嵌入式系统实验

——安装 **httpd+php+mysql**

在 PCDuino 上安装 httpd+php+mysql 环境。

实验目的

1. 熟悉 pcDuino 在 linux 下软件的安装；
2. 掌握 httpd、php、mysql 的安装与配置。

实验器材

硬件

- pcDuino v2 板一块；
- 5V/1A 电源一个；
- microUSB 线一根；
- USB-TTL 串口线一根（FT232RL 芯片或 PL2303 芯片）。

以下为自备（可选）器材：

- PC（Windows/Mac OS/Linux）一台；
- 以太网线一根（可能还需要路由器等）。

软件

- PC 上的 USB-TTL 串口线配套的驱动程序；
- PC 上的串口终端软件，如 minicom、picocom、putty 等；
- PC 上的 SSH 软件，如 putty 等。

实验步骤

1. 在 **pcDuino** 上安装并配置 **apache**；

利用命令行 apt-get install apache2 下载并安装 apache

```
root@Acadia:/mnt# sudo apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  apache2-mpm-worker apache2-utils apache2.2-bin apache2.2-common libapr1
  libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-1dap
Suggested packages:
  apache2-doc apache2-suexec apache2-suexec-custom ufw
Recommended packages:
  ssl-cert
The following NEW packages will be installed:
  apache2 apache2-mpm-worker apache2-utils apache2.2-bin apache2.2-common
  libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-1dap
0 upgraded, 9 newly installed, 0 to remove and 0 not upgraded.
Need to get 1590 kB of archives.
After this operation, 4209 kB of additional disk space will be used.
Do you want to continue [Y/n]?
```

选择继续完成 apache 的下载和安装。安装完成后，设置 apache 的默认端口
为 80(在 apache2.conf 文件中)。

```
root@Acadia:/mnt# sudo vi /etc/apache2/apache2.conf
ServerName localhost:80
#
# Based upon the NCSA server configuration files originally by Rob McCool.
#
# This is the main Apache server configuration file.  It contains the
# configuration directives that give the server its instructions.
# See http://httpd.apache.org/docs/2.2/ for detailed information about
# the directives.
```

2. 验证 apache 已经安装并能成功访问；

利用 wget 命令访问 localhost 获得 html 文件

```
root@Acadia:/mnt# wget http://localhost
--2015-03-19 23:57:04--  http://localhost/
Resolving localhost (localhost)... 127.0.0.1, ::1
Connecting to localhost (localhost)|127.0.0.1|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 177 [text/html]
Saving to: `index.html'
```

打开该文件可见访问成功（It works！）

```
root@Acadia:/mnt# vi index.html
<html><body><h1>It works!</h1>
<p>This is the default web page for this server.</p>
<p>The web server software is running but no content has been added, yet.</p>
</body></html>
```

3. 在 pcDuino 上安装并配置 php；

同样，利用 apt-get 命令下载并安装 php5

```
root@Acadia:/mnt# sudo apt-get install libapache2-mod-php5 php5
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  apache2-mpm-prefork php5-common
Suggested packages:
  php-pear php5-suhosin
Recommended packages:
  php5-cli
The following packages will be REMOVED:
  apache2-mpm-worker
The following NEW packages will be installed:
  apache2-mpm-prefork libapache2-mod-php5 php5 php5-common
```

4. 写一个 php 脚本验证 php 已经安装成功；

在 var/www 目录下创建简单的 php 脚本文件，如下：

```
root@Acadia:/mnt# cd /var/www
root@Acadia:/var/www# vi test.php
<html>
<body>
<?php
echo 'hello world!';
?>

</body>
</html>
```

利用 wget 命令访问该文件，显示结果如下，成功显示 hello world！字样，可见 php 功能运作正常。

```
root@Acadia:/var/www# wget localhost/test.php
--2015-03-20 00:00:32--  http://localhost/test.php
Resolving localhost (localhost)... 127.0.0.1, ::1
Connecting to localhost (localhost)|127.0.0.1|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 43 [text/html]
Saving to: `test.php.1'

100%[======================================>] 43          --.-K/s   in 0s

2015-03-20 00:00:32 (1.08 MB/s) - `test.php.1' saved [43/43]

root@Acadia:/var/www# vi test.php.1
<html>
<body>
hello world!
</body>
</html>
```
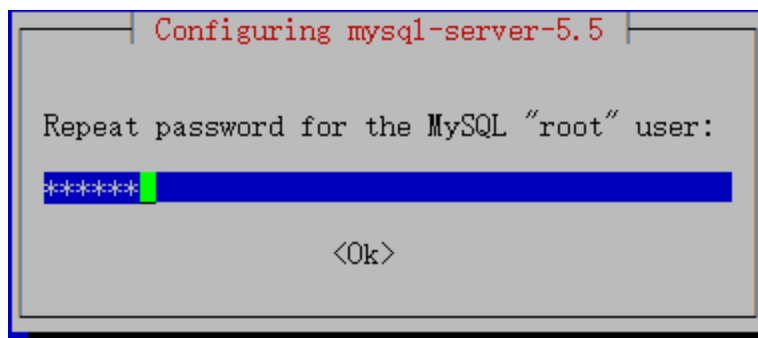
5. 在 pcDuino 上安装并配置 mysql；

利用 apt-get 命令安装 mysql 以及 php5-mysql，如下：

```
root@Acadia:/mnt# sudo apt-get install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  libdbd-mysql-perl libdbi-perl libmysqlclient18 libnet-daemon-perl
  libplrpc-perl mysql-client-5.5 mysql-client-core-5.5 mysql-common
  mysql-server-5.5 mysql-server-core-5.5
Suggested packages:
  libterm-readkey-perl tinyca mailx
Recommended packages:
  libhtml-template-perl
The following NEW packages will be installed:
  libdbd-mysql-perl libdbi-perl libmysqlclient18 libnet-daemon-perl
  libplrpc-perl mysql-client-5.5 mysql-client-core-5.5 mysql-common
  mysql-server mysql-server-5.5 mysql-server-core-5.5
```

```
root@Acadia:/mnt# sudo apt-get install php5-mysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  php5-mysql
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 61.5 kB of archives.
```

其中，对 mysql 进行简单的密码设置

```
┌────────┤ Configuring mysql-server-5.5 ├────────┐
│                                                │
│ Repeat password for the MySQL "root" user:     │
│                                                │
│ ******                                         │
│                                                │
│                    <Ok>                        │
│                                                │
└────────────────────────────────────────────────┘
```

重启后更新配置

6. 写一个 php 脚本访问 mysql，验证 mysql 安装成功。

在 var/www 目录下编写如下的 php 脚本测试 mysql 是否安装成功

```
root@Acadia:/var/www# vi testsql.php
<html>
<body>
<?php
$con = mysql_connect("localhost","root","159357");
if(!$con)  echo "Fail to connect!";
else echo "Success to connect!";
?>
</body>
</html>
```

访问该脚本测试能够成功连接 mysql

```
root@Acadia:/var/www# wget localhost/testsql.php
--1970-01-01 08:02:29--  http://localhost/testsql.php
Resolving localhost (localhost)... 127.0.0.1, ::1
Connecting to localhost (localhost)|127.0.0.1|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 50 [text/html]
Saving to: `testsql.php.1'

100%[======================================>] 50          --.-K/s   in 0s

1970-01-01 08:02:29 (1.34 MB/s) - `testsql.php.1' saved [50/50]

root@Acadia:/var/www# vi testsql.php.1
<html>
<body>
Success to connect!</body>
</html>
```