

Systems Programming & Scripting

Lecture 15: PHP Introduction

Web Dynamic Content

- A web server responds to static page requests directly by returning the files composing such pages.
- However *dynamic page requests* are forwarded to the application server.
- The business logic required to generate dynamically generated pages is contained in the application server.

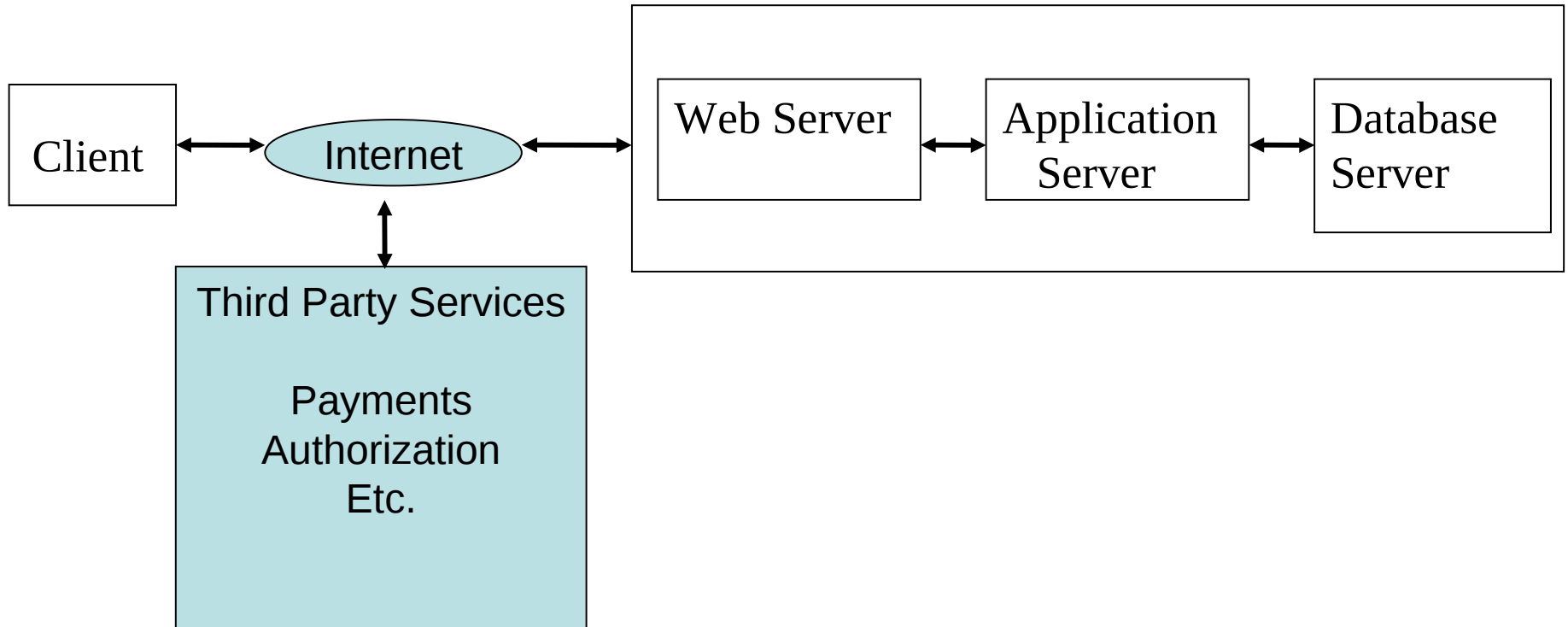
Application Server

- The application server acts as an interface between the manipulation and presentation of data.
 - The application server manipulates the system's data by issuing queries and updates typically to a database in the system.
 - The presentation of data is achieved by constructing pages containing query results.

Cont. Application Server

- Different application server technologies are available including PHP, Asp, Java Servlets and JSP.
- The application server should provide some form of session tracking to maintain customer information across subsequent requests.

Role of the Application Server



Application Server Technologies

- Many programming environments exist for implementing application servers.
 - Allowing the interaction between front-end databases and fulfilling the need for dynamic HTML page generation.
- These technologies include:
 - Common Gateway Interface (CGI)
 - Active Server Pages (ASP).
 - ColdFusion.
 - Java Server Pages (JSP).
 - Java Servlets.
 - PHP Hypertext Preprocessor (PHP).

PHP Overview

- The PHP Hypertext Preprocessor (PHP) is
 - an open source,
 - server-side,
 - cross-platform,
 - HTML *embedded scripting language*.
- It was developed in 1994 by Rasmus Lerdorf to keep track of visitors to his online C.V.
- Since then, it has undergone several changes with three major versions released: PHP3, PHP4 and PHP5.
- PHP originally stood for Personal Home Pages but the name was later changed to PHP Hypertext Preprocessor.
- As of April 2007, about 21 million domains worldwide use PHP.

PHP – A Closer Look

- PHP can be deployed to run as a server-side *module* in a web server such as Apache.
- *Embedding* PHP code into HTML documents enables the generation of HTML code dynamically.
- PHP borrows concepts of common languages such as C including syntax, datatypes and control structures.
- PHP supports the *object-oriented* programming paradigm.
- Many Web programming features are provided by PHP including form parameter handling and session tracking techniques.

PHP – A Closer Look (cont'd)

- Global arrays are created to hold HTTP request details including form parameter and cookies values.
- These arrays are accessed in the PHP script to fulfill the request.
- Many relational Database Management Systems (DBMSs) are supported by PHP including MySQL, PostgreSQL and Oracle.

A Simple PHP Script

```
<html>
  <head>
    <title>Hello World Example</title>
  </head>
  <body>
    <?php echo '<p>Hello World</p>'; ?>
  </body>
</html>
```

The following output will be sent to the browser:

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

PHP Global Variables

- A main feature of the PHP script is the way it handles HTML forms.
- Form elements will automatically be available to the PHP script when receiving the request.
- All details about PHP script requests get stored in *global variables* and can then be accessed by the script, e.g.:
 - `$_GET`: a global variable (array) which can be used to get all get request data.
 - `$_POST`: a global variable (array) which can be used to get all post request data.

Example *

HTML Form:

```
<form action="action.php" method="post">
<p>Your name: <input type="text" name="name"
/></p>
  <p>Your age: <input type="text" name="age"
/></p>
<p><input type="submit" /></p> </form>
```

Part of action.php

```
Hi <?php echo $_POST['name']; ?>.
You are <?php echo $_POST['age']; ?> years old.
```

* *Introductory tutorial, www.php.net.*

Session Tracking

- HTTP is a stateless protocol.
- Web pages are dependent.
- An application server should provide some form of session tracking to
 - maintain data across web page requests.

Session Tracking Mechanisms

- Different session tracking mechanisms exist including:
 - *Cookies*, which is a named piece of data that is provided by the server and stored on the client side. The cookie is added to subsequent client requests to the site, which the server updates and sends back to the client and so on.
 - *URL Rewriting*: in which the necessary session information is encoded into any URLs the server generates.
 - Another form of session tracking includes using an application technology's **built-in session tracking system**.
 - *Persistent storage* such as a database can be used to store user session information.

PHP Session Tracking Support

- PHP supports session tracking using **cookies** and using a more complex **built-in** support.
- For cookies, PHP allows the user to set different parameters in a cookie using the `setCookie()` method including *name*, *value* and *expiry date*.
- Cookie details are retrieved using the global variable `$_Cookie`.
- PHP also supports a built-in session tracking by providing a unique *session ID* for every new visitor.
- The *session ID* is stored in a cookie called *PHPSESSION* which is persistent across user requests.
- Variables can be associated with the *session ID* and stored in the session's allocated space.

Built-in Sessions

```
<?php
    session_start();
    session_register('hits');
    ++$_SESSION['hits'];
?>
```

...

```
<p>
This page has been visited <?php echo $_SESSION['hits']; ?> times.
```

...

- `session_start` initialises a session
- `session_register` allocates a variable
- These variables persist across visits to the page

Software Environment

- The rest of the course requires
 - Apache as web server
 - PHP 5 installed as an apache module
 - MySQL as database
 - Optionally PEAR as DB interface
- Download all in one bundle from:
<http://www.apachefriends.org/en/xampp.html>
- This is available on www2.macs.hw.ac.uk
- You can put your files in: `public_html`
- Refer to it as: `http://www2.macs.hw.ac.uk/~<user>`

Further Reading

- Rasmus Lerdorf, “Programming in PHP”, O'Reilly, 2006
- Luke Welling and Laura Thomson, “PHP and MySQL Web Development”, Sams Publishing, 2005.
- “PHP Tutorial”,
<http://php.net/manual/en/tutorial.php>
- “PHP Manual”, <http://php.net/manual/en/>