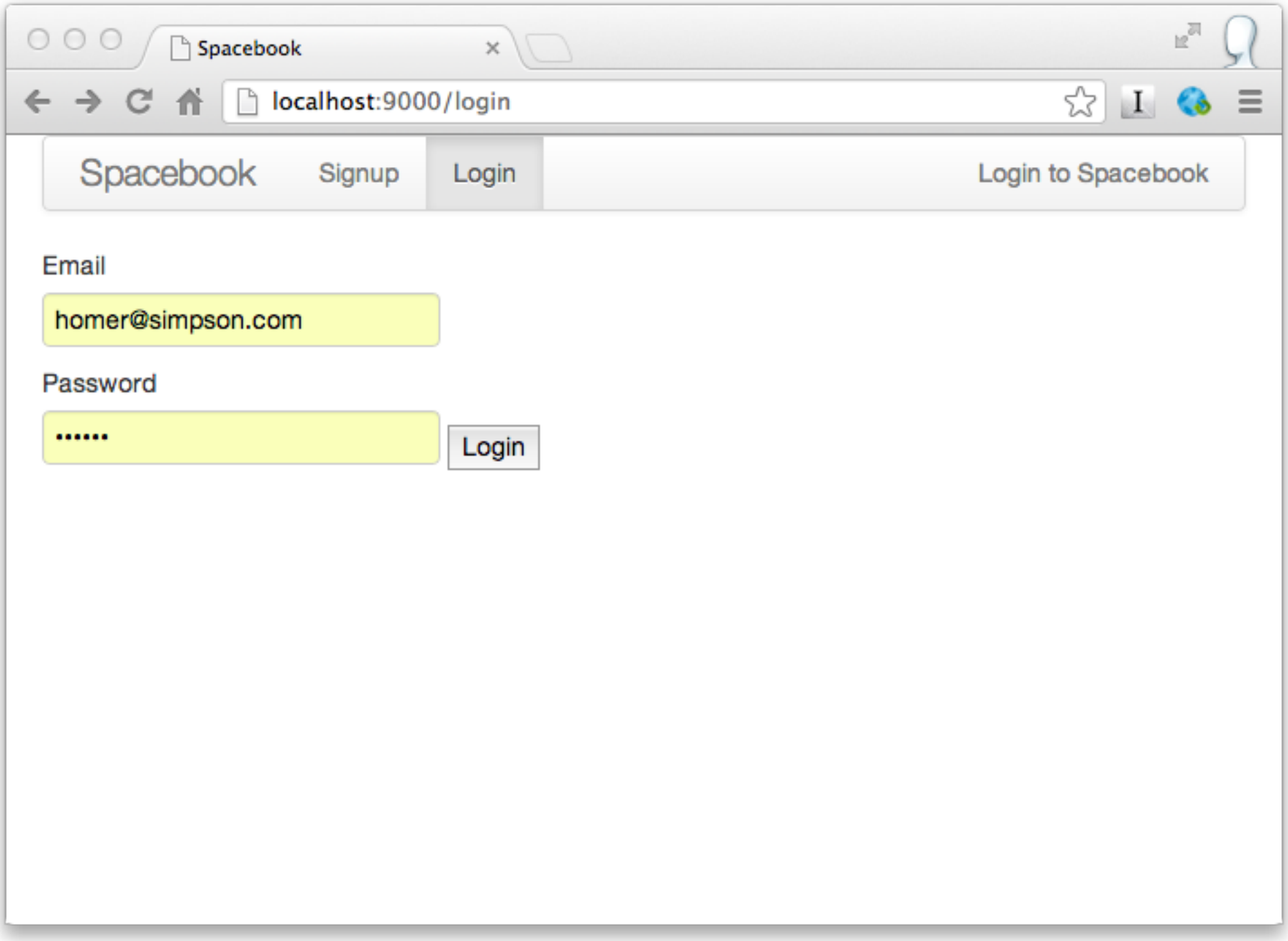
Headers | Preview | Response | Cookies | Timing

```
<!DOCTYPE html>
<html>
  <head>
    <title> Spacebook </title>
    <link rel="stylesheet" media="screen" href="/public/bootstrap/css/bootstrap.min.cs
  </head>
  <body>
    <div class="container-fluid">



    <div class="navbar  ">
      <div class="navbar-inner">
        <a class="brand pull-left" href="#">Spacebook</a>
        <ul class="nav">
  <li>                  <a href="/signup"> Signup  </a></li>
  <li class="active">  <a href="/login">  Login    </a></li>
    </ul>
    <p class="navbar-text pull-right"> Login to Spacebook </p>
  </div>
</div>


<form id="login" action="/authenticate" method="POST">
  <label>Email</label>
  <input type="text" name="email" id="email" />

  <label>Password</label>
  <input type="password" name="password"  id="password" />

  <input class="formbutton" type="submit" value="Login" />
</form>
    </div>
  </body>
</html>
```

2 requests | 1.32KB transferred

All | Documents | Stylesheets | Images | Scripts | XHR | Fonts | WebSockets | Other

Try Submitting a Form...



- When we press the button, we are generating a request...

Developer Tools - http://localhost:9000/home

Elements | Resources | Network | Sources | Timeline | Profiles | Audits | Console

Name / Path	Meth...	Status / Text	Type	Initiator	Size / Conten	Time / Latency	Timeline
authenticate	POST	302 Found	text/...	Other	418B 0B	187ms 186ms	
home	GET	200 OK	text/...	http://localhc Redirect	1.41KB 1.04KB	65ms 65ms	
bootstrap.min.css /public/bootstrap/css	GET	304 Not Mo	text/...	home:5 Parser	124B 98.89KI	3ms 3ms	

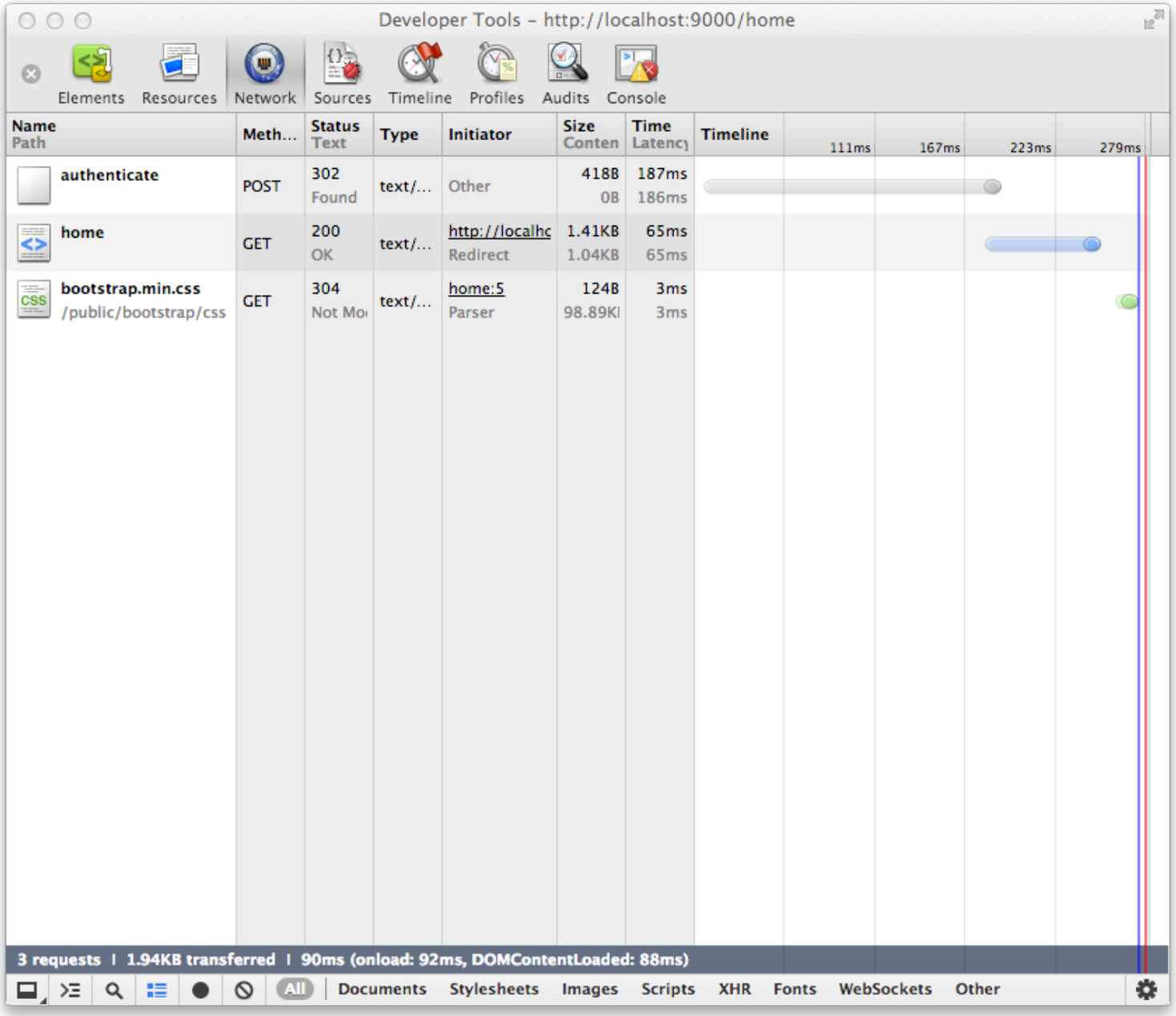
111ms 167ms 223ms 279ms

3 requests | 1.94KB transferred | 90ms (onload: 92ms, DOMContentLoaded: 88ms)

All | Documents | Stylesheets | Images | Scripts | XHR | Fonts | WebSockets | Other

3 Requests?

- First one is ok - this is the ‘Action’ from the form
- What about the other two?



/authenticate Request

```
POST /authenticate HTTP/1.1
Host: localhost:9000
Connection: keep-alive
Content-Length: 41
Cache-Control: max-age=0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Origin: http://localhost:9000
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_2) AppleWebKit/537.17
(KHTML, like Gecko) Chrome/24.0.1312.56 Safari/537.17
Content-Type: application/x-www-form-urlencoded
Referer: http://localhost:9000/login
Accept-Encoding: gzip,deflate,sdch
Accept-Language: en-US,en;q=0.8
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.3
Cookie: PLAY_SESSION=08b5765778d75b6fbee191f2a44c8368e25f62e4-
%00logged_in_userid%3A1%00
email=homer%40simpson.com&password=secret
```

/authenticate Request - form data

```
POST /authenticate HTTP/1.1
Host: localhost:9000

...

email=homer%40simpson.com&password=secret
```

- Request encapsulate ‘form data’ as a single string, separated by ‘&’s

/authenticate - Response

```
HTTP/1.1 302 Found
Server: Play! Framework;1.2.4;dev
Content-Type: text/plain; charset=utf-8
Location: http://localhost:9000/home
Set-Cookie: PLAY_FLASH=;Expires=Mon, 28-Jan-13 17:28:55 GMT;Path=/
Set-Cookie: PLAY_ERRORS=;Expires=Mon, 28-Jan-13 17:28:55 GMT;Path=/
Set-Cookie: PLAY_SESSION=08b5765778d75b6fbee191f2a44c8368e25f62e4-
%00logged_in_userid%3A1%00;Path=/
Cache-Control: no-cache
Content-Length: 0
```

- Response with ‘302 Found’ (previous response was ‘200 ok’)
- ‘302 Found’ means the requested resource is present - but at another location.
- This is provided as ‘Location: http://localhost:9000/home
- Once a browser sees this response - it make a second request to this new location...

/home request

```
GET /home HTTP/1.1
Host: localhost:9000
Connection: keep-alive
Cache-Control: max-age=0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_8_2) AppleWebKit/
537.17 (KHTML, like Gecko) Chrome/24.0.1312.56 Safari/537.17
Referer: http://localhost:9000/login
Accept-Encoding: gzip,deflate,sdch
Accept-Language: en-US,en;q=0.8
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.3
Cookie: PLAY_SESSION=08b5765778d75b6fbee191f2a44c8368e25f62e4-
%00logged_in_userid%3A1%00
```

- Notice the ‘logged_in_userid’ field... remember that?

- What is its purpose?

/home response

```
HTTP/1.1 200 OK
Server: Play! Framework;1.2.4;dev
Content-Type: text/html; charset=utf-8
Set-Cookie: PLAY_FLASH=;Expires=Mon, 28-Jan-13 17:28:55 GMT;Path=/
Set-Cookie: PLAY_ERRORS=;Expires=Mon, 28-Jan-13 17:28:55 GMT;Path=/
Set-Cookie: PLAY_SESSION=08b5765778d75b6fbee191f2a44c8368e25f62e4-%00logged_in_userid%3A1%00;Path=/
Cache-Control: no-cache
Content-Length: 1067
<!DOCTYPE html>
<html>
  <head>
    <title> Spacebook </title>
    <link rel="stylesheet" media="screen" href="/public/bootstrap/css/bootstrap.min.css">
  </head>
  <body>
    <div class="container-fluid">

    <div class="navbar  ">
      <div class="navbar-inner">
        <a class="brand pull-left" href="#">Spacebook</a>
        <ul class="nav">          <li class="active"> <a href="/home">        Home    </a></li>
          <li>                <a href="/members">     Members </a></li>
          <li>                <a href="/homeprofile"> Profile </a></li>
          <li>                <a href="/logout">      Logout  </a></li>
    </ul>
    <p class="navbar-text pull-right"> Spacebook Home Page for Homer Simpson </p>
  </div>
</div>
<div class="row-fluid">
  <div class="span4">
    <p>
      Homer Simpson,  0,
    </p>
    <h2> Friends </h4>
    <h2> Following (0) </h2>
      <ul>
              </ul>
    <h4> Followers </h4>
  </div>
  <div class="span8">
    <h2> Messages </h2>

  </div>
</div>    </div>
  </body>
</html>
```

- This is a ‘200 ok’ delivering to us the ‘home’ page...
- Which in turn requests the css file

Developer Tools - http://localhost:9000/home

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Name Path	Method	Status Text	Type	Initiator	Size Content	Time Latenc	Timeline
authenticate	POST	302 Found	text/plain	Other	418B 0B	187ms 186ms	
home	GET	200 OK	text/html	http://localhost:9000/authenticate Redirect	1.41KB 1.04KB	65ms 65ms	
bootstrap.min.css /public/bootstrap/c:	GET	304 Not Modifi	text/css	home:5 Parser	124B 98.89KB	3ms 3ms	

3 requests | 1.94KB transferred | 90ms (onload: 92ms, DOMContentLoaded: 88ms)

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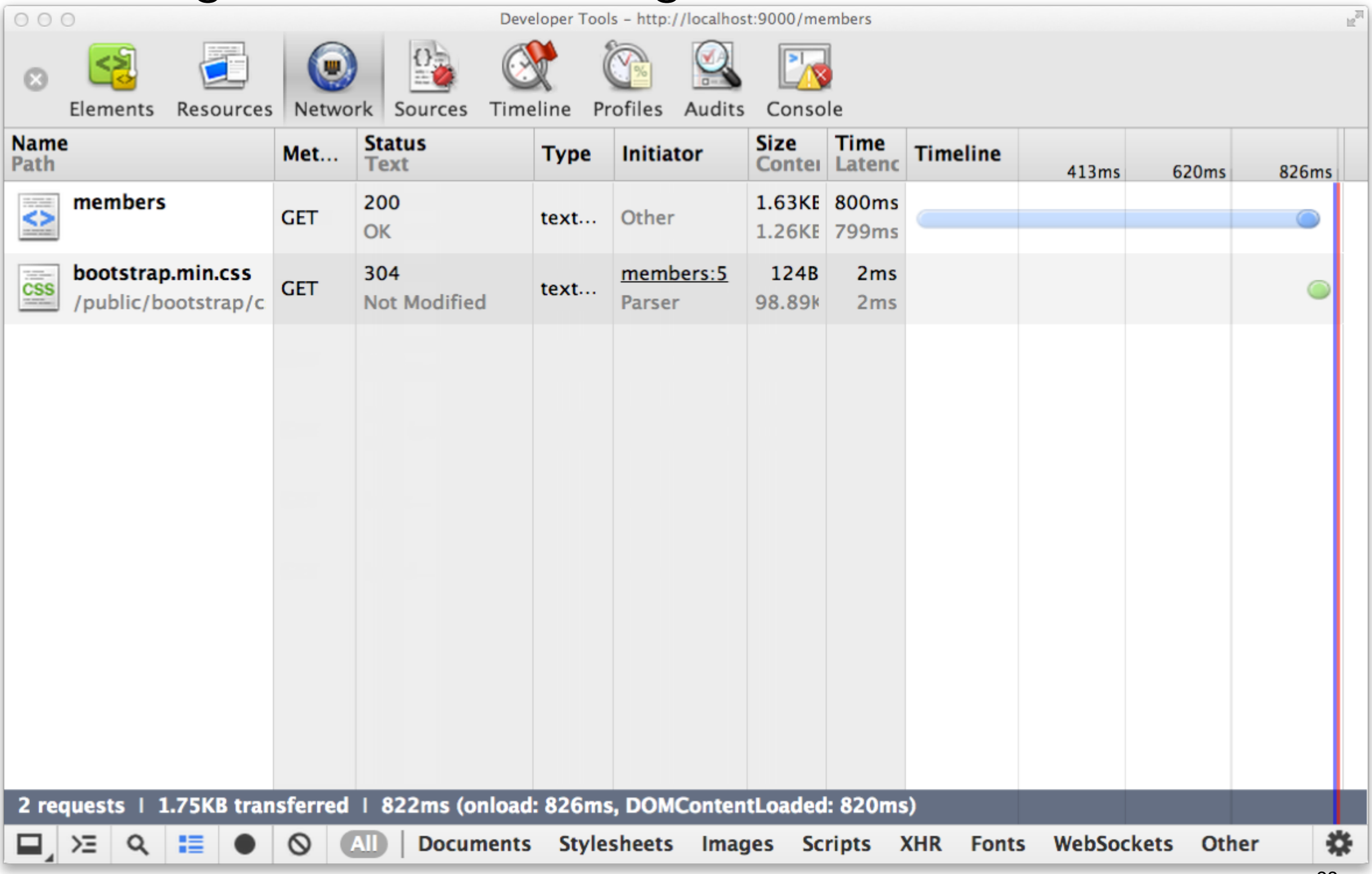
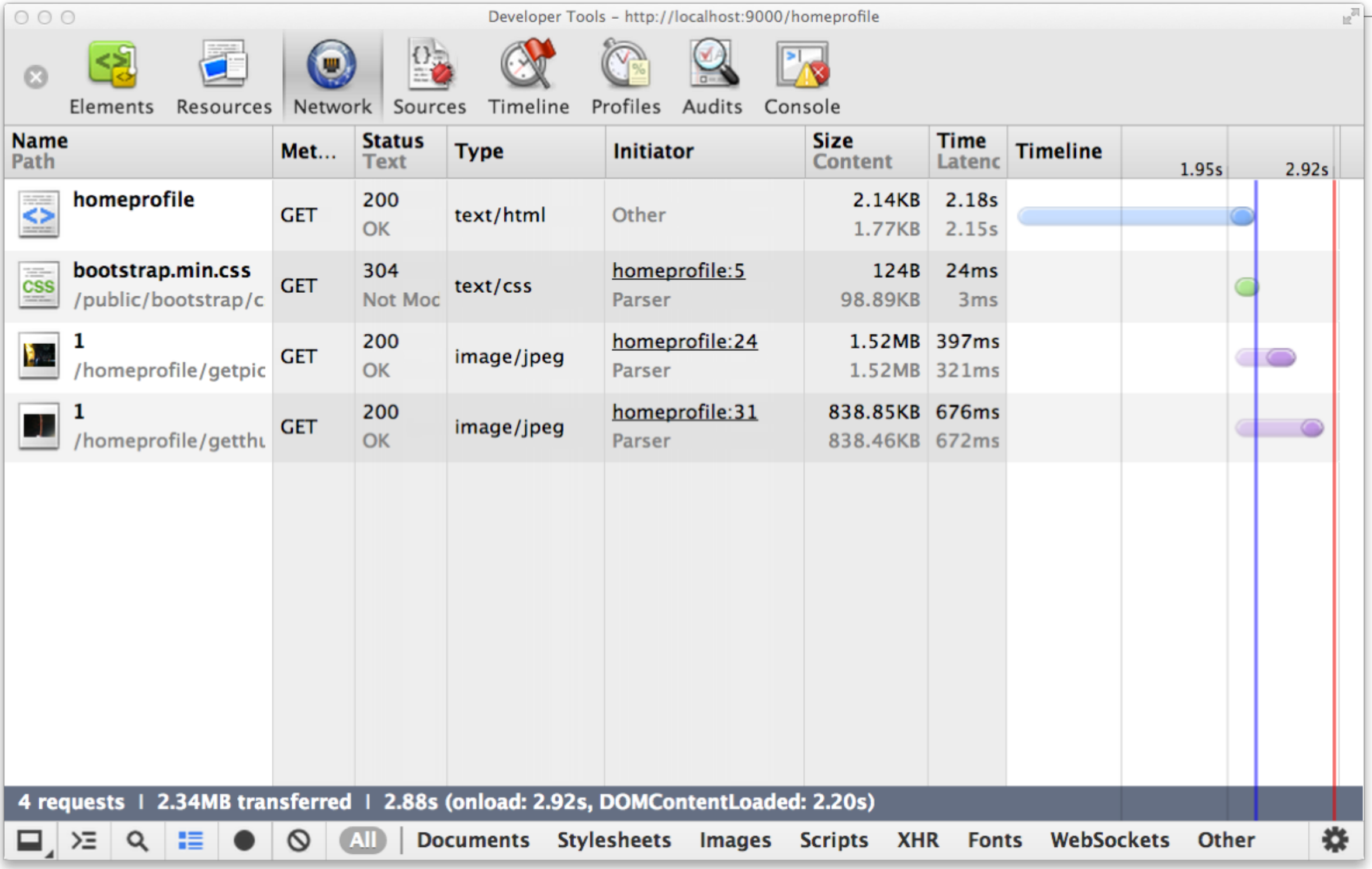
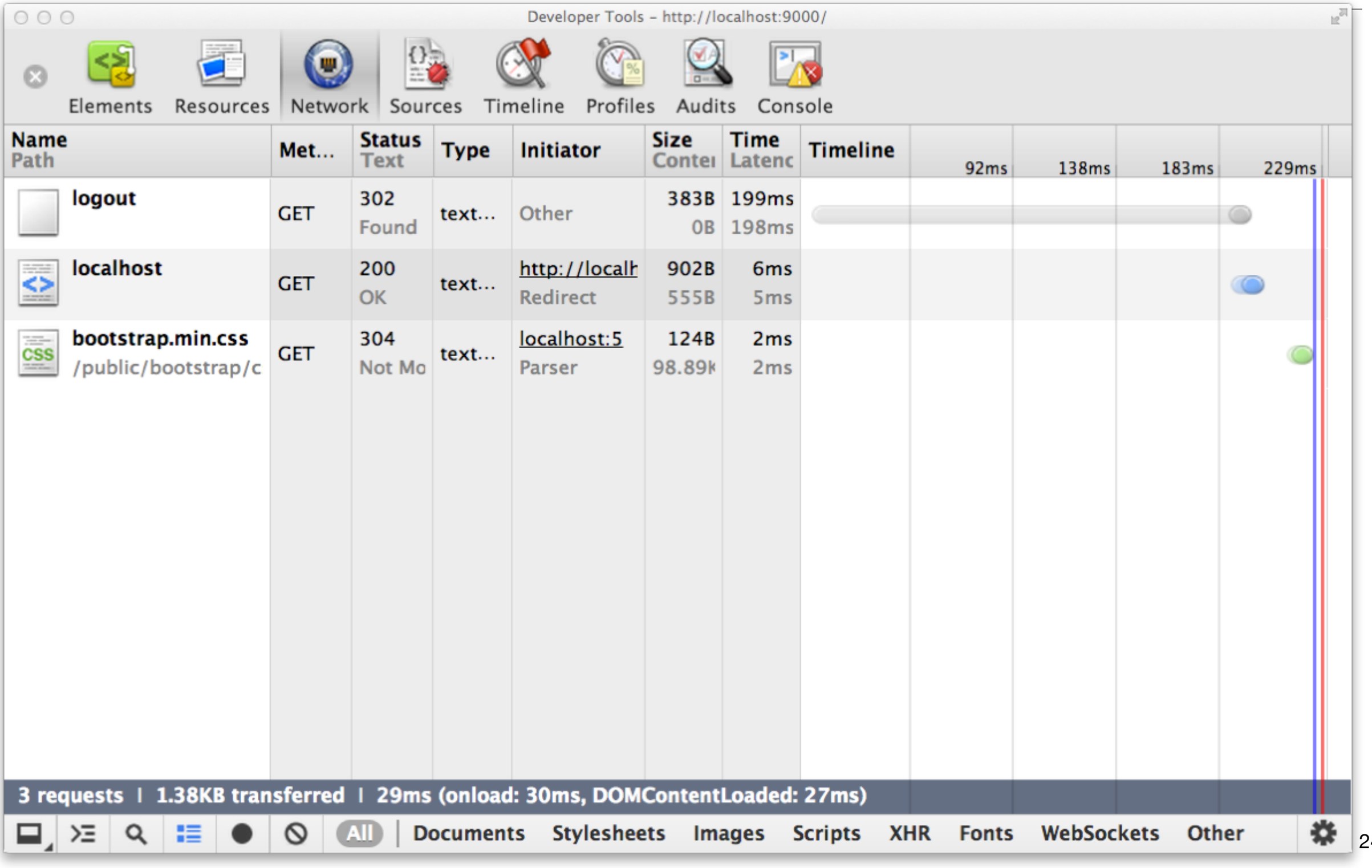
Visiting the Members Page



Visiting the Home Profile



Logging out


Developer Tools - http://localhost:9000/
Elements
Resources
Network
Sources
Timeline
Profiles
Audits
Console
Name
Path
Met...
Status
Text
Type
Initiator
Size
Conte
Time
Latenc
Timeline
92ms
138ms
183ms
229ms
logout
GET
302
Found
text...
Other
383B
0B
199ms
198ms
localhost
GET
200
OK
text...
http://localh
Redirect
902B
555B
6ms
5ms
bootstrap.min.css
/public/bootstrap/c
GET
304
Not Mo
text...
localhost:5
Parser
124B
98.89k
2ms
2ms
3 requests | 1.38KB transferred | 29ms (onload: 30ms, DOMContentLoaded: 27ms)
All
Documents
Stylesheets
Images
Scripts
XHR
Fonts
WebSockets
Other

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