Working with Zend\Form

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PHPNW 12, October 2012

The problem with forms

They break the concept of separation of concerns:

- display
- validation
- data transfer
- *display of validation errors!*

ZF2's form solution

Multiple parts working together:

- Zend\Form
- Zend\InputFilter
- view helpers
- Zend\Stdlib\Hydrator

Zend\Form

A bridge between the model entity and the view

- elements & fieldsets
- input filter
- data transfer methods

Elements

- Button
- Captcha
- Checkbox
- Collection
- Color
- Csrf
- Date
- DateTime
- DateTimeLocal
- Email
- File
- Hidden
- Image
- Month
- MultiCheckbox
- Number
- Password
- Radio
- Range
- Select
- Submit
- Text
- Textarea
- Time
- Url
- Week

Zend\InputFilter

Provides:

- Filtering of input data
- Validation of input data

Implement:

- Add separate `Input` objects to an `InputFilter`
- or `Factory` to specify an array

View helpers

- Render a form using a series of view helpers:
  - `form()` for open and close tags
  - `formXxx()` for each element: ie: `formHidden()`
  - `formLabel()` for each element's label
- Alternatively: `formRow()` to render label, element and error message in one go
- No decorators: you have control!

Data transfer

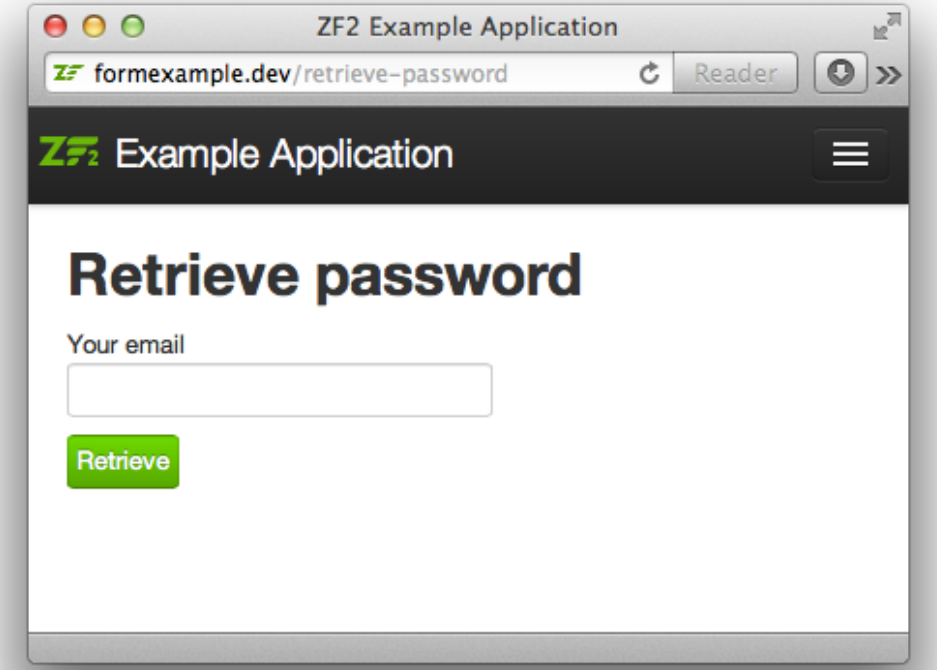
(aka Hydration)

- bind an object to the form, then it will:
  - Map validated values into object after post
  - Extract values from object to populate form
- Multiple strategies:
  - ArraySerializable
  - ObjectProperty
  - ClassMethods

Zend\Form in use!

(Warning: lots of code coming up!)

Consider this



The HTML

```
<h1>Retrieve password</h1>
<form action="/" method="POST">
<label for="email">Your email</label>
<input type="text" name="email" id="email">
<input type="submit" name="submit"
        class="btn-success" value="Retrieve">
</form>
```

Define a form

```
namespace Application\Form;
use Zend\Form\Form;
class RetrievePwd extends Form
{
    public function __construct($name = null)
    {
        parent::__construct('retrievepwd');

        /* Elements defined here */
    }
}
```

Email elements

```
// within RetrievePwd::__construct()
$this->add(array(
    'name' => 'email',
    'type' => 'Zend\Form\Element\Email',
    'options' => array(
        'label' => 'Your email',
    ),
    'attributes' => array(
        'id'    => 'email',
    ),
));
```

Submit Element

```
$this->add(array(
    'name' => 'submit',
    'type' => 'Zend\Form\Element\Submit',
    'attributes' => array(
        'value' => 'Retrieve',
        'class' => 'btn-success',
    ),
));
```

Controller code

```
namespace Application\Controller;
use Zend\Mvc\Controller\AbstractActionController;
use Application\Form\RetrievePwd as RPForm;
class IndexController
    extends AbstractActionController
{
    public function newPwdAction()
    {
        $form = new RetrievePwdForm();

        return array('form' => $form);
    }
}
```

View script

```
// in view/index/new-pwd.phtml
$f = $this->form;
$f->setAttribute('action',
    $this->url('new-pwd'));
$f->prepare();

echo $this->form()->openTag($f) . "\n";
echo $this->formLabel($f->get('email')) . "\n";
echo $this->formInput($f->get('email')) . "\n";
echo $this->FormElementErrors($f->get('email'));
echo $this->formSubmit($f->get('submit')) . "\n";
echo $this->form()->closeTag($f) . "\n";
```

Using formRow

The `formRow` view helper simplifies rendering of elements:

```
echo $this->formLabel($f->get('email'))."\n";
echo $this->formInput($f->get('email'))."\n";
echo $this->FormElementErrors($f->get('email'));
```

becomes:

```
echo $this->formRow($f->get('email'))."\n";
```

formRow: the view script

```
// in view/index/new-pwd.phtml
$f = $this->form;
$f->setAttribute('action', $this->url('new-pwd'));
$f->prepare();

echo $this->form()->openTag($f) . "\n";
echo $this->formRow($f->get('email')) . "\n";
echo $this->formRow($f->get('submit')) . "\n";
echo $this->form()->closeTag($form) . "\n";
```

Automate: view helper

```
class RenderForm extends AbstractHelper {
  public function __invoke($form)
  {
    $form->prepare();
    $out = $this->view->form()->openTag($form);
    $elements = $form->getElements();
    foreach ($elements as $element) {
        $out .= $this->view->formRow($element);
    }
    $out .= $this->view->form()->closeTag($form);
    return $out;
  }
}
```

Automate: view script

```
// in view/index/new-pwd.phtml
$f = $this->form;
$f->setAttribute('action',$this->url('new-pwd'));
echo $this->renderForm($f);
```

Validation: InputFilter

Attach an `InputFilter` to the form:

```
namespace Application\Form;
use Zend\InputFilter\InputFilter;

class RetrievePwdFilter extends InputFilter
{
    public function __construct()
    {
        /* Input objects defined here */
    }
}
```

Validation: Inputs

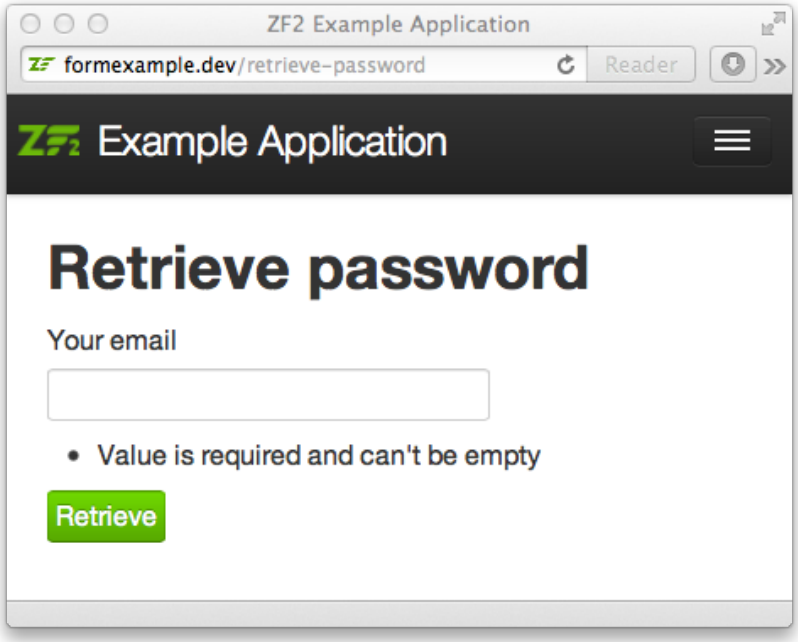
```
// Within RetrievePwdFilter::__construct():
$this->add(array(
    'name'     => 'email',
    'required' => true,
    'filters'  => array(
        array('name' => 'StringTrim'),
    ),
    'validators' => array(
        array('name' => 'EmailAddress'),
    ),
));
```

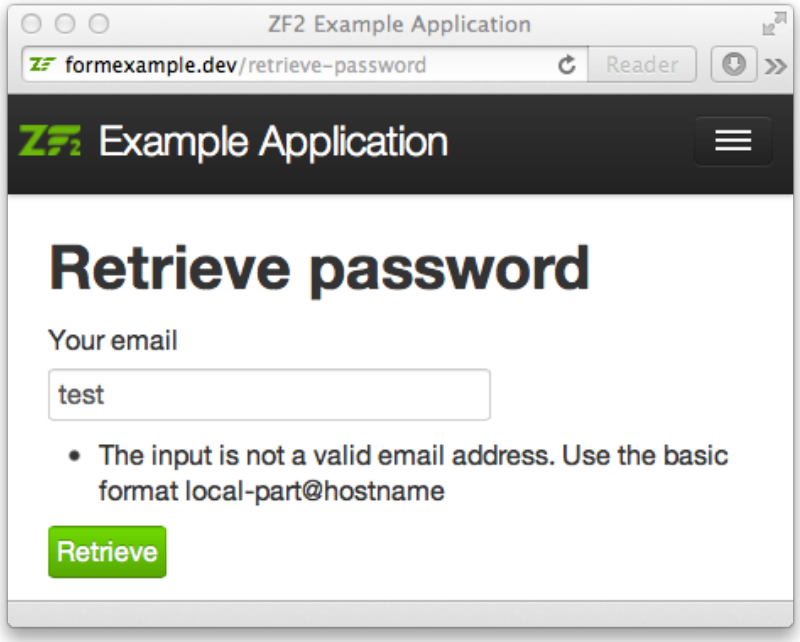
Controller code

Attach input filter and process POST'ed request

```
public function newPwdAction() {
  $f = new RetrievePwdForm();
  $f->setInputFilter(new RetrievePwdFilter());
  if ($this->getRequest()->isPost()) {
    $f->setData($this->getRequest()->getPost());
    if ($f->isValid()) {
        // do something useful
    }
  }
  return array('form' => $f);
}
```

Errors


ZF2 Example Application
formexample.dev/retrieve-password
Reader
Example Application
Retrieve password
Your email
Value is required and can't be empty
Retrieve


ZF2 Example Application
formexample.dev/retrieve-password
Reader
Example Application
Retrieve password
Your email
test
The input is not a valid email address. Use the basic format local-part@hostname
Retrieve

Change the error message

```
// 'validators' key in RetrievePwdFilter:
'validators' => array(
  array(
    'name'    => 'EmailAddress',
    'options' => array(
      'messages' => array(
        'emailAddressInvalidFormat'
             => 'Your email address is invalid'),
    ),
  ),
),
```

The "required" message

```
// 'validators' key in RetrievePwdFilter:
'validators' => array(
  array(
    'name'                   => 'NotEmpty',
    'break_chain_on_failure' => true,
    'options'                => array(
      'messages' => array('isEmpty'
                 => 'Email address is required'),
    )
  ),
  array(
    'name'    => 'EmailAddress',
    'options' => array( /* ... */ ),
),
```

Empty required field

Use `allow_empty` when a required field may be an empty string:

```
$this->add(array(
    'name'        => 'email',
    'required'    => true,
    'allow_empty' => true,
    'filters'     => array(
        array('name' => 'StringTrim'),
    ),
    'validators'  => array( /* ... */ ),
```

Data Transfer: binding

Binding allows the form to:

- set initial values the form fields from an object
- populate that object with the submitted data
- usually used for transferring all fields to a model entity

Data Transfer: binding

```
public function newPwdAction()
{
  $form = new RetrievePwdForm();
  $form->setInputFilter(new RetrievePwdFilter());

  $sendPwdSvc = new SendPwdService();
  $form->bind($sendPwdSvc);

  // cont...
```

Data Transfer: binding

```
  // cont...
  $request = $this->getRequest();
  if ($request->isPost()) {
    $form->setData($request->getPost());
    if ($form->isValid()) {
      $sendPwdSvc->sendLostPasswordEmail();
      // redirect somewhere useful
    }
  }
  return array('form' => $form);
}
```

ArraySerializable Hydrator

```
class SendPwdService
{
    protected $email;
    public function getArrayCopy()
    {
        return array('email' => '');
    }
    public function populate($data)
    {
        $this->email = $data['email'];
    }
    public function sendLostPwdEmail() { /* … */ }
}
```

ArraySerializable Hydrator

Or use `getArrayCopy()` and `exchangeArray()`. These are are implemented by `ArrayObject`:

```
namespace Application\Service;

class SendPwdService extends \ArrayObject
{
    public function sendLostPasswordEmail()
    {
        // do work with $this['email']
    }
}
```

Other hydrators

ObjectProperty:

```
protected $email
```

ClassMethods:

```
function getEmail()
function setEmail($email)
```

That's all you really need to know

But there's more...

Zend\Form\Fieldset

- *Logically* group elements and bind objects to them
- Ideal for groups of elements for each model entity
- Also handles One to One and One to Many relationships in your forms

- Not related to rendering in a `<fieldset>` (but you can do!)
- Arguably mis-named!

E.g: reporting a bug

Consider this entity

```
class Bug
{
    public $title = '';
    public $description = '';

    // other properties: date, priority, etc.
}
```

A 'Bug' Fieldset

```
class BugFieldset extends Fieldset
{
  public function __construct($name = null)
  {
    parent::__construct('bug');
    $hydrator = new ObjectPropertyHydrator();
    $this->setHydrator($hydrator);

    $this->add(array(
        'name' => 'title',
        'options' => array('label' => 'Title'),
    ));
    // cont...
```

A 'Bug' Fieldset

```
    // cont...
    $this->add(array(
        'name' => 'description',
        'type' => 'Zend\Form\Element\Textarea',
        'options' => array(
            'label' => 'Description'),
    ));
    // other elements: date, priority, etc.
  }
}
```

Adding an input filter

```
class BugFieldset extends Fieldset
    implements InputFilterProviderInterface
{
  // after __construct()
  public function getInputFilterSpecification()
  {
    return array(
      'title' => array('required' => true),
      'description' => array(
          'validators' => array('StripTags')
      ),
      // other inputs for date, priority, etc.
    );
  }
}
```

We need a form too

```
class Bug extends Form
{
  public function __construct($name = null)
  {
    parent::__construct('bug');
    $this->setAttribute('method', 'post')

    $hydrator = new ObjectPropertyHydrator();
    $this->setHydrator($hydrator);

    // cont...
```

Form

```
// cont...
$this->add(array(
    'type' => 'Application\Form\BugFieldset',
    'options' => array(
        'use_as_base_fieldset' => true)
));

$this->add(array(
    'type' => 'Zend\Form\Element\Csrf',
    'name' => 'csrf'
));
// and a submit button here
```

View script

```
$form = $this->form;
$form->setAttribute('action', $this->url('bug'));
$form->prepare();
echo $this->form()->openTag($form);

// bug fieldset
echo "<fieldset class='bug'><legend>Bug</legend>";
$bug = $form->get('bug');
echo $this->formRow($bug->get('title'));
echo $this->formRow($bug->get('description'));
echo "</fieldset>";

// cont...
```

View script

```
// cont...

// CSRF element & submit button
echo "<div class='submit'>";
echo $this->formHidden($form->get('csrf'));
echo $this->formSubmit($form->get('submit'));
echo "</div>";

echo $this->form()->closeTag($form);
```

Binding the entity

```
public function bugAction()
{
    $form = new BugForm();
    $bug = new Bug();
    $form->bind($bug);

    if ($this->request->isPost()) {
        $form->setData($this->request->getPost());
        if ($form->isValid()) { /* save here */ }
    }

    return array('form' => $form);
}
```

That was easy enough

Adding a reporter

Let's have a `User` class

```
class User {
    public $name = '';
    public $email = '';
}
```

Update the `Bug` class

```
class Bug {
    public $title = '';
    public $description = '';
    // other properties: date, priority, etc.

    public $reporter;

    function __construct()
    {
        $this->reporter = new User();
    }
}
```

The reporter fieldset

```
class UserFieldset extends Fieldset
        implements InputFilterProviderInterface
{
  public function __construct($name='')
  {
    parent::__construct($name);
    $hydrator = new ObjectPropertyHydrator();
    $this->setHydrator($hydrator);
    $this->setObject(new User());

    // cont...
```

The reporter fieldset

```
    // cont...
    $this->add(array(
        'name' => 'name',
        'options' => array('label' => "Name"),
    ));
    $this->add(array(
        'name' => 'email',
        'type' => 'Zend\Form\Element\Email',
        'options' => array('label' => "Email"),
    ));
  }
  // don't forget getInputFilterSpecificiation()

    public function getInputFilterSpecification()
    {
        // inputs as usual
        return array(
            'name' => array(
                'required' => true,
            )
        );
    }
```

Add the reporter to the bug

```
class BugFieldset extends Fieldset
    implements InputFilterProviderInterface
{
  public function __construct($name = null)
  {
    // after 'bug' elements

    $this->add(array(
      'type' => 'Application\Form\UserFieldset',
      'name' => 'reporter',
    ));
  }
}
```

Add to the view script

```
// after the bug fieldset

// reporter fieldset
$reporter = $bug->get('reporter');
echo "<fieldset><legend>Your details</legend>";
echo $this->formRow($reporter->get('name'));
echo $this->formRow($reporter->get('email'));
echo "</fieldset>" . PHP_EOL;
```

That's it!

Note that we didn't need to worry about hydration and binding as it happens automatically

Things I didn't cover

- Collections
- Annotations
- Validation groups

(You'll have to look these up yourself!)

Questions?

Thank you!

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