WEBD 236

Web Information Systems Programming

Week 13

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Agenda

- This week's expected outcomes
- This week's topics
- This week's homework
- Upcoming deadlines
- Solution to Homework 10
- Questions and answers

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Week 13 Outcomes

- Send e-mail from web applications.
- Invoke web services from remote sites using cURL.
- Examine JSON as a data-interchange format.

Sending email from PHP

- SMTP (Simple Mail Transfer Protocol)
  - Must have a properly configured SMTP server.
  - Easy to configure it to work with Google's SMTP servers:
    - Create a GMail account, enable POP.
    - Communicate with Google over SSL.

Sending email from PHP

- Configuration issues with XAMPP
  - Must turn on SSL by adding the following line to `C:\xampp\php\php.ini`

```
; enable SSL for e-mail send/receive
extension=php_openssl.dll
```

  - Then restart Apache

Sending email from PHP

- Using the PEAR (PHP Extension and Application Repository) library for mail
  - Require the '`Mail.php`' file, pulled from `c:\xampp\php\PEAR`
  - Turn off strict error reporting (`Mail.php` is a library written for PHP4)

```
<?php
error_reporting(E_ALL & !E_STRICT);
require_once 'Mail.php';
```

Sending email from PHP

- Let's abstract this into a class!

```
class Email {
    private static $smtpHost = "ssl://smtp.gmail.com";
    private static $smtpPort = 465;
    private static $smtpAuth = true;
    private static $smtpUsername = 'someaccount@gmail.com';
    private static $smtpPassword = 'someAccountPassword';
    private $smtp;
    private $recipients;
    private $carbonCopy;
    private $blindCopy;
    private $subject;
    private $message;
    private $sender;
    private $body;
    private $contentType;
```


Sending email from PHP

- Let's abstract this into a class!

```
    public function __construct() {
        $options = array();
        $options['host'] = self::$smtpHost;
        $options['port'] = self::$smtpPort;
        $options['auth'] = self::$smtpAuth;
        $options['username'] = self::$smtpUsername;
        $options['password'] = self::$smtpPassword;

        $mail = new Mail();
        $this -> smtp = $mail -> factory('smtp', $options);

        if (is_a($this -> smtp, 'PEAR_Error')) {
            throw new Exception("Could not create mailer");
        }
        // ...continued...
```

Sending email from PHP

- Let's abstract this i

```
public function __co
    $options = array(
    $options['host']
    $options['port']
    $options['auth']
    $options['usernam
    $options['password

    $mail = new Mail();
    $this -> smtp = $mail -> factory('smtp', $options);

    if (is_a($this -> smtp, 'PEAR_Error')) {
        throw new Exception("Could not create mailer");
    }
    // ...contin
```

Your textbook uses `Mail::factory()`, but that triggers errors in `E_STRICT` mode since factory isn't declared to be `static`.

Same here where your book uses Your textbook uses `PEAR::isError()`.

Sending email from PHP

- Let's abstract this into a class!

```
        $this -> recipients = array();
        $this -> carbonCopy = array();
        $this -> blindCopy = array();
        $this -> sender = '"WEBD236 Team" <' .
             self::$smtpUsername . '>';
    }

    public function addRecipient($recipient) {
        $this -> recipients[] = $recipient;
    }

    public function setRecipient($recipient) {
        $this -> recipients = array();
        $this -> addRecipient($recipient);
    }
```

Sending email from PHP

- Let's abstract this into a class!

```
        $this
        $this
        $this
        $this
             se
    }

    public func
        $this -> recipi                precipient;
    }

    public function setRecipient($recipient) {
        $this -> recipients = array();
        $this -> addRecipient($recipient);
    }
```

The use here is that you can set many different options, and then from within a loop call `setRecipient()` followed by `send()` to deliver customized email messages. BCC is more efficient if the message is the same (one send vs. many).

Sending email from PHP

- Let's abstract this into a class!

```
    public function addCC($recipient) {
        $this -> carbonCopy[] = $recipient;
    }
    public function setCC($recipient) {
        $this -> carbonCopy = array();
        $this -> addCC($recipient);
    }
    public function addBcc($recipient) {
        $this -> blindCopy[] = $recipient;
    }
    public function setBcc($recipient) {
        $this -> blindCopy = array();
        $this -> addBcc($recipient);
    }
```

Sending email from PHP

- Let's abstract this into a class!

```
public function setSender($sender) {
    $this -> sender = $sender;
}

public function setSubject($subject) {
    $this -> subject = $subject;
}

public function setBody($body) {
    $this -> body = $body;
}

public function setContentType($contentType) {
    $this -> contentType = $contentType;
}
```


Sending email from PHP

- Let's abstract this into a class!

```
public function setSender($sender) {
    $this -> sender = $sender;
}

public function setSubject(
    $this -> subject = $sub
}

public function setBody($bo
    $this -> body = $body;
}

public function setContentType($contentType) {
    $this -> contentType = $contentType;
}
```

Defaults to plain text with no content type. Use `"text/html"` to send HTML-based mail.

Sending email from PHP

- Let's abstract this into a class!
  - Wouldn't it be nice to use the same template rendering engine we used for web-pages to generate email templates too?
    - A small, backwards compatible change to `renderTemplate` in `include/util.inc` makes this possible.

Sending email from PHP

- Modifying `include/util.inc`

```
function renderTemplate($view, $params = array(),
        $asString = false) {
    $useCaching = false; // turn off caching
    if (!file_exists($view)) {
        die("File $view doesn't exist.");
    }
    // do we have a cached version?
    clearstatcache();
    $cacheName = __cacheName($view);
    if ($useCaching && file_exists($cacheName) &&
            (filemtime($cacheName) >= filemtime($view))) {
        $contents = file_get_contents($cacheName);
    } else {

    // ...continued...
```

Sending email from PHP

- Modifying `include/util.inc`

```
        $contents = __importTemplate(array('unused', $view));
        $contents = preg_replace_callback('/@@\s*(.*)\s*@@/U',
            '__resolveRelativeUrls', $contents);
        $patterns = array(
            array('src' => '/{{/', 'dst' => '<?php echo('),
            array('src' => '/}}/', 'dst' => ');?>'),
            array('src' => '/\[\[/', 'dst' => '<?php '),
            array('src' => '/\]\]/', 'dst' => '?>')
        );
        foreach ($patterns as $pattern) {
            $contents = preg_replace($pattern['src'],
                $pattern['dst'], $contents);
        }
        file_put_contents($cacheName, $contents);
    } // ...continued...
```

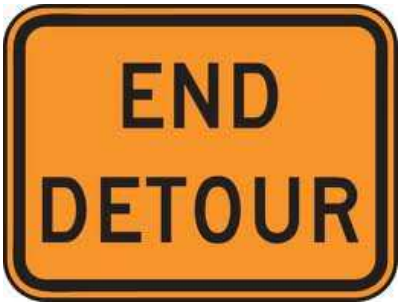

Sending email from PHP

- Modifying `include/util.inc`

```
    extract($params);
    ob_start();
    eval("?>" . $contents);
    $result = ob_get_contents();
    ob_end_clean();
    if (!$asString) {
        echo $result;
    }
    return $result;
}
```

Sending email from PHP

- Let's abstract this into a class!
  - Now, if we pass a third parameter (`true`), then it won't produce output, but will return the rendered string.



Sending email from PHP

- Meanwhile, back in `Email.inc`…

```
public function send($template=false, $variables=false) {
    if ($template) {
        $this -> body = renderTemplate($template,
            $variables, true);
    }
    $headers = array();
    $headers['From'] = $this -> sender;
    $headers['To'] = implode(", ", $this -> recipients);
    $headers['Cc'] = implode(", ", $this -> carbonCopy);
    $headers['Bcc'] = implode(", ", $this -> blindCopy);
    $headers['Subject'] = $this -> subject;
    if ($this -> contentType) {
        $headers['Content-type'] = $this -> contentType;
    }
    // ...continued...
```

Sending email from PHP

- Meanwhile, back in `Email.inc`…

```
        $allRecipients = array_merge($this -> recipients,
            $this -> blindCopy, $this -> carbonCopy);

        $result = $this -> smtp -> send(implode(", ",
            $allRecipients), $headers, $this -> body);

        if (is_a($result, 'PEAR_Error')) {
            throw new Exception($result -> getMessage());
        }
    }
} // end Email class
```


Sending email from PHP

- A simple `email_template.html`

```
<!DOCTYPEhtml PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html>
  <head><title>{{$title}}</title></head>
  <body>
    <p>Hello {{$firstName}},</p>
    <p>I'm writing to you today to tell you about our
    great product! It's not Spam, I assure you. It's an
    e-mail system that integrates easily with PHP and it's
    built on top of PEAR::Mail. Please consider buying it.</p>
    <p>Sincerely,</p>
    <p>WEBD236-V1WW</p>
  </body>
</html>
```

Sending email from PHP

- Using the `Email` class

```
$subject = "Testing an e-mail through PHP";
$recipient = '"Todd Whittaker" <todd.whittaker@franklin.edu>';
$email = new Email();
$email -> setRecipient($recipient);
$email -> setSubject($subject);
$email -> setContentType('text/html');
$email -> send(
    'email_template.html',
    array(
        'title' => $subject,
        'firstName' => 'Todd'
    )
);
```


Sending email from PHP

- Using th

```
$subject = "T
$recipient =
$email = new
$email -> set
$email -> set
$email -> set
$email -> sen
    'email_te
    array(
        'title' => $subject,
        'firstName' => 'Todd'
    )
);
```

Testing an e-mail through PHP March 28, 2012 10:53 AM

From: "WEBD 236" <webd236@gmail.com>

To: "Todd Whittaker" <todd.whittaker@franklin.edu>

Hello Todd,

I'm writing to you today to tell you about our great product! It's not Spam, I assure you. It's an e-mail system that integrates easily with PHP and it's built on top of PEAR::Mail. Please consider buying it.

Sincerely,

WEBD236-V1WW

Sending email from PHP

- Covered more in the textbook
  - Email address validation with RFC822

Accessing remote data

- Uses the cURL (Client URL) library
  - Configuration issues with XAMPP
    - Must turn on cURL by adding/uncommenting the following line to `C:\xampp\php\php.ini`

```
; enable cURL for web scraping
extension=php_curl.dll
```

    - Then restart Apache

Accessing remote data

- It is possible to pull data from any web site
  - But, it requires parsing the HTML
  - XML is easier to parse, but still cumbersome
  - JSON (JavaScript Object Notation) is designed for easy parsing.
    - Rapidly becoming the back-end of all web sites
    - "One page apps" like Google Mail send and receive JSON to communicate with the back end, and use JavaScript on the front end to display results.

Accessing remote data

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  - But, it r
  - XML is
  - JSON (J
  easy pars
    - Rapidly be ing the back-end of all web sites
    - "One page apps" like Google Mail send and receive JSON to communicate with the back end, and use JavaScript on the front end to display results.

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AJAX (Asynchronous JavaScript and XML) has really become AJAJ (Asynchronous JavaScript and JSON).

Accessing remote data

- It is possible to pull data from any web site
  - But, it requires parsing the HTML
  - XML is easier to parse, but still cumbersome
  - JSON (JavaScript Object Notation) is designed for easy parsing
    - Rapidly
    - "One pag
      JSON to
      JavaScript on the front end to display results.

Our cURL example will interface with Twitter, extracting JSON data on trending topics.

Accessing remote data

- cURL, Twitter, and JSON

```
class Twitter {

    private static $curlOpts = array(
        CURLOPT_TIMEOUT        => 300,
        CURLOPT_CONNECTTIMEOUT => 60,
        CURLOPT_RETURNTRANSFER => true,
        CURLOPT_SSL_VERIFYHOST => false,
        CURLOPT_SSL_VERIFYPEER => false,
        CURLOPT_ENCODING       => 'gzip,deflate'
    );

    public function __construct() {
    }

    // ...continued...
```

Accessing remote data

- cURL, Twitter, and JSON

```
    public function getTrending($region = 1) {
        $curl = curl_init();
        curl_setopt_array($curl, self::$curlOpts);
        curl_setopt($curl, CURLOPT_URL,
            "https://api.twitter.com/1/trends/" . $region .
            ".json");
        $json = curl_exec($curl);
        $data = json_decode($json);
        return $data[0] -> trends;
    }

} // end Twitter class
```


Accessing remote data

- cURL, T

```
    public
        $cur
        curl
        curl


        $jso
        $dat
        retu
    }

} // end Twi
```


```
[{
    "trends" : [{
        "url" : "http:\/\/twitter.com\/search\/%23IfIMeetJustinBieber",
        "query" : "%23IfIMeetJustinBieber",
        "name" : "#IfIMeetJustinBieber",
        "events" : null,
        "promoted_content" : null
    }, {
        "url" : "http:\/\/twitter.com\/search\/%23YouKnowItsFriday",
        "query" : "%23YouKnowItsFriday",
        "name" : "#YouKnowItsFriday",
        "events" : null,
        "promoted_content" : null
    }, {
        "url" : "http:\/\/twitter.com\/search\/%23WeLoveKevinJonas",
        "query" : "%23WeLoveKevinJonas",
        "name" : "#WeLoveKevinJonas",
        "events" : null,
        "promoted_content" : null
    }, {
    // ...snip...
    }],
    "created_at" : "2012-03-28T17:37:59Z",
    "as_of" : "2012-03-28T17:38:26Z",
    "locations" : [{
        "name" : "Worldwide",
        "woeid" : 1
    }]
}]
```


Raw JSON returned from Twitter

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Ac

- cURL, Twit

```
    public func
        $curl =
        curl_set
        curl_set
            "htt
            ".js
        $json =
        $data =
        return $
    }

} // end Twitter
```

```
array(1) {
  [0]=>
  object(stdClass)#2 (4) {
    ["trends"]=>
    array(10) {
      [0]=>
      object(stdClass)#3 (5) {
        ["url"]=>
        string(48) "http://twitter.com/search/%23IfIMeetJustinBieber"
        ["query"]=>
        string(22) "%23IfIMeetJustinBieber"
        ["name"]=>
        string(20) "#IfIMeetJustinBieber"
        ["events"]=>
        NULL
        ["promoted_content"]=>
        NULL
      }
      [1]=>
      object(stdClass)#4 (5) {
        ["url"]=>
        string(45) "http://twitter.co
        ["query"]=>
        string(19) "%23YouKnowItsFriday"
        ["name"]=>
        string(17) "#YouKnowItsFriday"
        ["events"]=>
        NULL
        ["promoted_content"]=>
        NULL
      }
    // ...snip...
    }
}
```

JSON converted to PHP arrays/objects via `json_decode()`.

Accessing remote data

- Using the `Twitter` class

```
$twitter = new Twitter();
$trends = $twitter -> getTrending();
renderTemplate(
    'trending_template.inc',
    array(
        'trends' => $trends
    )
);
```

Accessing remote data

- Using the `Twitter` class

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html>
    <head><title>Twitter trending topics</title></head>
    <body>
        <h1>Twitter trending topics</h1>
        <ol>
            [[ foreach ($trends as $trend) : ]]
            <li><a href='{{$trend -> url}}'>
                {{$trend -> name}}</a></li>
            [[ endforeach; ]]
        </ol>
    </body>
</html>
```


Accessing remote data

- Using the `Twitter` class

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xht
<html>
    <head><title>Twitter
    <body>
        <h1>Twitter trend
        <ol>
            [[ foreach ($
            <li><a href='
                {{$trend
            [[ endforeach
        </ol>
    </body>
</html>
```

Twitter trending topics

1. #IfIMeetJustinBieber
2. #YouKnowItsFriday
3. #ReplaceATLSongsWithBoner
4. Un Gobierno DemocrÃ¡tico
5. We Love Kevin Jonas
6. Rise of the Guardians
7. MillÃ´r Fernandes
8. Rep. Bobby Rush
9. Today Is Gaga's Day
10. Sonisphere

Accessing remote data

- Considerations when building a web app
  - JSON is the data-interchange format of the web.
  - If you want to build something that others build on, then you'll need to expose services using JSON like Twitter does.
  - Page-refresh apps (like we've been building) are old technology. Ajax and single-page apps take less bandwidth, use REST more effectively, and are more responsive to users.

Show me the code!

- Email and Twitter classes are posted at http://cs.franklin.edu/~whittakt/WEBD236/.
  - Note that the email class needs to be configured with a working GMail address as a sender and a working address for a receiver.

Solution to HW 10

Next Week

- PHP Web Frameworks
- Final Exam Review

General Q & A

- Questions?
- Comments?
- Concerns?