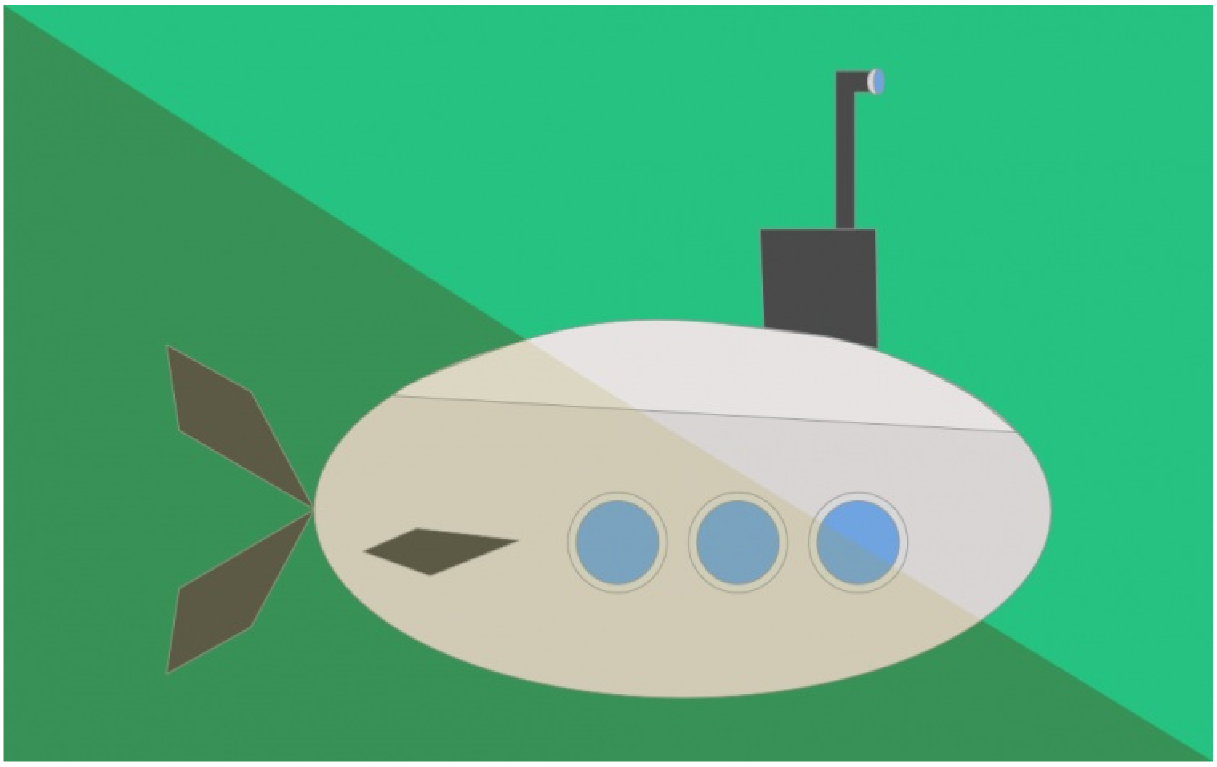
Symfony 3 Forms: Build, Render & Conquer!



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Chapter 1: The Form Type Class

Hey guys! You're back! Awesome! Because this tutorial is all about *forms*: the good, the bad, and the ugly.

Quit Hatin' on the Forms

The truth is: the form component is super controversial: some people love it, some people hate it - and a lot of people have trouble learning it. In fact, its documentation on symfony.com is read far more than any other section.

Why? Because honestly, it *is* complex - too complex sometimes. But you know what? The form component is going to allow you to get a *lot* of work done really quickly. And when I *do* see someone suffering with forms, most of the time, it's their fault. They create situations that are far more complicated than they need to be.

So let's *not* do that - let's *enjoy* forms, and turn them into a weapon.

~~Sing Along~~ Code along!

Ok, you guys know the drill: download the course code and unzip it to code along with me. Inside, you'll find the answers to life's questions and a start/ directory that has the same code I have here. Make sure to check out the README for all the setup details.

Once you're ready, start the built-in web server with:

```
$ ./bin/console server:run
```

I made a *few* changes to the site since last time. For example, go to localhost:8000/genus. It looks the same, but see the "Sub Family"? Before, that was a string field on Genus. But now, I've added a SubFamily entity:

40 lines | src/AppBundle/Entity/SubFamily.php

```
... lines 1 - 6
/**
 * @ORM\Entity
 * @ORM\Table(name="sub_family")
 */
class SubFamily
{
    /**
     * @ORM\Id
     * @ORM\GeneratedValue(strategy="AUTO")
     * @ORM\Column(type="integer")
     */
    private $id;

    /**
     * @ORM\Column(type="string")
     */
    private $name;
... lines 24 - 38
}
```

And created a ManyToOne relation from Genus to SubFamily:

119 lines | src/AppBundle/Entity/Genus.php

```
... lines 1 - 11
class Genus
{
... lines 14 - 25
    /**
     * @ORM\ManyToOne(targetEntity="AppBundle\Entity\SubFamily")
     * @ORM\JoinColumn(nullable=false)
     */
    private $subFamily;
... lines 31 - 117
}
```

So every Genus belongs to one SubFamily.

I also started a new admin section - see it at /admin/genus. But, it needs some work - like the ability to add a *new* genus. That'll be our job. And the code will live in the new GenusAdminController.

Creating a new Form

To create a form, you'll add a class where you'll *describe* what the form looks like.

Tip

Actually, you can build a form directly in the controller if you want to.

In PhpStorm, select anywhere in your bundle and press command+N, or right click and select "New". Find "Form" and call it GenusFormType:

21 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 2
namespace AppBundle\Form;

use Symfony\Component\Form\AbstractType;
use Symfony\Component\Form\FormBuilderInterface;
use Symfony\Component\OptionsResolver\OptionsResolver;

class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {

    }

    public function configureOptions(OptionsResolver $resolver)
    {

    }
}
```

Cool! This just gave us a basic skeleton and put the class in a Form directory. Sensible! These classes are called "form types"... which is the worst name that we could come up with when the system was created. Sorry. Really, these classes are "form recipes".

Here's how it works: in buildForm(): start adding fields: $builder->add() and then name to create a "name" field:

25 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 8
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
            ->add('name')
... lines 15 - 16
        ;
    }
... lines 19 - 23
}
```

Keep going: add('speciesCount') and add('funFact'):

25 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 12
        $builder
            ->add('name')
            ->add('speciesCount')
            ->add('funFact')
        ;
... lines 18 - 25
```

Right now, those field names can be anything - you'll see why in a second.

And that's it! The form is built after writing about 4 lines of code! Let's go render it!

Chapter 2: Render that Form Pretty (Bootstrap)

Head into the GenusAdminController. I gave us a *tiny* head start - there's already a newAction():

```
39 lines | src/AppBundle/Controller/Admin/GenusAdminController.php
... lines 1 - 11
class GenusAdminController extends Controller
{
... lines 14 - 27
    /**
     * @Route("/genus/new", name="admin_genus_new")
     */
    public function newAction()
    {
... lines 33 - 37
    }
}
```

In the admin area, the "Add" button points here. Click it!

> The controller must return a response (null given). Did you forget to add a return statement somewhere in your controller?

Yep, a great explosion!

Instantiating the Form Object

To create the form object, add $form = $this->createForm(). This is a shortcut method in the base Controller that calls a method on the form.factory service. That's my friendly reminder to you that *everything* - including form magic - is done by a service.

To createForm(), pass it the form type class name - GenusFormType::class:

```
39 lines | src/AppBundle/Controller/Admin/GenusAdminController.php
... lines 1 - 4
use AppBundle\Form\GenusFormType;
... lines 6 - 11
class GenusAdminController extends Controller
{
... lines 14 - 30
    public function newAction()
    {
        $form = $this->createForm(GenusFormType::class);
... lines 34 - 37
    }
}
```

And because I used autocomplete, that *did* just add the use statement for me. The ::class syntax is new in PHP 5.5 - and we're going to use it a lot.

Rendering the Form

Now that we have a form object, just render a template a pass it in: return $this->render() with admin/genus/new.html.twig to somewhat follow the directory structure of the controller:

```
39 lines | src/AppBundle/Controller/Admin/GenusAdminController.php
... lines 1 - 11
class GenusAdminController extends Controller
{
... lines 14 - 30
    public function newAction()
    {
        $form = $this->createForm(GenusFormType::class);

        return $this->render('admin/genus/new.html.twig', [
... line 36
        ]);
    }
}
```

Pass in one variable genusForm set to $form->createView():

```
39 lines | src/AppBundle/Controller/Admin/GenusAdminController.php
... lines 1 - 11
class GenusAdminController extends Controller
{
... lines 14 - 30
    public function newAction()
    {
        $form = $this->createForm(GenusFormType::class);

        return $this->render('admin/genus/new.html.twig', [
            'genusForm' => $form->createView()
        ]);
    }
}
```

Don't forget that createView() part - it's something we'll talk about more in a future course about form theming.

Hold command+click to jump into the template. Yep, I took the liberty of already creating this for us in the app/Resources/views/admin/genus directory:

```
17 lines | app/Resources/views/admin/genus/new.html.twig
{% extends 'base.html.twig' %}

{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>New Genus</h1>
... lines 8 - 13
            </div>
        </div>
    </div>
{% endblock %}
```

Here, we know we have a genusForm variable. So... how can we render it? You can't render! I'm kidding - you totally can, by using several special Twig functions that Symfony gives us.

The Form Twig Functions

First, we need an opening form tag. Render that with form_start(genusForm):

17 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 2
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>New Genus</h1>

                {{ form_start(genusForm) }}
... lines 10 - 13
            </div>
        </div>
    </div>
{% endblock %}
```

To add a closing form tag, add form_end(genusForm):

17 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 2
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>New Genus</h1>

                {{ form_start(genusForm) }}
... lines 10 - 12
                {{ form_end(genusForm) }}
            </div>
        </div>
    </div>
{% endblock %}
```

I know, having functions to create the HTML form tag seems a little silly. But, wait! form_start() is cool because it will add the enctype="multipart/form-data" attribute if the form has an upload field. And the form_end() function takes care of rendering hidden fields. So, these guys are my friends.

Between them, render all three fields at once with form_widget(genusForm):

17 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 2
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>New Genus</h1>

                {{ form_start(genusForm) }}
                    {{ form_widget(genusForm) }}
... lines 11 - 12
                {{ form_end(genusForm) }}
            </div>
        </div>
    </div>
{% endblock %}
```

And finally, we need a button! We can do that by hand: <button type="submit">, give it a few Bootstrap classes and call it "Save":

17 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 2
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>New Genus</h1>

                {{ form_start(genusForm) }}
                    {{ form_widget(genusForm) }}

                    <button type="submit" class="btn btn-primary">Save</button>
                {{ form_end(genusForm) }}
            </div>
        </div>
    </div>
{% endblock %}
```

Tip

You *can* also add buttons as fields to your form. But this is helpful in very few cases, so I prefer just to render them by hand.

that's it! Head to the browser and refresh.

There it is! A rendered form with almost no work. They're all text boxes now: we'll customize them soon.

The Bootstrap Form Theme

Of course, it *is* pretty ugly... Symfony has default HTML markup that it uses to render everything you're seeing: the labels, the inputs and any validation errors.

Since we're using Bootstrap, it would be *really* cool if Symfony could automatically render the fields using Bootstrap-friendly markup.

Yep, that's built-in. Open app/config/config.yml. Under twig, add form_themes and then below that - bootstrap3_layout.html.twig. Actually, make that bootstrap_3_layout.html.twig:

74 lines | app/config/config.yml

```
... lines 1 - 36
# Twig Configuration
twig:
... lines 39 - 42
    form_themes:
        - bootstrap_3_layout.html.twig
... lines 45 - 74
```

Form themes are how we can control the markup used to render forms. The bootstrap_3_layout.html.twig template lives in the core of Symfony and now, our form markup will change to use HTML bits that live inside of it.

Try it out. Beautiful. Now, let's submit this form and do something with its data.

Chapter 3: Process that Form!

Inspect the HTML and check out the <form> element. Notice: this does *not* have an action attribute. This means that the form will submit right back to the same route and controller that renders it. You *can* totally change this, but we won't.

In other words, our single action method will be responsible for *rendering* the form *and* processing it when the request method is POST.

Before we do any processing, we need the request. Type-hint it as an argument:

46 lines | src/AppBundle/Controller/Admin/GenusAdminController.php

```
... lines 1 - 7
use Symfony\Component\HttpFoundation\Request;
... lines 9 - 12
class GenusAdminController extends Controller
{
... lines 15 - 31
    public function newAction(Request $request)
    {
... lines 34 - 44
    }
}
```

$form->handleRequest()

Next, to actually handle the submit, call $form->handleRequest() and pass it the $request object:

46 lines | src/AppBundle/Controller/Admin/GenusAdminController.php

```
... lines 1 - 12
class GenusAdminController extends Controller
{
... lines 15 - 31
    public function newAction(Request $request)
    {
        $form = $this->createForm(GenusFormType::class);

        // only handles data on POST
        $form->handleRequest($request);
... lines 38 - 44
    }
}
```

This is really cool: the $form knows what fields it has on it. So $form->handleRequest() goes out and grabs the post data off of the $request object for those specific fields and processes them.

The *confusing* thing is that this *only* does this for POST requests. If this is a GET request - like the user simply navigated to the form - the handleRequest() method does nothing and our form renders just like it did before.

Tip

You *can* configure the form to submit on GET requests if you want. This is useful for search forms

But if the form *was* just submitted, then we'll want to do something with that information, like save a new Genus to the database. Add an if statement: if ($form->isSubmitted() && $form->isValid()):

```
46 lines | src/AppBundle/Controller/Admin/GenusAdminController.php
... lines 1 - 12
class GenusAdminController extends Controller
{
... lines 15 - 31
    public function newAction(Request $request)
    {
        $form = $this->createForm(GenusFormType::class);

        // only handles data on POST
        $form->handleRequest($request);
        if ($form->isSubmitted() && $form->isValid()) {
... line 39
        }
... lines 41 - 44
    }
}
```

In other words, if this is a POST request and if the form passed all validation. We'll add validation soon.

Fetching $form->getData()

If we get inside this if statement, life is good. For now, just dump the submitted data: dump($form->getData()) and then die;:

```
46 lines | src/AppBundle/Controller/Admin/GenusAdminController.php
... lines 1 - 12
class GenusAdminController extends Controller
{
... lines 15 - 31
    public function newAction(Request $request)
    {
        $form = $this->createForm(GenusFormType::class);

        // only handles data on POST
        $form->handleRequest($request);
        if ($form->isSubmitted() && $form->isValid()) {
            dump($form->getData());die;
        }
... lines 41 - 44
    }
}
```

OK, let's see what this dumps out!

Fill out the form with very realistic data and submit. Check that out! It dumps and associative array with the three fields we added to the form. That's so simple! We added 3 fields to the form, rendered them in a template, and got those three values as an associative array.

Now, it would be very, very easy to use that associative array to create a new Genus object, populate it with the data, and save it via Doctrine.

But, it would be awesomesauce if the form framework could do our job for us. I mean, use the data to automatically create the Genus object, populate it, and return *that* to us. Let's do that.

Chapter 4: Binding Forms to Objects: data_class

Open GenusFormType and find the configureOptions() method. Add $resolver->setDefaults(). Pass that an array with a single key called data_class set to AppBundle\Entity\Genus:

27 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 8
class GenusFormType extends AbstractType
{
... lines 11 - 19
    public function configureOptions(OptionsResolver $resolver)
    {
        $resolver->setDefaults([
            'data_class' => 'AppBundle\Entity\Genus'
        ]);
    }
}
```

Do *nothing* else: refresh to re-submit the form.

Tip

You can also use a newer syntax in PHP for this:

```
'data_class' => Genus::class
```

Most editors will auto-complete this for you!

Boom! Now we have a brand-new Genus object that's just waiting to be saved. Thanks to the data_class option, the form creates a new Genus object behind the scenes. And then it sets the data on it.

Earlier, when we got back an associative array, these field names - name, speciesCount and funFact – could have been anything:

27 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 8
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
            ->add('name')
            ->add('speciesCount')
            ->add('funFact')
        ;
    }
... lines 19 - 25
}
```

But as soon as you bind your form to a class, name, speciesCount and funFact need to match property names inside of your class:

134 lines | src/AppBundle/Entity/Genus.php

```
... lines 1 - 11
class Genus
{
... lines 14 - 23
    private $name;
... lines 25 - 34
    private $speciesCount;
... lines 36 - 39
    private $funFact;
... lines 41 - 132
}
```

Actually, that's *kind of* a lie. These properties are private, so the form component *can't* set them directly. In reality, it guesses a setter function for each field and call that: setName(), setSpeciesCount() and setFunFact():

134 lines | src/AppBundle/Entity/Genus.php

```
... lines 1 - 11
class Genus
{
... lines 14 - 67
    public function setName($name)
    {
        $this->name = $name;
    }
... lines 72 - 90
    public function setSpeciesCount($speciesCount)
    {
        $this->speciesCount = $speciesCount;
    }
... lines 95 - 100
    public function setFunFact($funFact)
    {
        $this->funFact = $funFact;
    }
... lines 105 - 132
}
```

Technically, you could add a form field call outOnAMagicalJourney as long as you had a public method in your class called setOutOnAMagicalJourney().

Form Field Guessing!

Head back to your browser, highlight the URL and hit enter. This just made a GET request, which skipped form processing and just rendered the template.

Let's add a few more field we need: like subFamily:

```
30 lines | src/AppBundle/Form/GenusFormType.php
... lines 1 - 8
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
            ->add('name')
            ->add('subFamily')
            ->add('speciesCount')
            ->add('funFact')
... lines 18 - 19
        ;
    }
... lines 22 - 28
}
```

Hey, we're even getting auto-complete now: PhpStorm knows Genus has a subFamily property!

Also add isPublished - that should eventually be a checkbox - and firstDiscoveredAt - that will need to be some sort of date field:

```
30 lines | src/AppBundle/Form/GenusFormType.php
... lines 1 - 8
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
            ->add('name')
            ->add('subFamily')
            ->add('speciesCount')
            ->add('funFact')
            ->add('isPublished')
            ->add('firstDiscoveredAt')
        ;
    }
... lines 22 - 28
}
```

Cool, try it out!

Huge error!

> Catchable Fatal Error: Object of class SubFamily could not be converted to string

Okay: that's weird. What's going on?

Until now, it looked like Symfony renders every field as an input text field by default. But that's not true! There's a lot more coolness going on behind the scenes!

In reality, the form system looks at each field and tries to *guess* what type of field it should be. For example, for subFamily, it sees that this is a ManyToOne relationship to SubFamily:

```
134 lines | src/AppBundle/Entity/Genus.php
... lines 1 - 11
class Genus
{
... lines 14 - 25
    /**
     * @ORM\ManyToOne(targetEntity="AppBundle\Entity\SubFamily")
     * @ORM\JoinColumn(nullable=false)
     */
    private $subFamily;
... lines 31 - 132
}
```

So, it tries to render this as a select drop-down of sub families. That's amazing, because it's *exactly* what we want.

But, it needs to be able to turn a SubFamily object into a string so it can render the text for each option in the select. That's the source of the error.

To help it, add a public function __toString() to the SubFamily class:

```
45 lines | src/AppBundle/Entity/SubFamily.php
... lines 1 - 10
class SubFamily
{
... lines 13 - 39
    public function __toString()
    {
        return $this->getName();
    }
}
```

Refresh again!

Look at this! A free drop-down with almost no work. It also noticed that isPublished should be a checkbox because that's a boolean field in Doctrine:

```
134 lines | src/AppBundle/Entity/Genus.php
... lines 1 - 11
class Genus
{
... lines 14 - 41
    /**
     * @ORM\Column(type="boolean")
     */
    private $isPublished = true;

    /**
     * @ORM\Column(type="date")
     */
    private $firstDiscoveredAt;
... lines 51 - 132
}
```

And since firstDiscoveredAt is a date, it rendered it with year-month-day drop-down boxes. Now, those three boxes are *totally* ugly and we'll fix it later, but isn't it cool that it's *guessing* the right field types?

Fill out the form again with super-realistic data and submit. Woh! One more error:

> Neither the property isPublished nor one of the methods getIsPublished() exist and have public access in class Genus

Remember how every form field needs a setter function on your class? Like name and setName()? Every field *also* needs a *getter* function - like getIsPublished() or one of these other variations.

This was my bad: when I set this up, I added an isPublished property, a setIsPublished() method, but no getter! I'll use the "Code"->"Generate" menu - or command+N - to generate that getter:

139 lines | src/AppBundle/Entity/Genus.php

```
... lines 1 - 11
class Genus
{
... lines 14 - 115
    public function getIsPublished()
    {
        return $this->isPublished;
    }
... lines 120 - 137
}
```

Refresh! It dumps the Genus object of course, but check out the subFamily field! It's not the SubFamily *ID* - the form field took the submitted ID, queried the database for the SubFamily object and set *that* on the property. That's HUGE.

We're ready to save this!

Chapter 5: Save, Redirect, setFlash (and Dance)

We already have the finished Genus object. So what do we do now? Whatever we want!

Probably... we want to save this to the database. Add $genus = $form->getData(). Get the entity manager with $em = this->getDoctrine()->getManager(). Then, the classic $em->persist($genus) and $em->flush():

52 lines | src/AppBundle/Controller/Admin/GenusAdminController.php

```
... lines 1 - 12
class GenusAdminController extends Controller
{
... lines 15 - 31
    public function newAction(Request $request)
    {
... lines 34 - 37
        if ($form->isSubmitted() && $form->isValid()) {
            $genus = $form->getData();

            $em = $this->getDoctrine()->getManager();
            $em->persist($genus);
            $em->flush();
... lines 44 - 45
        }
... lines 47 - 50
    }
}
```

Always Redirect!

Next, we *always* redirect after a successful form submit - ya know, to make sure that the user can't just refresh and re-post that data. That'd be lame.

To do that, return $this->redirectToRoute(). Hmm, generate a URL to the admin_genus_list route - that's the main admin page I created before the course:

52 lines | src/AppBundle/Controller/Admin/GenusAdminController.php

```
... lines 1 - 12
class GenusAdminController extends Controller
{
... lines 15 - 31
    public function newAction(Request $request)
    {
... lines 34 - 37
        if ($form->isSubmitted() && $form->isValid()) {
... lines 39 - 44
            return $this->redirectToRoute('admin_genus_list');
        }
... lines 47 - 50
    }
}
```

Because redirectToRoute() returns a RedirectResponse, we're done!

Time to try it out. I'll be lazy and refresh the POST. We *should* get a brand new "Sea Monster" genus. There it is! Awesome!

Adding a Super Friendly (Flash) Message

Now, it worked... but it lack some spirit! There was no "Success! You're amazing! You created a new genus!" message.

And I want to build a friendly site, so let's add that message. Back in newAction(), add some code *right* before the redirect: $this->addFlash('success') - you'll see where that key is used in a minute - then Genus created - you are amazing!:

54 lines | src/AppBundle/Controller/Admin/GenusAdminController.php

```
... lines 1 - 12
class GenusAdminController extends Controller
{
... lines 15 - 31
    public function newAction(Request $request)
    {
... lines 34 - 37
        if ($form->isSubmitted() && $form->isValid()) {
... lines 39 - 44
            $this->addFlash('success', 'Genus created!');

            return $this->redirectToRoute('admin_genus_list');
        }
... lines 49 - 52
    }
}
```

It's good to encourage users.

But let's be curious and see what this does behind the scenes. Hold command and click into the addFlash() method:

398 lines | vendor/symfony/symfony/src/Symfony/Bundle/FrameworkBundle/Controller/Controller.php

```
... lines 1 - 38
abstract class Controller implements ContainerAwareInterface
{
... lines 41 - 102
    /**
     * Adds a flash message to the current session for type.
     *
     * @param string $type    The type
     * @param string $message The message
     *
     * @throws \LogicException
     */
    protected function addFlash($type, $message)
    {
        if (!$this->container->has('session')) {
            throw new \LogicException('You can not use the addFlash method if sessions are disabled.');
        }

        $this->container->get('session')->getFlashBag()->add($type, $message);
    }
... lines 119 - 396
}
```

Okay, cool: it uses the session service, fetches something called a "flash bag" and adds our message to it. So the flash bag is a special part of this session where you can store messages that will automatically disappear *after* one redirect. If we store a message here and then redirect, on the next page, we can read those messages from the flash bag, and print them on the page. And because the message automatically disappears after one redirect, we won't accidentally show it to the user more than once.

And actually, it's even a little bit cooler than that. A message will *actually* stay in the flash bag until you ask for it. Then it's removed. This is good because if you - for some reason - redirect *twice* before rendering the message, no problem! It'll stay in there and wait for you.

Rendering the Flash Message

All we need to do now is render the flash message. And the best place for this is in your base template. Because then, you can set a flash message, redirect to *any* other page, and it'll always show up.

Right above the body block, add for msg in app.session - the shortcut to get the session service - .flashbag.get() and then the success key. Add the endfor:

49 lines | app/Resources/views/base.html.twig

```
<!DOCTYPE html>
<html>
... lines 3 - 13
    <body>
... lines 15 - 28
        <div class="main-content">
            {% for msg in app.session.flashBag.get('success') %}
... lines 31 - 33
            {% endfor %}
... lines 35 - 36
        </div>
... lines 38 - 46
    </body>
</html>
```

Why success? Because that's what we used in the controller - but this string is arbitrary:

54 lines | src/AppBundle/Controller/Admin/GenusAdminController.php

```
... lines 1 - 12
class GenusAdminController extends Controller
{
... lines 15 - 31
    public function newAction(Request $request)
    {
... lines 34 - 37
        if ($form->isSubmitted() && $form->isValid()) {
... lines 39 - 44
            $this->addFlash('success', 'Genus created!');
... lines 46 - 47
        }
... lines 49 - 52
    }
}
```

Usually I have one for success that I style green and happy, and on called error that style to be red and scary.

I'll make this happy with the alert-success from bootstrap and then render msg:

49 lines | app/Resources/views/base.html.twig

```
<!DOCTYPE html>
<html>
... lines 3 - 13
    <body>
... lines 15 - 28
        <div class="main-content">
            {% for msg in app.session.flashBag.get('success') %}
                <div class="alert alert-success">
                    {{ msg }}
                </div>
            {% endfor %}
... lines 35 - 36
        </div>
... lines 38 - 46
    </body>
</html>
```

Cool! Go back and create Sea Monster2. Change its subfamily, give it a species count and save that sea creature! Ocean conservation has never been so easy.

And, I'm feeling the warm and fuzzy from our message.

Next, let's *really* start to control how the fields are rendered.

Chapter 6: Field Types and Options

So far, we set the property name of the form fields and Symfony tries to *guess* the best field type to render. Since isPublished is a boolean in the database, it guessed a checkbox field:

```
139 lines | src/AppBundle/Entity/Genus.php
... lines 1 - 11
class Genus
{
... lines 14 - 41
    /**
     * @ORM\Column(type="boolean")
     */
    private $isPublished = true;
... lines 46 - 137
}
```

But obviously, that's not always going to work.

Google for "Symfony form field types", and find a document called Form Types Reference.

These are *all* the different field types we can choose from. It's got stuff you'd expect - like text and textarea, some HTML5 fields - like email and integer and some more unusual types, like date, which helps render date fields, either as three drop-downs or a single text field.

Right now, isPublished is a checkbox. But instead, I'd rather have a select drop-down with "yes" and "no" options. But... you won't see a "select" type in this list. Instead, it's called ChoiceType.

Using ChoiceType

ChoiceType is a little special: it can render a drop-down, radio buttons or checkboxes based on what options you pass to it. One of the options is choices, which, if you look down at the example, you can see controls the actual items in the drop-down.

Let's use this! In GenusFormType, the optional second argument to the add function is the field *type* you want to use. Set it to ChoiceType::class:

```
36 lines | src/AppBundle/Form/GenusFormType.php
... lines 1 - 5
use Symfony\Component\Form\Extension\Core\Type\ChoiceType;
... lines 7 - 9
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... lines 15 - 18
            ->add('isPublished', ChoiceType::class, [
... lines 20 - 23
            ])
... line 25
        ;
    }
... lines 28 - 34
}
```

The third argument is an array of options to configure that field. What can you pass here? Well, each field type has different options... though there are a lot of options shared by *all* types, like the ability to customize the label.

Either way, the reference section will tell you what you can use. Pass in the choices option and set that to an array. Add Yes mapped to true and No mapped to false. The keys - Yes and No will be the text in the drop down:

```
36 lines | src/AppBundle/Form/GenusFormType.php
... lines 1 - 9
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... lines 15 - 18
            ->add('isPublished', ChoiceType::class, [
                'choices' => [
                    'Yes' => true,
                    'No' => false,
                ]
            ])
... line 25
        ;
    }
... lines 28 - 34
}
```

The values - true and false will be the value that's passed to setIsPublished() if that option is chosen.

Try it out! Head back to the form and refresh! Perfect.

The EntityType

Let's keep going with this. This subFamily field is also a drop-down. So that's probably being *guessed* as a ChoiceType, right? *Almost*. Check out the EntityType. This is *just* like the ChoiceType, except it's really good at fetching the options by querying an entity.

In this case, it's automatically querying for the SubFamily entity: it guessed which type to use *and* auto-configured it. And yeah, I know - these sub-families are totally silly. They're actually just the last names of people - coming from the Faker library - I was being lazy.

Form Field Options

But I do have one problem with this EntityType field: it auto-selects the first option. That's lame - I'd rather have an option on top that says "Choose a Sub-Family".

Check out the options for EntityType: there's one called placeholder. Click to read more about that. Yes! This is exactly what we want!

Open the form class back up. We know that Symfony is guessing the EntityType for the subFamily field. We *could* now manually pass EntityType::class as the second argument. But don't! Pass null instead. Now, add a placeholder option set to Choose a Sub-Family:

```
39 lines | src/AppBundle/Form/GenusFormType.php
... lines 1 - 10
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... line 16
            ->add('subFamily', null, [
                'placeholder' => 'Choose a Sub Family'
            ])
... lines 20 - 28
        ;
    }
... lines 31 - 37
}
```

But wait, why did I pass null as the second argument? Well first, because I can! I can be lazy here: if I pass null, Symfony will guess the EntityType. That's cool.

Second, when you use the EntityType, there's a required option called class. Let me show you an example: 'class' => 'AppBundle:User'. You have to tell it *which* entity to query from. But if you let Symfony *guess* the field type for you, then it will also guess any options it can, including this one. So by being lazy and passing null, it will continue to guess the field type *and* a few other options for me, like class.

Anyways, go back, refresh, and there it is. Here are the key takeaways. First, you have a giant dictionary of built-in form field types. And second: you configure each field by passing a third argument to the add() function.

Now, how could we *further* control the query that's made for the SubFamily options? What if we need them to be listed alphabetically?

Chapter 7: Custom Query in EntityType

As cool as it is that it's guessing my field type, I am actually going to add EntityType::class to use this type *explicitly*:

43 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 4
use Symfony\Bridge\Doctrine\Form\Type\EntityType;
... lines 6 - 10
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... line 16
            ->add('subFamily', EntityType::class, [
... lines 18 - 22
            ])
... lines 24 - 32
        ;
    }
... lines 35 - 41
}
```

I don't *have* to do this: I just want to show you guys what a traditional setup looks like.

Now, do *nothing* else and refresh. It'll still work, right? Right? Nope!

The required class option is missing! As I just finished saying, we *must* pass a class option to the EntityType. We got away with this before, because when it's null, Symfony guesses the form "type" *and* the class option.

Set the option to SubFamily::class - and alternate syntax to the normal AppBundle:SubFamily:

45 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 4
use AppBundle\Entity\SubFamily;
... lines 6 - 12
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... line 18
            ->add('subFamily', EntityType::class, [
... line 20
                'class' => SubFamily::class,
... lines 22 - 24
            ])
... lines 26 - 34
        ;
    }
... lines 37 - 43
}
```

The query_builder Option

Now that our form is put back together, I have a second challenge: make the select order alphabetically. In other words, I want to customize the query that's made for the SubFamily's and add an ORDER BY.

Head back to the EntityType docs. One option jumps out at me: query_builder. Click to check it out. OK, it says:

> If specified, this is used to query the subset of options that should be used for the field.

And actually, I need to search for query_builder: I know there's a better example on this page. Here it is!

So, if you pass a query_builder option and set it to an anonymous function, Doctrine will pass that the *entity repository* for this specific entity. All we need to do is create whatever query builder we want and return it.

In the form, add query_builder and enjoy that auto-completion. Set this to a function with a $repo argument:

45 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 12
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... line 18
            ->add('subFamily', EntityType::class, [
... lines 20 - 21
                'query_builder' => function(SubFamilyRepository $repo) {
... line 23
                }
            ])
... lines 26 - 34
        ;
    }
... lines 37 - 43
}
```

Now, I like to keep all of my queries inside of repository classes because I don't want queries laying around in random places, like in a form class. But, if you look, I don't have a SubFamilyRepository yet.

No worries - copy the GenusRepository, paste it as SubFamilyRepository. Rename that class and clear it out:

16 lines | src/AppBundle/Repository/SubFamilyRepository.php

```
... lines 1 - 2
namespace AppBundle\Repository;
... lines 4 - 5
use Doctrine\ORM\EntityRepository;

class SubFamilyRepository extends EntityRepository
{
... lines 10 - 14
}
```

Open the SubFamily entity and hook it up with @ORM\Entity(repositoryClass="") and fill in SubFamilyRepository:

```
45 lines | src/AppBundle/Entity/SubFamily.php
... lines 1 - 6
/**
 * @ORM\Entity(repositoryClass="AppBundle\Repository\SubFamilyRepository")
... line 9
 */
class SubFamily
... lines 12 - 45
```

Great! Back in our form, we know this repo will be an instance of SubFamilyRepository:

```
45 lines | src/AppBundle/Form/GenusFormType.php
... lines 1 - 5
use AppBundle\Repository\SubFamilyRepository;
... lines 7 - 12
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... line 18
            ->add('subFamily', EntityType::class, [
... lines 20 - 21
                'query_builder' => function(SubFamilyRepository $repo) {
... line 23
                }
            ])
... lines 26 - 34
        ;
    }
... lines 37 - 43
}
```

Return $repo-> and a new method that we're about to create called createAlphabeticalQueryBuilder():

```
45 lines | src/AppBundle/Form/GenusFormType.php
... lines 1 - 12
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... line 18
            ->add('subFamily', EntityType::class, [
... lines 20 - 21
                'query_builder' => function(SubFamilyRepository $repo) {
                    return $repo->createAlphabeticalQueryBuilder();
                }
            ])
... lines 26 - 34
        ;
    }
... lines 37 - 43
}
```

Copy that name and head into the repository to create that function. Inside, return $this->createQueryBuilder('sub_family') and then order by sub_family.name, ASC:

```
16 lines | src/AppBundle/Repository/SubFamilyRepository.php
... lines 1 - 7
class SubFamilyRepository extends EntityRepository
{
    public function createAlphabeticalQueryBuilder()
    {
        return $this->createQueryBuilder('sub_family')
            ->orderBy('sub_family.name', 'ASC');
    }
}
```

Done! The query_builder method points here, and we handle the query.

Alright, try it out! Nailed it! As far as form options go, we probably just conquered one of the most complex.

Chapter 8: Creating a Date Picker Field

What's the ugliest part of the form? Yeah, we all know. It's this crazy 3 drop-downs used for the date field.

In modern times, if we need a date field, we're going to render it as a text field and use a fancy JavaScript widget to help the user fill it in.

Head back to the list of fields. It doesn't take long to find the one that's being guessed for the "First Discovered At" field: it's DateType.

Let's see if there's a way to render this as a text field instead.

Setting widget to single_text

Check out the widget option:

> The basic way in which this field should be rendered.

It can be either choice - the three select fields, which is lame - 3 text fields, or a *single* text field with single_text. Ah hah!

Back in the form, let's pass in DateType::class *even* though we could be lazy and pass null. Create the array for the third argument and add widget set to single_text:

48 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 9
use Symfony\Component\Form\Extension\Core\Type\DateType;
... lines 11 - 13
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... lines 19 - 34
            ->add('firstDiscoveredAt', DateType::class, [
                'widget' => 'single_text'
            ])
        ;
    }
... lines 40 - 46
}
```

Check it out.

HTML5 Date Types are Cool(ish)

Boom! It looks great. In fact, check this out: it *already* has some widget coolness: with a drop-down and a nice calendar.

Tip

If you don't see a fancy widget, don't worry! Not all browsers support this, which is why we'll use a true JavaScript widget soon!

This is *not* coming from Symfony: it's coming from my browser. Because as soon as we made this a single_text widget, Symfony rendered it as an <input type="date"> HTML5 field. Most browsers see this and add their own little date widget functionality.

Ready for the lame news? Not all browsers do this. And that means that users *without* this feature will have a pretty tough time trying to figure out what date format to pass.

Adding a JavaScript Date Picker

Instead, let's add a proper JavaScript widget. Google for "Bootstrap Date Picker". Ok, this first result looks pretty awesome - let's go for it!

First, we need to import new CSS and JS files. In new.html.twig, override the block stylesheets from the base layout. Add {% endblock %} and print {{ parent() }}:

35 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 2
{% block stylesheets %}
    {{ parent() }}
... lines 5 - 6
{% endblock %}
... lines 8 - 35
```

Because I'm lazy, I'll paste the URL to a CDN that hosts this CSS file:

35 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 2
{% block stylesheets %}
    {{ parent() }}

    <link rel="stylesheet" href="//cdnjs.cloudflare.com/ajax/libs/bootstrap-datepicker/1.6.0/css/bootstrap-datepicker.css">
{% endblock %}
... lines 8 - 35
```

But, you can download it if you want.

Do the same thing for block javascripts. Add {% endblock %} and call parent():

35 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 8
{% block javascripts %}
    {{ parent() }}
... lines 11 - 18
{% endblock %}
... lines 20 - 35
```

I've got a CDN URL ready for the JavaScript file too. Go me!

35 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 8
{% block javascripts %}
    {{ parent() }}

    <script src="//cdnjs.cloudflare.com/ajax/libs/bootstrap-datepicker/1.6.0/js/bootstrap-datepicker.min.js"></script>
... lines 13 - 18
{% endblock %}
... lines 20 - 35
```

Adding a class Attribute

Next, how do we activate the plugin? According to their docs: it's pretty simple: select the input and call .datepicker() on it.

Personally, whenever I want to target an element in JavaScript, I give that element a class that starts with js- and use that with jQuery.

So the question is, how do we give this text field a class? You can't!

I mean you can! In 2 different ways! The first is by passing another option to the field in the form class. Add an attr option to an array. And give that array a class key set to js-datepicker:

50 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 13
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... lines 19 - 34
            ->add('firstDiscoveredAt', DateType::class, [
... line 36
                'attr' => ['class' => 'js-datepicker'],
... line 38
            ])
        ;
    }
... lines 42 - 48
}
```

Setting up the JavaScript

Next, in our template, add the jQuery(document.ready) block. Hook it up with $('.js-datepicker').datepicker():

35 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 8
{% block javascripts %}
    {{ parent() }}

    <script src="//cdnjs.cloudflare.com/ajax/libs/bootstrap-datepicker/1.6.0/js/bootstrap-datepicker.min.js"></script>

    <script>
        jQuery(document).ready(function() {
            $('.js-datepicker').datepicker();
        });
    </script>
{% endblock %}
... lines 20 - 35
```

Easy. Give it a try.

Scroll down and... hey! There it is! I can see the cool widget. And if I click... um... if I click... then - why is nothing happening?

HTML5 versus DatePicker: Fight!

It turns out, the HTML5 date functionality from my browser is *fighting* with the date picker. Silly kids. This doesn't happen in *all* browsers, it's actually something special to Chrome.

To fix this, we need to turn *off* the HTML5 date functionality. In other words, we want render this as a true <input type="text"> field, *not* a date field.

To do that, open the form type. There's one last option that will help us: set html5 to false:

50 lines | src/AppBundle/Form/GenusFormType.php

```
... lines 1 - 13
class GenusFormType extends AbstractType
{
    public function buildForm(FormBuilderInterface $builder, array $options)
    {
        $builder
... lines 19 - 34
            ->add('firstDiscoveredAt', DateType::class, [
... lines 36 - 37
                'html5' => false,
            ])
        ;
    }
... lines 42 - 48
}
```

Try it one last time. HTML5 is out of the way and the date picker is in charge.

Pretty awesome.

Chapter 9: Date Format & "Sanity" Validation

Let's use the fancy new date picker. Fill in the other fields and hit submit.

Whoa! Validation Error!

First, the good news: the error looks nice! And we didn't do any work for that.

Now, the bad news: do you remember adding any validation? Because I don't! So, where is that coming from?

The Format of the Date Field

What you're seeing is a really amazing automatic thing that Symfony does. And I invented a term for it: "sanity validation".

Remember, even though this has a fancy date picker widget, this is *just* a text field, and it needs to be filled in with a very specific format. In this case, the widget fills in month/day/year.

But what if Symfony expects a different format - like year/month/day?

Well, that's *exactly* what's happening: Symfony expects the date in one format, but the widget is generating something else. When Symfony fails to parse the date, it adds the validation error.

Sanity Validation

So, it turns out that many fields have sanity validation. It basically makes sure that a *sane* value is submitted by the user. If an *insane* value is sent, it blocks the way and shows a message.

For example, the speciesCount is using Symfony's NumberType, which renders as an HTML5 field with up and down arrows on some browsers:

139 lines | src/AppBundle/Entity/Genus.php

```
... lines 1 - 11
class Genus
{
... lines 14 - 31
    /**
     * @ORM\Column(type="integer")
     */
    private $speciesCount;
... lines 36 - 137
}
```

If we tried to type a word here and submit, the NumberType would throw a validation error thanks to sanity validation.

Our drop-down fields *also* have sanity validation. If a jerk user tries to hack the system by adding an option that we did *not* originally include, the field will fail validation. 99% of the time, you don't know or care that this is happening. Just know, Symfony has your back.

Making the Date Formats Match

But how do we fix the date field? We just need to make Symfony's expected format match the format used by the datepicker. In fact, the format itself is an option on the DateType. I'll hold command and click into DateType. When you use the single_text widget, it expects this HTML5_FORMAT: so year-month-day.

Let's update the JavaScript widget to match this.

How? On its docs, you'll see that it *also* has a format option. Cool!

Now, unfortunately, the format string used by the DateType and the format string used by the datepicker widget are not *exactly* the same format - each has its own system, unfortunately. So, you may need to do some digging or trial and error. It turns out, the correct format is yyyy-mm-dd:

```
37 lines | app/Resources/views/admin/genus/new.html.twig
... lines 1 - 8
{% block javascripts %}
... lines 10 - 13
    <script>
        jQuery(document).ready(function() {
            $('.js-datepicker').datepicker({
                format: 'yyyy-mm-dd'
            });
        });
    </script>
{% endblock %}
... lines 22 - 37
```

OK, go back and refresh that page. Fill out the top fields... and then select a date. Moment of truth. Got it!

Data Transformers

So I keep telling you that the purpose of the field "types" is to control how a field is rendered. But that's only *half* of it. Behind the scenes, many fields have a "data transformer".

Basically, the job of a data transformer is to transform the data that's inside of your PHP code to a format that's visible to your user. For example, the firstDiscoveredAt value on Genus is actually a DateTime object:

```
139 lines | src/AppBundle/Entity/Genus.php
... lines 1 - 11
class Genus
{
... lines 14 - 46
    /**
     * @ORM\Column(type="date")
     */
    private $firstDiscoveredAt;
... lines 51 - 137
}
```

The data transformer internally changes that into the string that's printed in the box.

Then, when a date string is submitted, that same data transformer does its work in reverse: changing the string back into a DateTime object.

The data transformer is also kicking butt on the subFamily field. The id of the selected SubFamily is submitted. Then, the data transformer uses that to query for a SubFamily object and set that on Genus.

You don't need to know more about data transformers right now, I just want you to realize that this awesomeness is happening.

Chapter 10: Form Rendering and Form Variables

Let's talk form rendering.

Sure, things looks nice right now, especially considering we're rendering all the fields in one line!

The problem? First, we can't change the order of the fields. And second, we won't be able to control the labels or anything else that we're going to talk about.

Using form_row

So, in reality, I don't use form_widget to render all my fields at once. Replace this with a different function: form_row and pass it genusForm. and then the name of one of the fields - like name:

43 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 22
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
... lines 27 - 28
                {{ form_start(genusForm) }}
                    {{ form_row(genusForm.name) }}
... lines 31 - 37
                {{ form_end(genusForm) }}
            </div>
        </div>
    </div>
{% endblock %}
```

Since this form has 1, 2, 3, 4, 5, 6 fields, I'll copy that and paste it six times. Now, fill in all the field names: subFamily, speciesCount, funFact, isPublished and firstDiscoveredAt:

43 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 22
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
... lines 27 - 28
                {{ form_start(genusForm) }}
                    {{ form_row(genusForm.name) }}
                    {{ form_row(genusForm.subFamily) }}
                    {{ form_row(genusForm.speciesCount) }}
                    {{ form_row(genusForm.funFact) }}
                    {{ form_row(genusForm.isPublished) }}
                    {{ form_row(genusForm.firstDiscoveredAt) }}
... lines 36 - 37
                {{ form_end(genusForm) }}
            </div>
        </div>
    </div>
{% endblock %}
```

Refresh! OMG - it's the *exact* same thing as before!!! This is what form_widget was doing behind the scenes: looping over the fields and calling form_row.

All the Form Rendering Functions

So, at this point, you're probably asking:

> What else can I do? What other functions are there? What options can I pass to these functions?

Look, I don't know! But I bet Google does: search for "form functions twig" to find another reference section called Form Function and Variable Reference.

Ah hah! This is our cheatsheet!

First - we already know about form_row: it renders the 3 parts of a field, which are the label, the HTML widget element itself and any validation errors.

If you ever need more control, you can render those individually with form_widget, form_label and form_errors. Use these *instead* of form_row, *only* when you need to.

Form Variables

Now notice, most of these functions - including form_row - have a second argument called "variables". And judging by this code example, you can apparently control the label with this argument.

Listen closely: these "variables" are the most *powerful* part of form rendering. By passing different values, you can override almost *every* part of how a field is rendered.

So what *can* you pass here? Scroll down near the bottom to find a big beautiful table called Form Variables Reference.

This gives you a big list of all the variables that you can override when rendering a field, including label, attr, label_attr, and other stuff.

To show this off, find the speciesCount field and add a second argument set to {} - the Twig array syntax. Override the label variable: set it to Number of Species:

45 lines | app/Resources/views/admin/genus/new.html.twig

```
... lines 1 - 22
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
... lines 27 - 28
                {{ form_start(genusForm) }}
... lines 30 - 31
                    {{ form_row(genusForm.speciesCount, {
                        'label': 'Number of Species'
                    }) }}
... lines 35 - 39
                {{ form_end(genusForm) }}
            </div>
        </div>
    </div>
{% endblock %}
```

Refresh! It's just that easy.

The Amazing Form Profiler

There's one *huge* form tool that we haven't looked at yet. Your web debug toolbar *should* have a clipboard icon. Click it.

This is the profiler for your form, and it's *packed* with stuff that's going to make your form life better. If you click speciesCount, you can see the different data for your species - which isn't too interesting on this blank form. You can see any submitted data and all of the variables that can be passed to the field.

It turns out, the reference section we looked at has *most* of the variables but *this* will have *all* of them. This is your place to answer:

> What are the values for my variables? And, what can I override?

This also shows you "Resolved Options": these are the final values of the options that can be passed as the third argument to the add() function.

CSRF Protection

Oh, and check out this _token field. Do you remember adding this?

Hopefully not - because we never did! This is a CSRF token that's automatically added to the form. It's rendered *for* us when we call form_end and validated behind the scenes along with all the other fields. It's free CSRF protection.

Chapter 11: Disable HTML5 Validation

Leave everything blank and hit save.

Oh, it doesn't submit. Instead we get this validation error. So where's that coming from?

The Famous required Attribute

Hint: it's not Symfony!. It's our friend HTML5. When Symfony renders the field, it's adding a required="required" attribute, and this activates HTML5 validation.

But, there are a few problems with this. First, Symfony always adds the required attribute... even if it's not actually required in the database. It'a a borderline bug in Symfony.

And actually, that's not totally fair. If you use field-type-guessing, Symfony *will* guess whether or not it should render this by looking at your database and validation config. But as soon as you set your field type, it stops doing that. Boo!

Here's the second problem: even if we like this HTML5 client-side validation, we still need to add true server-side validation. Otherwise, nasty users can go crazy on our site.

Disable HTML5 Validation

So here's what I do: I disable HTML5 validation and rely purely on server-side validation.

If you *do* want some fancy client-side validation, I recommend adding it with a JavaScript library. These give you more features and control than HTML5 validation.

There's even a bundle - JsFormValidatorBundle - that can dump your server-side rules into JavaScript.

So how do we disable HTML5 validation? Very simple: find the submit button and add formnovalidate:

```
45 lines | app/Resources/views/admin/genus/new.html.twig
... lines 1 - 22
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
... lines 27 - 28
                {{ form_start(genusForm) }}
... lines 30 - 38
                    <button type="submit" class="btn btn-primary" formnovalidate>Save</button>
                {{ form_end(genusForm) }}
            </div>
        </div>
    </div>
{% endblock %}
```

That's it. Refresh the page now and submit. No more HTML5 validation. But of course now, we need server-side validation!

Chapter 12: Beautiful Form Validation

Guess what! Server-side validation is really, really fun. Google for Symfony validation, and find the book chapter.

There is *one* weird thing about validation... which I *love*. Here it is: you don't apply validation to your form. Nope, there will be *no* validation code inside of GenusFormType. Instead, you add validation to the *class* that is bound to your form. When the form is submitted, it automatically reads those validation rules and uses them.

Validation is added with annotations. So copy the use statement from the code block, find Genus and paste it on top:

141 lines | src/AppBundle/Entity/Genus.php

```
... lines 1 - 6
use Symfony\Component\Validator\Constraints as Assert;
... lines 8 - 141
```

The Giant List of Constraints

Good start! Next, we'll add validation rules - called constraints - above each property. On the left side bar, find the "Constraints" link.

Check out this menu of validation rules: NotBlank, NotNull, Email, Length, Regex... so many things! Pretty much anything you can dream up is inside of this list.

Let's start with an easy one: above the name property, add @Assert\NotBlank:

141 lines | src/AppBundle/Entity/Genus.php

```
... lines 1 - 12
class Genus
{
... lines 15 - 21
    /**
     * @Assert\NotBlank()
... line 24
     */
    private $name;
... lines 27 - 139
}
```

Without doing anything else, refresh. Boom! Validation error. And, it looks nice.

Let's add some more. For subFamily - that should be required, so add @NotBlank:

145 lines | src/AppBundle/Entity/Genus.php

```
... lines 1 - 12
class Genus
{
... lines 15 - 27
    /**
     * @Assert\NotBlank()
... lines 30 - 31
     */
    private $subFamily;
... lines 34 - 143
}
```

For speciesCount, add @NotBlank again:

```
145 lines | src/AppBundle/Entity/Genus.php
... lines 1 - 12
class Genus
{
... lines 15 - 34
    /**
     * @Assert\NotBlank()
... lines 37 - 38
     */
    private $speciesCount;
... lines 41 - 143
}
```

But in addition to that, we want speciesCount to be a positive number: we don't want some funny biologist entering negative 10.

Constraint Options

On the constraints list, there's one called Range. Check that out.

Ok cool: just like the form field types, you can pass options to the constraints. The Range constraint has several: min, max, minMessage and maxMessage. Add @Assert\Range with min=0 and minMessage="Negative species! Come on...":

```
145 lines | src/AppBundle/Entity/Genus.php
... lines 1 - 12
class Genus
{
... lines 15 - 34
    /**
     * @Assert\NotBlank()
     * @Assert\Range(min=0, minMessage="Negative species! Come on...")
... line 38
     */
    private $speciesCount;
... lines 41 - 143
}
```

Ok, let's finish up. It's ok if funFact is empty - so don't add anything there. The same is true for isPublished: we *could* add a constraint to make sure this is a boolean, but the sanity validation on the form already takes care of that.

Finally, let's make sure firstDiscoveredAt is also NotBlank:

```
145 lines | src/AppBundle/Entity/Genus.php
... lines 1 - 12
class Genus
{
... lines 15 - 51
    /**
     * @Assert\NotBlank()
... line 54
     */
    private $firstDiscoveredAt;
... lines 57 - 143
}
```

Ok, refresh! Leave everything blank and put -10 for the number of species. I love it!

Chapter 13: Changing Validation Messages

Check out the web debug toolbar: it's highlighted with the number of validation errors, which is pretty cool. It's even cooler because we can see where those are coming from.

The default message for the NotBlank constraint is obviously

> This value should not be blank

We can easily change this by passing a message option to the annotation. But wait a second: we're going to use NotBlank a lot. Is there a way to customize the default message across the whole system?

Yea! All of these strings are passed through Symfony's translator. And we can take advantage of that to customize this message, even in English.

Enabling the Translator

First, in case you don't already have it enabled, open up app/config/config.yml. Activate the translator service by uncommenting out the translator key under framework:

74 lines | app/config/config.yml

```
... lines 1 - 11
framework:
... line 13
    translator:      { fallbacks: ["%locale%"] }
... lines 15 - 74
```

Refresh this page and watch the web debug toolbar. Suddenly, there's an extra icon that's coming from the translator. It's reporting that there are ten missing messages. In other words, we are apparently already sending ten messages through the translator that are missing translation strings.

This is because every form field and all validation errors are automatically sent through the translator. Nothing looks weird, because those strings are already English, so it's not really a problem that they aren't translated.

Changing Validation Messages

But, if you want to customize this message, copy it. And, notice, the domain is validators: that's basically a translation "category", and it's important for what we do next.

We don't have any translation files yet, so create a new directory called translations in app/Resources. Inside, add a new file: validators.en.yml. This is validators because the message is being translated in that domain.

Inside, paste the string and set it to "Hi! Please enter something for this field.":

1 lines | app/Resources/translations/validators.en.yml

```
"This value should not be blank.": Hi! Please enter *something* for this field :)
```

And that's it! Go back and refresh! Oh no, it didn't work! Well, I kind of expected that. Find your terminal, open a new tab, and run:

```
./bin/console cache:clear
```

You almost *never* need to worry about clearing your cache while developing but *very* occasionally, you'll find a quirk in Symfony that needs this. Sometimes, when you add a new translation file, this happens.

Let's refresh again. There it is!

So yay validation! There's one more constraint I want you to see: Callback. This is your Swiss army knife: it allows you to write whatever custom validation logic you want inside a method. There, you can create different validation errors and map them to any field.

Chapter 14: Easy Edit Form

When you get to the form, it's completely blank. How could we add *default* data to the form?

Well, it turns out answering that question is exactly the same as answering the question

> How do we create an edit form?

Let's tackle that.

In GenusAdminController, I'm going to be lazy: copy the entire newAction() and update the URL to /genus/{id}/edit. Give it a different route name: admin_genus_edit and call it editAction():

81 lines | src/AppBundle/Controller/Admin/GenusAdminController.php

```
... lines 1 - 13
class GenusAdminController extends Controller
{
... lines 16 - 55
    /**
     * @Route("/genus/{id}/edit", name="admin_genus_edit")
     */
    public function editAction(Request $request, Genus $genus)
    {
... lines 61 - 79
    }
}
```

Our first job should be to query for a Genus object. I'll be lazy again and just type-hint an argument with Genus:

81 lines | src/AppBundle/Controller/Admin/GenusAdminController.php

```
... lines 1 - 4
use AppBundle\Entity\Genus;
... lines 6 - 8
use Symfony\Component\HttpFoundation\Request;
... lines 10 - 13
class GenusAdminController extends Controller
{
... lines 16 - 58
    public function editAction(Request $request, Genus $genus)
    {
... lines 61 - 79
    }
}
```

Thanks to the param converter from SensioFrameworkExtraBundle, this will automatically query for Genus by using the {id} value.

Passing in Default Data

This form needs to be pre-filled with all of the data from the database. So again, how can I pass default data to a form? It's as simple as this: the second argument to createForm is the default data. Pass it the entire $genus object:

```
81 lines | src/AppBundle/Controller/Admin/GenusAdminController.php
... lines 1 - 13
class GenusAdminController extends Controller
{
... lines 16 - 58
    public function editAction(Request $request, Genus $genus)
    {
        $form = $this->createForm(GenusFormType::class, $genus);
... lines 62 - 79
    }
}
```

Why the entire object? Because remember: our form is bound to the Genus class:

```
50 lines | src/AppBundle/Form/GenusFormType.php
... lines 1 - 13
class GenusFormType extends AbstractType
{
... lines 16 - 42
    public function configureOptions(OptionsResolver $resolver)
    {
        $resolver->setDefaults([
            'data_class' => 'AppBundle\Entity\Genus'
        ]);
    }
}
```

That means that its output will be a Genus object, but its input should *also* be a Genus object.

Behind the scenes, it will use the getter functions on Genus to pre-fill the form: like getName(). And everything else is exactly the same. Well, I'll tweak the flash message but you get the idea:

```
81 lines | src/AppBundle/Controller/Admin/GenusAdminController.php
... lines 1 - 13
class GenusAdminController extends Controller
{
... lines 16 - 58
    public function editAction(Request $request, Genus $genus)
    {
... lines 61 - 64
        if ($form->isSubmitted() && $form->isValid()) {
... lines 66 - 71
            $this->addFlash('success', 'Genus updated!');
... lines 73 - 74
        }
... lines 76 - 79
    }
}
```

Rendering the Edit Form

Update the template to edit.html.twig:

```
81 lines | src/AppBundle/Controller/Admin/GenusAdminController.php
... lines 1 - 13
class GenusAdminController extends Controller
{
... lines 16 - 58
    public function editAction(Request $request, Genus $genus)
    {
... lines 61 - 76
        return $this->render('admin/genus/edit.html.twig', [
            'genusForm' => $form->createView()
        ]);
    }
}
```

I'm still feeling lazy, so I'll completely duplicate the new template and update the h1 to say "Edit Genus":

```
45 lines | app/Resources/views/admin/genus/edit.html.twig
... lines 1 - 22
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>Edit Genus</h1>
... lines 28 - 40
            </div>
        </div>
    </div>
{% endblock %}
```

Don't worry, this duplication is temporary.

Finally, in the admin list template, I already have a spot ready for the edit link. Fill that in with path('admin_genus_edit') and pass it the single wildcard value: id: genus.id:

```
33 lines | app/Resources/views/admin/genus/list.html.twig
... lines 1 - 2
{% block body %}
    <div class="container">
        <div class="row">

            <div class="col-xs-12">
... lines 8 - 13
                <table class="table table-striped">
... lines 15 - 19
                    {% for genus in genuses %}
                        <tr>
... lines 22 - 23
                            <td>
                                <a href="{{ path('admin_genus_edit', {'id': genus.id}) }}" class="btn btn-xs btn-success"><span class="fa fa-pencil"
                            </td>
                        </tr>
                    {% endfor %}
                </table>
            </div>
        </div>
    </div>
{% endblock %}
```

LOVE it. Open up /admin/genus in your browser.

Ah good, an explosion - I felt like things were going too well today:

> Method id for object Genus does not exist in list.html.twig at line 25.

So apparently I do *not* have a getId() function on Genus. Let's check it out. And indeed, when I created this class, I did not add a getter for ID. I'll use command+N, or the "Code"->"Generate" menu to add it:

```
150 lines | src/AppBundle/Entity/Genus.php
... lines 1 - 12
class Genus
{
... lines 15 - 68
    public function getId()
    {
        return $this->id;
    }
... lines 73 - 148
}
```

All right. Let's try it again. Refresh. No errors!

Edit the first genus. Check that out: it completely pre-filled the form for us. In fact, check out this weird "TEST" text inside of funFact. That is left over from an earlier tutorial. I hacked in this TEST string temporarily in getFunFact() so we could play with markdown. This *proves* that the form is using the getter functions to pre-fill things.

So, that's really interesting but let's take it out:

```
150 lines | src/AppBundle/Entity/Genus.php
... lines 1 - 12
class Genus
{
... lines 15 - 106
    public function getFunFact()
    {
        return $this->funFact;
    }
... lines 111 - 148
}
```

Refresh. Change the "Fun fact" to be even more exciting, hit enter, and there it is:

> Genus updated - you are amazing!

Edit that Genus again: there's the new fun fact. This is a *really* cool thing about the form framework: the new and edit endpoints are *identical*. The only difference is that one is passed default data.

So this is great! Except for the template duplication. That's not great still.

Chapter 15: Sharing Form Templates with include()

Adding edit was quick! But the *entire* template is now duplicated. This includes the code to render the form *and* the other blocks that include the needed CSS and JS files.

First, copy the form rendering code and move that into a new file: _form.html.twig:

13 lines | app/Resources/views/admin/genus/_form.html.twig

```
{{ form_start(genusForm) }}
    {{ form_row(genusForm.name) }}
    {{ form_row(genusForm.subFamily) }}
    {{ form_row(genusForm.speciesCount, {
        'label': 'Number of Species'
    }) }}
    {{ form_row(genusForm.funFact) }}
    {{ form_row(genusForm.isPublished) }}
    {{ form_row(genusForm.firstDiscoveredAt) }}

    <button type="submit" class="btn btn-primary" formnovalidate>Save</button>
{{ form_end(genusForm) }}
```

Paste it here.

In edit, just include that template: include('admin/genus/_form.html.twig'):

34 lines | app/Resources/views/admin/genus/edit.html.twig

```
... lines 1 - 22
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>Edit Genus</h1>

                {{ include('admin/genus/_form.html.twig') }}
            </div>
        </div>
    </div>
{% endblock %}
```

Copy that, open new.html.twig, and paste it there:

```
34 lines | app/Resources/views/admin/genus/new.html.twig
... lines 1 - 22
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>New Genus</h1>

                {{ include('admin/genus/_form.html.twig') }}
            </div>
        </div>
    </div>
{% endblock %}
```

Ok, I'm feeling better. Refresh now: everything still looks good.

And by the way, if there *were* any customizations you needed to make between new and edit, I would pass a variable in through the second argument of the include function and use that to control the differences.

Using a Form Layout

So let's fix the last problem: the duplicated block overrides.

To solve this, we'll need a shared layout between these two templates. Create a new file called formLayout.html.twig. This will *just* be used by these two templates.

Copy the extends code all the way through the javascripts block and delete it from edit.html.twig:

```
14 lines | app/Resources/views/admin/genus/edit.html.twig
... lines 1 - 2
{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>Edit Genus</h1>

                {{ include('admin/genus/_form.html.twig') }}
            </div>
        </div>
    </div>
{% endblock %}
```

Paste it in formLayout.html.twig:

22 lines | app/Resources/views/admin/genus/formLayout.html.twig

```
{% extends 'base.html.twig' %}

{% block stylesheets %}
    {{ parent() }}

    <link rel="stylesheet" href="//cdnjs.cloudflare.com/ajax/libs/bootstrap-datepicker/1.6.0/css/bootstrap-datepicker.css">
{% endblock %}

{% block javascripts %}
    {{ parent() }}

    <script src="//cdnjs.cloudflare.com/ajax/libs/bootstrap-datepicker/1.6.0/js/bootstrap-datepicker.min.js"></script>

    <script>
        jQuery(document).ready(function() {
            $('.js-datepicker').datepicker({
                format: 'yyyy-mm-dd'
            });
        });
    </script>
{% endblock %}
```

So this template *itself* will extend base.html.twig, but not before adding some stylesheets and some JavaScripts. In edit, re-add the extends to use this template: admin/genus/formLayout.html.twig:

14 lines | app/Resources/views/admin/genus/edit.html.twig

```
{% extends 'admin/genus/formLayout.html.twig' %}
... lines 2 - 14
```

Copy that, open new.html.twig and repeat: delete the javascripts and stylesheets and paste in the new extends:

14 lines | app/Resources/views/admin/genus/new.html.twig

```
{% extends 'admin/genus/formLayout.html.twig' %}

{% block body %}
    <div class="container">
        <div class="row">
            <div class="col-xs-12">
                <h1>New Genus</h1>

                {{ include('admin/genus/_form.html.twig') }}
            </div>
        </div>
    </div>
{% endblock %}
```

Try it! Cool! We're using our Twig tools to get rid of duplication!

A Word of Caution

Congrats team - that's it for our first form episode. You should feel dangerous. Most of the time, forms are easy, and amazing! They do *a lot* of work for you.

Let me give you one last word of warning: because this is how I see people get into trouble.

Right now, our form is bound to our entity and that makes this form super easy to use. But eventually, you'll need to build a form that does *not* look exactly like your entity: perhaps it has a few extra fields or is a combination of fields from several entities.

When you run into this: here's what I want you to do. Don't bind your form to your entity class. Instead, create a brand new class: I usually put these classes inside my Form directory. For example, GenusModel. This class will have the *exact* properties that your form needs.

Bind *this* class to your form and add all your validation rules like normal. After you submit your form, $form->getData() will return this *other* object. Then, it'll be your job to write a little bit of extra code that reads this data, updates your entities - or whatever else you need that data for - and saves things.

If you have questions, let me know in the comments.

There's certainly more to learn, but don't wait! Get out there and build something crazy cool!

Seeya guys next time!