

CMSC 100 – Web Programming

Introductory Terms

Ojective:

At the end of the session, the students should be able to:

Discuss the definitions of common/introductory terms related to Web Programming

Previously...

- ♦ Client-Server
- ♦ Web Application
- ♦ Web Browser

Previously...

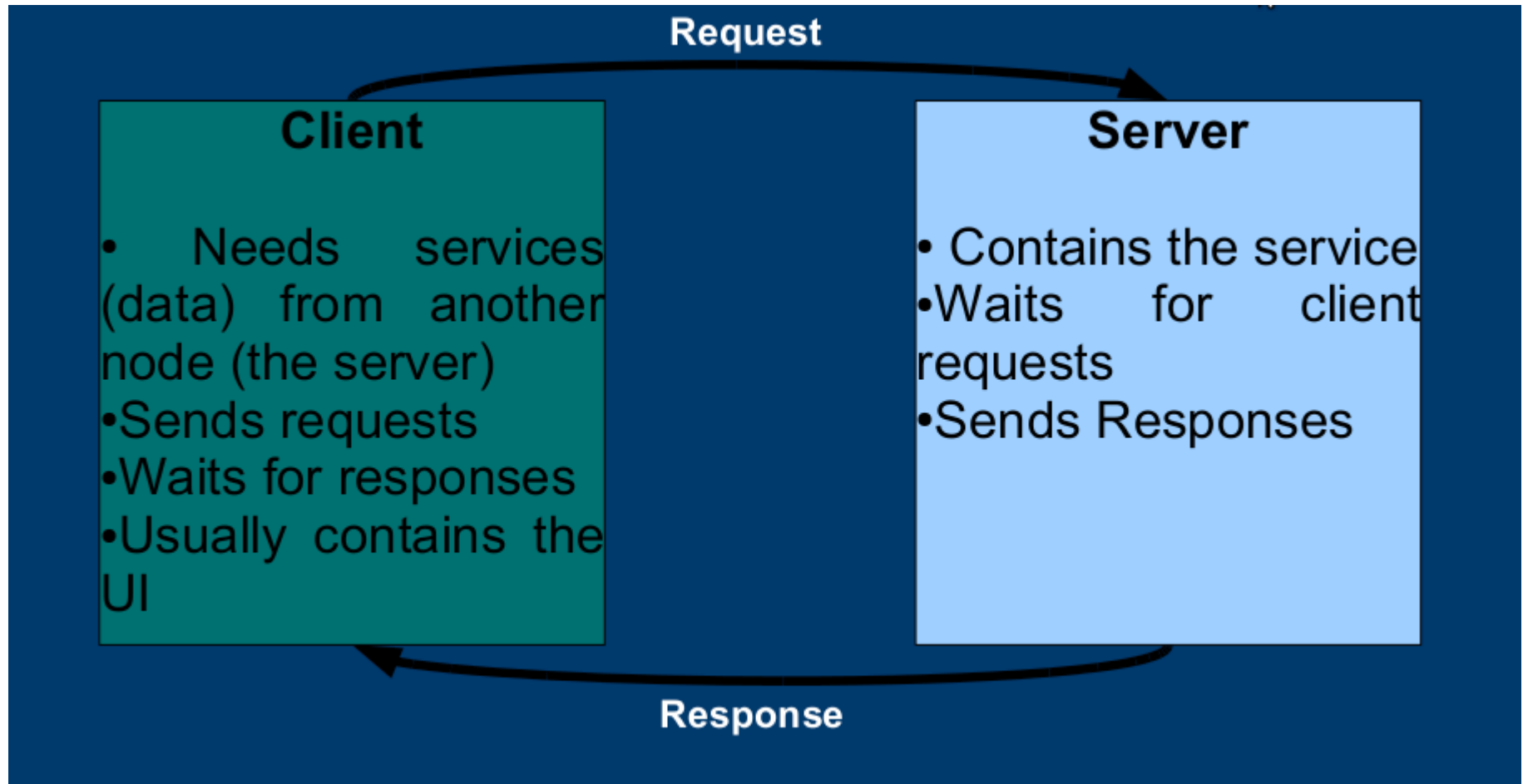
- ♦ Web
- ♦ Internet ➔ *TCP/IP*
- ♦ World Wide Web ➔ *HTTP*

HTTP*

- Hypertext Transfer Protocol
 - ➔ the foundation of data communication for the World Wide Web

**Most of this lecture presentation are from
Prof. Rodolfo Duldulao, former instructor at ICS, UPLB.*

HTTP: Web Interaction



Web Client-Server Apps

Server: The Web Server

- Also known as HTTP Server.
- Server that hosts web content.
- Most web servers can be configured to handle dynamic content
- Usually, 'attach' a programming language and related tools to the server and you're ready to do web programming.

Browser-Server Interaction

PROTOCOL

- System of that two or more communicating parties follow when they 'talk' with each other.
- When Accessing a web page, the browser makes an HTTP Request (message) and sends to the server.
- Server creates one or more HTTP Responses as a response to request.

The HTTP Request

When a browser makes a request

- When user types on the address bar of the browser.
- When additional resources are linked to a resource.
- When the user clicks on a hyperlink (and the hyperlink refers to a Web Resource).
- As a response to a request redirect.
- User Submits a Web Form.

The HTTP Request

- The message that browsers send to web servers.
- Contains information about the request, kind of request, where the request comes from, type of browser used, etc...

```
Request
= Request-Line
*(( general-header
| request-header
| entity-header ) CRLF)
CRLF
[ message-body ]
```

Parts of the Request

Request Line

- The First Line of the Request
- It tells us what kind of HTTP Request it is (Method)
- The resource being requested

Examples

GET `http://www.w3.org/pub/WWW/TheProject.html` HTTP/1.1
DELETE `/pub/WWW/TheProject.html` HTTP/1.1

Headers

From the second line up to the empty line before the message body are called headers

Three types of headers

- General Headers: Common headers also used in responses
- Request Headers: Information about the Client
- Entity Headers: Information about the content of the request message body

Message Body

Message Body = Entity Body encoded as per Encoding specified by entity headers.

e.g.:

- When submitting a POST request (i.e. form data is encoded in the body).
- When submitting a form with a file attachment (i.e. file upload).

Example

```
GET / HTTP/1.1[CRLF]
```

```
Host: facebook.com[CRLF]
```

```
Connection: close[CRLF]
```

```
User-Agent: Mozilla/4.0 (compatible; MSIE  
5.01; Windows NT)[CRLF]
```

```
Accept-Charset: ISO-8859-1,UTF-  
8;q=0.7,*;q=0.7[CRLF]
```

```
Cache-Control: no-cache[CRLF]
```

```
Accept-Language: de,en;q=0.7,en-  
us;q=0.3[CRLF]
```

HTTP Response

Also a text encoded message from web server to browser.

- One request may trigger multiple responses depending on size of response.

```
Response
= Status-Line
*(( general-header
| response-header
| entity-header ) CRLF)
CRLF
[ message-body ]
```

Response Example

HTTP/1.1 200 OK

Date: Mon, 06 Dec 1999 20:54:26 GMT

Server: Apache/1.3.6 (Unix)

Last-Modified: Fri, 04 Oct 1996 14:06:11 GMT

ETag: "2f5cd-964-381e1bd6"

Accept-Ranges: bytes

Content-length: 327

Connection: close

Content-type: text/html

<title>Sample Homepage</title>

<h1>Welcome</h2>

Hi there, this is a simple web page. Granted, it may not be as elegant as some other web pages you've seen on the net,

but there are

some common qualities:

 An image,

 Text,

 and a hyperlink.

Status Code and Reason Phrase

Status Code: A 3-digit number corresponding to a response type.

- Reason Phrase: Describes the response or result of processing the request.
- Status: Codes grouped according to kind of response, grouping determined by the first digit.

Status Codes

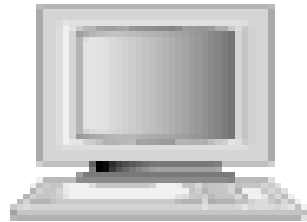
- 1xx: Informational - Request received, continuing process
- 2xx: Success - The action was successfully received, understood, and accepted
- 3xx: Redirection - Further action must be taken in order to complete the request
- 4xx: Client Error - The request contains bad syntax or cannot be fulfilled
- 5xx: Server Error - The server failed to fulfill an apparently valid request

Assignment

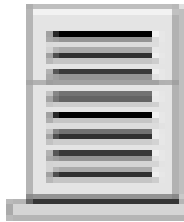
Memorize at least ten status codes and corresponding reason phrase

Status Code Definitions

HTTP Communication



Client



Server

TIME



```
GET / HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/
      jpeg, image/png, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE
      5.01; Windows NT)
Host: hypothetical.osa.com
Connection: Keep-Alive
```

```
HTTP/1.1 200 OK
Date: Mon, 06 Dec 1999 20:54:26 GMT
Server: Apache/1.3.6 (Unix)
Last-modified: Fri, 04 Oct 1996 14:06:11 GMT
ETag: "2f3cd-964-381e1bd6"
Accept-Ranges: bytes
Content-length: 327
Connection: close
Content-type: text/html

<title>Sample Homepage</title>

...
```