SOEN 287

Chapter 4: JavaScript (2)

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Topics

- History
- Basic Syntax

This set of sides is modified from the slides accompanied the textbook.

Primitives, Operations and Expressions

- The five primitive types: Number, String, Boolean, Undefined, or Null
  - Coerce
- The wrapper objects (`Number`, `String`, and `Boolean`)
- Example of numbers:

  72, 7.2, -72, 7E2, 7e2, 7.2E-2
- Example of strings:

  "Tuesday", 'Tuesday\n', 'Sam\'s work', "C:\\root"
- Boolean values are `true` and `false`
- The only Null value is `null`
- The only Undefined value is `undefined`

`string`

- Sequence of 0 or more 16-bit characters
- No separate character type
  - Characters are represented as strings with a length of 1
- Strings are immutable (similar to Java!)
- Use == to check if the values of the string are the same (definitely not in Java!)
- String literals can use single or double quotes
- `String.length`
- `String(value)`: returns `string`
- `new String(value)`: returns `object`
  - You can live without this

iClicker question

- The following code prints

```
var a = "123";
var b = "123";
document.write(a==b);
```

A. true
B. false
C. error
D. undefined

Answer: A

`String` methods

- `charAt`
- `concat`
- `indexOf`
- `lastIndexOf`
- `match`
- `replace`
- `search`
- `slice`
- `split`
- `substring`
- `toLowerCase`
- `toUpperCase`

Boolean

- Boolean values are `true` and `false`
- 0, -0, null, "", false, undefined, or NaN are considered **`false`**
- "0" is **`true!`**
- the `Boolean(value)` function

iClicker question

- The following code returns

```
Boolean("false");
```

A. true
B. false
C. error
D. undefined

Answer: A

The `Date` Object

- The `Date` Object

`toLocaleString` – returns a string of the date
`getDate` – returns the day of the month
`getMonth` – returns the month of the year (0 – 11)
`getDay` – returns the day of the week (0 – 6)
`getFullYear` – returns the year
`getTime` – returns the number of milliseconds since January 1, 1970
`getHours` – returns the hour (0 – 23)
`getMinutes` – returns the minutes (0 – 59)
`getMilliseconds` – returns the millisecond (0 – 999)

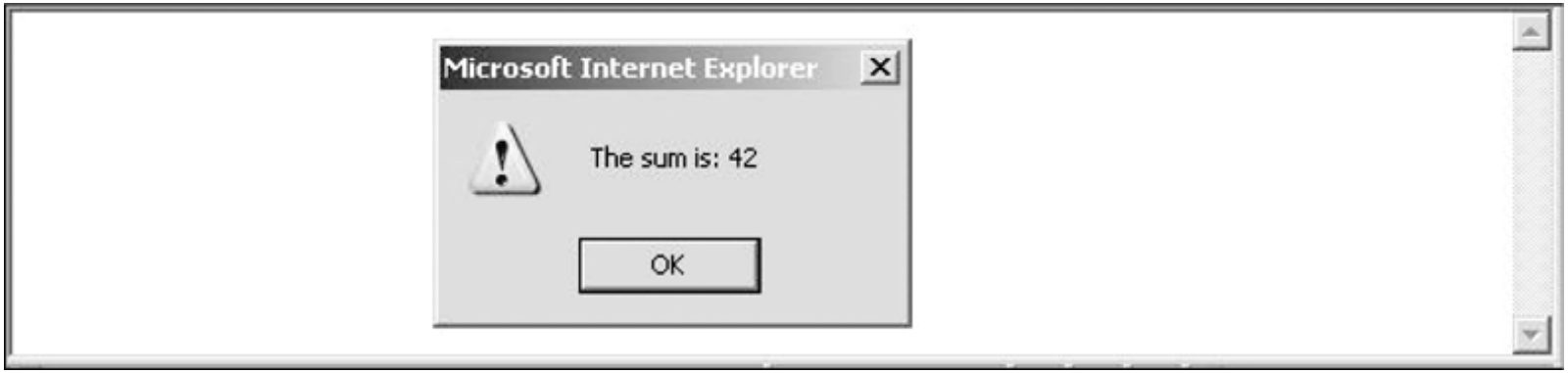
→SHOW `date-work.html` and display

Screen Output & Keyboard Input

- The model for the browser display window is the `Window` object
- The `Window` object contains `document` object
- The `Document` object has a method, `write`, which dynamically creates content

Screen output

- `alert("The sum is:"+sum+"\n");`



- http://www.w3schools.com/js/tryit.asp?filename=tryjs_alert
- `confirm("Do you want to continue?");`

- http://www.w3schools.com/js/tryit.asp?filename=tryjs_confirm

- `prompt("What is your name?", "");`

→**SHOW `root.html` and display**

Control expressions

```
if(1) {document.write('yes');}
      else {document.write('no');}
if(0) {document.write('yes');}
      else {document.write('no');}
```

- 0, -0, null, "", false, undefined, or NaN are considered `false`

p151: error to consider "0" false

- ==, !=, <, >, <=, >=, ===, !==
- &&, ||, !, ! !

Equal and not equal

- == and != can do type coercion
- === and !== cannot do type coercion
- Thus

```
"3" == 3: true
"3" === 3: false
```

iClicker Question

```
var a = "123";
var b = "123";
if(a==b) {document.write('yes');}
      else {document.write('no');}
```

- What are the outputs?
  A. yes
  B. no
  C. error
  D. nothing

Answer:A

iClicker Question

```
if(3!== "3") {document.write('yes');}
      else {document.write('no');}
```

- What are the outputs?
  A. yes
  B. no
  C. error
  D. nothing

Answer:A

A Challenge Question

```
var a = new String("123");
var b = new String("123");
if(a==b) {document.write('yes');}
      else {document.write('no');}
```

- What are the outputs?
  A. yes
  B. no
  C. error
  D. nothing

Answer:B

A Challenge Question

```
var a = String("123");
var b = new String("123");
if(a==b) {document.write('yes');}
      else {document.write('no');}
```

- What are the outputs?
  A. yes
  B. no
  C. error
  D. nothing

Answer:A

The logic operators: `&&` and `||`

- They do not necessarily return `false or true`
- `&&`:

  if the first operand is truthy,

  return the second operand,

  else return the first operand
- `||`:

  if the first operand is truthy,

  return the first operand,

  else return the second operand

```
var last = input || default_value;
```

The logic operators: `!`

- `!`:

  if the operand is truthy,

  return `false`,

  else return `true`

- `!!`: as `Boolean(value)`, return `false` or `true`.

The bitwise operators:

Operator	Description	Example	Same as	Result	Decimal
&	AND	x = 5 & 1	0101 & 0001	0001	1
|	OR	x = 5 | 1	0101 | 0001	0101	5
~	NOT	x = ~ 5	~0101	1010	10
^	XOR	x = 5 ^ 1	0101 ^ 0001	0100	4
<<	Left shift	x = 5 << 1	0101 << 1	1010	10
>>	Right shift	x = 5 >> 1	0101 >> 1	0010	2

http://www.w3schools.com/jsref/jsref_operators.asp

Control Statements

- Switch

```
switch (expression) {
     case value_1:
        // value_1 statements
     case value_2:
        // value_2 statements
     …
     [default:
        // default statements]
  }
```

→ **SHOW** `borders2.html`

Control Statements

- Loop
  - `while`
  - `for`
  - `do-while`

→**SHOW `date.html` and display**

The End