HTTP, Servlets, and JSP

based on Chapter 1 of Head First Servlets and JSP

- Static
- Connected
- HTML

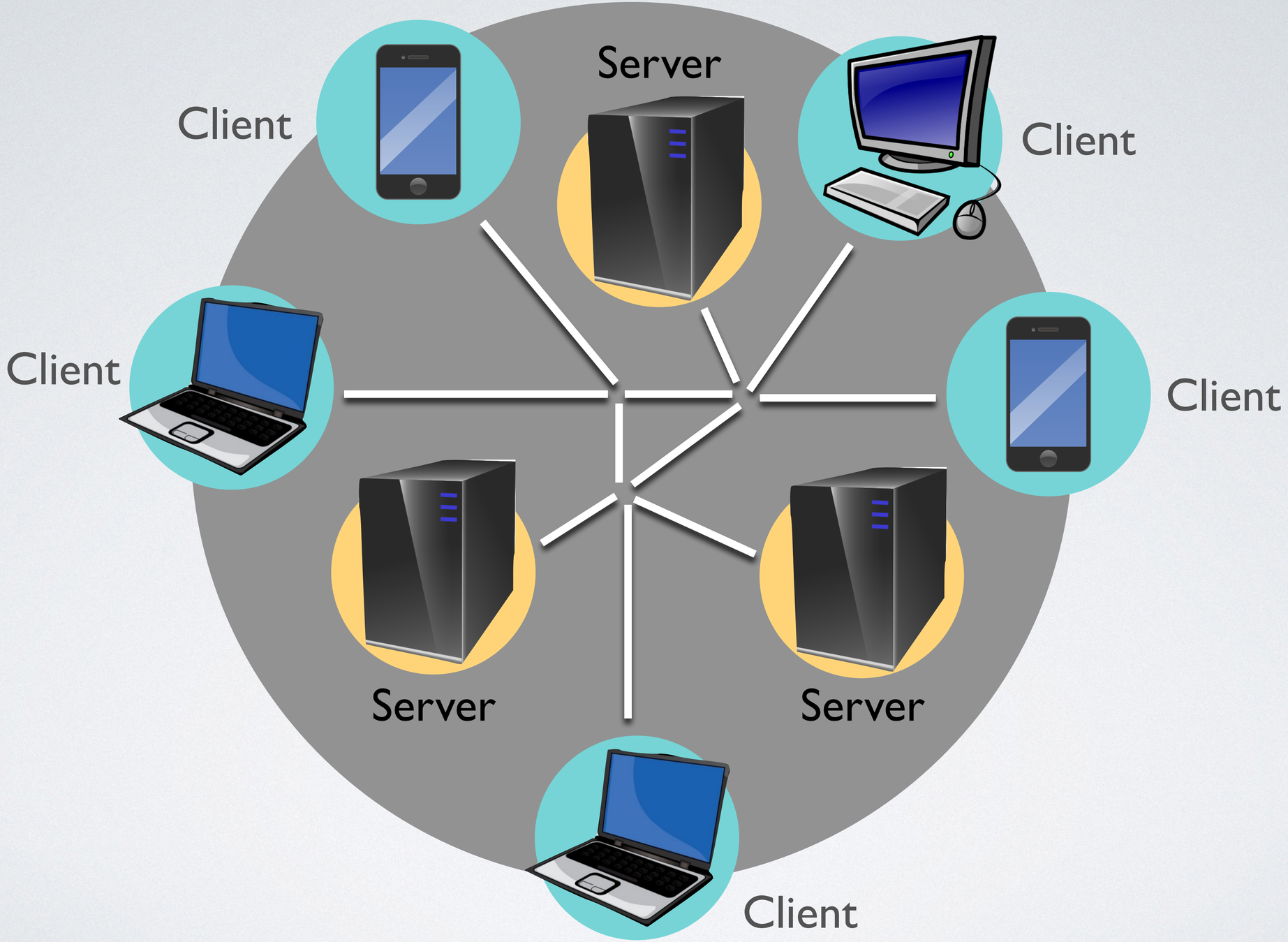
Web Sites

Web Applications

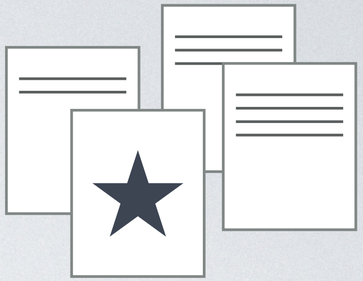
- Dynamic
- Connected
- HTML + Java, etc.

- Dynamic
- Standalone
- Java, etc.

Native GUI Applications


Server
Client
Client
Client
Client
Server
Server
Client

client request
contains name and
address (URL)



server has lots
of content:
web pages,
images, data

Web Client

server response
contains document
that client requested

Web Server

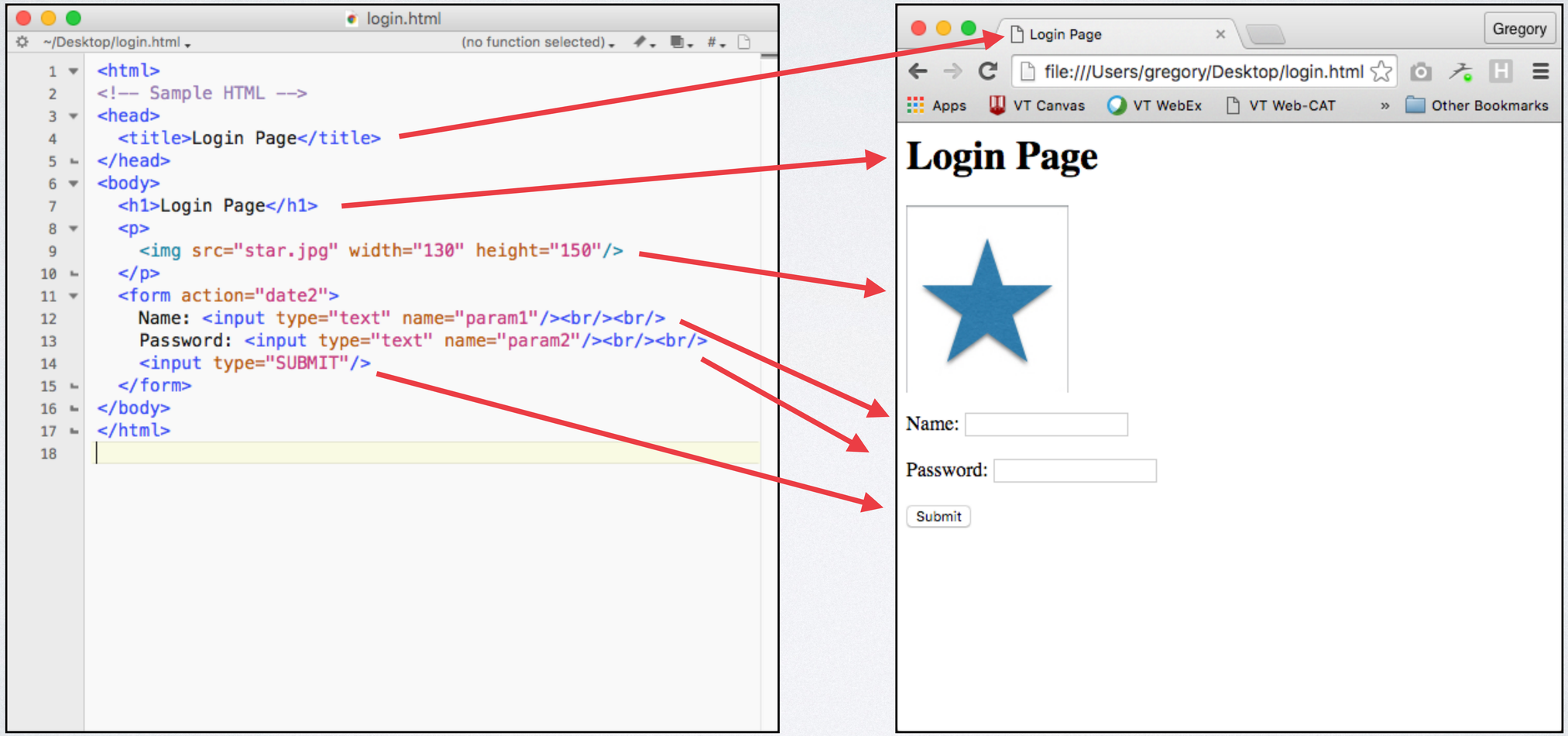
The server typically sends the browser instructions written in HTML. This tells the browser how to display the requested content to the user.

The protocol used by clients and servers to communicate with one another. It handles the simple request and response conversations.

HTML (Hypertext Markup Language)

HTTP (Hypertext Transfer Protocol)

HTML Code


login.html
~/Desktop/login.html
(no function selected)
1 <html>
2 <!-- Sample HTML -->
3 <head>
4 <title>Login Page</title>
5 </head>
6 <body>
7 <h1>Login Page</h1>
8
9
10
11 <form action="date2">
12 Name: <input type="text" name="param1"/>

13 Password: <input type="text" name="param2"/>

14 <input type="SUBMIT"/>
15 </form>
16 </body>
17 </html>
18
Login Page
Gregory
file:///Users/gregory/Desktop/login.html
Apps
VT Canvas
VT WebEx
VT Web-CAT
Other Bookmarks
Login Page
Name:
Password:
Submit

HTTP Protocol

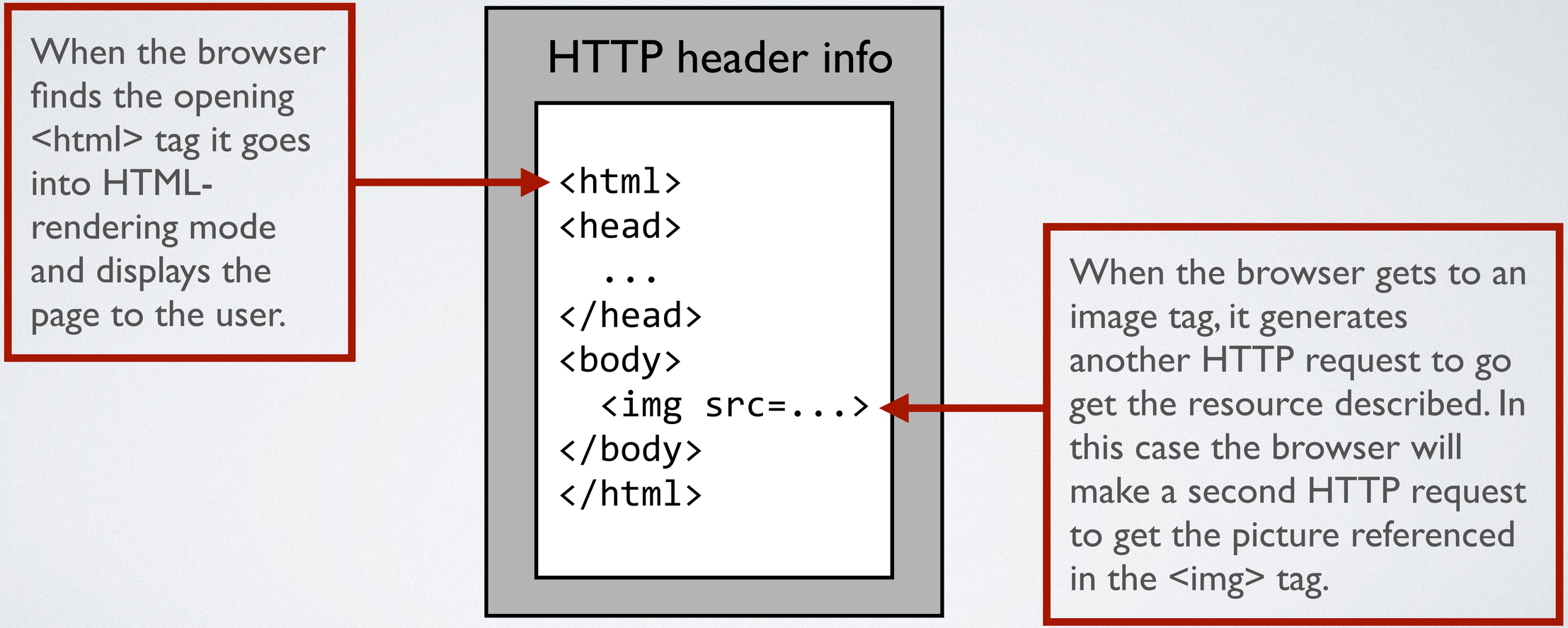
Key elements of the request stream

- HTTP method (the action to be preformed)
- The page to access (a URL)
- Form parameters (like arguments to a method)

Key elements of the response stream

- A status code (for whether the request was successful)
- Content-type (text, picture, HTML, etc.)
- The content (the actual HTML, image, etc.)

HTTP Response



HTTP GET Request

User clicks a link to a new page

Web

Browser sends a GET request to the server, asking for the new page

GET
...
...

Web

HTTP POST Request

User fills out a form and hits the submit button

Web

Browser sends a POST request to the server, giving the server the data from the form

POST
...
...

Web

Using POST vs GET

You *can* send some data with a get request. It appears after the ? in the URL

`http://saloon.javaranch.com/cgi-bin/ubb/ultimateweb.cgi?ubb=get_topic&f=18&t=003475`

However...

- Total number of characters you can send with GET is often limited by the server
- The data you send is appended to the URL in the address bar, so it is exposed
- You can't bookmark a form submission

Sample GET Request

HTTP method

path to resource on the web server

parameters are appended to the path

protocol version

```
GET /select/selectBeerTaste.jsp?color=dark&taste=malty HTTP/1.1
Host: www.wickedlysmart.com
User-Agent: Mozilla/5.0 (Macintosh; U; PPC Mac OS X en-US; rv:1.4)
    Gecko/20030624 Netscape/7.1
Accept: text/xml,application/xml,application/xhtml+xml,text/html;
    q=0.9,text/plain;q=0.8,video/x-mng,image/png,image/jpeg,image/gif;
    q=0.2,*/*;q=0.1
Accept-Language: en-us;en;q=0.5
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive
```

request line

server

client application

accepted MIME types

Sample POST Request

request line

request headers

```
POST /select/selectBeerTaste.do HTTP/1.1
Host: www.wickedlysmart.com
User-Agent: Mozilla/5.0 (Macintosh; U; PPC Mac OS X Mach-O; en-US; rv:1.4)
    Gecko/20030624 Netscape/7.1
Accept: text/xml,application/xml,application/xhtml+xml,text/html;
    q=0.9,text/plain;q=0.8,video/x-mng,image/png,image/jpeg,image/gif;
    q=0.2,*/*;q=0.1
Accept-Language: en-us;en;q=0.5
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive

color=dark&taste=malty
```

request body (payload)

Other HTTP Request Methods

Method	Description
HEAD	Same as GET but returns only HTTP headers and no document body
PUT	Uploads a representation of the specified URI
DELETE	Deletes the specified resource
OPTIONS	Returns the HTTP methods that the server supports
CONNECT	Converts the request connection to a transparent TCP/IP tunnel

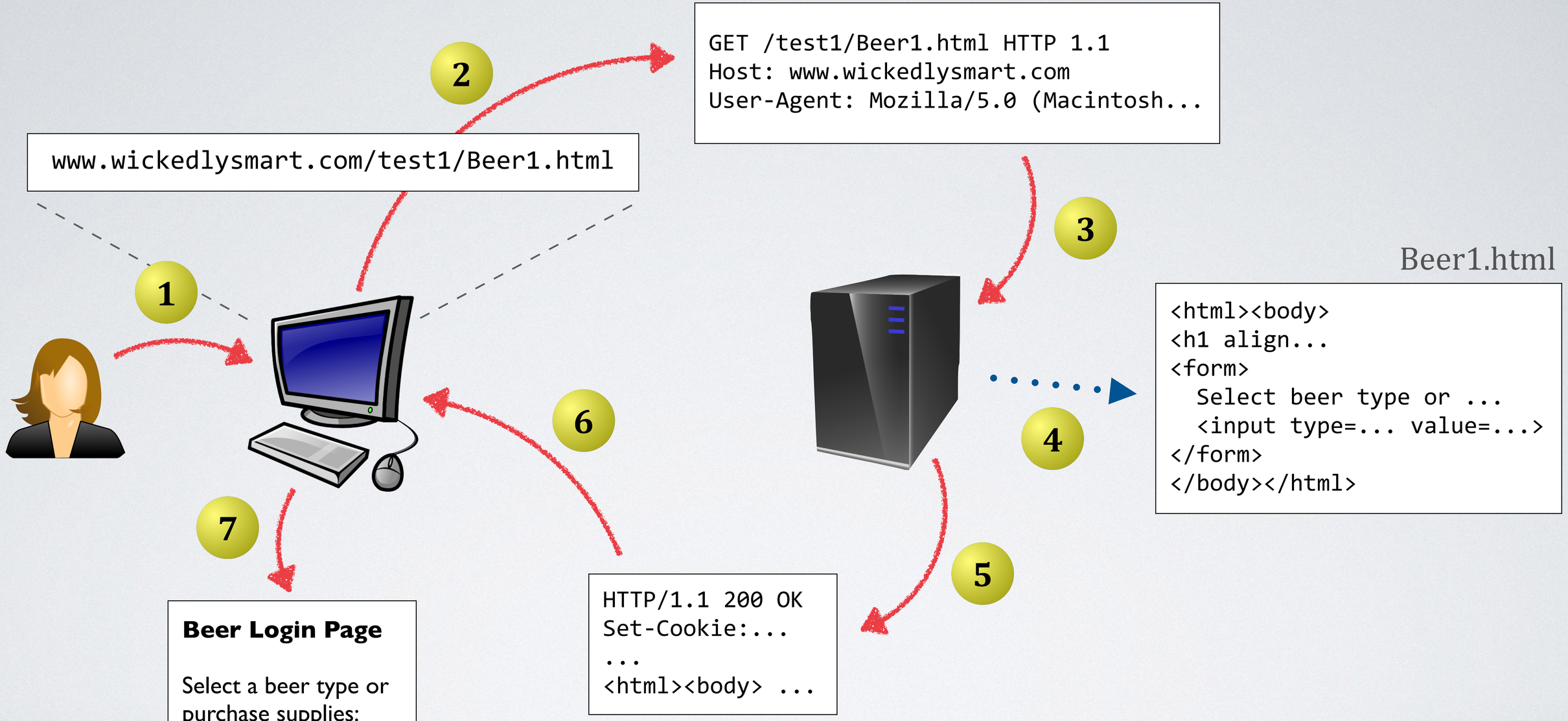
– w3schools.com

Sample Response

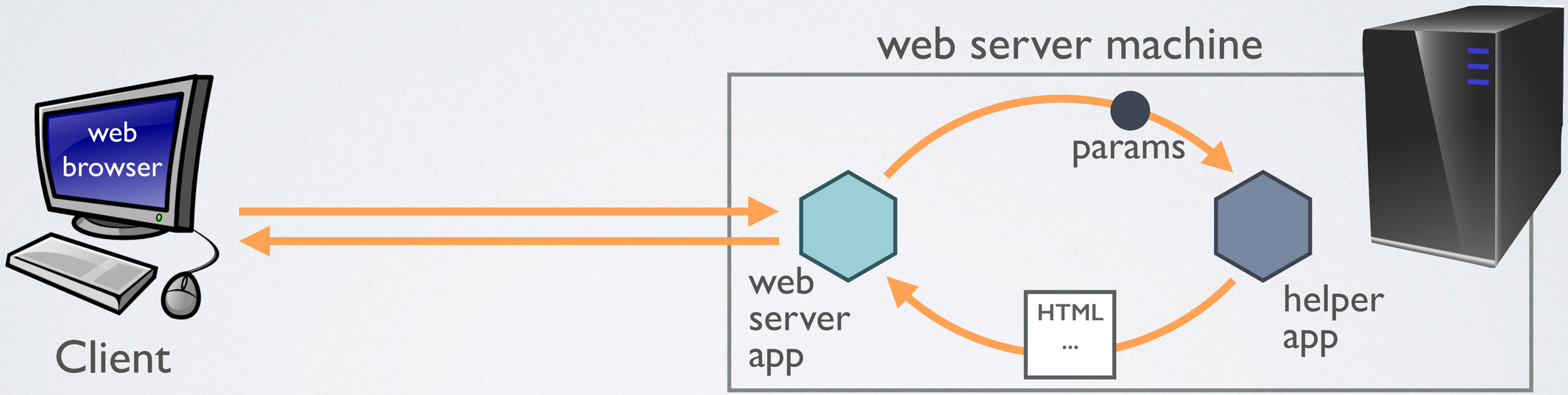
code	text	meaning
200	OK	The request is OK
403	Forbidden	Request is legal, but server refuses to respond
404	Not Found	Requested page cannot be found
500	Internal Server Error	Generic error message

URL

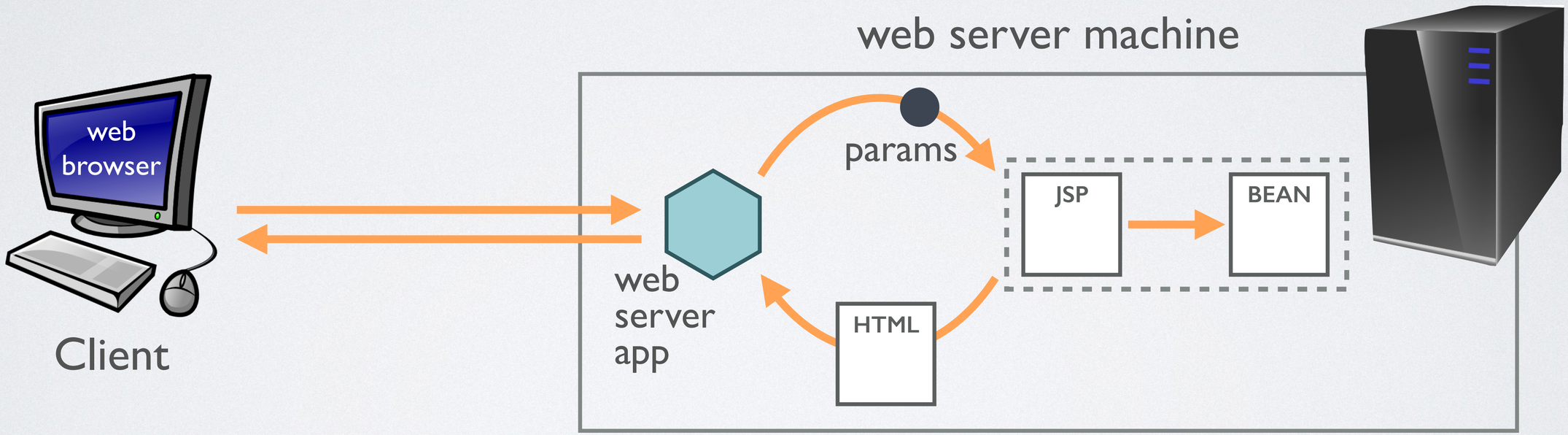

Protocol
Port
Resource
http://www.wickedlysmart.com:80/beeradvice/select/beer1.html
Server
Path


www.wickedlysmart.com/test1/Beer1.html
1
2
GET /test1/Beer1.html HTTP 1.1
Host: www.wickedlysmart.com
User-Agent: Mozilla/5.0 (Macintosh...
3
Beer1.html
<html><body>
<h1 align...
<form>
Select beer type or ...
<input type=... value=...>
</form>
</body></html>
4
5
HTTP/1.1 200 OK
Set-Cookie:...
...
<html><body> ...
6
7
Beer Login Page
Select a beer type or purchase supplies:
Select
Buy supplies

Making web sites dynamic with helper apps (CGI)



Making web sites dynamic with Servlets and JSP



Making web sites dynamic with JavaScript