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G51DBI

JavaScript (2)

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Built in libraries

- JavaScript has extensive built-in libraries
- Well documented by Mozilla & W3Schools
 - <https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference>
 - <https://www.w3schools.com/jsref/>
- Mostly pre-defined objects
- For example: Math and Number
 - Math.sqrt(4) → 2
 - 3.1234.toFixed(2) → 3.12

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JavaScript Strings

- Strings can be either primitive values or objects
- For example:
 - var a = "Nottingham"
 - var b = new String("Nottingham")
 - a is a string variable, b is a string object
 - Usually bad practice to create string objects
 - Be careful with type comparisons
 - NB == compares contents === compares content and type

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String methods

- Even when a string is declared as a primitive, instance properties and methods may be used
- Similar to Java String methods
- For example:
 - length
 - charAt()
 - substr()
 - toUpperCase()


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Regular Expressions

- Regular Expressions (regex) provide very sophisticated string matching
- String.search and String.replace methods support regex also there is a RegExp object with a test() method
- For example:
 - /b[aeiou]t/i matches bat, bet, bit, bot and but (case insensitive)
 - "Bit".search(/b[aeiou]t/i) will return 0
 - "Cat".search(/b[aeiou]t/i) will return -1



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Regular Expression (2)

- A knowledge of Regex is not essential for JavaScript or web development, but it is very useful

| Character | Meaning | Example |
|-----------|--|--|
| * | Match zero, one or more of the previous | ax+ matches "aaaaa" or "a" |
| ? | Match zero or one of the previous | ax? matches "a" or "aa" |
| + | Match one or more of the previous | ax+ matches "aa" or "aaaa" but not "a" |
| \ | Used to escape a special character | regex?r matches "regex?" |
| . | Wildcard character; matches any character | ax..+ matches "aaa", "aaaa", "aaa.", etc. |
| () | Group characters | See example for |
| [] | Matches a range of characters | (a-z) matches "aaa", "bbb", or "ccc" (0-9) matches any positive integer ([a-z]) matches ascii letters a-z (uppercase and lower case) (^-\$) matches any character not 0-9 |
| | Match previous OR next character/group | (mon tuesday) matches "Monday" or "Tuesday" |
| { } | Matches a specified number of occurrences of the previous | (0-1){3} matches "111" but not "11" (0-1){2,4} matches "12", "123", and "1234" (0-1){2,} matches "1234567..." |
| ^ | Beginning of a string. Or within a character range !: negation | *http matches strings that begin with http, such as a url. [^0-9] matches any character not 0-9. |
| \$ | End of a string. | !exp matches "exciting" but not "ingenious" |

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HTML Forms

- ❑ Forms collect user input
- ❑ General syntax:

```
<form action = "script" >
    ...
    form elements
    ...
</form>
```

The <input> element

- ❑ Defines the user inputs
- ❑ Type attribute specifies:
 - ❑ text - a one-line text input field
 - ❑ password - as text, but hides the input
 - ❑ radio - a radio button
 - ❑ submit - a button that triggers the form action
 - ❑ button - another button
 - ❑ reset - resets all values of the form to defaults
 - ❑ many more with HTML 5
- ❑ Value attributed specifies a label or default content

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Other <form> elements

- ❑ These also define user inputs, but they are not a part of the <input> element
- ❑ <textarea>
 - ❑ Defines a multi-line text input
 - ❑ Must be sized - either with rows and cols attributes or using CSS
 - ❑ With modern browsers this is resizable by the user
- ❑ <select>
 - ❑ Defines a pull-down list
 - ❑ <option> specifies list values
- ❑ <button>
 - ❑ Similar to <input type="button">, but does not trigger the form action

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Useful <form> attributes

- ❑ These attributes can be used with any form element, and control the user interface
- ❑ All can be set under JavaScript control (use DOM)
- ❑ value
 - ❑ Contains a default value
- ❑ disabled
 - ❑ Disables (greys out) the element
- ❑ readonly
- ❑ size
 - ❑ in characters

Form actions

- ❑ The forms action attribute can be used to specify JavaScript
- ❑ For example:
 - ❑ action = "javascript:handleForm()"
 - ❑ executes the handleForm() function
- ❑ Alternatively you can use the onclick() event
 - ❑ onclick attribute can be added to <button>
 - ❑ or any HTML tag
- ❑ Use DOM to extract values from elements

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Debugging JavaScript

- ❑ Use the JavaScript console of your browser
- ❑ console.log() writes to the console
- ❑ Usual debugger tools are available in most browsers (breaks, watches etc.)

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JavaScript vs PHP



VS



JavaScript vs PHP

- ☐ JavaScript is the language of the web
- ☐ PHP is the other language of the web!
- ☐ It is a different language to JavaScript
- ☐ Different execution environment
 - ☐ JavaScript is executed by the client
 - ☐ PHP is executed by the server
 - ☐ PHP is what you use to connect to databases

