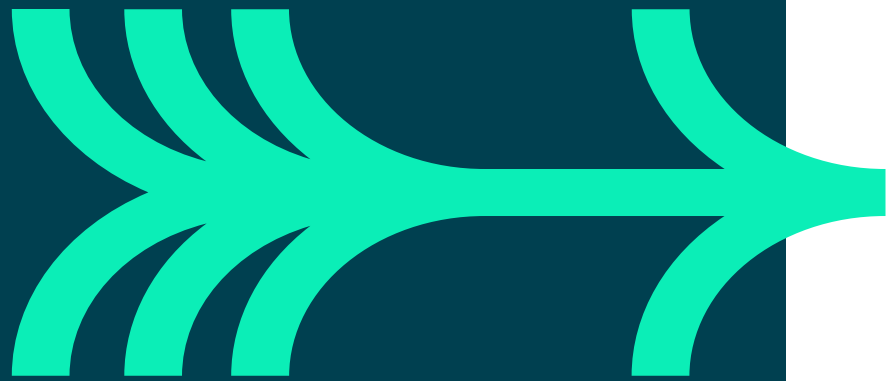
POWERING POTENTIAL

Forms

→ Programming with JavaScript

INTRODUCTION



- Understanding forms
  - What are forms?
  - HTML hierarchy
  - Selecting form elements
- Accessing form elements
  - Inputs
  - Radio buttons
  - Select options
- Events
  - Form events
  - Control Events

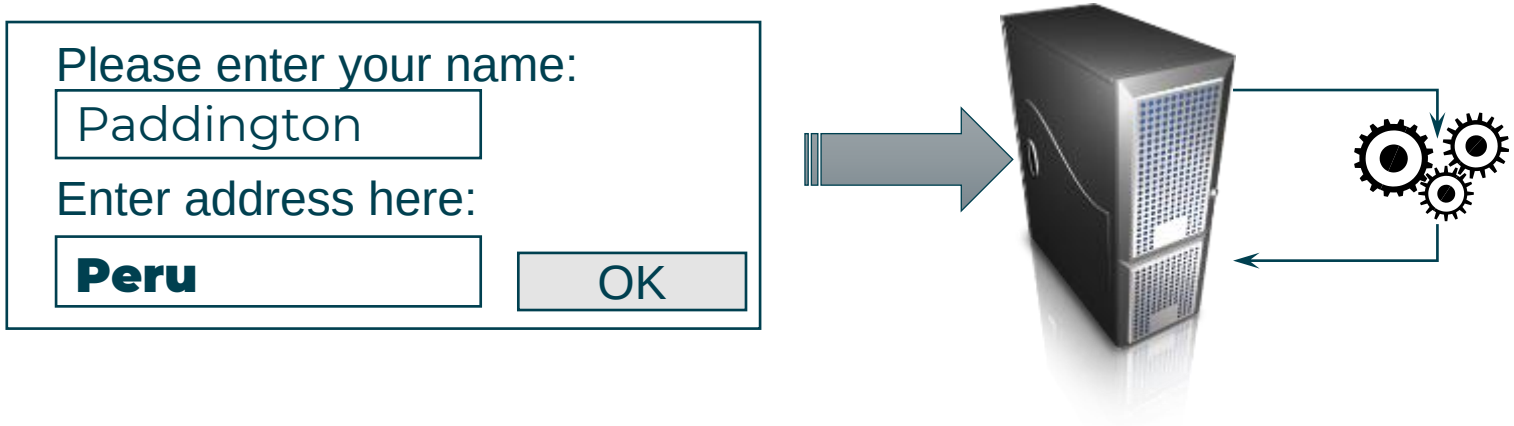
Understanding forms – what are forms?

- Forms allow us to send data to the server for processing

```
<form action="/folder/enrol.aspx" method="POST">
    <input type="text" name="username" />
    <input type="text" name="address" />
    <input type="submit" value="OK" />
</form>
```

Define:

- Form – action & method
- Inputs– name, type & value



Understanding forms – HTML form inputs

- Text boxes/areas

```
<input type="text" name="username" value="">
<input type="password" name="password" value="">
<textarea name="comment" rows="10" cols="40"></textarea>
```

- Checkboxes and radio buttons

```
<input type="checkbox" name="milk" value="CHECKED">Milk?<br>
<input type="radio" name="drink" value="tea">Tea<br>
<input type="radio" name="drink" value="coffee">Coffee<br>
<input type="radio" name="drink" value="choc">Chocolate<br>
```

- Selections

```
<select name="title">
    <option value="Dr">Dr</option>
    <option value="Ms">Ms</option>
    <option value="Mr">Mr</option>
</select>
```

```
<select name="prod" multiselect>
    <option value="a">Apples</option>
    <option value="p">Pears</option>
    <option value="g">grapes</option>
</select>
```

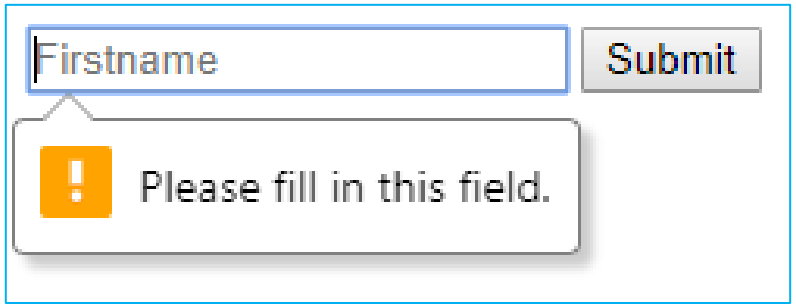
HTML5 Elements

HTML5 introduced a wave of new input types:

- `color`
- `date`
- `email`
- `month`
- `number`
- `range`
- `search`
- `tel`
- `Time`
- `datetime-local`
- `url`
- `week`

Required fields

- You can force a field to be mandatory on the client



- On a submit action, an error message may appear:

```
<input type="text" autofocus="true" required/>
```

Pattern

- The pattern attribute allows use of regular expressions

```
<input type="text" pattern="[0-9]{13,16}" name="CreditCardNumber />
```

- We must ensure the user understands the regular expression using plain-language explanations of the requirements

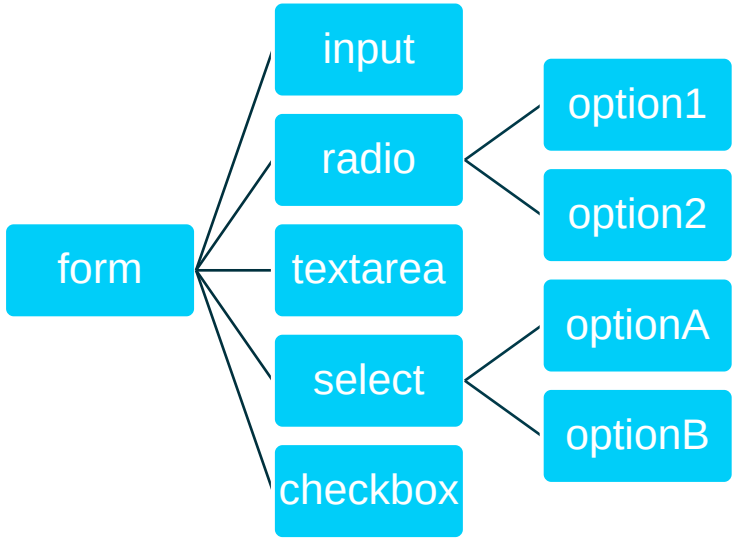
Form validation

- As we have seen, some browsers ship with validation
- These are JavaScript-free client validation
- Uneven support and UI feedback may be more trouble than benefit
  - You can tell a browser to switch it off
  - Still benefiting from the semantic types

```
<form novalidate>
    <input type="email" id="addr">
    <input type="submit" value="Subscribe">
</form>
```

Understanding forms – HTML hierarchy

- The Form is a DOM object and container of other elements
  - When a form is submitted, these details are sent to the server
    - → The majority of the form fields hold a single value
    - → Radio and select controls are slightly more complex



Understanding forms – selecting form elements

- You can use DOM or BOM techniques to select forms (DOM should be preferred)
  - The BOM maintains an array of form objects
  - The DOM allows id or hierarchical selection and is significantly faster
- Elements can have a name and an id attribute
  - Name is needed if you are going to submit a form to the server

```
<form name="demo" id="demo" action="process.pl">
    ...
</form>
<script>
    frm1 = document.demo;
    frm2 = document.forms[0];
    frm3 = document.forms["demo"];
    frm4 = document.getElementById("demo");
</script>
```

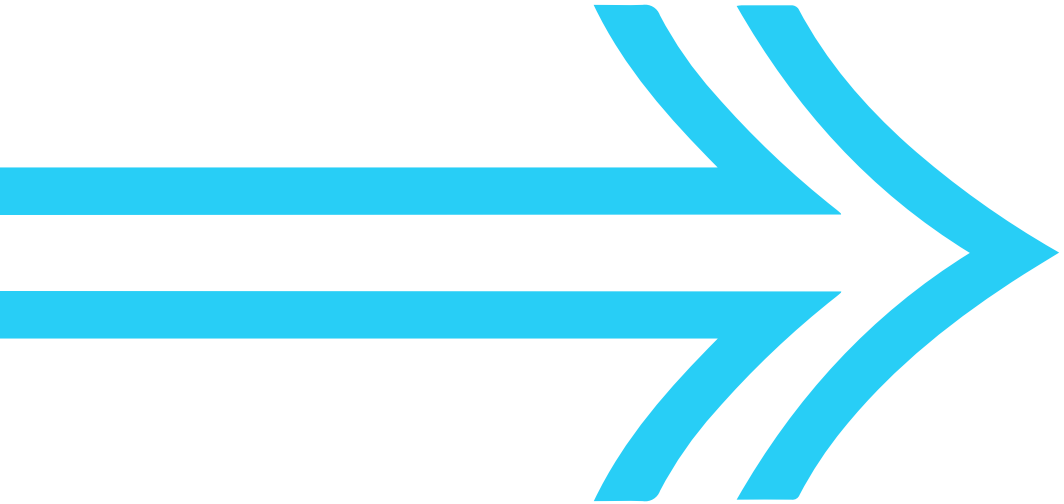
Accessing input elements

- Elements are sub objects of the form object
- Once selected, the input object has a series of properties.

Attribute	Value	Description
alt	text	Specifies an alternate text for an image (only for type="image")
checked	checked	Specifies that an element should be preselected when the page loads (for type="checkbox" or type="radio")
disabled	disabled	Specifies that an <input> element should be disabled
maxlength	number	Specifies the maximum number of characters allowed in an element
minlength	number	Specifies the minimum number of characters allowed in an element
name	name	Specifies the name of an <input> element
readonly	readonly	Specifies that an input field should be read-only
size	number	Specifies the width, in characters, of an <input> element
value	text	Specifies the value of an <input> element
required	n/a	HTML5 attribute that specifies this field requires a value
placeholder	text	Placeholder text to display within the element
autofocus	n/a	Instruct the browser to place focus on this field once rendered
spellcheck	n/a	Instruct the browser that spell-checking should take place on user input

Radio buttons

- Radio buttons are unique as they can share the same name value
  - But not the same id
  - Radio buttons are a mutually exclusive selection list
- To find the selected radio button in a group:
  - Select the radio buttons in the group
  - Loop over the array looking for the checked element
  - Select the value



Accessing select options

The selected element holds several useful properties to know what options have been selected:

- **`selectedIndex`**: The index of the first selected item
- **`selectedOptions`**: An **`HTMLCollection`** representing the set of **`<option>`** elements that are selected
- **`value`**: A string representing the value of the first selected item

```
let select = document.querySelector('select');
console.log(select.value);
```

Form methods and events

Properties

- Those relating to HTML attributes
  - → `action`
  - → `encoding (ENCTYPE)`
  - → `method`
  - → `name`
  - → `target`
- Others
  - → `length`

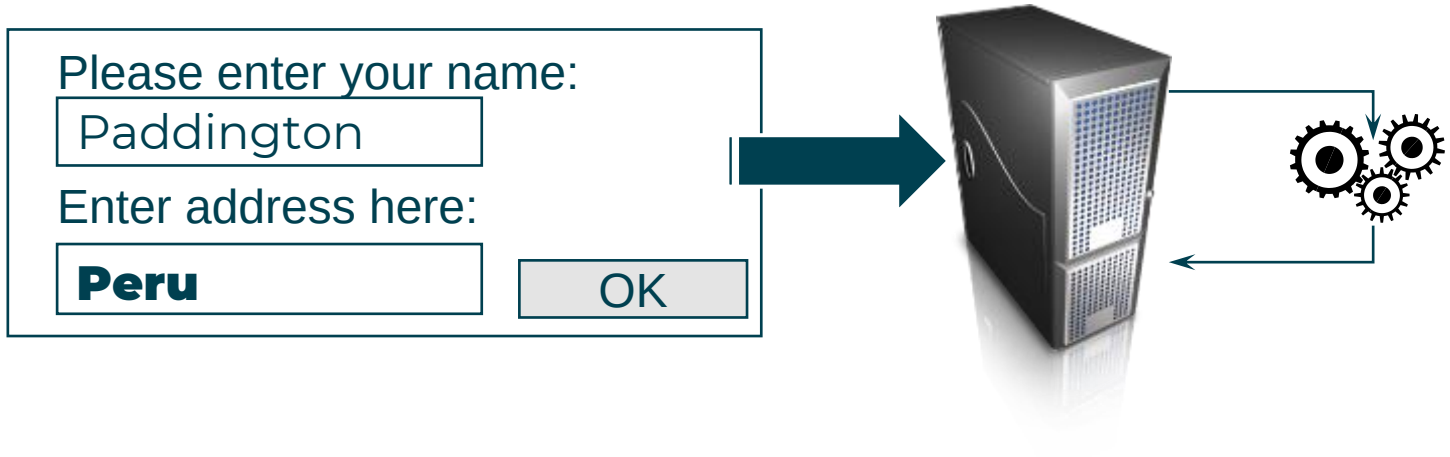
Methods

- Perform actions corresponding to form buttons
  - → `submit()`
  - → `reset()`

Understanding forms – form submission (GET)

- A form is submitted when a button is pressed
  - type="submit" or type="image"
- Form data is sent to the server along with the URL request
- JavaScript can intercept form submission for validation

```
GET /…/enrol.aspx?username=Paddington&address=Peru HTTP/1.0
```



Form events

- The events of the form object are of great importance
- When a user submits a form, they raise an **`onsubmit`** event
  - Normally the event fires, no additional interaction occurs
  - Data is transmitted to the server
- Subscribing to the **`onsubmit`** event allows you to check the data
  - Cancelling the submit action, if necessary
- There is also an **`onreset`** event
  - Fires if the user has clicked a reset button
  - Use it for form clean up and wiping variables

Input element events

Main events of input elements:

- **`onfocus`**
  → The object is receiving the input focus
- **`onblur`**
  → The object is losing the input focus
- **`onchange`**
  → Edit controls only
  → The object is losing the input focus and its contents have changed
- **`onclick`**
  → Checkboxes and button types only
  → The object has been clicked
  → Especially useful with **`type="button"`** input elements
- **`onselect`**
  → Edit controls only
  → Some text has been selected within the control

Form validation – the submit event

You may either want to validate on the field or the form.

- The form validation occurs during the **`onsubmit`** event
- By using inline validation, the validation function must return a **`false`**

→ *Never do this but you may inherit it*

- In programmatic events, we can **`preventDefault()`** behaviour

→ Much the preferred approach!

```
function validateForm(evt) {
  let error = false;
  //error checking code
  if (error === true) {
    evt.preventDefault();
    //feedback to user
  }
};

window.onload = function () {
  let element = document.querySelector("#payment");
  element.addEventListener("submit",
validateForm, false);
};
```

Form validation – field validation

Field validation allows you to check the value of an individual field.

- **blur**, **focus** and **change** are the most important events

The **change** event fires when the value in a form has changed.

- For check boxes and the like, this occurs when the value changes
- Text inputs change when the user leaves the field

```
let cardtype = document.querySelectorAll('input[name=cardtype]');

for (let i = 0; i < cardtype.length; i++) {
    cardtype[i].addEventListener('change', checkSelection);
}
```

There are events to check user input when we leave or enter a field:

- **focus** on entry
- **blur** when you leave

QuickLab 22 – Form Validation

- Creating field and page submission validation
  → Hooking into events programmatically
  → Checking input presence
  → Reusing field validation for page submission

REVIEW

- Understanding forms
  - → What are forms?
  - → Selecting form elements
- Accessing form elements
  - → Inputs
  - → Radio buttons
  - → Select options
- Events
  - → Form events
  - → Control Events
  - → Form validation
- Regular expressions
  - → What is RegEx?
  - → Using RegEx to analyse data