Flow Form Framework Documentation

Release 5.0

The Neos Team

Aug 29, 2017

Contents

This documentation covering version 5.0 has been rendered at: Aug 29, 2017

Part I

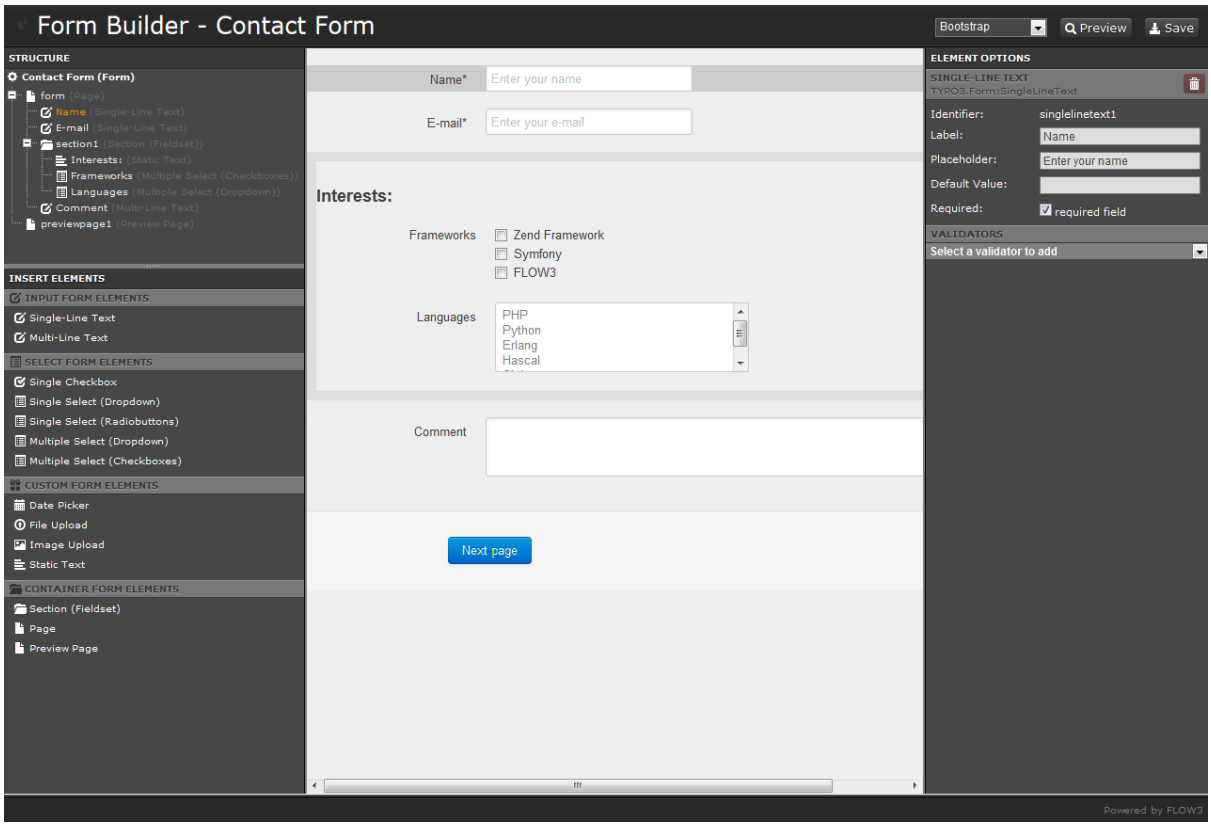
Forms

The Form API is an extensible and flexible framework to **build web forms**.

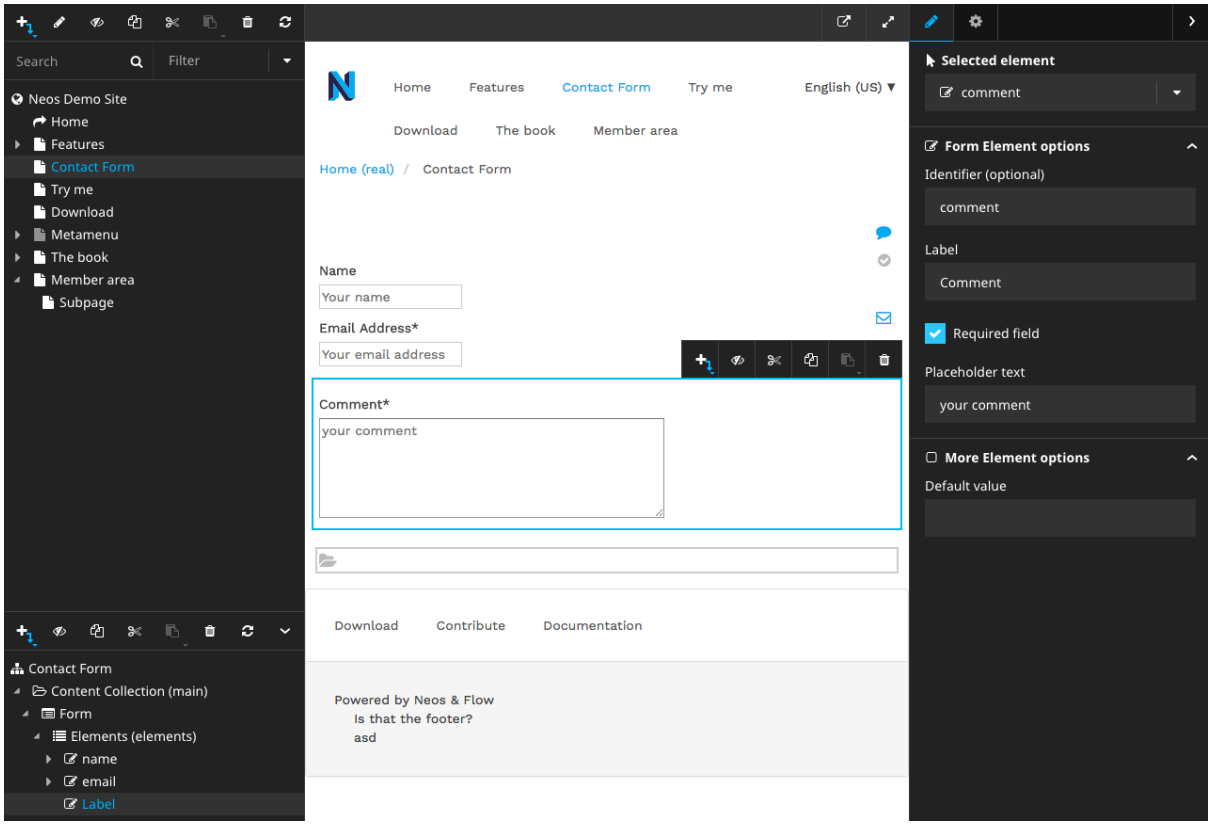
It includes the following features:

- Ready-to-use standard form elements
- Creation of **Multi-Step Forms**
- Server- and Client-Side **Validation**
- highly **flexible rendering** of form elements, based on Fluid or any custom renderer
- **Extensible** with new form elements
- robust, **object oriented API**
- Integration into **Neos Flow** and **Neos CMS**

Also, there are some useful Related Packages that make use of the extension points and provide useful additions. For example there is the original Form YAML Builder that is a Flow based web application for graphically assembling and modifying forms:



Since version 5 there's also a Neos Form Builder that adds these features and more to the Neos CMS Backend:


Search
Filter
Neos Demo Site
Home
Features
Contact Form
Try me
Download
Metamenu
The book
Member area
Subpage
Contact Form
Content Collection (main)
Form
Elements (elements)
name
email
Label
Home
Features
Contact Form
Try me
English (US)
Download
The book
Member area
Home (real) / Contact Form
Name
Your name
Email Address*
Your email address
Comment*
your comment
Download
Contribute
Documentation
Powered by Neos & Flow
Is that the footer?
asd
Selected element
comment
Form Element options
Identifier (optional)
comment
Label
Comment
Required field
Placeholder text
your comment
More Element options
Default value

Part II

About This Documentation

This documentation contains a number of tutorial-style guides which will explain various aspects of the Form API and the Form Framework. It is not intended as in-depth reference, although there will be links to the in-depth API reference at various points.

CHAPTER 1

Quickstart

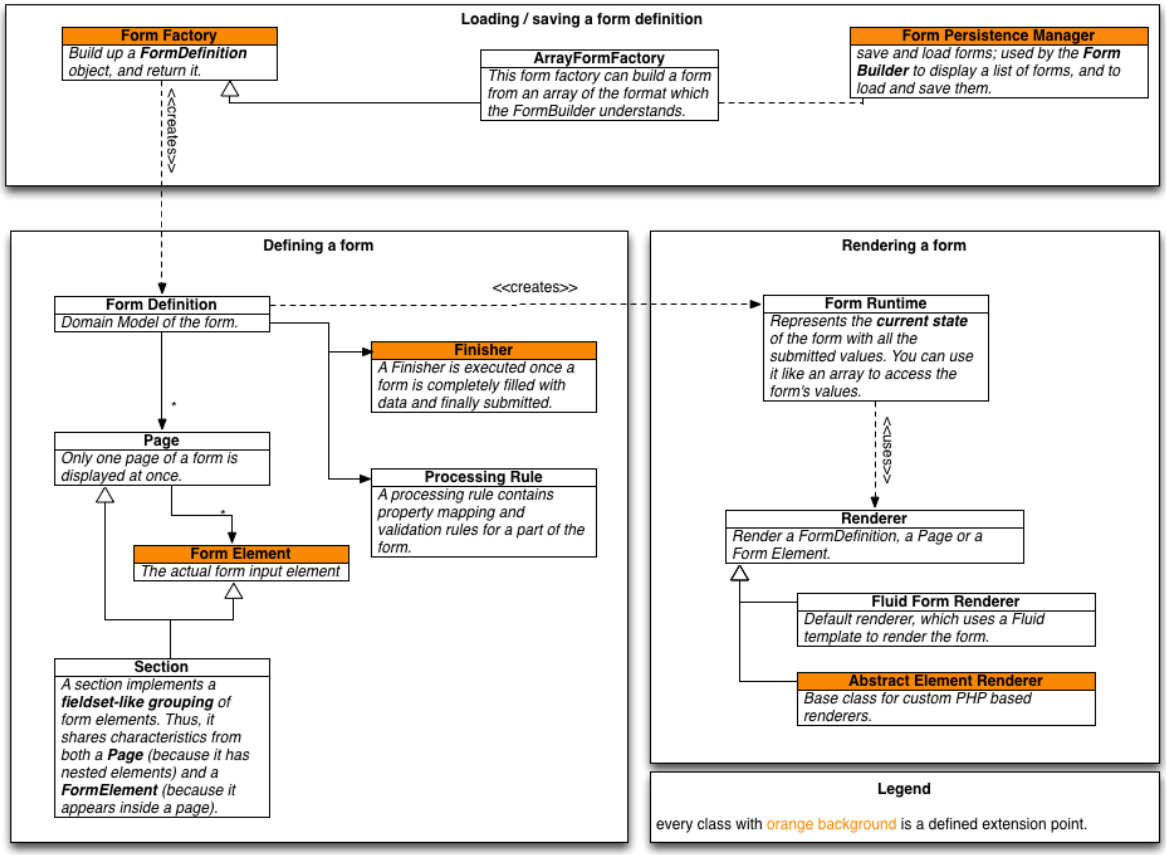
After working through this guide, you will have learned:

- the structure of a form
- creating a form using the API
- rendering a form
- adding validation rules
- invoking actions after the form is finished

API Overview

The image below shows the high-level API overview of the this package.

First, we will dive into the API part *defining a form*, and then go over to *rendering a form*. In later chapters, we will also show how loading / saving a form definition works.



Anatomy of a Form

A form is described by the so-called FormDefinition, which is a container object for the form that consists of one or more `Pages` in which the actual `FormElements` are located.

As an example, let's take a basic contact form with the following structure:

- **Contact Form** ***(Form)***
  - **Page 01** ***(Page)***
    - Name *(Single-line Text)*
    - Email *(Single-line Text)*
    - Message *(Multi-line Text)*

Our form just has a single page that contains three input fields: Name, Email and Message.

Note: Every form needs to have at least one page.

Further Information

In-depth information about the form structure can be found in the FormDefinition API Documentation.

Create your first form

Now, let's try to create the basic contact form from above. For this we need to implement a so-called FormFactory, which is responsible for creating the form.

> **Note:** The package comes with a ready-to-use factory for building forms based on YAML files describing the forms. See *Configuring form rendering with YAML* for details.

If you want to build a form with PHP, the skeleton for building a form looks as follows:

```
namespace Your\Package;

use Neos\Flow\Annotations as Flow;
use Neos\Form\Core\Model\FormDefinition;

class QuickstartFactory extends \Neos\Form\Factory\AbstractFormFactory {

        /**
         * @param array $factorySpecificConfiguration
         * @param string $presetName
         * @return \Neos\Form\Core\Model\FormDefinition
         */
        public function build(array $factorySpecificConfiguration, $presetName) {
                $formConfiguration = $this->getPresetConfiguration($presetName);
                $form = new FormDefinition('yourFormIdentifier',
↪$formConfiguration);
                // Now, build your form here
                return $form;
        }
}
```

As you can see there is the `build()` method that you have to implement; and this method needs to return the FormDefinition.

Lets add the one page and input fields for *name*, *email* and *message* of our contact form:

```
public function build(array $factorySpecificConfiguration, $presetName) {
        $formConfiguration = $this->getPresetConfiguration($presetName);
        $form = new FormDefinition('contactForm', $formConfiguration);

        $page1 = $form->createPage('page1');

        $name = $page1->createElement('name', 'Neos.Form:SingleLineText');
        $name->setLabel('Name');

        $email = $page1->createElement('email', 'Neos.Form:SingleLineText');
        $email->setLabel('Email');

        $comments = $page1->createElement('message', 'Neos.Form:MultiLineText');
        $comments->setLabel('Message');

        return $form;
}
```

You see that we used the API method `createPage($identifier)`, which creates a new page inside the form object and returns it for further use. Then, we used `createElement($identifier, $type)` to create the form elements and set some options on them.

The `$identifier` is used to identify a form element, thus it needs to be unique across the whole form. `$type` references an **Element Type**.

Note: By default the `$identifier` is part of the *id* attribute of the rendered Form Element so it should be lowerCamelCased and must not contain special characters.

Tip: As you will learn in the next guide, you can define your own **Element Types** easily. The element types referenced above (`Neos.Form:SingleLineText` and `Neos.Form:MultiLineText`) are just element types which are delivered by default by the framework.

Render a form

Now that we have created the first FormDefinition how can we display the actual form? That is really easy with the provided form:render ViewHelper:

```
{namespace form=Neos\Form\ViewHelpers}
<form:render factoryClass="Your\Package\YourFactory" />
```

If you put that snippet in your Fluid template and replace *YourPackage* with your package namespace and *YourFactory* with the class name of the previously generated form factory, you should see a form consisting of the three text fields and a submit button.

But as you can see, none of the fields are required and the email address is not verified. So let's add some basic validation rules:

Validation

Every FormElement implements the FormElementInterface which provides a convenient way to work with Neos Flow validators:

```
$name->addValidator(new \Neos\Flow\Validation\Validator\NotEmptyValidator());

$email->addValidator(new \Neos\Flow\Validation\Validator\NotEmptyValidator());
$email->addValidator(new \Neos\Flow\Validation\Validator\EmailAddressValidator());

$comments->addValidator(new \Neos\Flow\Validation\Validator\NotEmptyValidator());
$comments->addValidator(new␣
↪\Neos\Flow\Validation\Validator\StringLengthValidator(array('minimum' => 3)));
```

With the `addValidator($validator)` method you can attach one or more validators to a form element. If you save the changes and reload the page where you embedded the form, you can see that all text fields are required now, that the email address is syntactically verified and that you need to write a message of at least 3 characters. If you try to submit the form with invalid data, validation errors are displayed next to each erroneous field.

If you do enter name, a valid email address and a message you can submit the form - and see a blank page. That's where so called **Finishers** come into play.

Finishers

A Finisher is a piece of PHP code that is executed as soon as a form has been successfully submitted (if the last page has been sent and no validation errors occurred).

You can attach multiple finishers to a form.

For this example we might want to send the data to an email address, and we can use the EmailFinisher for that:

```
$emailFinisher = new \Neos\Form\Finishers\EmailFinisher();
$emailFinisher->setOptions(array(
        'templatePathAndFilename' => 'resource://Your.Package/Private/Templates/
↪ContactForm/NotificationEmail.txt',
        'recipientAddress' => 'your@example.com',
        'senderAddress' => 'mailer@example.com',
        'replyToAddress' => '{email}',
        'carbonCopyAddress' => 'copy@example.com',
        'blindCarbonCopyAddress' => 'blindcopy@example.com',
        'subject' => 'Contact Request',
        'format' => \Neos\Form\Finishers\EmailFinisher::FORMAT_PLAINTEXT
));
$form->addFinisher($emailFinisher);
```

And afterwards we want to redirect the user to some confirmation action, thus we add the RedirectFinisher:

```
$redirectFinisher = new \Neos\Form\Finishers\RedirectFinisher();
$redirectFinisher->setOptions(
        array('action' => 'confirmation')
);
$form->addFinisher($redirectFinisher);
```

Summary

That's it for the quickstart. The complete code of your form factory should look something like this now:

```
namespace Your\Package;

use Neos\Flow\Annotations as Flow;
use Neos\Form\Core\Model\FormDefinition;

/**
 * Flow\Scope("singleton")
 */
class QuickstartFactory extends \Neos\Form\Factory\AbstractFormFactory {

        /**
         * @param array $factorySpecificConfiguration
         * @param string $presetName
         * @return \Neos\Form\Core\Model\FormDefinition
         */
        public function build(array $factorySpecificConfiguration, $presetName) {
                $formConfiguration = $this->getPresetConfiguration($presetName);
                $form = new FormDefinition('contactForm', $formConfiguration);

                $page1 = $form->createPage('page1');

                $name = $page1->createElement('name', 'Neos.Form:SingleLineText');
                $name->setLabel('Name');
                $name->addValidator(new␣
↪\Neos\Flow\Validation\Validator\NotEmptyValidator());

                $email = $page1->createElement('email', 'Neos.Form:SingleLineText
↪');
                $email->setLabel('Email');
                $email->addValidator(new␣
↪\Neos\Flow\Validation\Validator\NotEmptyValidator());
                $email->addValidator(new␣
↪\Neos\Flow\Validation\Validator\EmailAddressValidator());
```

```
                $comments = $page1->createElement('message', 'Neos.
↪Form:MultiLineText');
                $comments->setLabel('Message');
                $comments->addValidator(new␣
↪\Neos\Flow\Validation\Validator\NotEmptyValidator());
                $comments->addValidator(new␣
↪\Neos\Flow\Validation\Validator\StringLengthValidator(array('minimum' => 3)));

                $emailFinisher = new \Neos\Form\Finishers\EmailFinisher();
                $emailFinisher->setOptions(array(
                        'templatePathAndFilename' => 'resource://Your.Package/
↪Private/Templates/ContactForm/NotificationEmail.txt',
                        'recipientAddress' => 'your@example.com',
                        'senderAddress' => 'mailer@example.com',
                        'replyToAddress' => '{email}',
                        'carbonCopyAddress' => 'copy@example.com',
                        'blindCarbonCopyAddress' => 'blindcopy@example.com',
                        'subject' => 'Contact Request',
                        'format' => \Neos\Form\Finishers\EmailFinisher::FORMAT_
↪PLAINTEXT
                ));
                $form->addFinisher($emailFinisher);

                $redirectFinisher = new \Neos\Form\Finishers\RedirectFinisher();
                $redirectFinisher->setOptions(
                        array('action' => 'confirmation')
                );
                $form->addFinisher($redirectFinisher);

                return $form;
        }
}
```

Next Steps

Now, you know how to build forms using the API. In the next tutorial, you will learn how to adjust the form output and create new form elements – all without programming!

Continue with: *Adjusting Form Output*

CHAPTER 2

Configuring form rendering with YAML

Setup

To render a form based on a YAML configuration file, simply use the Neos.Form `render` ViewHelper. It uses the `Neos\Form\Factory\ArrayFormFactory` by default, which needs to know where the form configuration is stored. This is done in `Settings.yaml`:

```
Neos:
  Form:
    yamlPersistenceManager:
      savePath: 'resource://AcmeCom.SomePackage/Private/Form/'
```

From now on, every YAML file stored there can be loaded by using the filename as the persistence identifier given to the `render` ViewHelper. So if you have a file named `contact.yaml`, it can be rendered with:

```
<form:render persistenceIdentifier="contact"/>
```

Form configuration

Generally speaking, the configuration is a nested structure that contains the keys `type`, `identifier` and `renderables` and further options (e.g. `label`) depending on the type of the current level.

The element types referenced below (`Neos.Form:SingleLineText` and `Neos.Form:MultiLineText`) are just element types which are delivered by default by the framework. All available types can be found in the settings of the Neos.Form package under `Neos.Form.presets.default.formElementTypes`.

On the top level, the `finishers` can be configured as an array of `identifier` and `options` keys. The available options depend on the finisher being used.

Let us examine the configuration for a basic contact form with the following structure:

- **Contact Form** ***(Form)***
  - **Page 01** ***(Page)***
    - Name *(Single-line Text)*
    - Email *(Single-line Text)*

* Message *(Multi-line Text)*

The following YAML is stored as `contact.yaml`:

```
type: 'Neos.Form:Form'
identifier: 'contact'
label: 'Contact form'
renderables:
  -
    type: 'Neos.Form:Page'
    identifier: 'page-one'
    renderables:
      -
        type: 'Neos.Form:SingleLineText'
        identifier: name
        label: 'Name'
        validators:
          - identifier: 'Neos.Flow:NotEmpty'
      -
        type: 'Neos.Form:SingleLineText'
        identifier: email
        label: 'Email'
        validators:
          - identifier: 'Neos.Flow:NotEmpty'
          - identifier: 'Neos.Flow:EmailAddress'
      -
        type: 'Neos.Form:MultiLineText'
        identifier: message
        label: 'Message'
        validators:
          - identifier: 'Neos.Flow:NotEmpty'
finishers:
  -
    identifier: 'Neos.Form:Email'
    options:
      templatePathAndFilename: resource://AcmeCom.SomePackage/Private/Templates/
↪Form/Contact.txt
      subject: '{subject}'
      recipientAddress: 'info@acme.com'
      recipientName: 'Acme Customer Care'
      senderAddress: '{email}'
      senderName: '{name}'
      format: plaintext
```

Note: Instead of setting the `templatePathAndFilename` option to specify the Fluid template file for the EmailFinisher, the template source can also be set directly via the `templateSource` option.

File Uploads

The `default` preset comes with an `FileUpload` form element that allows the user of the form to upload arbitrary files. The `EmailFinisher` allows these files to be sent as attachments:

```
type: 'Neos.Form:Form'
identifier: 'application'
label: 'Example application form'
renderables:
  -
    type: 'Neos.Form:Page'
    identifier: 'page-one'
```

```
    renderables:
      -
        type: 'Neos.Form:SingleLineText'
        identifier: email
        label: 'Email'
        validators:
          - identifier: 'Neos.Flow:NotEmpty'
          - identifier: 'Neos.Flow:EmailAddress'
      -
        type: 'Neos.Form:FileUpload'
        identifier: applicationform
        label: 'Application Form (PDF)'
        properties:
          allowedExtensions:
            - pdf
        validators:
          - identifier: 'Neos.Flow:NotEmpty'
finishers:
  -
    # Application email that is sent to "customer care" with all uploaded files␣
↪attached
    identifier: 'Neos.Form:Email'
    options:
      templatePathAndFilename: 'resource://AcmeCom.SomePackage/Private/Form/
↪EmailTemplates/Application.html'
      subject: 'New Application'
      recipientAddress: 'application@acme.com'
      senderAddress: '{email}'
      format: html
      attachAllPersistentResources: true
  -
    # Confirmation email that is sent to the user with a static file attachment
    identifier: 'Neos.Form:Email'
    options:
      templatePathAndFilename: 'resource://AcmeCom.SomePackage/Private/Form/
↪EmailTemplates/Confirmation.html'
      subject: 'Your Application'
      recipientAddress: '{email}'
      senderAddress: 'application@acme.com'
      format: html
      attachments:
        - resource: 'resource://AcmeCom.SomePackage/Private/Form/EmailTemplates/
↪Attachments/TermsAndConditions.pdf'
```

Note: attachments can also referenced via *formElement* paths explicitly, for example: `- formElement: 'image-field.resource'`

CHAPTER 3

Adjusting Form Output

After working through this guide, you will have learned:

- how to adjust the form output
- how to create custom Form Presets
- how to create custom form elements

Generally, this guide answers the question: **How can form output be modified without programming?**

Presets Explained

In the *Quickstart* guide, you have seen how a basic form can be built. We will now dissect the form element creation a little more, and explain the lines which you might not have understood yet.

Let's have a look at the boilerplate code inside the form factory again:

```
public function build(array $factorySpecificConfiguration, $presetName) {
        $formConfiguration = $this->getPresetConfiguration($presetName);
        $form = new FormDefinition('contactForm', $formConfiguration);
        // ...
}
```

You see that the second parameter is a `$presetName` which is passed to `getPresetConfiguration()`. So, let's introduce the concept of *presets* now.

A **Preset** is a container for pre-defined form configuration, and is the basic way to adjust the form's output. Presets are defined inside the `Settings.yaml` file, like in the following example:

```
Neos:
  Form:
    presets:
      preset1:
        title: 'My First Preset'
        formElementTypes:
          'Neos.Form:SingleLineTextfield':
            # configuration for the single line textfield
      preset2:
        title: 'My Second Preset'
```

```
        parentPreset: 'preset1'
        # because preset2 *inherits* from preset1, only the changes between
        # preset1 and preset2 need to be defined here.
```

The above example defines two presets (`preset1` and `preset2`). Because `preset2` defines a `parentPreset`, it **inherits** all options from `preset1` if not specified otherwise.

Tip: The Neos.Form package already defines a preset with the name `default` which contains all standard form elements. Look into `Neos.Form/Configuration/Settings.yaml` for the details on the defined form elements.

In most cases, you will create a sub-preset of the `default` preset, modifying only the parts you need.

The method `getPresetConfiguration($presetName)` in AbstractFormFactory evaluates the preset inheritance hierarchy and returns a merged array of the preset configuration.

Form Element Types Explained

Now that we have seen that presets can inherit from each other, let's look *inside* the preset configuration. One particularily important part of each preset configuration is the *form element type* definition, which configures each form element correctly.

As an example, let's create a text field with the following snippet:

```
$name = $page1->createElement('name', 'Neos.Form:SingleLineText');
$name->setLabel('Name');
```

In the above example, the form element type is `Neos.Form:SingleLineText`, and when creating the form element, it *applies all default values* being set inside the form element type. As an example, take the following type definition:

```
'Neos.Form:SingleLineText':
  defaultValue: 'My Default Text'
  properties:
    placeholder: 'My Placeholder Text'
```

That's exactly the same as if one wrote the following PHP code:

```
$name->setDefaultValue('My Default Text');
$name->setProperty('placeholder', 'My Placeholder Text');
```

So `$page->createElement($identifier, $formElementType)` is essentially a very specialized *factory method*, which automatically applies the default values from the *form element definition* on the newly created form object before returning it.

Tip: The defaults are not only applied on single form elements, but also on the FormDefinition and Page objects. The FormDefinition object has, by convention, the *form element type* `Neos.Form:Form`, but you can also override it by passing the to-be-used type as third parameter to the constructor of FormDefinition.

A *page* has, by default, the *form element type* `Neos.Form:Page`, and you can override it by supplying a second parameter to the `createPage()` method of FormDefinition.

Supertypes

Now, there's one more secret ingredient which makes the form framework powerful: Every form element type can have one or multiple **supertypes**; and this allows to only specify the differences between the "parent" form element and the newly created one, effectively creating an inheritance hierarchy of form elements.

The following example demonstrates this:

```
'Neos.Form:SingleLineText':
  defaultValue: 'My Default Text'
  properties:
    placeholder: 'My Placeholder Text'
'Neos.Form:SpecialText':
  superTypes:
    'Neos.Form:SingleLineText' : TRUE
  defaultValue: 'My special text'
```

Here, the `SpecialText` inherits the `placeholder` property from the `SingleLineText` and only overrides the default value.

Together, presets (with parent presets) and form element types (with supertypes) form a very flexible foundation to customize the rendering in any imaginable way, as we will explore in the remainder of this guide.

Note: If multiple super types are specified, they are evaluated from *left to right*, i.e. later super types override previous definitions.

Previously the superTypes configuration was just a simple list of strings:

```
'Neos.Form:SpecialText':
  superTypes:
    'Neos.Form:SingleLineText': TRUE
  defaultValue: 'My special text'
```

But this made it impossible to *unset* a super type from a 3rd party package. The old syntax is still supported but is deprecated and might be removed in future versions.

Creating a Custom Preset

First, we create a sub-preset inheriting from the `default` preset. For that, open up `Your.Package/Configuration/Settings.yaml` and insert the following contents:

```
Neos:
  Form:
    presets:
      myCustom:
        title: 'Custom Elements'
        parentPreset: 'default'
```

You now created a sub preset named `myCustom` which behaves exactly the same as the default preset. If you now specify the preset name inside the `<form:render>` ViewHelper you will not see any differences yet:

```
<form:render factoryClass="..." presetName="myCustom" />
```

Now we are set up to modify the custom preset, and can adjust the form output.

Adjusting a Form Element Template

The templates of the default Form Elements are located in `Neos.Form/Resources/Private/Form/`. They are standard Fluid templates and most of them are really simple. Open up the `Single-Line Text` template for example:

```
<f:layout name="Neos.Form:Field" />
<f:section name="field">
   <f:form.textfield property="{element.identifier}" id="{element.uniqueIdentifier}
↪"
                     placeholder="{element.properties.placeholder}" errorClass=
↪"error" />
</f:section>
```

As you can see, the Form Element templates use layouts in order to reduce duplicated markup.

Tip: The Fluid Form Renderer expects layout and partial names in the format `<PackageKey>:<Name>`. That makes it possible to reference layouts and partials from other packages!

We'll see how to change the layout in the next section. For now let's try to simply change the `class` attribute of the *SingleLineText* element.

For that, copy the default template to `Your.Package/Private/Resources/CustomElements/SingleLineText.html` and adjust it as follows:

```
<f:layout name="Neos.Form:Field" />
<f:section name="field">
   <f:form.textfield property="{element.identifier}" id="{element.uniqueIdentifier}
↪"
                     placeholder="{element.properties.placeholder}" errorClass=
↪"error"
                  class="customClass" />
</f:section>
```

Now, you only need to tell the framework to use your newly created template instead of the default one. This can be archieved by overriding the rendering option `templatePathPattern` in the *form element type definition*.

Adjust `Your.Package/Configuration/Settings.yaml` accordingly:

```
Neos:
  Form:
    presets:
      myCustom:
        title: 'Custom Elements'
        parentPreset: 'default'
        formElementTypes:
          'Neos.Form:SingleLineText':
            renderingOptions:
              templatePathPattern: 'resource://Your.Package/Private/CustomElements/
↪SingleLineText.html'
```

Now, all `Single-Line Text` elements will have a class attribute of `customClass` when using the `myCustom` preset.

A more realistic use-case would be to change the arrangement of form elements. Read on to see how you can easily change the layout of a form.

Changing The Form Layout

By default, validation errors are rendered next to each form element. Imagine you want to render validation errors of the current page *above* the form instead. For this you need to adjust the previously mentioned **field layout**.

The provided default field layout located in `Neos.Form/Resources/Private/Form/Layouts/Field.html` is a bit more verbose as it renders the label, validation errors and an asterisk if the element is required (we slightly reformatted the template here to improve readability):

```
{namespace form=Neos\Form\ViewHelpers}
<f:form.validationResults for="{element.identifier}">
   <!-- wrapping div for the form element; contains an identifier for the form␣
↪element if we are
      in preview mode -->
   <div class="clearfix{f:if(condition: validationResults.flattenedErrors, then: '␣
↪error')}"
        <f:if condition="{element.rootForm.renderingOptions.previewMode}">
           data-element="{form:form.formElementRootlinePath(renderable:element)}"
        </f:if>
   >
      <!-- Label for the form element, and required indicator -->
      <label for="{element.uniqueIdentifier}">{element.label -> f:format.nl2br()}
         <f:if condition="{element.required}">
            <f:render partial="Neos.Form:Field/Required" />
         </f:if>
       </label>

      <!-- the actual form element -->
      <div class="input">
         <f:render section="field" />

         <!-- validation errors -->
         <f:if condition="{validationResults.flattenedErrors}">
            <span class="help-inline">
               <f:for each="{validationResults.errors}" as="error">
                  {error -> f:translate(id: error.code, arguments: error.arguments,
                                        package: 'Neos.Form', source:
↪'ValidationErrors')}
                  <br />
               </f:for>
            </span>
         </f:if>
      </div>
   </div>
</f:form.validationResults>
```

Copy the layout file to `Your.Package/Private/Resources/CustomElements/Layouts/Field.html` and remove the validation related lines:

```
{namespace form=Neos\Form\ViewHelpers}
<f:form.validationResults for="{element.identifier}">
   <!-- wrapping div for the form element; contains an identifier for the form␣
↪element if we are
      in preview mode -->
   <div class="clearfix{f:if(condition: validationResults.flattenedErrors, then: '␣
↪error')}"
        <f:if condition="{element.rootForm.renderingOptions.previewMode}">
           data-element="{form:form.formElementRootlinePath(renderable:element)}"
        </f:if>
   >
      <!-- Label for the form element, and required indicator -->
      <label for="{element.uniqueIdentifier}">{element.label -> f:format.nl2br()}
```

```
        <f:if condition="{element.required}">
           <f:render partial="Neos.Form:Field/Required" />
        </f:if>
       </label>

      <!-- the actual form element -->
      <div class="input">
         <f:render section="field" />
      </div>
   </div>
</f:form.validationResults>
```

Additionally you need to adjust the default form template located in `Neos.Form/Resources/Private/Form/Form.html` (remember that a FormDefinition also has a form element type, by default of `Neos.Form:Form`), which looks as follows by default:

```
{namespace form=Neos\Form\ViewHelpers}
<form:form object="{form}" action="index" method="post" id="{form.identifier}"
           enctype="multipart/form-data">
   <form:renderRenderable renderable="{form.currentPage}" />
   <div class="actions">
      <f:render partial="Neos.Form:Form/Navigation" arguments="{form: form}" />
   </div>
</form:form>
```

Copy this template file to `Your.Package/Private/Resources/CustomElements/Form.html` and add the validation result rendering:

```
{namespace form=Neos\Form\ViewHelpers}
<form:form object="{form}" action="index" method="post" id="{form.identifier}"
           enctype="multipart/form-data">
   <f:form.validationResults>
      <f:if condition="{validationResults.flattenedErrors}">
         <ul class="error">
            <f:for each="{validationResults.flattenedErrors}" as="elementErrors"
                   key="elementIdentifier" reverse="true">
               <li>
                  {elementIdentifier}:
                  <ul>
                     <f:for each="{elementErrors}" as="error">
                        <li>{error}</li>
                     </f:for>
                  </ul>
               </li>
            </f:for>
         </ul>
      </f:if>
   </f:form.validationResults>
   <form:renderRenderable renderable="{form.currentPage}" />
   <div class="actions">
      <f:render partial="Neos.Form:Form/Navigation" arguments="{form: form}" />
   </div>
</form:form>
```

Now, you only need to adjust the form definition in order to use the new templates:

```
Neos:
  Form:
    presets:
      ########## CUSTOM PRESETS ##########

      myCustom:
```

```
        title: 'Custom Elements'
        parentPreset: 'default'
        formElementTypes:

          # ...

          ### override template path of Neos.Form:Form ###
          'Neos.Form:Form':
            renderingOptions:
              templatePathPattern: 'resource://Neos.FormExample/Private/
↪CustomElements/Form.html'

          ### override default layout path ###
          'Neos.Form:Base':
            renderingOptions:
              layoutPathPattern: 'resource://Neos.FormExample/Private/
↪CustomElements/Layouts/{@type}.html'
```

Tip: You can use **placeholders** in `templatePathPattern`, `partialPathPattern` and `layoutPathPattern`: `{@package}` will be replaced by the package key and `{@type}` by the current form element type without namespace. A small example shall illustrate this:

If the form element type is `Your.Package:FooBar`, then `{@package}` is replaced by `Your.Package`, and `{@type}` is replaced by `FooBar`. As partials and layouts inside form elements are also specified using the `Package:Type` notation, this replacement also works for partials and layouts.

Creating a New Form Element

With the Form Framework it is really easy to create additional Form Element types. Lets say you want to create a specialized version of the `Neos.Form:SingleSelectRadiobuttons` that already provides two radio buttons for `Female` and `Male`. That's just a matter of a few lines of yaml:

```
Neos:
  Form:
    presets:
      ########### CUSTOM PRESETS ###########

      myCustom:
        title: 'Custom Elements'
        parentPreset: 'default'
        formElementTypes:

          # ...

          'Your.Package:GenderSelect':
            superTypes:
              'Neos.Form:SingleSelectRadiobuttons': TRUE
            renderingOptions:
              templatePathPattern: 'resource://Neos.Form/Private/Form/
↪SingleSelectRadiobuttons.html'
            properties:
              options:
                f: 'Female'
                m: 'Male'
```

As you can see, you can easily extend existing Form Element Definitions by specifying the `superTypes`.

Tip: We have to specify the `templatePathPattern` because according to the default path pattern the template would be expected at `Your.Package/Private/Resources/Form/GenderSelect.html` otherwise.

Note: Form Elements will only be available in the preset they're defined (and in it's sub-presets). Therefore you should consider adding Form Elements in the `default` preset to make them available for all Form Definitions extending the default preset.

CHAPTER 4

Translating Forms

If a form has been set up, all elements will use the labels, placeholders and so forth as configured. To have the form translated depending on the current locale, you need to configure a package to load the translations from and add the translations as XLIFF files.

Configuration

The package to load the translations from is configured in the form preset being used. The simplest way to configure it is this:

```
Neos:
  Form:
    presets:
      default:
        formElementTypes:
          'Neos.Form:Base':
            renderingOptions:
              translationPackage: 'AcmeCom.SomePackage'
```

Of course it can be set in a custom preset in the same way.

The translation of validation error messages uses the Neos.Flow package by default, to avoid having to copy the validation errors message catalog to all packages used for form translation. If you want to adjust those error messages as well, copy `ValidationErrors.xlf` to your package and set the option `validationErrorTranslationPackage` to your package key.

XLIFF files

The XLIFF files follow the usual rules, the `Main` catalog is used. The Form package comes with the following catalog (`Main.xlf`):

```
<?xml version="1.0" encoding="UTF-8"?>
<xliff version="1.2" xmlns="urn:oasis:names:tc:xliff:document:1.2">
    <file original="" product-name="Neos.Form" source-language="en" datatype=
↪"plaintext">
        <body>
```

```
            <trans-unit id="forms.navigation.previousPage" xml:space="preserve">
                <source>Previous page</source>
            </trans-unit>
            <trans-unit id="forms.navigation.nextPage" xml:space="preserve">
                <source>Next page</source>
            </trans-unit>
            <trans-unit id="forms.navigation.submit" xml:space="preserve">
                <source>Submit</source>
            </trans-unit>
        </body>
    </file>
</xliff>
```

It should be copied to make sure the three expected units are available and can then be amended by your own units.

For most reliable translations, the units should be given id properties based on the form configuration. The schema is as follows:

forms.navigation.nextPage In multi-page forms this is used for the navigation.

forms.navigation.previousPage In multi-page forms this is used for the navigation.

forms.navigation.submitButton In forms this is used for the submit button.

Forms and sections can have their labels translated using this, where where `{identifier}` is the identifier of the page or section itself:

forms.pages.{identifier}.label The label used for a form page.

forms.sections.{identifier}.label The label used for a form section.

The actual elements of a form have their id constructed by appending one of the following to `forms.elements.{identifier}.`, where `{identifier}` is the identifier of the form element itself:

label The label for an element.

placeholder The placeholder for an element, if applicable.

description dkjsadhsajk

text The text of a `StaticText` element.

confirmationLabel Used in the `PasswordWithConfirmation` element.

passwordDescription Used in the `PasswordWithConfirmation` element.

The labels of radio buttons and select field options can be translated using the following schema, where `{identifier}` is the identifier of the form element itself and `value` is the value assigned to the option:

forms.elements.{identifier}.options.{value} Used to translate labels of radio buttons and select field entries.

Complete example

This is the example form used elsewhere in this documentation:

- **Contact Form** ***(Form)***
  - **Page 01** ***(Page)***
    - Name *(Single-line Text)*
    - Email *(Single-line Text)*
    - Message *(Multi-line Text)*

Assume it is configured like this using YAML:

```yaml
type: 'Neos.Form:Form'
identifier: 'contact'
label: 'Contact form'
renderables:
  -
    type: 'Neos.Form:Page'
    identifier: 'page-one'
    renderables:
      -
        type: 'Neos.Form:SingleLineText'
        identifier: name
        label: 'Name'
        validators:
          - identifier: 'Neos.Flow:NotEmpty'
        properties:
          placeholder: 'Please enter your full name'
      -
        type: 'Neos.Form:SingleLineText'
        identifier: email
        label: 'Email'
        validators:
          - identifier: 'Neos.Flow:NotEmpty'
          - identifier: 'Neos.Flow:EmailAddress'
        properties:
          placeholder: 'Enter a valid email address'
      -
        type: 'Neos.Form:MultiLineText'
        identifier: message
        label: 'Message'
        validators:
          - identifier: 'Neos.Flow:NotEmpty'
        properties:
          placeholder: 'Enter your message here'
```

Note: You may leave out `label` and `placeholder` if you use id-based matching for the translation. Be aware though, that you will get empty labels and placeholders in case the translation fails or is not available.

The following XLIFF would allow to translate the form:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xliff version="1.2" xmlns="urn:oasis:names:tc:xliff:document:1.2">
    <file original="" product-name="Neos.Form" source-language="en" datatype=
↪"plaintext">
        <body>
            <trans-unit id="forms.navigation.previousPage" xml:space="preserve">
                <source>Previous page</source>
            </trans-unit>
            <trans-unit id="forms.navigation.nextPage" xml:space="preserve">
                <source>Next page</source>
            </trans-unit>
            <trans-unit id="forms.navigation.submit" xml:space="preserve">
                <source>Submit</source>
            </trans-unit>

            <trans-unit id="forms.pages.page-one" xml:space="preserve">
                <source>Submit</source>
            </trans-unit>

            <trans-unit id="forms.elements.name.label" xml:space="preserve">
                <source>Name</source>
            </trans-unit>
```

```
            <trans-unit id="forms.elements.name.placeholder" xml:space="preserve">
                <source>Please enter your full name</source>
            </trans-unit>

            <trans-unit id="forms.elements.email.label" xml:space="preserve">
                <source>Email</source>
            </trans-unit>
            <trans-unit id="forms.elements.email.placeholder" xml:space="preserve">
                <source>Enter a valid email address</source>
            </trans-unit>

            <trans-unit id="forms.elements.message.label" xml:space="preserve">
                <source>Message</source>
            </trans-unit>
            <trans-unit id="forms.elements.message.placeholder" xml:space="preserve
↪">
                <source>Enter your message here</source>
            </trans-unit>
        </body>
    </file>
</xliff>
```

Copy it to your target language and add the `target-language` attribute as well as the needed `<target>...</target>` entries.

CHAPTER 5

Extending Form API

After working through this guide, you will have learned:

- how to create custom PHP based Form Element implementations
- how to create a custom Form Element renderer

Generally, this guide answers the question: **How can the form output be modified with programming?**

Custom PHP-based Form Elements

In the previous guides you have learned how to create custom Form Elements without writing a single line of PHP. While this is sufficient for most cases where you mainly want to change the visual representation or create a *specialized* version of an already existing element, there are situations where you want to adjust the *Server-side* behavior of an element. This is where you want to get your hands dirty and create custom Form Element implementations. Examples for such custom Form Elements are:

- A *DatePicker* that converts the input to a `DateTime` object
- A *File upload* that validates and converts an uploaded file to a `PersistentResource`
- A *Captcha* image

A Form Element must implement the `FormElementInterface` interface located in `Neos.Form/Classes/Core/Model/FormElementInterface.php`.

Tip: Usually you want to extend the provided `AbstractFormElement` which already implements most of the methods of the interface.

Most commonly you create custom Form elements in order to preconfigure the so called `Processing Rule` which defines validation and property mapping instructions for an element. Lets have a look at the `DatePicker` Form Element located in `Neos.Form/Classes/FormElements/DatePicker.php`:

```
class DatePicker extends \Neos\Form\Core\Model\AbstractFormElement {
   public function initializeFormElement() {
      $this->setDataType('DateTime');
   }
}
```

The method `initializeFormElement()` is called whenever a Form Element is **added to a form**. In this example, we only set the target data type to a DateTime object. This way, property mapping and type conversion using the registered TypeConverters is automatically triggered.

Besides being able to modify the Form Element configuration during *initialization* you can also implement the callbacks `beforeRendering()` or/and `onSubmit()` in order to adjust the behavior or representation of the element at *runtime*. Lets create a new Form Element that is required only if another form field has been specified (for example a "subscribe to newsletter" checkbox that requires you to provide an email address if checked). For this create a new PHP class at `Your.Package/Classes/FormElements/ConditionalRequired.php`:

```
namespace Your\Package\FormElements;

class ConditionalRequired extends \Neos\Form\Core\Model\AbstractFormElement {

   /**
    * Executed before the current element is outputted to the client
    *
    * @param \Neos\Form\Core\Runtime\FormRuntime $formRuntime
    * @return void
    */
   public function beforeRendering(\Neos\Form\Core\Runtime\FormRuntime
↪$formRuntime) {
      $this->requireIfTriggerIsSet($formRuntime->getFormState());
   }

   /**
    * Executed after the page containing the current element has been submitted
    *
    * @param \Neos\Form\Core\Runtime\FormRuntime $formRuntime
    * @param mixed $elementValue raw value of the submitted element
    * @return void
    */
   public function onSubmit(\Neos\Form\Core\Runtime\FormRuntime $formRuntime, &
↪$elementValue) {
      $this->requireIfTriggerIsSet($formRuntime->getFormState());
   }

   /**
    * Adds a NotEmptyValidator to the current element if the "trigger" value is␣
↪not empty.
    * The trigger can be configured with $this->properties['triggerPropertyPath']
    *
    * @param \Neos\Form\Core\Runtime\FormState $formState
    * @return void
    */
   protected function requireIfTriggerIsSet(\Neos\Form\Core\Runtime\FormState
↪$formState) {
      if (!isset($this->properties['triggerPropertyPath'])) {
         return;
      }
      $triggerValue = $formState->getFormValue($this->properties[
↪'triggerPropertyPath']);
      if ($triggerValue === NULL || $triggerValue === '') {
         return;
      }
      $this->addValidator(new \Neos\Flow\Validation\Validator\NotEmptyValidator());
   }
}
```

`beforeRendering()` is invoked just before a Form Element is actually outputted to the client. It receives a reference to the current `FormRuntime` making it possible to access previously submitted values.

`onSubmit()` is called whenever the page containing the current Form Element is submitted. to the server. In addition to the `FormRuntime` this callback also gets passed a reference to the raw value of the submitted element value before property mapping and validation rules were applied.

In order to use the new Form Element type you first have to extend the Form Definition and specify the `implementationClassName` option:

```
Neos:
  Form:
    presets:
      somePreset:
        # ...
        formElementTypes:
          'Neos.FormExample:ConditionalRequired':
            superTypes:
              'Neos.Form:FormElement': TRUE
            implementationClassName:
↪'Neos\FormExample\FormElements\ConditionalRequired'
            renderingOptions:
              templatePathPattern: 'resource://Neos.Form/Private/Form/
↪SingleLineText.html'
```

This makes the new Form Element `Neos.FormExample:ConditionalRequired` available in the preset `somePreset` and you can use it as follows:

```
$form = new FormDefinition('myForm', $formDefaults);

$page1 = $form->createPage('page1');

$newsletter = $page1->createElement('newsletter', 'Neos.Form:Checkbox');
$newsletter->setLabel('Subscribe for Newsletter');

$email = $page1->createElement('email', 'Neos.FormExample:ConditionalRequired');
$email->setLabel('E-Mail');
$email->setProperty('triggerPropertyPath', 'newsletter');
```

The line `$email->setProperty('triggerPropertyPath', 'newsletter');` makes the `email` Form Element required depending on the value of the `newsletter` element.

This example is really simple but it demonstrates how you can profoundly interact with the Form handling at every level.

Custom Form Element Renderers

By default a form and all its elements are rendered with the `FluidFormRenderer` which is a specialized version of the `Fluid TemplateView`. For each renderable Form Element there exists an corresponding Fluid template. The template path can be changed for all or specific Form Elements as well as layout and partial paths, so the default renderer is flexible enough to cover most scenarios. However if you want to use your own templating engine or don't want to render HTML forms at all (think of Flash or CLI based forms) you can implement your own Renderer and use it either for the complete form or for certain Form Elements.

As a basic example we want to implement a `ListRenderer` that simply outputs specified items as unordered list. A Form Element Renderer must implement the `RendererInterface` interface located in `Neos.Form/Classes/Core/Renderer/RendererInterface.php` and usually you want to extend the provided `AbstractRenderer` which already implements most of the methods of the interface:

```
namespace Your\Package\Renderers;

class ListRenderer extends \Neos\Form\Core\Renderer\AbstractElementRenderer {

   /**
```

```
    * @param \Neos\Form\Core\Model\Renderable\RootRenderableInterface $renderable
    * @return string
    */
   public function␣
↪renderRenderable(\Neos\Form\Core\Model\Renderable\RootRenderableInterface
↪$renderable) {
      $renderable->beforeRendering($this->formRuntime);
      $items = array();
      if ($renderable instanceof \Neos\Form\Core\Model\FormElementInterface) {
         $elementProperties = $renderable->getProperties();
         if (isset($elementProperties['items'])) {
            $items = $elementProperties['items'];
         }
      }
      $content = sprintf('<h3>%s</h3>', htmlspecialchars($renderable->getLabel()));
      $content .= '<ul>';
      foreach ($items as $item) {
         $content .= sprintf('<li>%s</li>', htmlspecialchars($item));
      }
      $content .= '</ul>';
      $content = $this->formRuntime->invokeRenderCallbacks($content, $renderable);
      return $content;
   }
}
```

Note: Don't forget to invoke `RootRenderableInterface::beforeRendering()` and `FormRuntime::invokeRenderCallbacks()` as shown above.

Tip: If you write your own Renderer make sure to sanitize values with `htmlspecialchars()` before outputting them to prevent invalid HTML and XSS vulnerabilities.

Make sure to have a look at the **'FusionRenderer Package<https://packagist.org/packages/neos/form-fusionrenderer>'_** that provides Fusion based rendering for arbitrary Form Elements!

Part III

Credits

The initial implementation has been generously sponsored by AKOM360 - Multi Channel Marketing. Further work has been supported by internezzo ag - agentur für online-kommunikation and Format D GmbH

It has been implemented by:

- Sebastian Kurfürst, sandstorm|media
- Bastian Waidelich, wwwision