

Blazor Server

Forms and Validation – Beyond the basics

2023

Customizing validation CSS classes

- CSS frameworks such as Bootstrap (<https://getbootstrap.com>), Materialize (<https://materializecss.com>), or Bulma (<https://bulma.io>) all have predefined classes for `valid` and `invalid` input states.
- Blazor allows us to use these classes—instead of the default ones it provides—by specifying them in a custom `FieldCssClassProvider`.

Creating a FieldCssClassProvider

Create the: BootstrapCssClassProvider.cs file:

```
using Microsoft.AspNetCore.Components.Forms;

namespace app.Validation;
public class BootstrapCssClassProvider : FieldCssClassProvider
{
    public override string GetFieldCssClass(EditContext editContext, FieldIdentifier fieldIdentifier){
        var isValid = !editContext.GetValidationMessages(fieldIdentifier).Any();
        if (editContext.IsModified(fieldIdentifier)){
            return isValid ? " is-valid" : "is-invalid";
        }
        return isValid ? "" : "is-invalid";
    }
}
```

<https://gist.github.com/brunobmo/f541401900fcb7b9a328bf584c825910>

Customizing validation CSS classes

- When deriving from `FieldCssClassProvider`, we need to override the `GetFieldCssClass` method.
- This method takes an `EditContext` and a `FieldIdentifier` that represents the field in the form we're getting CSS classes for.
- `EditContext` is the brain of the form and keeps track of the state of each field in the form.
- We can use the `GetValidationMessages` method on the `EditContext` to check if there are any validation messages for the current field.
- If there are, then we know the field is currently not valid and we can set the `isValid` variable accordingly, or vice versa

Customizing validation CSS classes

- Next, we can use the `IsModified` method on the `EditContext` to check if the field has been edited by the user in any way.
- For a field to be `modified`, the user must have `typed` something or `changed` a selection.
- Even typing into an empty field and then removing all the characters returning it to its originally empty state would class the field as `modified`.

Using custom FieldCssClassProviders with EditForm

- To use `BootstrapCssClassProvider` with the `EditForm` component, we need to plug it in. To do this, we use the `EditContext`.
- Internally, the `EditForm` creates an `EditContext` instance using that model.
- However, we can create an `EditContext` ourselves and pass that to the `EditForm` component instead of the model

Using custom FieldCssClassProviders with EditForm

- Let's change AddCard.razor:

```
<EditForm EditContext="_editContext" OnValidSubmit="SubmitForm">
(...)

@code {
    private EditContext _editContext = default!;
(...)

protected override void OnInitialized()
{
    _editContext = new EditContext(_card);
    _editContext.SetFieldCssClassProvider(new BootstrapCssClassProvider());
}
(...)
```

We pass the EditContext instance we create to the EditForm rather than passing it to the model directly.

Shows the new private field for our EditContext instance

Configures the EditContext to use our new BootstrapCssClassProvider

Using custom FieldCssClassProviders with EditForm

- Before we move on, we just need to tidy up our [CSS](#).
- We will [remove](#) the following classes from [wwwroot > css](#):

```
input.invalid,  
textarea.invalid,  
select.invalid {  
    border-color: red;  
}
```

```
input.valid.modified,  
text.valid.modified,  
select.valid.modified {  
    border-color: green;  
}
```

Building custom input components with InputBase

- Let's create a [new feature](#) to the cards, allowing the user to define how much time a card will appear in the home page (like a “flash sale”);
- This is a great opportunity for a [custom input component](#):

Time Available

Choose how much time the card is online

Time

2 Hours 0 Minutes

Building custom input components with InputBase

- The Blazor team has included a base type: `InputBase<T>`
- All we need to do is provide the `UI` and `implementation` for a method called `TryParseValueFromString`

Inheriting from InputBase<T>

- The first thing we need to do is create a new component in our ManageCards feature called `InputTime.razor`.

```
@inherits InputBase<int> ←  
  
<div class="input-time">  
  <div>  
    <input class="form-control" type="number" min="0" @onchange="SetHourValue" value="@_hours" />  
    <label>Hours</label>  
  </div>  
  <div>  
    <input class="form-control" type="number" min="0" max="59" @onchange="SetMinuteValue" value="@_minutes" />  
    <label>Minutes</label>  
  </div>  
</div>  
  
@code {  
  private int _hours;  
  private int _minutes;  
  protected override bool TryParseValueFromString(string? value, out int result, out string  
validationErrorMessage) => throw new NotImplementedException();  
}
```

The `@inherits` directive allows us to specify `InputBase<T>` as a base class for our component. The type parameter must match the type of the form model property the component will bind to.

When using `InputBase<T>`, we must provide an implementation for the `TryParseValueFromString` method. However, with our design, this method won't be called.

Inheriting from InputBase<T>

- The first thing we need to do is create a new component in our `ManageCards` feature called `InputTime.razor`.
- In the code block, we have provided an implementation for the `TryParseValueFromString` method.
- This method must be implemented by any component derived from `InputBase<T>`.
- Its job is to convert a `string value` to the type that the component is bound to on the form model.
- However, depending on how you build a `custom input component`, this method may not ever get called.

Inheriting from InputBase<T>

- The `base class` provides two properties to `update the model value`:
 - `CurrentValueAsString`
 - `CurrentValue`
- We could bind that input directly to the `CurrentValueAsString` property.
- We'd need to use this property, as HTML inputs only work with string values.
- When a `value was entered` in the input, it would set `CurrentValueAsString`, Blazor call `TryParseValueFromString` method

Inheriting from InputBase<T>

- Let's change `InputTime.razor`:

```
@inherits InputBase<int>
<div class="input-time">
  <div>
    <input class="form-control" type="number" min="0" @onchange="SetHourValue" value="@_hours" />
    <label>Hours</label>
  </div>
  <div>
    <input class="form-control" type="number" min="0" max="59" @onchange="SetMinuteValue" value="@_minutes" />
    <label>Minutes</label>
  </div>
</div>
```

Inheriting from InputBase<T>

- Let's change InputTime.razor:

```
@code {
    private int _hours;
    private int _minutes;
    ...
    private void SetHourValue(ChangeEventArgs args){
        int.TryParse(args.Value?.ToString(), out _hours);
        SetCurrentValue();
    }
    private void SetMinuteValue(ChangeEventArgs args){
        int.TryParse(args.Value?.ToString(), out _minutes);
        SetCurrentValue();
    }
    private void SetCurrentValue() => CurrentValue = (_hours * 60) + _minutes;

    protected override void OnParametersSet(){
        if (CurrentValue > 0){
            _hours = CurrentValue / 60;
            _minutes = CurrentValue % 60;
        }
    }
}
```

Using the `ChangeEventArgs`, this method extracts the new value entered by the user and converts it to an integer and sets the `_hours` field. It then calls `SetCurrentValue`.

The `_hours` and `_minutes` fields are converted to a total minutes value, and then the `CurrentValue` property is set to that value.

Loading existing values

Inheriting from InputBase<T>

- Until now, when we've bound to HTML inputs, we've used the `bind directive`.
- However, that method wouldn't be optimal in this scenario.
- We need to perform some `actions` every time either the `hour` or minute values change.
- While we could use the `bind directive with a property` and do the work inside the setter method, that would still require us to have a private backing field.

Inheriting from InputBase<T>

- Note that `CurrentValue` property comes from the `base class`.
- By setting this property, all the logic for triggering `validation` and `updating` the model value will be run
- The final piece to the component involves loading an `existing value`—for example, when the component is being used to edit an existing record.
- For this we will use the `OnParametersSet` life cycle method

Styling the custom component

- We will add a [new CSS file](#) into the `Features > ManageCard` folder called `InputTime.razor.css`

```
.input-time {  
    display: flex;  
}  
.input-time div {  
    display: flex;  
    align-items: center;  
    margin-right: 20px;  
}  
.input-time div input {  
    width: 90px;  
    margin-right: 10px;  
}  
.input-time div label {  
    margin-bottom: 0;  
}
```

Styling the custom component

- The last piece of styling we need to configure is for validation.
- Another nice feature of using InputBase is that it provides us with a property called CssClass that outputs the correct validation classes based on our field's state.
- We're going to reference the CssClass property in the class attribute on both of our input elements:

```
<input class="form-control" @CssClass" type="number" min="0" @onchange="SetHourValue"  
value="@_hours" />
```

the quotation mark is necessary in this case to indicate that the value of the CssClass variable should be treated as a string when binding it to the "class" attribute.

Using the custom input component

- Let's add a new section to the form (AddCard.razor):

```
(...)
<FormSection Title="Time Available" HelpText="Choose how much time the card is online">
  <FormFieldSet Width="col-5">
    <label for="cardTime" class="font-weight-bold text-secondary">Time</label>
    <InputTime @bind-Value="_card.TimeInMinutes" id="cardTime" />
    <ValidationMessage For="@(() => _card.TimeInMinutes)" />
  </FormFieldSet>
</FormSection>
(...)
```

Using the custom input component

- Let's update **CardValidator** class:

```
RuleFor(x => x.TimeInMinutes).GreaterThan(0).WithMessage("Please enter a time");
```

- And **Card** class with a new field:

```
public int TimeInMinutes { get; set; }
```

Exercise

- Test everything
- If we click submit a message: “Please add a tag” message appear. It doesn’t disappear when we insert a tag

Id	Name		
1	<input type="text" value="1"/>		

Please add a tag

Add Tag

Working with files

- We're going to start by adding the `InputFile` component to our `form`:

```
<FormFieldSet Width="col-6">
  <label for="cardImage" class="font-weight-bold text-secondary">Image</label>
  <InputFile OnChange="LoadCardImage" class="form-control-file" id="cardImage" accept=".png,.jpg,.jpeg" />
</FormFieldSet>
```

Working with files

- The most important point to notice is that the `InputFile` component **doesn't use the bind directive** as the other input components do.
- Instead, we must handle the `OnChange` event it exposes.
- Just as with file uploading in regular HTML forms, we can provide a list of `file types` we want the user to be able to upload using the `accept` attribute.
- Under the hood, the `InputFile` component renders an HTML input element with a type of file. The `accept` attribute is passed down to this element when the component renders.

Working with files

- Now that we have the `InputFile` component in place, we need to add the `LoadCardImage` method to the code block.

```
(...)
private IBrowserFile? _cardImage;
(...)
private void LoadCardImage(InputFileChangeEventArgs e) => _cardImage = e.File;
```

Uploading files when the form is submitted

- We're going to extend this logic to [check](#) if an [image](#) has been [selected](#) and make an [additional call](#) to [upload](#) it.
- Starting with the `SubmitForm` method, we're going to update the existing code

Uploading files when the form is submitted

```
private async Task SubmitForm(){
    var response = await Mediator.Send(new AddCardRequest(_card));
    if (response.insertedId == ""){
        _errorMessage = "There was a problem saving your card.";
        _submitSuccessful = false;
        return;
    }

    if (_cardImage is null){ ← Checks if a card image has been selected
        _submitSuccessful = true; ← If no image is selected, reset the form.
        ResetForm();
        return;
    }
    var newImageName = await ProcessImage(response.insertedId, _cardImage);
}
```

Mongo Request for store Card

Checks if a card image has been selected
If no image is selected, reset the form.

Call ProcessImage method passes in the card ID returned from the previous API call.

Uploading files when the form is submitted

- If a **card** has been selected, then we call the **ProcessImage** method.
- This method takes the **card ID** returned from the **AddCardRequest**.

```
private async Task<string> ProcessImage(string cardId, IBrowserFile? _cardImage)
    string imageUploadResponse = await UploadImage.HandleUpload(cardId, _cardImage);
    if (string.IsNullOrWhiteSpace(imageUploadResponse)){
        _errorMessage = "Your card was saved, but there was a problem uploading the image.";
        return;
    }

    _submitSuccessful = true;
    ResetForm();
    return imageUploadResponse;

}
```

Building the upload logic

- The final piece to the add is **handling upload**.
- This will go under Features > ManageCards.
- First, we will add a package: `dotnet add package SixLabors.ImageSharp --version 3.0.1`
- We'll use this package to **resize** the uploaded image to the **correct dimensions** for our app.

Building the upload logic

- Second, we'll use a [folder images](#) in the wwwroot of the API project.
- This is where we'll store all the [cards images](#) that are uploaded.

Building the upload logic

- Let's create `UploadCardImage.cs` to handle upload logic:

```
public class UploadImage {
    public static async Task<string> HandleUpload(string cardId, IBrowserFile? file, CancellationToken cancellationToken = default){
        if (file.Size == 0) {
            return "No image found.";
        }
        var filename = $"{Guid.NewGuid()}.jpg";
        var saveLocation = Path.Combine(Directory.GetCurrentDirectory(), "wwwroot/images", filename);
        var resizeOptions = new ResizeOptions {
            Mode = ResizeMode.Pad,
            Size = new Size(640, 426)
        };
        var image = await Image.LoadAsync(file.OpenReadStream());
        image.Mutate(x => x.Resize(resizeOptions));
        await image.SaveAsJpegAsync(saveLocation, cancellationToken: cancellationToken);
        return filename;
    }
}
```

Creates a new filename for the uploaded image that is safe to use in the application

Specifies the save location for the file

Using ImageSharp, resize the uploaded image to the correct dimensions and save it to the filesystem

Building the upload logic

- Now we need to **update** Mongo Database to **update the image** with the generated name;
- Let's create **UpdateCardImageRequest**:

```
public record UploadCardImageRequest(string cardId, string image) : IRequest<UploadCardImageRequest.Response>
{
    public const string RouteTemplate = "https://data.mongodb-api.com/app/data-
docuz/endpoint/data/beta/action/updateOne";
    (...)

    public record Response{
        public int modifiedCount { get; set; }
        public Response(int modifiedCount){
            this.modifiedCount = modifiedCount;
        }
    }
}
```

Building the upload logic

- Thus, we will create the `UpdateCardImageRequestHandler` for handling the request to MongoDB to update `image url` after the new name generation:

```
public class UpdateCardImageHandler : IRequestHandler<UploadCardImageRequest, UploadCardImageRequest.Response>{  
    (...)  
    public async Task<UploadCardImageRequest.Response> Handle(UploadCardImageRequest request, CancellationToken cancellationToken){  
        var requestMessage = new HttpRequestMessage(HttpMethod.Post, UploadCardImageRequest.RouteTemplate);  
        requestMessage.Headers.Add("api-key", AddCardRequest.ApiKey);  
  
        var mongoJson =  
            "{\"c ollection\":\\""  
            + AddCardRequest.Collection  
            + "\",  
            + "\"database\":\\""  
            + AddCardRequest.Database  
            + "\",\"dataSource\":\\""  
            + AddCardRequest.DataSource  
            + "\",\"filter\": { \"_id\": { \"$oid\": \\""+ request.cardId +"\\" } },"  
            + "\"update\": { \"$set\": { \"Image\":\\""+ request.image +"\\""  
            + "}}};  
  
        (...)
```

Building the upload logic

- **Exercises:**
 - Update `AddCard.razor` to include this logic, i.e. `insert the record and then update` it with new image name
 - Put image upload mandatory
 - Create a loading message after form being submitted

Updating the form to allow editing

- The final piece of work we're going to do is [refactor](#) our form so it can handle both [adding](#) and [editing](#) of cards.
- To do this, we'll extract the form from [AddCard.razor](#) and make it into a [standalone](#) component.
- We can share it with [AddCard.razor](#) and a new page we'll add called [EditCard.razor](#).

Updating the form to allow editing

- First, let's reorganize our `ManageCards` folder structure (fix errors this change generate):

```
✓ ManageCards
  ✓ AddCard
    ≡ AddCard.razor      9+, U
    C# AddCardHandler.cs   U
    C# AddCardRequest.cs   U
  ✓ EditCard
  ✓ Shared
    ≡ FormFieldSet.razor  U
    ≡ FormSection.razor   U
    # FormSection.razor.css U
    ≡ InputTime.razor     U
    # InputTime.razor.css U
    C# UpdateCardImageRequest... U
    C# UpdateCardImageRequest... U
    C# UploadCardImage.cs    1, U
```

subfeatures

Separating the card form into a standalone component

- The first task we'll tackle is separating out the card form from the AddCard and making it into its own component, capable of handling both adding and editing.
- We will refactor the code inside AddCard, creating a new component that allow the encapsulation of the form behaviour.
- Add the CardForm.razor

```
<EditForm EditContext="_editContext" OnValidSubmit="SubmitForm">
(...)
</EditForm>
```

Separating the card form into a standalone component

- Add the `CardForm.razor`

```
@code {
    private EditContext _editContext = default!;
    private Card _card = new Card();
    private IBrowserFile? _cardImage;
    private Boolean activeSpinner = false;
    [Parameter]
    public Func<Card, IBrowserFile?, Task> OnSubmit { get; set; }

    protected override void OnInitialized(){...}
    public void ResetForm(){...}

    private void LoadCardImage(InputFileChangeEventArgs e){...}

    private async Task SubmitForm(){
        await OnSubmit(_card, _cardImage);
    }
}
```

The `OnSubmit` parameter defines an event (delegate) that passes the data entered in the form to the handler specified by the consuming component.

Note that the `ResetForm` method is public. This will be called by the consuming component to reset the form, if required.

The handler for the `EditForm`'s `OnValidSubmit` event will invoke the `CardForm`'s `OnSubmit` event. This allows the handler to decide how to persist the data from the form.

Separating the card form into a standalone component

- We've added a component parameter that defines a component event—[On-Submit](#).
- When the [EditForm's OnValidSubmit](#) event is invoked, the [SubmitForm](#) method is run.
- This, in turn, calls the [OnSubmit](#) event passing in the card data from the form, as well as the image, if one has been selected.
- It's worth noting here that we're not using the [EventCallback<T>](#). This is because we want to manually control when `StateHasChanged` is called in the handler.

Refactoring AddTrailPage.razor

- We will update the markup section of the **AddCard** with the following code:

```
@inject IMediator Mediator  
@using app.Features.ManageCards.Shared;  
  
@page "/add-card"  
  
<PageTitle>Add Card</PageTitle>  
  
(...)  
@if (_submitSuccessful){  
    (...)  
}  
else if (_errorMessage is not null){  
    (...)  
}  
  
<CardForm @ref="_cardForm" OnSubmit="SubmitNewCard" />
```

The original EditForm component is replaced with the new CardForm component. Blazor's `@ref` directive is used to capture a reference to the component. This will be used to invoke the `ResetForm` method. We also provide a `OnSubmit` handler.

Refactoring AddTrailPage.razor

- Before we jump into the code block, we have an opportunity to extract some **reusable code** out into components.
- The markup that shows the **success** and **error** alerts will also be needed on the **edit card** page when we add it a little later.
- This will save us from duplicating a fair amount of code, and if we ever want to update our success and error alerts, we can do it in a **single place**.

Refactoring AddTrailPage.razor

- Create a new component in the Shared folder called **SuccessAlert.razor**.

```
<div class="alert alert-success" role="alert">
    <svg xmlns="http://www.w3.org/2000/svg" width="18" height="18"
        fill="currentColor" class="bi bi-check-circle-fill" viewBox="0 0 16 16">
        <path fill-rule="evenodd" d="M16 8A8 8 0 1 1 0 8a8 8 0 0 1 16
        0zm-3.97-3.03a.75.75 0 0 0-1.08.022l7.477 9.417 5.384 7.323a.75.75 0 0
        0-1.06 1.06l6.97 11.03a.75.75 0 0 0 1.079-.02l3.992-4.99a.75.75 0 0
        0-.01-1.05z" />
    </svg>
    @Message
</div>
@code {
    [Parameter, EditorRequired]
    public string Message { get; set; } = default!;
}
```

Refactoring AddTrailPage.razor

- We'll add a new component called **ErrorAlert.razor** and add the following code

```
<div class="alert alert-danger" role="alert">
    <svg xmlns="http://www.w3.org/2000/svg" width="18" height="18"
        fill="currentColor" class="bi bi-x-circle-fill" viewBox="0 0 16 16">
        <path fill-rule="evenodd" d="M16 8A8 8 0 1 1 0 8a8 8 0 0 1 16
0zM5.354 4.646a.5.5 0 1 0 -.708.708L7.293 8l-2.647 2.646a.5.5 0 0 0
.708.708L8 8.707l2.646 2.647a.5.5 0 0 0 .708-.708L8.707 8l2.647-2.646a.5.5
0 0 0 -.708-.708L8 7.293 5.354 4.646z" />
    </svg>
    @Message
</div>
@code {
    [Parameter, EditorRequired]
    public string Message { get; set; } = default!;
}
```

Refactoring AddTrailPage.razor

- We can now update the **AddCard** to use the new components:

```
(...)
@if (_submitSuccessful)
{
<SuccessAlert Message="Your card has been added successfully!" />
}
else if (_errorMessage is not null)
{
<ErrorAlert Message="@_errorMessage" />
}
(...)
```

Refactoring AddTrailPage.razor

- With that small refactor out of the way, we can get back to updating the code block for [AddCard.razor](#).

```
@code {
    private bool _submitSuccessful;
    private string? _errorMessage;
    private CardForm _cardForm = default!;
    private async Task SubmitNewCard(Card _card, IBrowserFile? _cardImage){
        var response = await Mediator.Send(new AddCardRequest(_card));
        if (response.insertedId == "" || _cardImage is null){
            _errorMessage = "There was a problem saving your card."; ← If there was an error saving the
            _submitSuccessful = false;                                card, manually call
            StateHasChanged();                                     StateHasChanged to update the
            return;                                                 UI with the error message.
        }
        var newImageName = await ProcessImage(response.insertedId, _cardImage);
        var responseImageUpdate = await Mediator.Send(new UploadCardImageRequest(response.insertedId,
newImageName));
        (continues...)
    }
}
```

Shows a manual call to StateHasChanged to trigger an update of the UI

Refactoring AddTrailPage.razor

- With that small refactor out of the way, we can get back to updating the code block for `AddCard.razor`.

```
if (responseImageUpdate.modifiedCount == 0){
    _errorMessage = "There was a problem saving your image.";
    _submitSuccessful = false;
    _cardForm.ResetForm();
    StateHasChanged(); ← If we are here, we've attempted to upload a trail image. We trigger a UI update to
    return; show the result of that operation.
}
_cardForm.ResetForm();
}

private async Task<string> ProcessImage(string cardId, IBrowserFile? _cardImage){
    string imageUploadResponse = await UploadImage.HandleUpload(cardId, _cardImage);
    if (string.IsNullOrWhiteSpace(imageUploadResponse)){
        _errorMessage = "Your card was saved, but there was a problem uploading the image.";
        return "";
    }
    _submitSuccessful = true;
    StateHasChanged();
    return imageUploadResponse;
}
```

Refactoring AddTrailPage.razor

- Test everything and ensure the loading still works after the refactor.

Adding the edit trail feature

- There are a few jobs for us to do:
 - We must update the [Card class](#)—specifically, to handle updating the card image
 - We need to add two [new requests](#) for our edit functionality: [EditCardRequest](#) and [GetCardRequest](#).

Adding the edit trail feature

- When editing a card, we will need to be able to display the card's [current image](#), if it has one.
- We will also need to give the user the ability to [remove the image](#), update it, or leave it unchanged.
- To enable these scenarios, we'll update the class with two additional properties and a new [enum](#).

Adding the edit trail feature

```
public class Card{  
    (...)  
    public string Image { get; set; } = "";  
    public ImageAction ImageAction { get; set; }  
}  
  
public enum ImageAction  
{  
    None,  
    Add,  
    Remove  
}(...)
```

Image holds the filename of an existing image.

ImageAction allows us to set what operation to perform on the trail image when updating the trail.

Contains the various operations that can be performed on an image

Adding the edit trail feature

- We're going to add is the GetCardRequest. We'll add this in the new EditCard folder we just created.

```
public record GetCardRequest(string cardId) : IRequest<GetCardRequest.Response>
{
    public const string RouteTemplate = "https://data.mongodb-api.com/app/data-
docuz/endpoint/data/beta/action/findOne";
    (...)

    public record Response(Card card);
    public record Card(
        int Id,
        string Name,
        string Description,
        string? Image,
        DateTime? Date,
        int TimeInMinutes,
        IEnumerable<Tag> tags);
    public record Tag(int Id, string Name, string Description);
}
```

The record contains a single property that holds the ID of the card to retrieve.

The request returns a response that contains all the information needed by the Card form.

Adding the edit trail feature

- The other request we need to add is the EditCardRequest. This will be called when the form is submitted once the user has finished editing.

```
public record EditCardRequest(Card card) : IRequest<EditCardRequest.Response>
{
    public const string RouteTemplate = "https://data.mongodb-api.com/app/data-
docuz/endpoint/data/beta/action/UpdateOne";
    public record Response(bool IsSuccess);
}

public class EditCardRequestValidator : AbstractValidator<EditCardRequest>
{
    public EditCardRequestValidator(){
        RuleFor(x => x.card).SetValidator(new CardValidator()); ←
    }
}
```

Shows the edited card data stored in the Card property on the record

To validate the trail, we reuse the CardValidator that lives with the Card. This ensures we're only using one set of validation rules whether we're adding or editing a trail.

Adding the edit trail feature

- **Exercise:**
 - Let's finish the edit trail

Blazor Server

Forms and Validation – Beyond the basics

2023