CSIT128 / CSIT828

More on JavaScript

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Form validation

```
<form action="myService" method="get"
  onSubmit="return validateForm()">

 ...  your form goes here ...

</form>
```

Use form attribute `onSubmit` to check input before form submission

```
<script>
function validateForm() {
    if (... something wrong ...) {
        return false;
    }
    return true;
}
</script>
```

When function returns `false`, form will not be submitted

Form validation

Example 1: we want user to fill out the email, if email is not filled out then we will alert the user

```
<form action="myService" method="get" onSubmit="return
validateForm()">

Email: <input id="email" type="text" name="email">
<br /><br />
<input type="submit" value="Submit">

</form>
```

Form validation

Example 1: we want user to fill out the email, if email is not filled out then we will alert the user

```
<script>
function validateForm() {
    var email = document.getElementById("email").value;

    if (email == null || email == "") {
        alert("Email must be filled out");
        return false;
    }

    return true;
}
</script>

Email: <input id="email" type="text" name="email">
```

Form validation

Example 2:
http://www.uow.edu.au/~dong/w3/example/js/validation2.html

What if user enter only whitespaces?

The trim() method removes whitespace from both sides of a string.

```
<script>
function validateForm() {
    var email = document.getElementById("email").value;

    if (email == null || email.trim() == "") {
        alert("Email must be filled out");
        return false;
    }

    return true;
}
</script>

Email: <input id="email" type="text" name="email">
```

Form validation

Example 3:
http://www.uow.edu.au/~dong/w3/example/js/validation3.html

If user didn't fill out the email, we want to display an error message.
We use a **span** element as a placeholder for the error message.

```
<form action="myService" method="get" onSubmit="return
validateForm()">

Email: <input id="email" type="text" name="email">
<span id="emailError"></span>
<br /> <br />
<input type="submit" value="Submit">

</form>
```

Form validation

If user didn't fill out the email, we want to display an error message.
We use a `span` element as a placeholder for the error message.

```
function validateForm() {
  var email = document.getElementById("email").value;

  if (email == null || email.trim() == "") {
    document.getElementById("emailError").innerHTML =
      "Email must be filled out";

    return false;
  }

  return true;
}
```

```
<span id="emailError"></span>
```

Form validation

We want the error message has the color red.

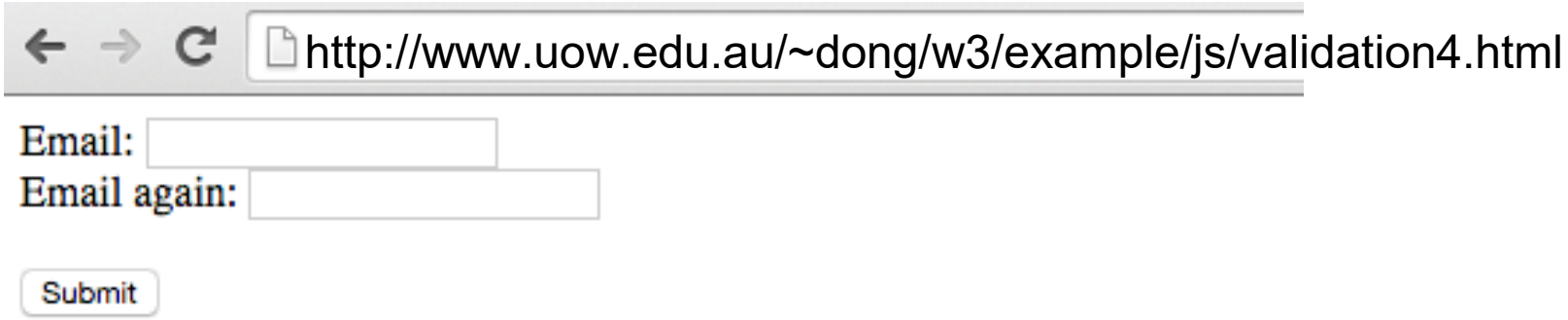
```
<style>
#emailError{
  color: red;
}
</style>
```

```
<span id="emailError"></span>
```

Form validation

Example 4: We want to have two input fields. One for email and another one for email confirmation. User has to fill in the same email for both input fields.

```
<form action="myService" method="get" onSubmit="return
validateForm()">

Email: <input id="email" type="text" name="email">
<span id="emailError"></span>
<br />
Email again: <input id="email2" type="text" name="email2">
<span id="emailError2"></span>
<br /> <br />
<input type="submit" value="Submit">

</form>
```



Form validation

```
function validateForm() {
  var email = document.getElementById("email").value;
  if (email == null || email.trim() == ""){
    document.getElementById("emailError").innerHTML
      = "Email must be filled out";
    return false;
  }

  var email2 = document.getElementById("email2").value;
  if (email2 == null || email2.trim() == ""){
    document.getElementById("emailError2").innerHTML =
      "Email must be filled out";
    return false;
  }

  if(email.trim() != email2.trim()){
    document.getElementById("emailError2").innerHTML =
      "Email does not matched";
    return false;
  }
  return true;
}
```

Form validation

We want all the error messages have the color red.

```
<style>
#emailError{
  color: red;
}

#emailError2{
  color: red;
}
</style>
```

```
<span id="emailError"></span>
<span id="emailError2"></span>
```

Form validation

Better solution: using **class**

```
<style>
.errorMessage{
  color: red;
}
</style>
```

```
<span id="emailError" class="errorMessage"></span>
<span id="emailError2" class="errorMessage"></span>
```

Form validation

Now suppose that user didn't fill out the email and click Submit, there will be a red error message next to the first input field.

Suppose that user fixed the error by filling out the first email, but leaving the second email field blank.

When the user clicks Submit, we will see that the error message next to the first input field still shows.

Form validation

http://www.uow.edu.au/~dong/w3/example/js/validation4b.html

We will fix the javascript code

```
function validateForm() {
  var email = document.getElementById("email").value;

  if (email == null || email.trim() == ""){
    document.getElementById("emailError").innerHTML =
      "Email must be filled out";
    return false;
  }else{
    document.getElementById("emailError").innerHTML = "";
  }
...
```

Form validation

We will fix the javascript code

```
function validateForm() {
...
  var email2 = document.getElementById("email2").value;

  if (email2 == null || email2.trim() == ""){
    document.getElementById("emailError2").innerHTML =
      "Email must be filled out";
    return false;
  }else{
    document.getElementById("emailError2").innerHTML = "";
  }
...
```

Form validation

We will fix the javascript code

```
function validateForm() {
...
  if(email.trim() != email2.trim()){
    document.getElementById("emailError2").innerHTML =
      "Email does not matched";
    return false;
  }else{
    document.getElementById("emailError2").innerHTML = "";
  }
...
```

Form validation

Final touch: we want to remove all whitespaces in the two input fields before submit

```
function validateForm() {
  var email = document.getElementById("email").value;

  if (email == null || email.trim() == ""){
    document.getElementById("emailError").innerHTML =
      "Email must be filled out";
    return false;
  }else{
    document.getElementById("emailError").innerHTML = "";
    document.getElementById("email").value = email.trim();
  }
...
```

Form validation

Final touch: we want to remove all whitespaces in the two input fields before submit

```
function validateForm() {
...
  var email2 = document.getElementById("email2").value;

  if (email2 == null || email2.trim() == ""){
    document.getElementById("emailError2").innerHTML =
      "Email must be filled out";
    return false;
  }else{
    document.getElementById("emailError2").innerHTML = "";
    document.getElementById("email2").value = email2.trim();
  }
...
```

Form validation

Example 5:

http://www.uow.edu.au/~dong/w3/example/js/validation5.html

Ask user a simple math problem, only submit the form if user answers correctly

```
function validateForm() {
...
  var answer = prompt("What is 1+2 ?");
  if(answer == null || answer != 3){
    return false;
  }
...
```

Form validation

Example 5:

http://www.uow.edu.au/~dong/w3/example/js/validation5.html

Ask user a simple math problem, only submit the form if user answers correctly

Can we generate random question?

```
function validateForm() {
...
  var answer = prompt("What is 1+2 ?");
  if(answer == null || answer != 3){
    return false;
  }
...
```

Form validation

`Math.random()`:
returns a random number between 0 (inclusive) and 1 (exclusive),
for example, `.753`

`Math.floor(x)`:
returns the greatest integer below `x`
for example, `Math.floor(4.6) = 4`

To get a random number between 0 and 9:

```
Math.floor(Math.random() * 10);
```

```
.753 * 10 = 7.53
Math.floor(7.53) = 7
```

To get a random number between 1 and 10:

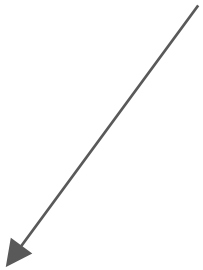
```
Math.floor(Math.random() * 10) + 1;
```

Form validation

Example 5: Ask user a simple math problem, only submit the form if user answers correctly

http://www.uow.edu.au/~dong/w3/example/js/validation5b.html

Generate random question



```
function validateForm() {
...
  var x = Math.floor(Math.random() * 10) + 1;
  var y = Math.floor(Math.random() * 10) + 1;
  var correctAnswer = x + y;

  var answer = prompt("What is " + x + " + " + y + " ?");
  if(answer == null || answer != correctAnswer){
    return false;
  }
...
```

Form validation

We can use input **required** attribute

```
Email: <input id="email" type="text" name="email" required>
```

```
<form action="myService" method="get">
Email: <input id="email" type="text" name="email"
title="Please enter email." required>
<br />
Email again: <input id="email2" type="text" name="email2"
title="Please enter email again." required>
<br /> <br />
<input type="submit" value="Submit">
</form>
```

However, it still allows user to enter whitespace only

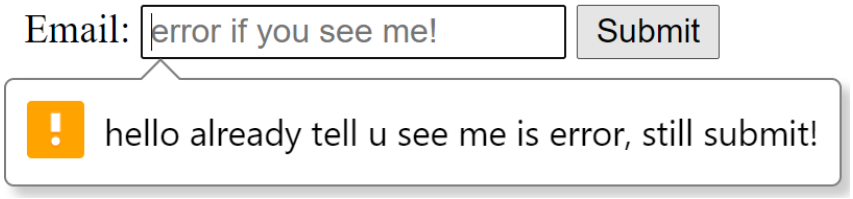
To fix this, we need to use **regular expression**

Input attribute

Title: just a small hints

Placeholder: inside textbox

Oninalid: customise error message




```
<html>
  <head></head>
  <body>
      <form action="myService" method="get">
        Email:
        <input  type="text“ id="email" name="email"
                title="Email should not be empty"
                placeholder = "error if you see me!"
                oninvalid = "this.setCustomValidity( 'hello already tell u see me is error, still submit!');"
                required>
        <input type="submit" onsubmit="return validateForm()">
      </form>
  </body>
</html>
```

Regular expression

A regular expression describes a pattern of characters

```
/pattern/
```

```
^...$       Starts and ends

[abc]       Only a, b, or c
[^abc]      Not a, b, nor c
[a-z]       Characters a to z
[0-9]       Numbers 0 to 9

\d          Any Digit
\D          Any Non-digit character

\w          Any Alphanumeric character
\W          Any Non-alphanumeric character

\s          Any Whitespace
\S          Any Non-whitespace character
```

Regular expression

A regular expression describes a pattern of characters

```
/pattern/
```

```
.           Any Character
\.          Period

{m}         m Repetitions
{m,n}       m to n Repetitions

*           Zero or more repetitions
+           One or more repetitions
?           Optional character

(...)       Capture Group
(abc|def)   Matches abc or def
```

Regular expression

Some characters which have special meaning need to be **escaped** before put into the regular expression

```
.           Any Character
\.          Period
```

Here is a list of special characters that need to be **escaped**

```
.   \   /   +   *   ?   ^   [   ]   $   (   )   {   }   |
```

Regular expression

Example 1:

```
<form action="myService" method="get">

Enter some text with pattern
<input type="text" name="t1"
 pattern="^[A-Z][a-z], [A-Z][a-z]$" required>

<br /> <br />
<input type="submit" value="Submit">

</form>
```

```
Bt, Ca   match
Bt Ca    not match
Bt,Ca    not match
BT, Ca   not match
Bt, CA   not match
Da, Te   match
```

`^[A-Z]`	start with a letter in the range A-Z
`[a-z]`	follow by a letter in the range a-z
`,`	follow by a comma and a space
`[A-Z]`	follow by a letter in the range A-Z
`[a-z]$`	end with a letter in the range a-z

http://www.uow.edu.au/~dong/w3/example/js/regex1.html

Regular expression

We can use javascript to check regular expression

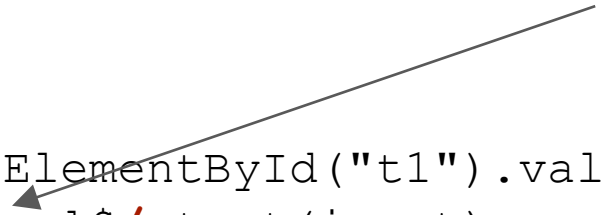
```
<script>
function validateForm(){
  var input = document.getElementById("t1").value;
  if(/^[A-Z][a-z], [A-Z][a-z]$/.test(input) == false){
    alert("input does not match the pattern");
    return false;
  }
  return true;
}
</script>

<form action="myService" method="get"
  onSubmit="return validateForm()">

Enter some text with pattern
<input id="t1" type="text" name="t1" required>
...
http://www.uow.edu.au/~dong/w3/example/js/regex1b.html
```

Regular expression

Using javascript, we need to write regular expression like this

`/pattern/`

Comparing the two methods



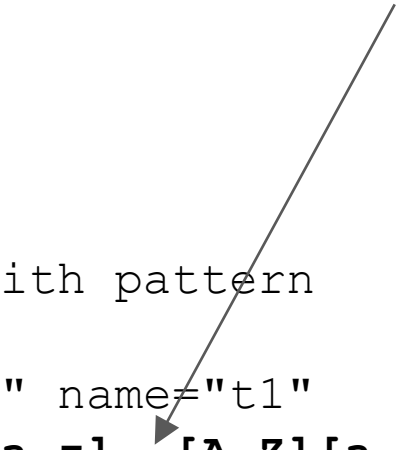
```
<script>
function validateForm(){
  var input = document.getElementById("t1").value;
  if(/^[A-Z][a-z], [A-Z][a-z]$/.test(input) == false){
    alert("input does not match the pattern");
    return false;
  }
  return true;
}
</script>

<form action="myService" method="get"
  onSubmit="return validateForm()">

Enter some text with pattern
<input id="t1" type="text" name="t1" required>
...
```

Regular expression

Comparing the two methods

Using *pattern attribute*, we need to write regular expression like this

```
<input pattern="just-the-pattern" >
```



```
Enter some text with pattern

<input type="text" name="t1"
 pattern="^[A-Z][a-z], [A-Z][a-z]$" required>
...
```

Regular expression

Example 2:

```
<form action="myService" method="get">

Enter some text with pattern
<input id="t1" type="text" name="t1" pattern="^[0-9]{5}$"
required>

<br /> <br />
<input type="submit" value="Submit">

</form>
```

```
12345    match
1234     not match
123456   not match
12 45    not match
03527    match
23492    match
```

`^[0-9]`	start with a letter in the range 0-9
`{5}`	repeated 5 times
`$`	till the end

http://www.uow.edu.au/~dong/w3/example/js/regex2.html

Regular expression

Example 3:

```
<form action="myService" method="get">

Enter some text with pattern
<input id="t1" type="text" name="t1" pattern="^[0-9]{2,5}$"
required>

<br /> <br />
<input type="submit" value="Submit">

</form>
```

```
1         not match
12        match
123       match
1234      match
12345     match
123456    not match
```

`^[0-9]`	start with a letter in the range 0-9
`{2,5}`	repeated 2 to 5 times
`$`	till the end end

http://www.uow.edu.au/~dong/w3/example/js/regex3.html

Regular expression

Example 4:

```
pattern="^[0-9]{2,}$"

2 or more digits, the same as

pattern="^\d{2,}$"
```

Regular expression

Example 5:

```
pattern="^.{5,}$"
```

```
5 or more characters
```

Example 6:

```
pattern="^.{4,10}$"
```

```
4 to 10 characters
```

Example 7:

```
pattern="^[0-9]{1,3}\.[0-9]{1,3}$"
```

```
1 to 3 digits, follow by a period, and then 1 to 3 digits
```

Regular expression

Example 8:

```
pattern="^[^0-9][0-9]$"
```

```
Not a digit, follow by a digit, the same as
```

```
pattern="^\D\d$"
```

Example 9:

```
pattern="^[0-9]+[a-z]*$"
```

```
One or more digit, follow by zero or more letters a-z
```

Example 10:

```
pattern="^http(s?):\/\/.+$"
```

```
http:// (or https://) follow by one or more characters
```

Regular expression

Example 11:

```
pattern="^[0-9]{4}-[0-9]{4}$"
```

```
4 digits, follow by -, follow by 4 digits
```

Example 12:

```
pattern="^[0-9]{2}:[0-9]{2}:[0-9]{4}$"
```

```
2 digits, follow by :, follow by 2 digits, follow by :,
follow by 4 digits
```

Example 13:

```
pattern="^(NSW|ACT|NT|QLD|SA|TAS|VIC|WA) [0-9]{4}$"
```

```
NSW or ACT, …, or WA, follow by a space, follow by 4 digits
```

Regular expression

Example 14:

```
pattern="^(0[1-9]|1[0-2])-20(1[0-9]|2[0-5])$"
```

01, or 02, …, or 09, or 10, or 11, or 12, follow by -, follow by 20, follow by 10, or 11, …, or 19, or 20, or 21, …, or 25

```
00-2010 not match
01-2010 match
12-2021 match
12-2026 not match
```

References

`http://www.w3schools.com/js`

`http://www.w3schools.com/jsref/jsref_obj_regexp.asp`

Robert W. Sebesta, *Programming the World Wide Web*, Pearson.