COMP303
Internet Computing

PHP 2

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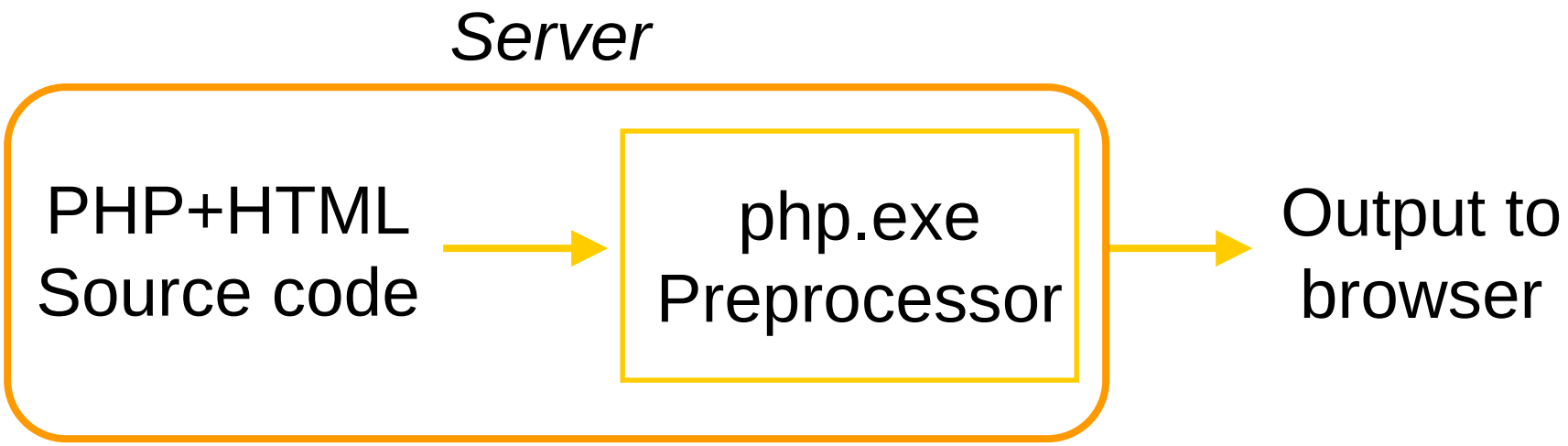
Overview

- This presentation considers
  - Debugging PHP
  - X-Powered-By
  - Checking HTTP communication
  - Browser redirection
  - Handling cookies with PHP
    - Setting, Accessing, Displaying, Deleting

PHP Operation - Reminder

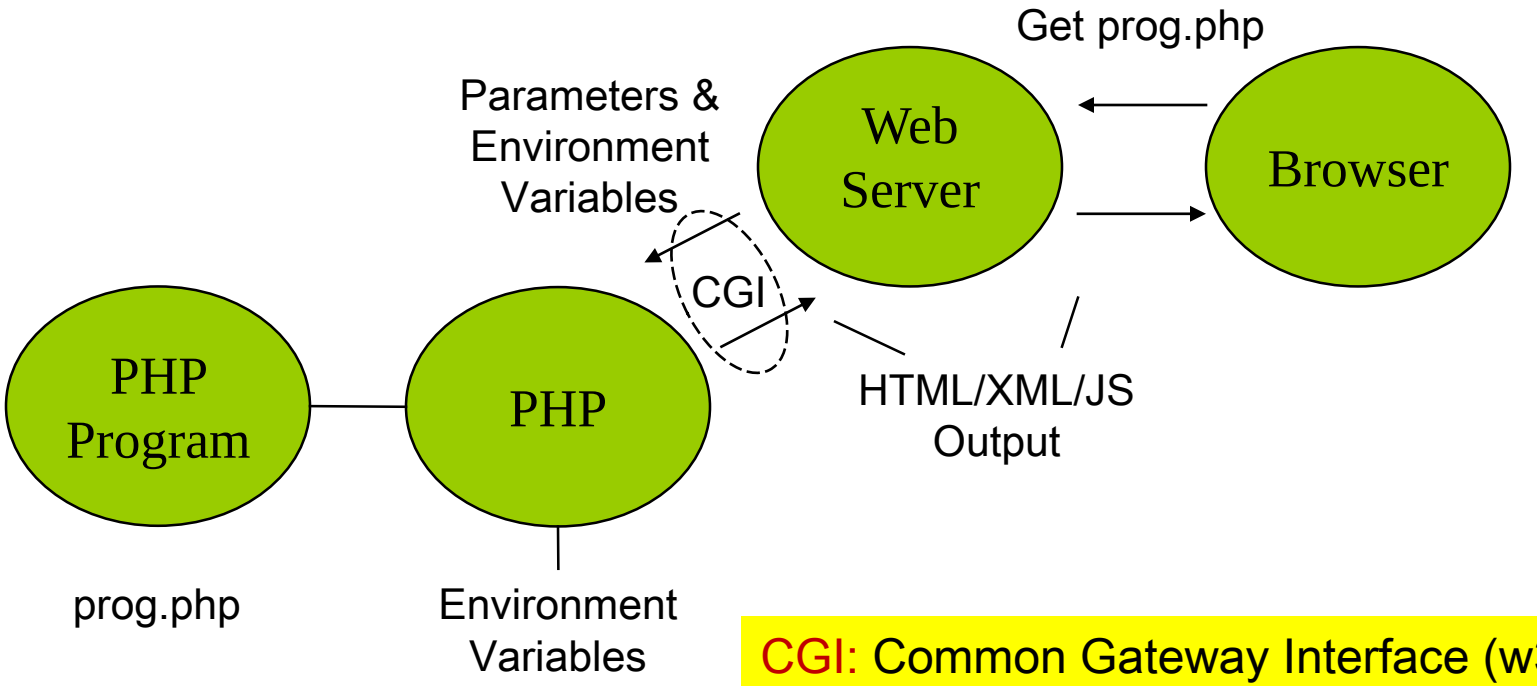


- Output could be HTML, JavaScript, XML, . . .

PHP-CLI vs PHP-CGI

- PHP is installed with PHP-CLI and PHP-CGI
- PHP-CLI (PHP Command Line Interface) is for development of standalone applications (independent of Web server and hence does not http headers); it runs on the command line and takes in command line arguments.
- PHP-CGI (PHP Common Gateway Interface) is for building applications that work with Web server; it outputs http headers.

PHP and Web Server Interface

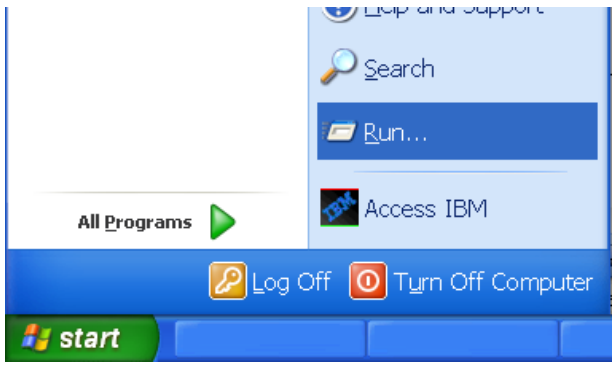


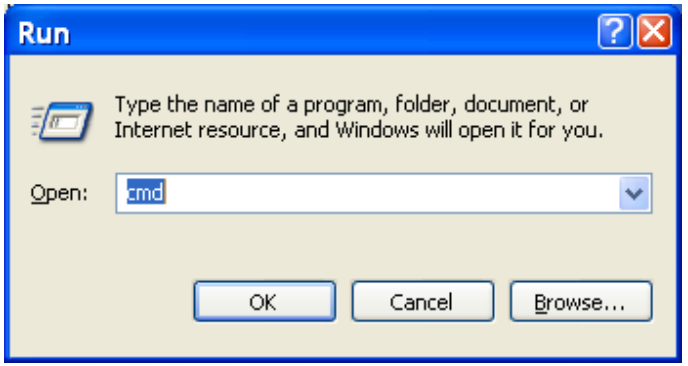
CGI: Common Gateway Interface (w3c standard) defines all environment variables in web server (e.g., form data); every language has its own way to access the variables

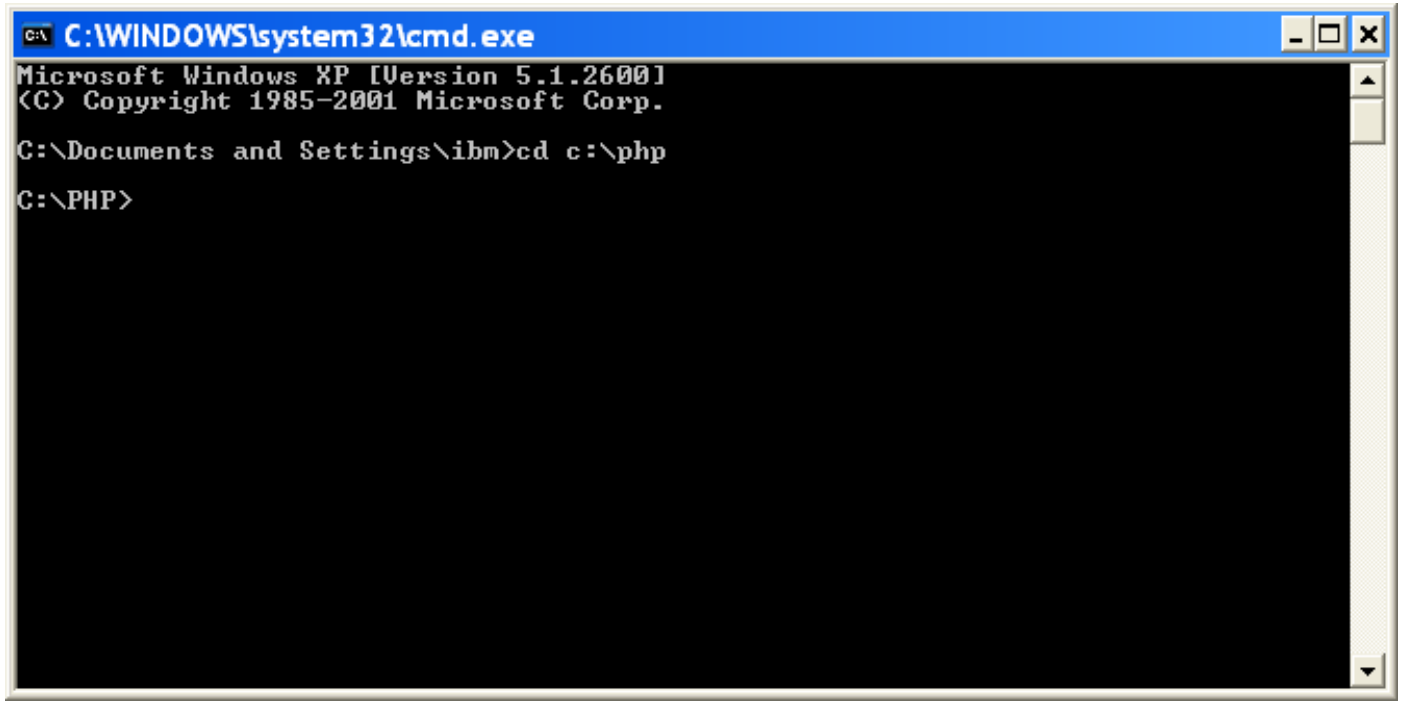
Debugging PHP with PHP-CGI

- Sometimes you don't know where the problem is - the PHP code? The server? The browser?
- You can learn more by running PHP code via the windows DOS command line
- You will then see exactly what is being generated by the PHP engine, including the important HTTP header which you don't see when you use a browser

PHP on DOS Command Prompt







Using PHP-CGI on Command Line

- After you have the windows command line display you can then give any PHP code to the PHP engine
- The PHP engine can execute a PHP file in the command line using a program called *php-cgi.exe*

```
C:\PHP>php-cgi.exe helloworld.php
```

- The exact output of the PHP code will then be shown, with the header
- This can help you work out what is wrong
- A complete example is given in the next slide

Example Execution of php-cgi.exe

PHP Code:

```
<html>
 <head>
  <title>
  Hello World
  </title>
 </head>
 <body>
  <p><?php
  print "Hello World";
  ?></p>
 </body>
</html>
```

PHP Output:

X-Powered-By

- Often a server side program will tell the browser what language and version it is running in the *X-Powered-By* field
- Actually, this is not very clever, because a hacker can try to find tricks which work with that particular version
- Many systems deliberately disable this output, so the browser is not told what server side language and version is being used

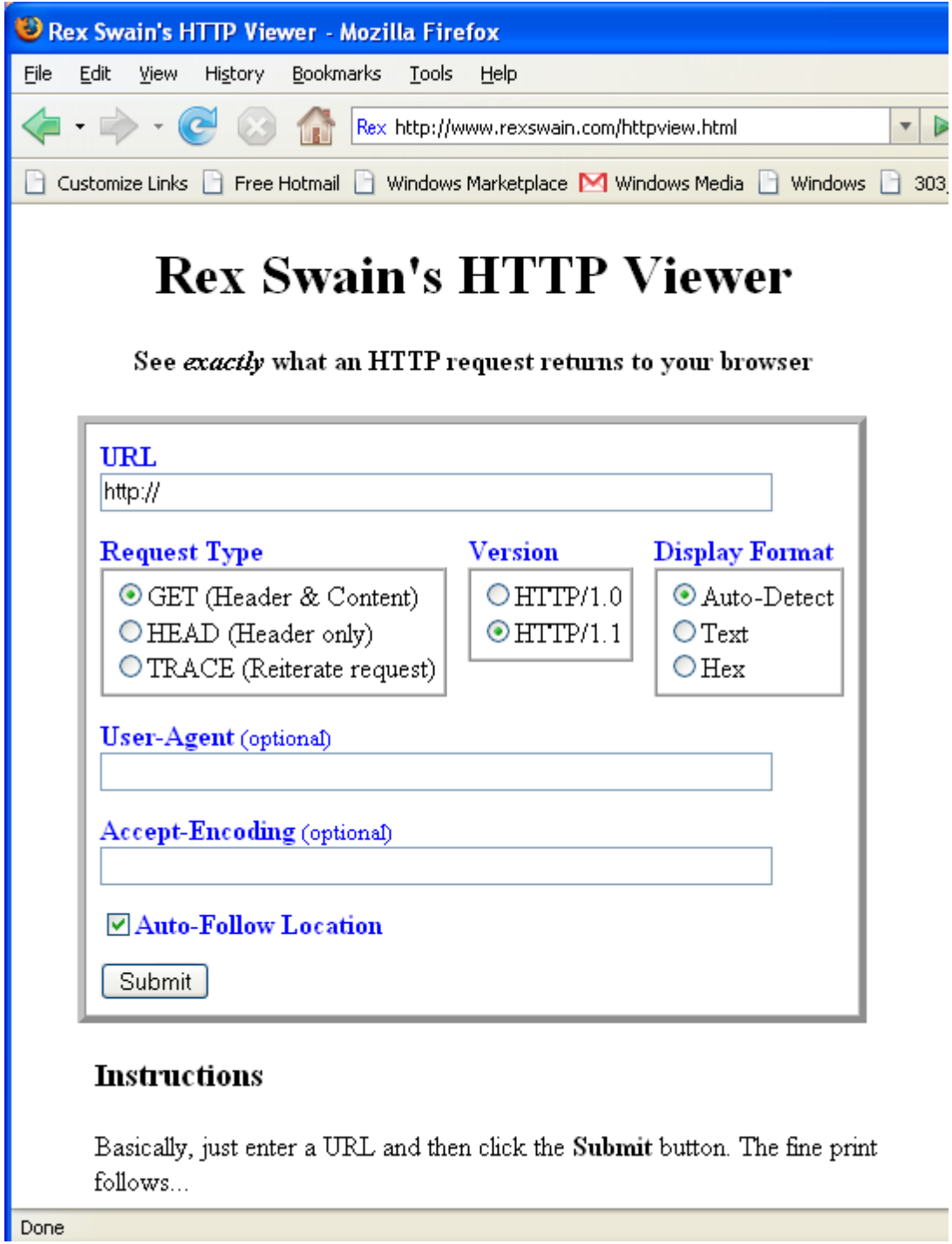
```
C:\PHP>php-cgi.exe helloworld.php
X-Powered-By: PHP/5.2.3
Content-type: text/html

<html>
  <head>
    <title>
    Hello World
    </title>
  </head>
  <body>
    <p>Hello World</p>
  </body>
</html>

C:\PHP>_
```

Using a HTTP Response Viewer

- Often you want to know exactly what is being sent out from a server
- You can use a HTTP viewer web site to send a request to a server and see exactly what is sent back
- If you want to test what is being sent from your own server and you don't know the English name of the machine, you can use the IP address of the server
- (These methods won't work if your server is running in a CS lab 1 machine because of the virtual image security)

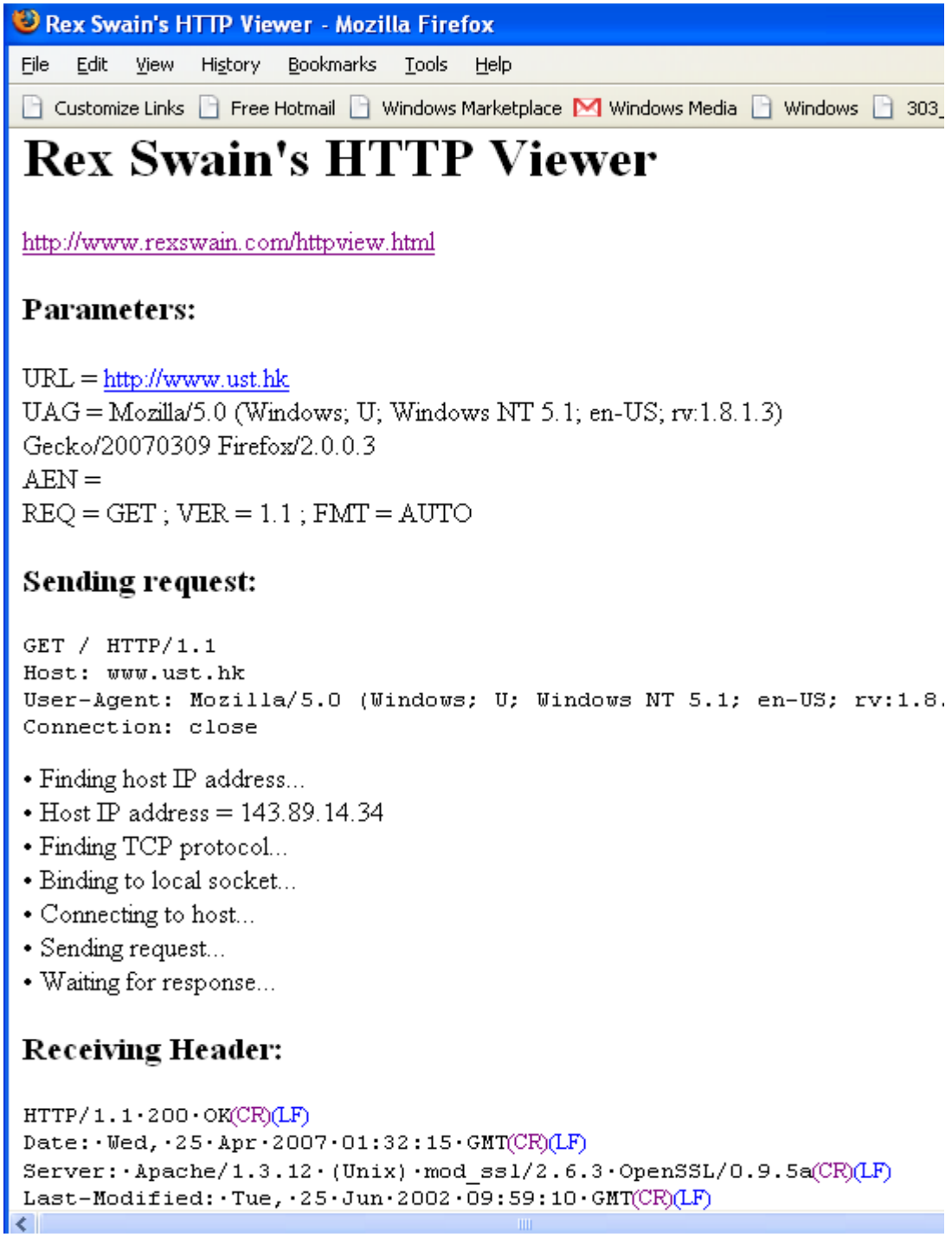
HTTP Response Viewer

http://www.rexswain.com/httpview.html



Example 1/2

- In this example a GET request is sent to http://www.ust.hk
- The complete sequence of request & response is shown here



Example 2/2

File Edit View History Bookmarks Tools Help

Customize Links Free Hotmail Windows Marketplace Windows Media Windows 303_s2007_a2_marki...

```
ETag:·"1a0a64-e4-3d183eee"(CR)(LF)
Accept-Ranges:·bytes(CR)(LF)
Content-Length:·228(CR)(LF)
Connection:·close(CR)(LF)
Content-Type:·text/html(CR)(LF)
(CR)(LF)
```

End of Header (Length = 276)

- Elapsed time so far: 3 seconds
- Waiting for additional response until connection closes...

Total bytes received = 504

Elapsed time so far: 4 seconds

Content (Length = 228):

```
<HTML>(LF)
<HEAD>(LF)
<TITLE>HKUST·Web·Server</TITLE>(LF)
<meta·http-equiv="Content-Type"·content="text/html">(LF)
<meta·HTTP-EQUIV="Refresh"·content="0;·URL=http://www.ust.hk/en/index.html">(LF)
</HEAD>(LF)
(LF)
<BODY·BGCOLOR="#FFFFFF">(LF)
(LF)
</BODY>(LF)
</HTML>(LF)
(LF)
```

Done

Total elapsed time: 4 seconds

Browser Redirection

- The HTML code below shows one way to tell the browser to go to a different page, using HTML alone:

```
<meta http-equiv="refresh" content=
                    "0; URL=http://www.google.com">
```

- A different method is by generating an appropriate message in the HTTP header. For example:

```
<?php
/* Redirect browser to another page */
header("Location: http://www.yahoo.com/");

/* Any PHP code below will not be appropriate */
/* Any HTML code below will not be seen in the browser */
echo "<h1>My web page. . .</h1>";
?>
```

Browser Redirection

- In this example, the instruction to go to a different web page is given in the HTTP header
- The browser sees the instruction and immediately goes to the new web site (any HTML is ignored)

Browser sees this and goes to new location

Ignored by browser

```
C:\PHP>php-cgi.exe location.php
Status: 302
X-Powered-By: PHP/5.2.3
Location: http://www.yahoo.com/
Content-type: text/html

<h1>My web page. . .</h1>
C:\PHP>_
```

Automatic Cookie Transfer

- Previously we did JavaScript programming of cookies - now we consider server-side programming of cookies
- For example, assume that the web site w3.org has previously set a cookie in the client side (in other words, in the browser)
- The next time that the browser visits a web page from w3.org the browser will send the cookie information to the web site together with the http command
  - i.e. when 'GET index.html' is sent by the browser the cookie information is also sent to the server

Setting Cookies using HTTP Header

- Server side code sends cookie instructions to the browser in the HTTP header
- Because the HTTP header is sent before the actual HTML is sent, this means you can't have any cookie instructions in your server side code if it has already generated the HTTP header
- In other words, if the PHP code has already output some HTML, it's too late to output a cookie

Setting a Cookie – Correct Example

```
<?php

// This example will correctly create a cookie.
// The cookie will expire 1 hour later.

setcookie("last_message", "Bye for now", time()+3600);

?>
```

Setting a Cookie - Server Output

```
C:\PHP>php-cgi.exe 02_set_cookie.php
X-Powered-By: PHP/5.2.3
Set-Cookie: last_message=Bye+for+now; expires=Mon, 06-Apr-2009 05:10:25 GMT
Content-type: text/html



C:\PHP>
```

- This shows the HTTP header which gets sent to the browser – the cookie is appropriately set
- In this example no HTML is generated

Another Example, With HTML Output

```
<?php
// This example will correctly create a cookie.
setcookie("last_message", "Bye for now", time()+3600);
?>
<html>
<head>
</head>

<body>
<p>This is the web page.</p>
</body>
</html>
```

- This is another example of correctly generating a cookie
- In this example HTML is also sent to the browser in addition to the cookie instruction

Setting a Cookie – Incorrect

```
<html>
<head> </head>

<?php
// This example will correctly create a cookie.
setcookie("last_message", "Bye for now", time()+3600);
?>
<body>
<p>This is the web page.</p>
</body>
</html>
```

Here the cookie cannot be set, because the HTTP header has already been sent to the browser

PHP Output for Previous Slide Code

```
C:\PHP>php-cgi.exe 04_set_cookie_incorrect.php
X-Powered-By: PHP/5.2.3
Content-type: text/html

<html>
<head>
</head>

<br />
<b>Warning</b>:  Cannot modify header information - headers already sent by (out
put started at C:\PHP\04_set_cookie_incorrect.php:5) in <b>C:\PHP\04_set_cookie_
incorrect.php</b> on line <b>12</b><br />

<body>

<p>This is the web page.</p>

</body>
</html>

C:\PHP>_
```

The HTTP header

The main part of the message, including error message from the PHP engine

Accessing a Cookie in PHP

- In PHP cookie values are provided to the programmer in an array called _COOKIE

```
<?php

    echo $_COOKIE["last_message"];

?>
```

Printing all Cookies

- Useful for debugging:

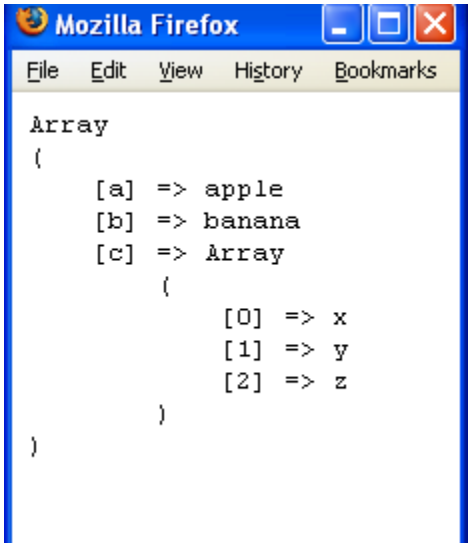
```
print_r($_COOKIE);  // print all cookies
```

- ‘print_r’ means ‘print recursively, in a nice easy to understand format’

Example of print_r

```
<pre>
<?php
  $a = array ('a' => 'apple', 'b' => 'banana', 'c' => array ('x', 'y', 'z'));
  print_r ($a);
?>
</pre>
```

```
<pre>
Array
(
    [a] => apple
    [b] => banana
    [c] => Array
        (
            [0] => x
            [1] => y
            [2] => z
        )
)
</pre>
```



- <pre> is html, meaning 'previously formatted'
- Anything in <pre> is therefore shown on the web page with the same spacing as the source text

Deleting a Cookie

- In PHP, you can delete a cookie by giving it no parameters
- The browser assumes that means you don't want it any more, and deletes it

```
<?php setcookie ("last_message"); ?>
```

```
C:\PHP>php-cgi.exe 08_delete_cookie.php
X-Powered-By: PHP/5.2.3
Set-Cookie: last_message=
Content-type: text/html


C:\PHP>
```

Take Home Message

- PHP can perform control functions such as redirecting the browser to another page
- While we learnt how to manipulate cookies using JavaScript on the client, we learn here how to manipulate cookies on the server