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Forms and Actions - tutorials

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Adding new albums

We can now code up the functionality to add new albums. There are two bits to this part:

- Display a form for user to provide details.
- Process the form submission and store to database.

We will use zend-form to do this. zend-form manages the various form inputs as well as their validation, the latter of which is handled by the zend-inputfilter component. We'll start by creating a new class, `Album\Form\AlbumForm`, extending from `Zend\Form\Form`. Create the file `module/Album/src/Form/AlbumForm.php` with the following contents:

```
namespace Album\Form;

use Zend\Form\Form;

class AlbumForm extends Form
{
    public function __construct($name = null)
    {

        parent::__construct('album');

        $this->add([
            'name' => 'id',
            'type' => 'hidden',
        ]);
        $this->add([
            'name' => 'title',
            'type' => 'text',
            'options' => [
                'label' => 'Title',
            ],
        ]);
        $this->add([
            'name' => 'artist',
            'type' => 'text',
            'options' => [
                'label' => 'Artist',
            ],
        ]);
        $this->add([
            'name' => 'submit',
            'type' => 'submit',
            'attributes' => [
                'value' => 'Go',
                'id'    => 'submitbutton',
            ],
        ]);
    }
}
```

Within the constructor of `AlbumForm` we do several things. First, we set the name of the form as we call the parent's constructor. The, we create four form elements: the id, title, artist, and submit button. For each item we set various attributes and options, including the label to be displayed.

> **Form method**
>
> HTML forms can be sent using `POST` and `GET` . zend-form defaults to `POST` ; therefore you don't have to be explicit in setting this option. If you want to change it to `GET` however, set the method attribute in the constructor:
>
> ```
> $this->setAttribute('method', 'GET');
> ```

We also need to set up validation for this form. zend-inputfilter provides a general purpose mechanism for input validation. It also provides an interface, `InputFilterAwareInterface` , which zend-form will use in order to bind an input filter to a given form. We'll add this capability now to our `Album` class.

```
namespace Album\Model;


use DomainException;
use Zend\Filter\StringTrim;
use Zend\Filter\StripTags;
use Zend\Filter\ToInt;
use Zend\InputFilter\InputFilter;
use Zend\InputFilter\InputFilterAwareInterface;
use Zend\InputFilter\InputFilterInterface;
use Zend\Validator\StringLength;

class Album implements InputFilterAwareInterface
{
    public $id;
    public $artist;
    public $title;


    private $inputFilter;

    public function exchangeArray(array $data)
    {
        $this->id     = !empty($data['id']) ? $data['id'] : null;
        $this->artist = !empty($data['artist']) ? $data['artist'] :
null;
        $this->title  = !empty($data['title']) ? $data['title'] : null;
    }



    public function setInputFilter(InputFilterInterface $inputFilter)
    {
        throw new DomainException(sprintf(
            '%s does not allow injection of an alternate input filter',
            __CLASS__
        ));
    }
    public function getInputFilter()
    {
        if ($this->inputFilter) {
            return $this->inputFilter;
        }

        $inputFilter = new InputFilter();

        $inputFilter->add([
            'name' => 'id',
            'required' => true,
            'filters' => [
                ['name' => ToInt::class],
            ],
        ]);

        $inputFilter->add([
            'name' => 'artist',
            'required' => true,
            'filters' => [
                ['name' => StripTags::class],
                ['name' => StringTrim::class],
            ],
            'validators' => [
                [
                    'name' => StringLength::class,
                    'options' => [
                        'encoding' => 'UTF-8',
                        'min' => 1,
                        'max' => 100,
                    ],
                ],
            ],
        ]);

        $inputFilter->add([
            'name' => 'title',
            'required' => true,
            'filters' => [
                ['name' => StripTags::class],
                ['name' => StringTrim::class],
            ],
            'validators' => [
                [
                    'name' => StringLength::class,
                    'options' => [
                        'encoding' => 'UTF-8',
                        'min' => 1,
                        'max' => 100,
                    ],
                ],
            ],
        ]);

        $this->inputFilter = $inputFilter;
        return $this->inputFilter;
    }
}
```

The `InputFilterAwareInterface` defines two methods: `setInputFilter()` and `getInputFilter()`. We only need to implement `getInputFilter()` so we throw an exception from `setInputFilter()`.

Within `getInputFilter()`, we instantiate an `InputFilter` and then add the inputs that we require. We add one input for each property that we wish to filter or validate. For the `id` field we add an `int` filter as we only need integers. For the text elements, we add two filters, `StripTags` and `StringTrim`, to remove unwanted HTML and unnecessary white space. We also set them to be *required* and add a `StringLength` validator to ensure that the user doesn't enter more characters than we can store into the database.

We now need to get the form to display and then process it on submission. This is done within the `AlbumController::addAction()`:

```
use Album\Form\AlbumForm;
use Album\Model\Album;

class AlbumController extends AbstractActionController
{
    public function addAction()
    {
        $form = new AlbumForm();
        $form->get('submit')->setValue('Add');

        $request = $this->getRequest();

        if (! $request->isPost()) {
            return ['form' => $form];
        }

        $album = new Album();
        $form->setInputFilter($album->getInputFilter());
        $form->setData($request->getPost());

        if (! $form->isValid()) {
            return ['form' => $form];
        }

        $album->exchangeArray($form->getData());
        $this->table->saveAlbum($album);
        return $this->redirect()->toRoute('album');
    }


}
```

After adding the `Album` and `AlbumForm` classes to the import list, we implement `addAction()`. Let's look at the `addAction()` code in a little more detail:

```
 $form = new AlbumForm();
$form->get('submit')->setValue('Add');
```

We instantiate `AlbumForm` and set the label on the submit button to "Add". We do this here as we'll want to re-use the form when editing an album and will use a different label.

```
 $request = $this->getRequest();

if (! $request->isPost()) {
    return ['form' => $form];
}
```

If the request is not a `POST` request, then no form data has been submitted, and we need to display the form. zend-mvc allows you to return an array of data instead of a view model if desired; if you do, the array will be used to create a view model.

```
$album = new Album();
$form->setInputFilter($album->getInputFilter());
$form->setData($request->getPost());
```

At this point, we know we have a form submission. We create an `Album` instance, and pass its input filter on to the form; additionally, we pass the submitted data from the request instance to the form.

```
if (! $form->isValid()) {
    return ['form' => $form];
}
```

If form validation fails, we want to redisplay the form. At this point, the form contains information about what fields failed validation, and why, and this information will be communicated to the view layer.

```
$album->exchangeArray($form->getData());
$this->table->saveAlbum($album);
```

If the form is valid, then we grab the data from the form and store to the model using `saveAlbum()` .

```
return $this->redirect()->toRoute('album');
```

After we have saved the new album row, we redirect back to the list of albums using the `Redirect` controller plugin.

We now need to render the form in the `add.phtml` view script:

```
<?php


$title = 'Add new album';
$this->headTitle($title);
```

```
?>
<h1><?= $this->escapeHtml($title) ?></h1>
<?php
$form->setAttribute('action', $this->url('album', ['action' => 'add']));
$form->prepare();

echo $this->form()->openTag($form);
echo $this->formHidden($form->get('id'));
echo $this->formRow($form->get('title'));
echo $this->formRow($form->get('artist'));
echo $this->formSubmit($form->get('submit'));
echo $this->form()->closeTag();
```

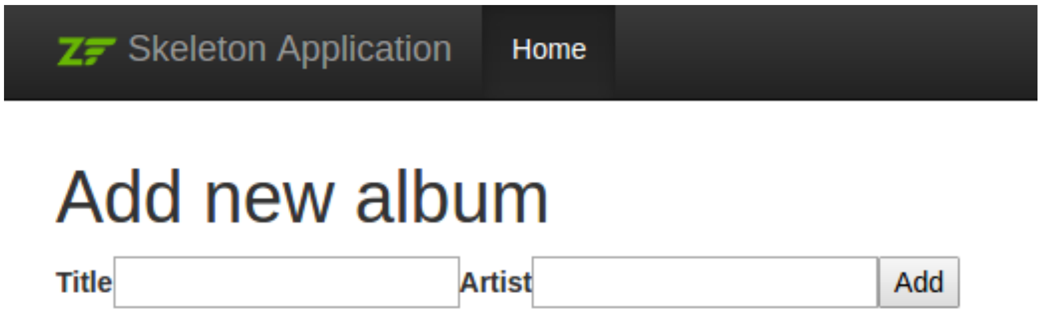
We display a title as before, and then we render the form. zend-form provides several view helpers to make this a little easier. The `form()` view helper has an `openTag()` and `closeTag()` method which we use to open and close the form. Then for each element with a label, we can use `formRow()` to render the label, input, and any validation error messages; for the two elements that are standalone and have no validation rules, we use `formHidden()` and `formSubmit()` .

Alternatively, the process of rendering the form can be simplified by using the bundled `formCollection` view helper. For example, in the view script above replace all the form-rendering echo statements with:

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

This will iterate over the form structure, calling the appropriate label, element, and error view helpers for each element, but you still have to wrap `formCollection($form)` with the open and close form tags. This helps reduce the complexity of your view script in situations where the default HTML rendering of the form is acceptable.

You should now be able to use the "Add new album" link on the home page of the application to add a new album record, resulting in something like the following:



This doesn't look all that great! The reason is because Bootstrap, the CSS foundation used in the skeleton, has specialized markup for displaying forms! We can address that in our view script by:

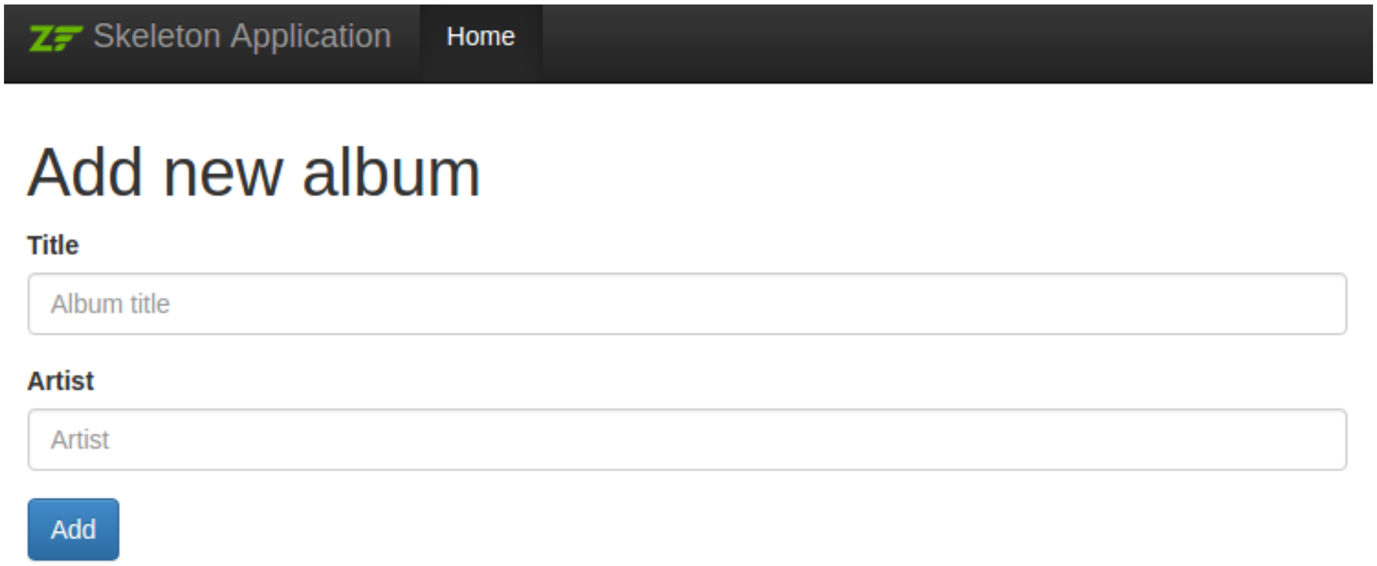
- Adding markup around the elements.
- Rendering labels, elements, and error messages separately.
- Adding attributes to elements.

Update your `add.phtml` view script to read as follows:

```
 <?php
$title = 'Add new album';
$this->headTitle($title);
?>
<h1><?= $this->escapeHtml($title) ?></h1>
<?php

$album = $form->get('title');
$album->setAttribute('class', 'form-control');
$album->setAttribute('placeholder', 'Album title');


$artist = $form->get('artist');
$artist->setAttribute('class', 'form-control');
$artist->setAttribute('placeholder', 'Artist');


$submit = $form->get('submit');
$submit->setAttribute('class', 'btn btn-primary');

$form->setAttribute('action', $this->url('album', ['action' => 'add']));
$form->prepare();

echo $this->form()->openTag($form);
?>
<?php
```

```
<div class="form-group">
    <?= $this->formLabel($album) ?>
    <?= $this->formElement($album) ?>
    <?= $this->formElementErrors()->render($album, ['class' => 'help-
block']) ?>
</div>

<div class="form-group">
    <?= $this->formLabel($artist) ?>
    <?= $this->formElement($artist) ?>
    <?= $this->formElementErrors()->render($artist, ['class' => 'help-
block']) ?>
</div>

<?php
echo $this->formSubmit($submit);
echo $this->formHidden($form->get('id'));
echo $this->form()->closeTag();
```

The results we get are much better:



The above is meant to demonstrate both the ease of use of the default form features, as well as some of the customizations possible when rendering forms. You should be able to generate any markup necessary for your site.

Editing an album

Editing an album is almost identical to adding one, so the code is very similar. This time we use `editAction()` in the `AlbumController`:

```
    public function editAction()
    {
        $id = (int) $this->params()->fromRoute('id', 0);

        if (0 === $id) {
            return $this->redirect()->toRoute('album', ['action' =>
'add']);
        }

        try {
            $album = $this->table->getAlbum($id);
        } catch (\Exception $e) {
            return $this->redirect()->toRoute('album', ['action' =>
'index']);
        }

        $form = new AlbumForm();
        $form->bind($album);
        $form->get('submit')->setAttribute('value', 'Edit');

        $request = $this->getRequest();
        $viewData = ['id' => $id, 'form' => $form];

        if (! $request->isPost()) {
            return $viewData;
        }

        $form->setInputFilter($album->getInputFilter());
        $form->setData($request->getPost());

        if (! $form->isValid()) {
            return $viewData;
        }

        $this->table->saveAlbum($album);


        return $this->redirect()->toRoute('album', ['action' =>
'index']);
    }
```

This code should look comfortably familiar. Let's look at the differences from adding an album. Firstly, we look for the `id` that is in the matched route and use it to load the album to be edited:

```
$id = (int) $this->params()->fromRoute('id', 0);

if (0 === $id) {
    return $this->redirect()->toRoute('album', ['action' => 'add']);
}





try {
    $album = $this->table->getAlbum($id);
} catch (\Exception $e) {
    return $this->redirect()->toRoute('album', ['action' => 'index']);
}
```

`params` is a controller plugin that provides a convenient way to retrieve parameters from the matched route. We use it to retrieve the `id` from the route we created within the Album module's `module.config.php` . If the `id` is zero, then we redirect to the add action, otherwise, we continue by getting the album entity from the database.

We have to check to make sure that the album with the specified `id` can actually be found. If it cannot, then the data access method throws an exception. We catch that exception and re-route the user to the index page.

```
$form = new AlbumForm();
$form->bind($album);
$form->get('submit')->setAttribute('value', 'Edit');
```

The form's `bind()` method attaches the model to the form. This is used in two ways:

- When displaying the form, the initial values for each element are extracted from the model.
- After successful validation in `isValid()` , the data from the form is put back into the model.

These operations are done using a *hydrator* object. There are a number of hydrators, but the default one is `Zend\Hydrator\ArraySerializable` which expects to find two methods in the model: `getArrayCopy()` and `exchangeArray()` . We have already written `exchangeArray()` in our `Album` entity, so we now need to write `getArrayCopy()` :

```
    public function exchangeArray($data)
    {
        $this->id     = isset($data['id']) ? $data['id'] : null;
        $this->artist = isset($data['artist']) ? $data['artist'] : null;
        $this->title  = isset($data['title']) ? $data['title'] : null;
    }


    public function getArrayCopy()
    {
        return [
            'id'     => $this->id,
            'artist' => $this->artist,
            'title'  => $this->title,
        ];
    }
```

As a result of using `bind()` with its hydrator, we do not need to populate the form's data back into the `$album` as that's already been done, so we can just call the mapper's `saveAlbum()` method to store the changes back to the database.

The view template, `edit.phtml` , looks very similar to the one for adding an album:

```
<?php
```

```
$title = 'Edit album';
$this->headTitle($title);
?>
<h1><?= $this->escapeHtml($title) ?></h1>
<?php
$album = $form->get('title');
$album->setAttribute('class', 'form-control');
$album->setAttribute('placeholder', 'Album title');

$artist = $form->get('artist');
$artist->setAttribute('class', 'form-control');
$artist->setAttribute('placeholder', 'Artist');

$submit = $form->get('submit');
$submit->setAttribute('class', 'btn btn-primary');

$form->setAttribute('action', $this->url('album', [
    'action' => 'edit',
    'id'     => $id,
]));
$form->prepare();

echo $this->form()->openTag($form);
?>
<div class="form-group">
    <?= $this->formLabel($album) ?>
    <?= $this->formElement($album) ?>
    <?= $this->formElementErrors()->render($album, ['class' => 'help-
block']) ?>
</div>

<div class="form-group">
    <?= $this->formLabel($artist) ?>
    <?= $this->formElement($artist) ?>
    <?= $this->formElementErrors()->render($artist, ['class' => 'help-
block']) ?>
</div>

<?php
echo $this->formSubmit($submit);
echo $this->formHidden($form->get('id'));
echo $this->form()->closeTag();
```

The only changes are to use the ‘Edit Album' title and set the form's action to the 'edit' action too, using the current album identifier.

You should now be able to edit albums.

Deleting an album

To round out our application, we need to add deletion. We have a "Delete" link next to each album on our list page, and the naive approach would be to do a delete when it's clicked. This would be wrong. Remembering our HTTP spec, we recall that you shouldn't do an irreversible action using GET and should use POST instead.

We shall show a confirmation form when the user clicks delete, and if they then click "yes", we will do the deletion. As the form is trivial, we'll code it directly into our view (zend-form is, after all, optional!).

Let's start with the action code in `AlbumController::deleteAction()` :

```
public function deleteAction()
{
    $id = (int) $this->params()->fromRoute('id', 0);
    if (!$id) {
        return $this->redirect()->toRoute('album');
    }

    $request = $this->getRequest();
    if ($request->isPost()) {
        $del = $request->getPost('del', 'No');

        if ($del == 'Yes') {
            $id = (int) $request->getPost('id');
            $this->table->deleteAlbum($id);
        }


        return $this->redirect()->toRoute('album');
    }

    return [
        'id'    => $id,
        'album' => $this->table->getAlbum($id),
    ];
}
```

As before, we get the `id` from the matched route, and check the request object's `isPost()` to determine whether to show the confirmation page or to delete the album. We use the table object to delete the row using the `deleteAlbum()` method and then redirect back the list of albums. If the request is not a POST, then we retrieve the correct database record and assign to the view, along with the `id`.

The view script is a simple form:

```
 <?php



$title = 'Delete album';
$url   = $this->url('album', ['action' => 'delete', 'id' => $id]);

$this->headTitle($title);
?>
<h1><?= $this->escapeHtml($title) ?></h1>

<p>
    Are you sure that you want to delete
    "<?= $this->escapeHtml($album->title) ?>" by
    "<?= $this->escapeHtml($album->artist) ?>"?
</p>

<form action="<?= $url ?>" method="post">
<div class="form-group">
    <input type="hidden" name="id" value="<?= (int) $album->id ?>" />
    <input type="submit" class="btn btn-danger" name="del" value="Yes"
/>
    <input type="submit" class="btn btn-success" name="del" value="No"
/>
</div>
</form>
```

In this script, we display a confirmation message to the user and then a form with "Yes" and "No" buttons. In the action, we checked specifically for the "Yes" value when doing the deletion.

Ensuring that the home page displays the list of albums

One final point. At the moment, the home page, `http://zf-tutorial.localhost/` doesn't display the list of albums.

This is due to a route set up in the `Application` module's `module.config.php` . To change it, open `module/Application/config/module.config.php` and find the home route:

```
'home' => [
    'type' => \Zend\Router\Http\Literal::class,
    'options' => [
        'route'    => '/',
        'defaults' => [
            'controller' => Controller\IndexController::class,
            'action'     => 'index',
        ],
    ],
],
```

Import `Album\Controller\AlbumController` at the top of the file:

```
use Album\Controller\AlbumController;
```

and change the `controller` from `Controller\IndexController::class` to `AlbumController::class` :

```
'home' => [
    'type' => \Zend\Router\Http\Literal::class,
    'options' => [
        'route'    => '/',
        'defaults' => [
            'controller' => AlbumController::class,
            'action'     => 'index',
        ],
    ],
],
```

That's it — you now have a fully working application!