

L.A.M.P.

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CE 350

Why cover a lecture on LAMP?

- Job Opportunities
 - There are many hosting companies offering LAMP as a web solution on Linux servers.
 - Base to a web application background.
- Cloud Computing
 - Applications are moving to web; so are the files.
 - These servers may use LAMP, too.
- Personal Reasons
 - You should have a web site.
 - You may be interested in scripting languages and web applications.

LAMP

- LAMP = A bundle of Linux OS, Apache Web Server, MySQL database server and PHP programming language (or Python or Perl).
- Linux is a UNIX variant, we have been using Linux in our course every week.
- Most of the hosting companies in Turkey offer cheap services thanks to LAMP.
- Although they work in harmony, there are a few things to know

How does web run?

- What happens when you type <http://cs.ieu.edu.tr/>
- First, your operating system looks for the IP number of the address: the DNS server
- The web browser indicates it as “Resolving address”
- The DNS server is specified in the /etc/resolv.conf file.
nameserver 8.8.8.8
- When the IP is resolved, the web browser makes an HTTP request to port 80 of the IP.

How does web run? (2)

- Let's assume there is an Apache server running on the server computer at cs.ieu.edu.tr.
- The Apache server may be configured to run many virtual hosts (same IP, different addresses).
- If so, it finds the directory on its file system that is the base for cs.ieu.edu.tr.
- Since you have not supplied a file name, but a directory, Apache sends an index file (index.html, index.php, etc) in that directory.

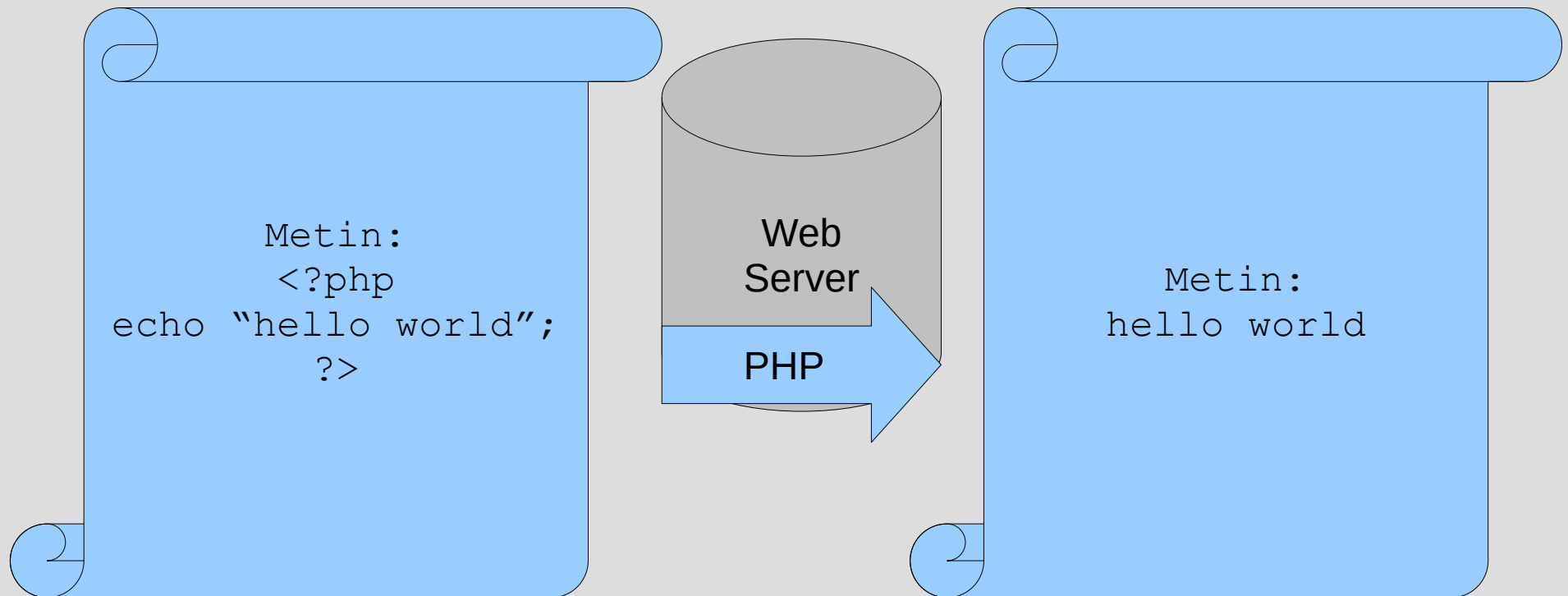
How does web run? (3)

- If the file requested is an HTML file (text/html) then Apache sends the file and the client's browser renders it.
- The file types are defined in Apache's configuration files (magic).
- If the file type is configured to be handled by an executable (like PHP) then Apache runs the script and sends the resulting page to the user.
- The type of the script should be text/html if it is to be rendered in a web browser.

How does web run? (4)

- The language can be PHP, Python, Perl and even C/C++!!
- You can use any programming library available to these languages; like database connections, XML parsers, string operations, etc.
- You can output text/html or any other type (like jpg images) you want.

How does web run? (5)



LAMP

- A typical Linux distribution has Apache, PHP and MySQL installed, or has them in its repositories.
- We'll take a look at each of their settings.
- Even with their default settings, you can run and develop web applications.

Apache

- Apache has its configuration files in /etc/apache2 or /etc/httpd directory (check your distribution documents)
- The main configuration file is apache2.conf:
 - General options like the number of connections the server will accept, log file format, etc.
 - Where other configuration files reside.
- Apache can have virtual hosts.
- Apache has modules, each of them have their own options and configuration files.

Virtual Host

- Name-based virtual host: hosting multiple domain names on a computer using a single IP address.
- `cs.ieu.edu.tr` → `10.0.0.25`
`www.ieu.edu.tr` → `10.0.0.25`
- Both have the same IP, same server, but served as different hosts.
- Site configuration files are in `/etc/apache2/sites-available`.
- The default file has port 80 (as usual) with the document root as `/var/www`

Apache Mods

- To enable mods, on Ubuntu, give the command as superuser:
`a2enmod module_name`
- You can see the module names in `/etc/apache2/mods-available`
- The enabled mods have links in the `mods-enabled` folder.
- To run PHP, you should have `mod_php` installed and enabled.

mod_php

- mod_php configuration is on file php5.conf.
- If you check the file, it registers file ending in `\.ph(p3?|tml)$` with mod_php.
- These files will first be run by PHP and then will be sent to the client.

PHP Settings

- The configuration file is `/etc/php5/apache2/php.ini`
- Most of the settings are typical preferences.
- During development:
 - `error_reporting = E_ALL & E_STRICT`
- When deployed
 - `display_errors = Off`
- Past time famous:
 - `register_globals = Off`

MySQL

- Popular SQL Server
- Configuration file is `/etc/mysql/my.cnf`
- Basic settings include port number, data and temp directory, buffer size, etc.
- You can connect and configure MySQL using the command line client (`mysql`) or other tools like `phpMyAdmin` or `MySQLAdmin`.

PHP

```
<html>
<head></head>
<body>
<?php

    $degisken = 12; // variables have $
    $degisken = "12"; // now a string!

    $metin = "i don't like mondays";
    $liste = explode(" ", $metin); // $liste is now an array
    $pcount = size($liste);
    for($i=0;$i<$pcount;$i++) echo $liste[$i] . "--" ;

?>
</body></html>
```


About PHP and MySQL

- PHP is very easy to learn if you know C/C++
- Here is the sample code to connect to a database:

```
mysql_connect("localhost", "uname", "pwd");  
mysql_select_db("mydb");  
mysql_query("SELECT * FROM users");
```

- Since it is very common and very easy, it is a common target. So security is important.

MySQL Injection

- A very common type of attack
- Suppose you enter

koguz “; DELETE table users; –

- The value you typed to user name will be placed in a SQL query like this:
“SELECT * FROM user WHERE uname=”\$uname\$”;



The image shows a login form for a Google account. At the top, it says "Google Hesabınız" with the Google logo. Below that, there are two input fields: "Kullanıcı Adı:" (Username) and "Şifre:" (Password). Under the password field, there is a checkbox labeled "Oturum açık kalsın" (Keep me signed in). A "Giriş yap" (Sign in) button is located below the checkbox. At the bottom, there is a link that says "Hesabınıza erişemiyor musunuz?" (Can't access your account?).

True Story

