Symfony Framework

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What is Symfony

- Symfony is an Open source web application framework for PHP5 projects.
- PHP is a general purpose scripting language designed for web development
- The best use of PHP is in creating dynamic web pages in client side
- Symfony is designed to optimize the development of web applications
- It adds a new layer on top of PHP providing tools that speedup the development of complex web applications
- Used in high demand e-business websites
- Compatible with most of the available database servers including MySQL, Oracle, Microsoft SQL server.

Symfony History

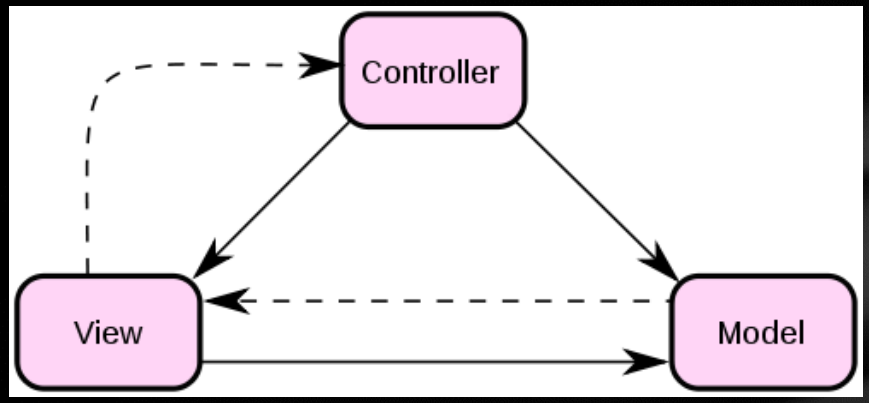
- First released on October 2005 by founder Fabien Potencier
- When PHP5 was released, Fabien decided that the available tools had reached a mature enough stage to be integrated into a full featured framework
- He then developed Symfony code basing his work on MVC architecture, the propel object relational mapping and ruby on rails templating helpers
- After successful testing of a few projects Fabien released Symfony under Open Source licence
- Then Fabien along with his colleague authored a book with excellent documentation as he believed extensive documentation in english is important to be adopted globally

Features of Symfony

- Simple to use
- Easy to install and configure on most platforms
- It is independent of database engine
- Easily adaptable for complex class definitions
- It has a lot of inbuilt functionalities that are conventional
- The user has to configure only unconventional functions
- Compliant with most web practices and design patterns

The MVC Architecture

- Symfony is based on the classic web design pattern called the MVC pattern



- This consists of three levels
  - The model: The application logic that is the information using which the application operates
  - The view: This renders the model into a webpage that is suited for usage by the end user
  - The controller: This responds to user actions and it invokes changes in model or view as required

Source: http://en.wikipedia.org/wiki/Model-view-controller

Symfony VS. MVC

The Components of MVC

Model layer

- Database abstraction
- Data access

View layer

- View
- Template
- Layout

Controller layer

- Front controller
- Action

The Components of Symfony

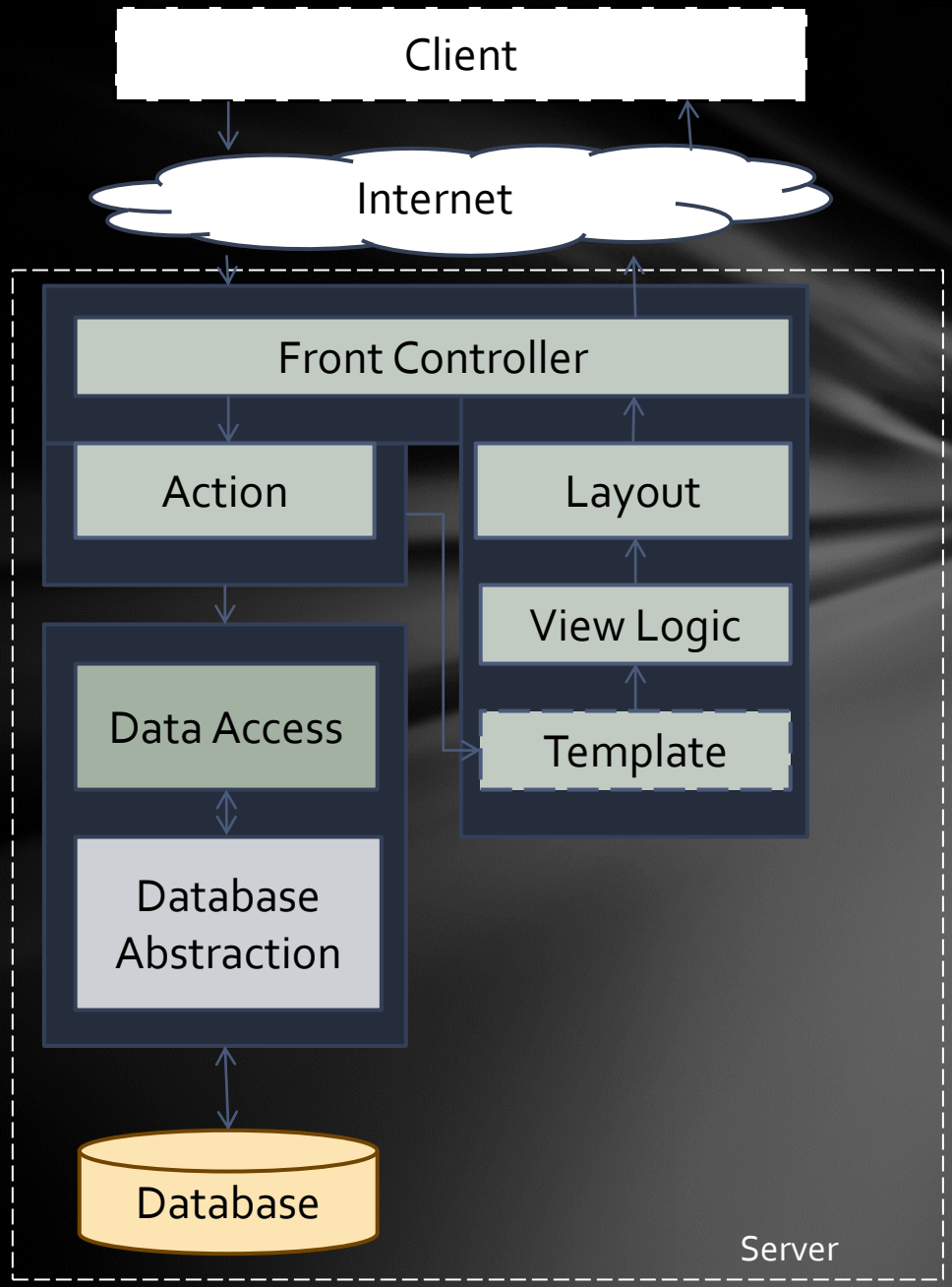
Action

Template

View

Layout

SymFONY WORKFLOW



http://www.symfony-project.org/book/1_0/02-Exploring-Symfony-s-Code

Script example

A Flat Script

- Very Easy to write
- Very difficult to maintain.

```php
<?php

// Connecting, selecting database
$link = mysql_connect('localhost', 'myuser', 'mypasswor
mysql_select_db('blog_db', $link);

// Performing SQL query
$result = mysql_query('SELECT date, title FROM post', $

?>

<html>
  <head>
    <title>List of Posts</title>
  </head>
  <body>
   <h1>List of Posts</h1>
   <table>
     <tr><th>Date</th><th>Title</th></tr>
<?php
// Printing results in HTML
while ($row = mysql_fetch_array($result, MYSQL_ASSOC))
{
echo "\t<tr>\n";
printf("\t\t<td> %s </td>\n", $row['date']);
printf("\t\t<td> %s </td>\n", $row['title']);
echo "\t</tr>\n";
}
?>
    </table>
  </body>
</html>

<?php

// Closing connection
mysql_close($link);

?>
```

Script example(2)

In Symphony, the entire code can be listed using just three files.

1. List Action

```
<?php
class weblogActions extends sfActions
{
  public function executeList()
  {
    $this->posts = PostPeer::doSelect(new Criteria());
  }
}

?>
```

Script example(3)

2. List Template

```
<h1>List of Posts</h1>
<table>
<tr><th>Date</th><th>Title</th></tr>
<?php foreach ($posts as $post): ?>
  <tr>
    <td><?php echo $post->getDate() ?></td>
```

- 3. Layout

```
<html>
  <head>
    <?php echo include_title() ?>
  </head>
  <body>
    <?php echo $sf_data->getRaw('sf_content') ?>
  </body>
</html>
```

Symfony libraries

- PEAR: This package has all the symphony libraries. Recommeneded for most users.
- Subversion(SVN): Recommended for experienced or advanced PHP developers.
- Pake: A CLI(Command line Interface) utility
- Lime: A unit testing utility
- Creole: A Database abstraction engine
- Propel: ORM tool. Object persistence and query service
- Phing: Build system used by model.

Page Creation in Symfony

- Symfony groups pages into modules.
- Before creating a page an empty module has to be created
- A default index action is created for each module. It has an action method and template file.
- The logic behind page is stored in action and the presentation is stored in template
- Pages without a logic would still require an action method that is empty
- Similarly if we execute a URL without a template method, symfony will give an error

Page Creation in Symfony(2)

Action example

- Adding an action means adding executeAction method to the Action class
- The name of an action is always executeXxx where Xxx is the name of action

```php
<?php

class mymoduleActions extends sfActions
{
  public function executeMyAction()
  {
  }
}
```

Page Creation in Symfony(3)

Template example

Normal PHP syntax to print time

```
<p>Hello, world!</p>
<?php

if ($test)
{
  echo "<p>".time()."</p>";
}

?>
```

Alternative PHP syntax used for templates. It is more readable to the user

```
<p>Hello, world!</p>
<?php if ($test): ?>
<p><?php echo time(); ?></p>
<?php endif; ?>
```

Passing Information

Passing information from action to template

- Action does all the complicated calculation, data retrieval and tests.
- Symphony makes the attributes of action class directly accessible to template in the global namespace.
- The following figure shows that the template has direct access to action attributes

```
<p>Hello, world!</p>
<?php if ($hour >= 18): ?>
<p>Or should I say good evening? It is already <?php echo $hour ?>.</p>
<?php endif; ?>
```

Forms

Templates can use the traditional HTML forms as below

```
<p>Hello, world!</p>
<?php if ($hour >= 18): ?>
<p>Or should I say good evening? It is already <?php echo $hour ?>.</p>
<?php endif; ?>
<form method="post" action="/myapp_dev.php/mymodule/anotherAction">
  <label for="name">What is your name?</label>
  <input type="text" name="name" id="name" value="" />
  <input type="submit" value="Ok" />
</form>
```

However, Symfony has helper functions defined which makes writing forms faster and easier

```
<p>Hello, world!</p>
<?php if ($hour >= 18): ?>
<p>Or should I say good evening? It is already <?php echo $hour ?>.</p>
<?php endif; ?>
<?php echo form_tag('mymodule/anotherAction') ?>
  <?php echo label_for('name', 'What is your name?') ?>
  <?php echo input_tag('name') ?>
  <?php echo submit_tag('Ok') ?>
```

URL and Action Names

- Symfony's routing system allows complete separation between actual action name and the form of URL needed to call it
- This allows custom formatting of URL
- Example:
- A call to index of an action module could look like this

  http://localhost/myapp_dev.php/article/index?id=123

- But the URL can be written in a completely different way with a simple change in routing.yml configuration
- The routing system automatically peels the request parameters from the smart URL

Linking Action to other action

- There is a total decoupling between the action name and its corresponding URL
- Changing the way URLs look at later stages might become cumbersome since it will only work with default routing
- To avoid this use the link_to() helper to create hyperlinks for the actions
- The resulting HTML might look the same as previous however when we change the routing rules, all the templates reformats the URLs correctly

Symphony Configuration

- Symphony configuration system uses YAML language to be simple and readable
- We can deal with multiple environments and also set parameters through definition cascade
- This provides versatility to the developer
- sfConfig is the object using which some configuration files can be accessed
- Symfony has a lot of configuration files and they are useful when high level of customization is required

Inside Control Layer

- In Symfony, control layer the code linking the business logic and presentation is split into several components for different purposes
- 1. Front Controller: It is the unique entry point to the application it loads configuration and determines the actions to execute
- Actions: They contain the logic. They check the integrity of a request and gets the presentation layer ready
- Request, response and session: These objects give access to request parameters, the response headers and the persistent user data.
- Filters: Portions of code executed for every request either before or after the action.

Inside the View Layer

- Templates: It contains HTML codes and some basic PHP codes. Usually calls to varaiables are declared in action and helper class
  - Helpers are PHP codes that return HTML code
- Code fragments: Often it might be required to insert HTML or PHP codes in several places. To avoid repeating these codes, PHPinclude() statement is used
- View Configuration: In Symfony, view consists of 2 parts
  - The HTML presentation of action result
  - Metadata, page title, File inclusions, Layout

Inside the Model layer

- Business logic of a web application mostly lies on its data model
- Symphony's default model component is based on an object or relational mapping layer.
- Symphony comes with the two most popular ORMs Propel and doctrine
- In symphony, any data element is accessed using objects this provides high level of abstraction and portability

Object Relational mapping

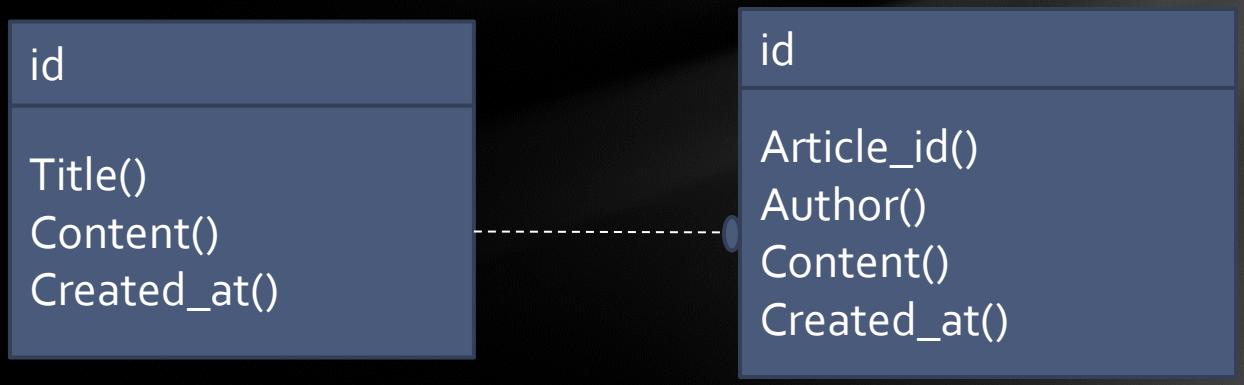
- PHP5 snd Symfony are Object oriented. When accesing the database an interface is required to translate Object logic to Relational logic
- ORM also provides encapsulation for data logic
- They allow us to add accessors in a object that don't necessarily match a column in a table

Database Schema

- Inorder to create the data object model that symfony will use, what ever relational model the database has should be converted into data model
- Schema is the description of relational model which facilitates this translation

Schema example

- Consider a blog database table structure



Database Schema(2)

The schema.yml file related to the blog database

looks like shown

```
Article:
  actAs: [Timestampable]
  tableName: blog_article
  columns:
    id:
      type: integer
      primary: true
      autoincrement: true
    title:   string(255)
    content: clob

Comment:
  actAs: [Timestampable]
  tableName: blog_comment
  columns:
    id:
      type: integer
      primary: true
      autoincrement: true
    article_id: integer
    author: string(255)
    content: clob
  relations:
    Article:
      onDelete: CASCADE
      foreignAlias: Comments
```

http://www.symfony-project.org/get/pdf/gentle-introduction-1.4-en.pdf

Is Symfony for Me?

- Symfony is simple to use irrespective of the expertise a person has in PHP programming.
- The deciding factor is the size of the project.
- If the requirement is just a simple web application with 5-10 pages then it would be better to stick with php.
- For more complex application with heavy PHP is not enough. Symfony provides good maintenance and extension support.

References

http://www.symfony-project.org

http://www.symfony-project.org/book/1_0/02-Exploring-Symfony-s-Code

http://www.symfony-project.org/get/pdf/gentle-introduction-1.4-en.pdf

http://forum.symfony-project.org/

http://groups.google.com/group/symfony-users

http://en.wikipedia.org/wiki/Model-view-controller