Principles and Techniques of DBMS 2
PHP Applications

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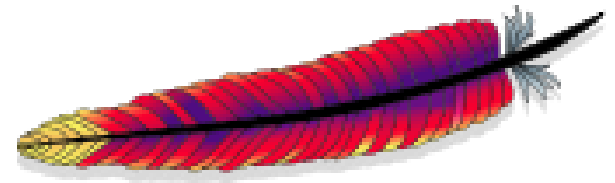Shanghai, China

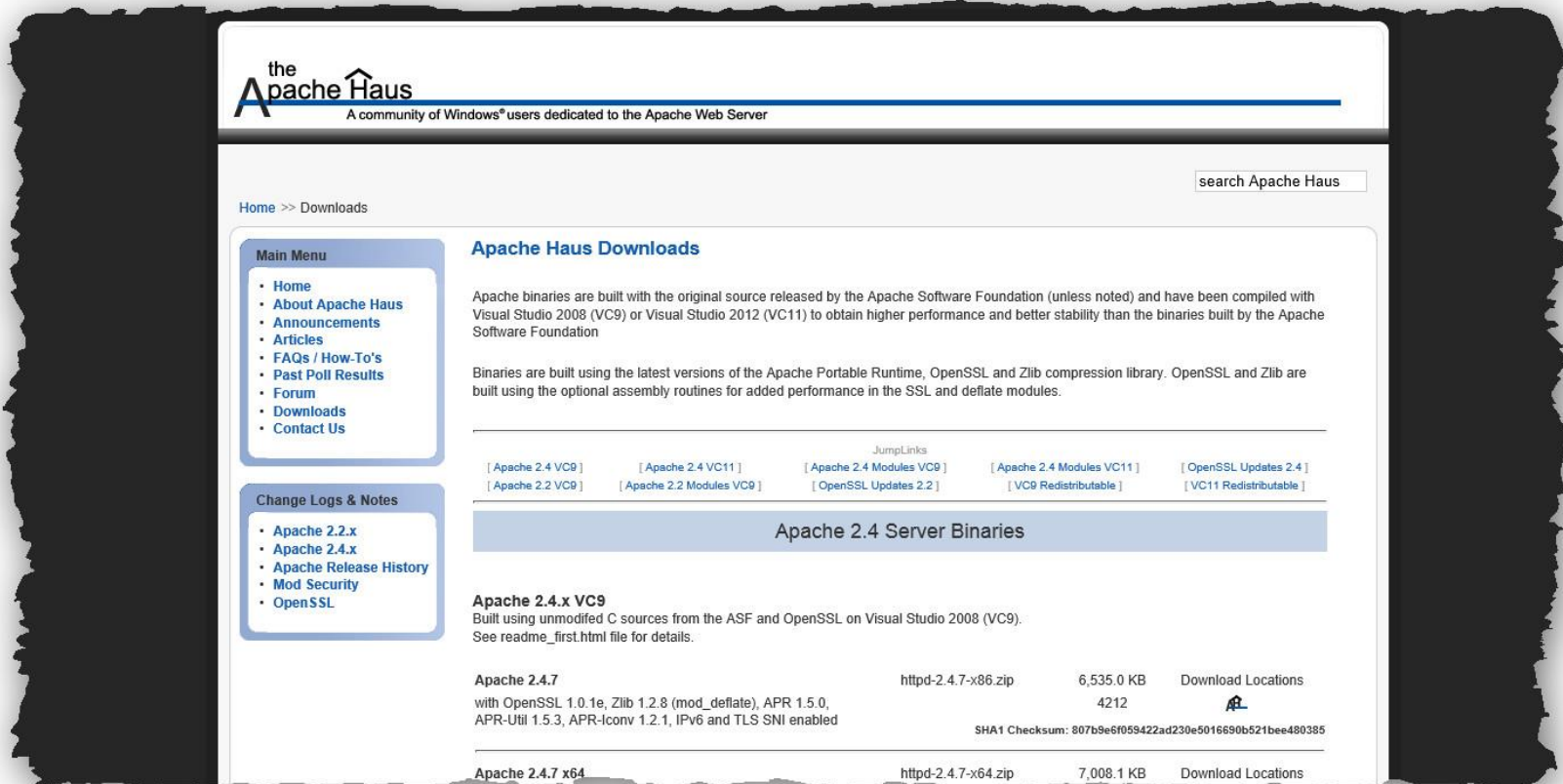http://reins.se.sjtu.edu.cn/~chenhp

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REliable, INtelligent & Scalable Systems

- PHP & Apache HTTP Server
  - Deploying,
  - Configuring,
  - and Testing of PHP & Apache HTTP Server

- Access RDBMS via PHP
  - Get connection
  - Develop PHP in Eclipse
  - Execute SQL statement

- PHP + jQuery

- Yii Framework

- The **Apache HTTP Server**
  - commonly referred to as **Apache** (/əˈpætʃiː/ *ə-PA-chee*)
  - is a web server application notable for playing a key role in the initial growth of the World Wide Web User enters interacts with a web page.

- The Apache HTTP Server Project itself does not provide binary releases of software, only source code.
  - You can obtain a binary package from numerous binary distributions available on the Internet.
  - Popular options for deploying Apache httpd, and, optionally, PHP and MySQL, on Microsoft Windows, include:
    - ApacheHaus
    - Apache Lounge
    - BitNami WAMP Stack
    - WampServer
    - XAMPP

- Download a binary version
  - Unzip it on your disk

Configuring

- Append the followings to `conf/httpd.conf`

```
PHPIniDir "E:/php-5.5.8/"
LoadModule php5_module "E:/php-5.5.8/php5apache2_4.dll"
AddType application/x-httpd-php .php
```

  – where,
    - `PHPIniDir` is the directory of PHP home.
    - `LoadModule` is in the directory of PHP home, which allows the support to PHP is loaded as a module of Apache HTTP Server.

- Run `bin/httpd.exe`
  - The Apache HTTP Server will be running in a command window.
- Browse `http://localhost`
  - If the Apache HTTP Server is correctly deployed, you will see:
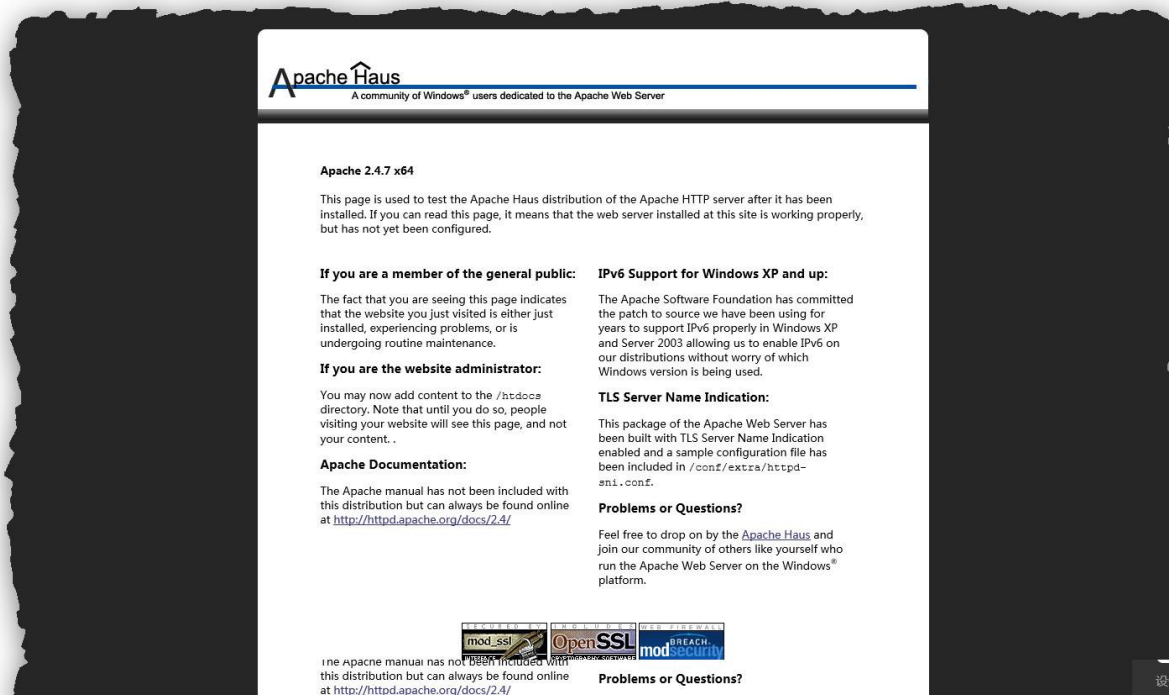
- PHP
  - Hypertext Preprocessor
  - PHP is a popular general-purpose scripting language that is especially suited to web development.
  - Fast, flexible and pragmatic, PHP powers everything from your blog to the most popular websites in the world.

From http://www.php.net/

RE in

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- Download a binary version
  - http://windows.php.net/download/
  - php-5.5.8-Win32-VC11-x64.zip (VC11 x64 Thread Safe)
  - Unzip it on your disk

Configuring
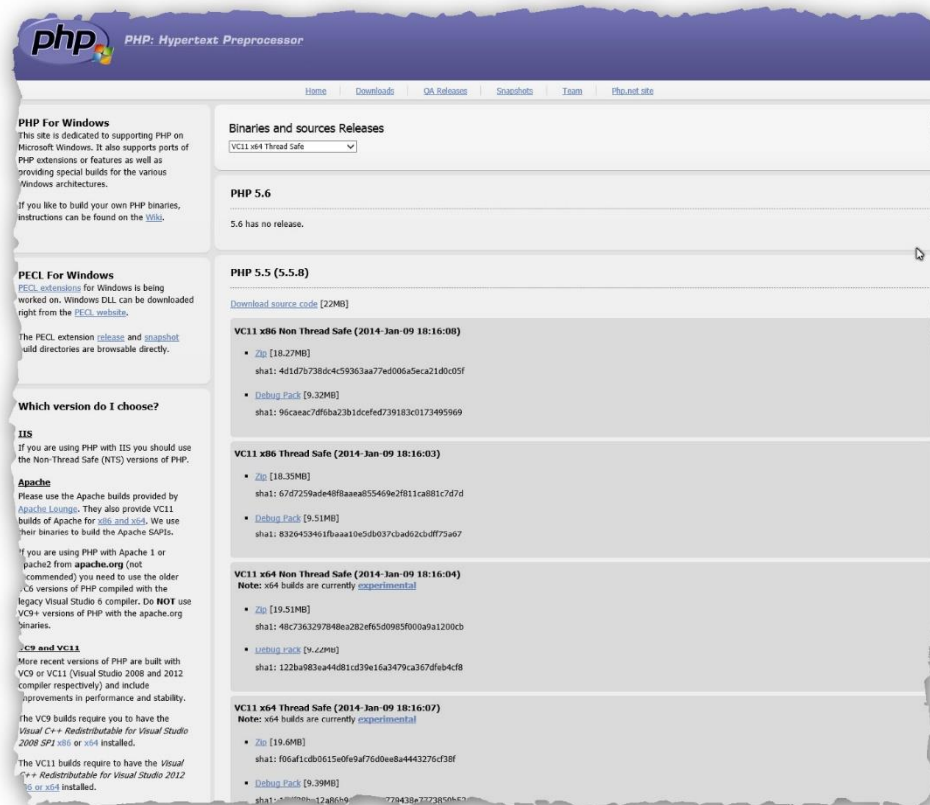
- Rename `php.ini-production` to `php.ini`
- Modify the followings in `php-5.5.8/php.ini`

```
;;;;;;;;;;;;;;;;;;;;;;;;;;
; Paths and Directories ;
;;;;;;;;;;;;;;;;;;;;;;;;;;
; On windows:
extension_dir = "E:/php-5.5.8/ext"
;;;;;;;;;;;;;;;;;;;;;;;;
; Dynamic Extensions ;
;;;;;;;;;;;;;;;;;;;;;;;
; Windows Extensions
extension=php_curl.dll
extension=php_gd2.dll
extension=php_mbstring.dll
extension=php_mysql.dll
extension=php_mysqli.dll
extension=php_pdo_mysql.dll
extension=php_pdo_odbc.dll
extension=php_xmlrpc.dll
[Session]
session.save_path = "E:/php-5.5.8/tmp"; // this directory needs to be writeable
```

- Environment Variable
  - Add an entry to `Path`
  - `PHP_HOME/ext`
  - For example:
    - `E:/php-5.5.8/ext`

- Copy `php5ts.dll` to `system32`

- Edit `test.php` and deploy it into `Apache_HOME/htdocs`

```
<html>
    <head><title>test</title></head>
    <body>
            <?php   phpinfo();?>
    </body>
</html>
```

- Browse `http://localhost/test.php`
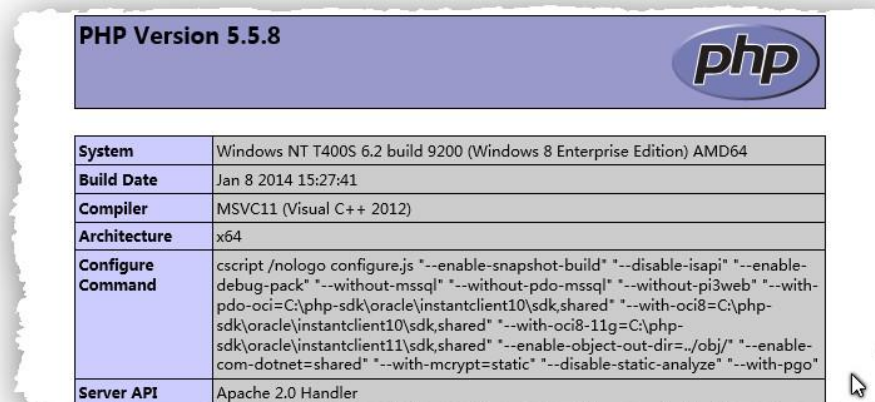 - If the PHP is correctly deployed, you will see:

PHP Version 5.5.8	
System	Windows NT T400S 6.2 build 9200 (Windows 8 Enterprise Edition) AMD64
Build Date	Jan 8 2014 15:27:41
Compiler	MSVC11 (Visual C++ 2012)
Architecture	x64
Configure Command	cscript /nologo configure.js "--enable-snapshot-build" "--disable-isapi" "--enable-debug-pack" "--without-mssql" "--without-pdo-mssql" "--without-pi3web" "--with-pdo-oci=C:\php-sdk\oracle\instantclient10\sdk,shared" "--with-oci8=C:\php-sdk\oracle\instantclient10\sdk,shared" "--with-oci8-11g=C:\php-sdk\oracle\instantclient11\sdk,shared" "--enable-object-out-dir=../obj/" "--enable-com-dotnet=shared" "--with-mcrypt=static" "--disable-static-analyze" "--with-pgo"
Server API	Apache 2.0 Handler

Access RDBMS – get connection

- Edit `testDB.php` and deploy it into `Apache_HOME/htdocs`

```php
<html>
    <head><title>test</title></head>
    <body>
        <?php
            $dbhost = 'localhost'; //the ip of RDBMS server
            $dbuser = 'root'; //username
            $dbpassword= '12345678'; //password
            $connect = mysql_connect($dbhost,$dbuser,$dbpassword);
            if ($connect) {
                    echo 'Succeed!<br>';
            } else {
                    echo 'Failed!<br>';
            }

            $dbname = 'sample_one'; //the name of DB
            $db = mysql_select_db($dbname);
            if ($db) {
                    echo 'Succeed!';
            } else {
                    echo 'Failed!';
            }

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

Access RDBMS – get connection

- Create database `sample_one` in MySQL.

- Browse `http://localhost/test.php`
    - If all the configuration are correct, you will see:

Develop PHP in Eclipse

- Append the followings to `conf/httpd.conf`

```
Alias /Workspace/ "E:/Projects/PHP/"
<Directory "E:/Projects/PHP/">
    Options Indexes MultiViews
    AllowOverride None
    Require all granted
</Directory>
```
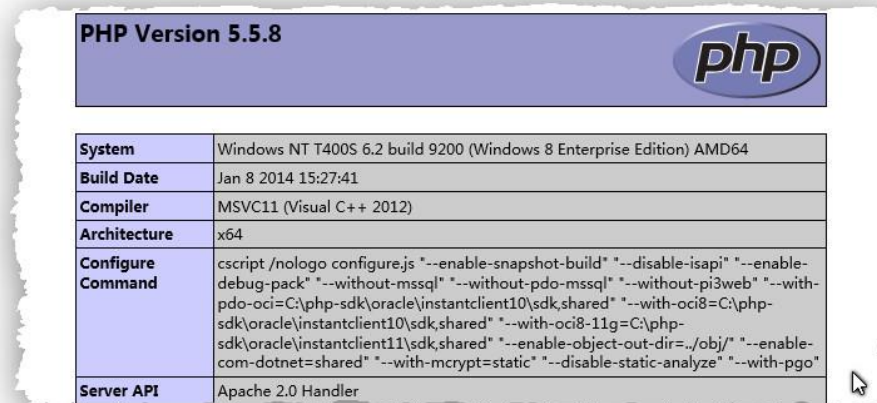
  - where,
    - `Workspace` is the alias of the workspace of Eclipse.

Develop PHP in Eclipse

- Window->Preferences->PHP->PHP Executables->Add

  `Name: PHP 5.5.8`

  `Executable Path: E:/PHP-5.5.8/php.exe`
  `PHP ini file(optional): D:/PHP-5.5.8/php.ini`
  `PHP debugger: Zend Debugger`

- Window->Preferences->PHP->PHP Server

  – Change `Default PHP Web Server`

    to `http://localhost/Workspace`

  – Where

    - `Workspace` is the alias configured in `conf/httpd.conf`

Develop PHP in Eclipse

- New a project `HelloWorld`
- Edit `test.php`

```
<?php
    phpinfo();
?>
```

- Right Click on `test.php` and Run as ->PHP Web Page
  - The URL will be `http://localhost/Workspace/HelloWorld/test.php`

PHP Version 5.5.8	
System	Windows NT T400S 6.2 build 9200 (Windows 8 Enterprise Edition) AMD64
Build Date	Jan 8 2014 15:27:41
Compiler	MSVC11 (Visual C++ 2012)
Architecture	x64
Configure Command	cscript /nologo configure.js "--enable-snapshot-build" "--disable-isapi" "--enable-debug-pack" "--without-mssql" "--without-pdo-mssql" "--without-pi3web" "--with-pdo-oci=C:\php-sdk\oracle\instantclient10\sdk,shared" "--with-oci8=C:\php-sdk\oracle\instantclient10\sdk,shared" "--with-oci8-11g=C:\php-sdk\oracle\instantclient11\sdk,shared" "--enable-object-out-dir=../obj/" "--enable-com-dotnet=shared" "--with-mcrypt=static" "--disable-static-analyze" "--with-pgo"
Server API	Apache 2.0 Handler

PHP & MySQL

- Get connection:

```
$dbhost = 'localhost'; //the ip of RDBMS server
$dbuser = 'root'; //username
$dbpassword= '12345678'; //password
$connect = mysql_connect($dbhost,$dbuser,$dbpassword);
```

- Select a database:

```
$dbname = 'sample_one'; //the name of DB
$db = mysql_select_db($dbname);
```

- Execute SQL statement:

```
$mysql_command = <statement>;
$result = mysql_query($mysql_command);
```

- Create a database:

```
$mysql_command = "create database testDB";
```

- Drop a database:

```
$mysql_command = "drop database if exists testDB";
```

- Create a table:

```
$mysql_command = "create table testOne (
    id int not null primary key auto_increment,
    column1 varchar(128))";
```

- Drop a table:

```
$mysql_command = "drop table testOne";
```

- Get server information:

```
echo mysql_get_server_info();
```

- Close connection:

```
mysql_close($connect);
```

- die() and mysql_error():

```
$result = mysql_query($mysql_command)
                or die(mysql_error());
```

- Client encoding:

```
mysql_client_encoding();
```

- Create records:

```
$count = 10;
while($count >= 1){
    $mysql_command = "insert into `testOne` values
                         ($count, 'Zhang San{$count}')";
    $result = mysql_query($mysql_command);
    $count --;
}
```

- Retrieve records:

```
$mysql_command = "select * from testOne";
$result = mysql_query($mysql_command);
while($row = mysql_fetch_object($result)){
    echo json_encode($row);
    echo '<br>';
}
```

- Update records:

```
$mysql_command = "update testOne set name = 'Zhang San 5'
                        WHERE id <= 10 or id >=1";
```

- Delete records:

```
$mysql_command = "delete from testOne WHERE id = 10";
```

- Error information:

```
mysql_error()
mysql_errno()
```

- Persistent connection:

```
$connect = mysql_pconnect($dbhost,$dbuser,$dbpassword);
```
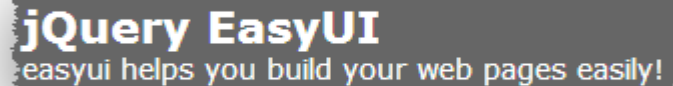
- Other functions
  - http://www.w3school.com.cn/php/index.asp
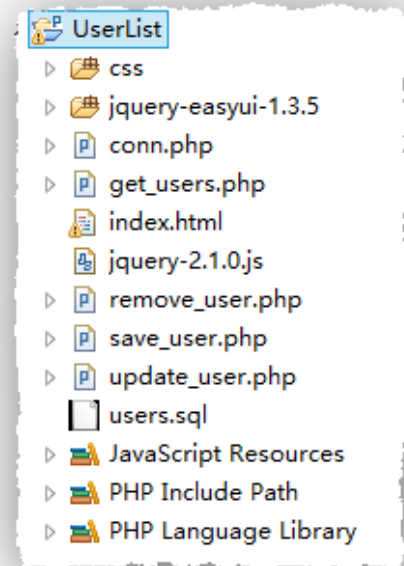
- jQuery
  - is a fast, small, and feature-rich JavaScript library.
  - jQuery v2.1.0

- jQuery EasyUI framework
  - helps you build your web pages easily
  - jQuery EasyUI v1.3.5

PHP + jQuery

- New a PHP project in Eclipse
  - The structure of project is as the left figure

- This is a demo given by jQuery EasyUI
  - You can download it at demo

- `index.html`

```
<title>jQuery EasyUI CRUD Demo</title>
<link rel="stylesheet" type="text/css" href="css/easyui.css">
<link rel="stylesheet" type="text/css" href="css/icon.css">
<link rel="stylesheet" type="text/css" href="css/demo.css">
```

- index.html

```
<script type="text/javascript" src="jquery-2.1.0.js"></script>
<script type="text/javascript" src="jquery-easyui-1.3.5/jquery.easyui.min.js"></script>

<script type="text/javascript">
        var url;
        function newUser(){
                $('#dlg').dialog('open').dialog('setTitle','New User');
                $('#fm').form('clear');
                url = 'save_user.php';
        }

        function editUser(){
                var row = $('#dg').datagrid('getSelected');
                if (row){
                        $('#dlg').dialog('open').dialog('setTitle','Edit User');
                        $('#fm').form('load',row);
                        url = 'update_user.php?id='+row.id;
                }
        }
```

- index.html

```
function saveUser(){
        $('#fm').form('submit',{
                url: url,
                onSubmit: function(){
                        return $(this).form('validate');
                },
                success: function(result){
                        var result = eval('('+result+')');
                        if (result.success){
                                $('#dlg').dialog('close');
                                $('#dg').datagrid('reload');
                        } else {
                                $.messager.show({
                                        title: 'Error',
                                        msg: result.msg
                                });
                        }
                }
        });
}
```

- index.html

```
    function removeUser(){
        var row = $('#dg').datagrid('getSelected');
        if (row){
            $.messager.confirm('Confirm','Are you sure you want to
              remove this user?',function(r){
                if (r){
                    $.post('remove_user.php',{id:row.id},function(result){
                        if (result.success){
                            $('#dg').datagrid('reload');
                        } else {
                            $.messager.show({
                                title: 'Error', msg: result.msg
                            });
                        }
                    },'json');
                }
            });
        }
    }
</script>
```

- `conn.php`

```php
<?php

    $conn = @mysql_connect('127.0.0.1','root','12345678');
    if (!$conn) {
        die('Could not connect: ' . mysql_error());
    }
    mysql_select_db('sample_one', $conn);

?>
```

- save_user.php

```php
<?php

    $firstname = $_REQUEST['firstname'];
    $lastname = $_REQUEST['lastname'];
    $phone = $_REQUEST['phone'];
    $email = $_REQUEST['email'];

    include 'conn.php';

    $sql = "insert into users(firstname,lastname,phone,email)
            values('$firstname','$lastname','$phone','$email')";
    $result = @mysql_query($sql);
    if ($result){
            echo json_encode(array('success'=>true));
    } else {
            echo json_encode(array('msg'=>'Some errors occured.'));
    }
?>
```

- `remove_user.php`

```php
<?php

    $id = intval($_REQUEST['id']);

    include 'conn.php';

    $sql = "delete from users where id=$id";
    $result = @mysql_query($sql);
    if ($result){
        echo json_encode(array('success'=>true));
    } else {
        echo json_encode(array('msg'=>'Some errors occured.'));
    }
?>
```

- update_user.php

```php
<?php

    $id = intval($_REQUEST['id']);
    $firstname = $_REQUEST['firstname'];
    $lastname = $_REQUEST['lastname'];
    $phone = $_REQUEST['phone'];
    $email = $_REQUEST['email'];

    include 'conn.php';
    $sql = "update users set firstname='$firstname',lastname='$lastname',
            phone='$phone',email='$email' where id=$id";
    $result = @mysql_query($sql);
    if ($result){
            echo json_encode(array('success'=>true));
    } else {
            echo json_encode(array('msg'=>'Some errors occured.'));
    }
?>
```

- get_users.php

```php
<?php
    $page = isset($_POST['page']) ? intval($_POST['page']) : 1;
    $rows = isset($_POST['rows']) ? intval($_POST['rows']) : 10;
    $offset = ($page-1)*$rows;
    $result = array();

    include 'conn.php';
    $rs = mysql_query("select count(*) from users");
    $row = mysql_fetch_row($rs);
    $result["total"] = $row[0];
    $rs = mysql_query("select * from users limit $offset,$rows");

    $items = array();
    while($row = mysql_fetch_object($rs)){
        array_push($items, $row);
    }
    $result["rows"] = $items;
    echo json_encode($result);
?>
```

PHP + jQuery

- Browse http:/localhost/Workspace/UserList/index.html

Yii framework

- Yii is a high-performance PHP framework best for developing Web 2.0 applications.

- Download Yii v1.1.14
  - And unzip the archive,
  - Copy the directory `/framework` and `/requirements` to
    - `Apache/htdocs`, or
    - `Eclipse/Workspace`
  - Run yiic.bat in `/framework` to generate your web application
    - `yiic webapp <app-path> [<vcs>]`

    - Where,
      - `app-path`: required, the directory where the new application will be created.
      - `vcs`: optional, version control system you're going to use in the new project.

- Uncomment

  `extension=php-pdo-sqllite`

  in `php.ini`
- Modify
  - `webapp/protected/views/layouts/main.php(51)`
    - Add `date_default_timezone_set('Asia/Shanghai');`
  - `webapp/protected/config/main.php`
    - Uncomment line(24) `gii` part
    - Uncomment line(50) `db` part
  - `webapp/protected/config/console.php`
    - Uncomment line(19) `db` part
- Remember,
  - The directory of `session.save_path` should be writeable.

Yii framework

- You first web application
  - http://localhost/sampleone/index.php (in the case of Apache), or
  - http://localhost/Workspace/sampleone/index.php(in the case of Eclipse)
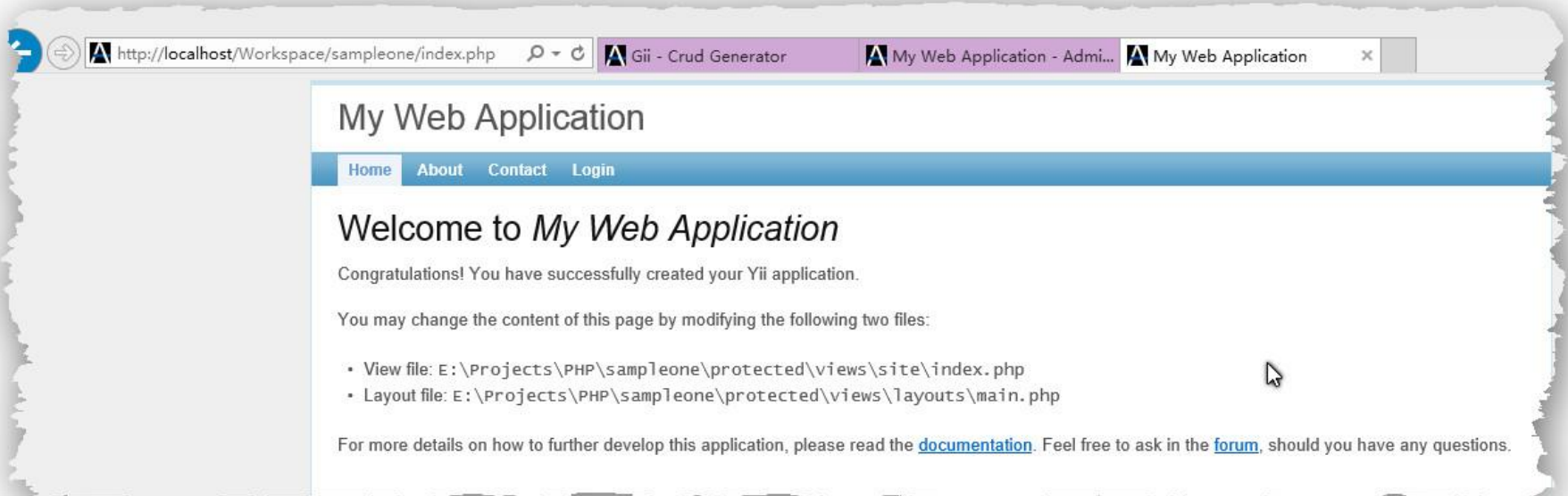
- Use `gii` to generate code
  - http://localhost/Workspace/sampleone/index.php?r=gii
  - After logged in, you will see:

Yii framework
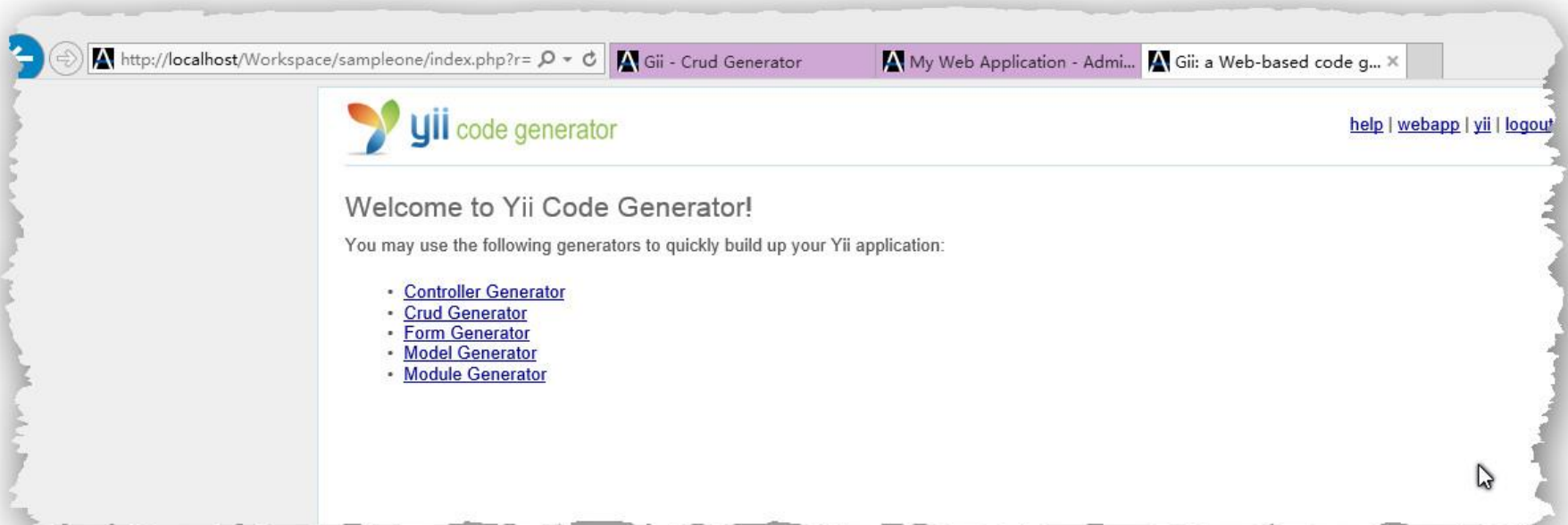
- Create a table

```
create table tbl_user (
    id integer not null primary key auto_increment,
    username varchar(128) not null,
    password varchar(128) not null,
    email varchar(128) not null);
```

- Generate code with the `Model Generator` and `CRUD Generator`

- To develop a Book Store with PHP
  - jQuery UI
  - MySQL DB
  - Apache HTTP Server
  - To implement the CRUD of book, order and user.
  - You can design the structure of book, order and user tables as your will.

References

- PHP Documentation, http://www.php.net/manual/en/

- Using Apache HTTP Server on Microsoft Windows,
  http://httpd.apache.org/docs/2.4/en/platform/windows.html

- Windows7 下安装配置Apache2.2+PHP5.4+MySQL5.5环境,
  http://www.54xue.com/w/23/n-31523.html

- 搭建Eclipse PHP开发环境,
  http://blog.csdn.net/zhoudaxia/article/details/5271250

- PHP 教程, http://www.w3school.com.cn/php/index.asp

- Build CRUD Application with jQuery EasyUI,
  http://www.jeasyui.com/tutorial/app/crud.php

- Yiiframework, http://www.yiiframework.com/

Thank You!