CODE AVENGERS

JavaScript 2 References

right property

sets the distance from the right for absolute and fixed position elements.

Example code:

```
<style>
section {
  background-color: orange;
  position: absolute;
  right: XXX;
}
</style>

<section>
  Example content.
</section>
```

<a> (a) tag

creates a link to another web page.
href gives the address of the web page.
target is set to "'_blank'" to show the linked page in a new tab when the user clicks it.

Example code:

```
<a target="_blank" href="http://google.com">Google</a>

<br>

<a href="/m/about.html">
  About Us</a>
```


 (br) tag

puts text on separate lines.

Example code:

```
Name: Super Cutey<br>
Age: 18 months<br>
Weight: 11kg<br>
Height: 62cm
```

<canvas> (canvas) tag

gives you a way to draw graphics using JavaScript on a webpage.
id Makes it easy to link each canvas to JS and CSS.
height Sets vertical height of canvas
width Sets horizontal width of canvas

Example code:

```
<style>
  html{
      background-color:lightGrey;}
  #drawing{
    background-color:aliceBlue;
    border: slateGrey dashed 1px;
}
</style>

<canvas id="drawing" width="200" height="200">
  HTML5 Canvas isn't working if you see this text.
</canvas>

<script>
var draw = document.getElementById('drawing');
var rectangle = draw.getContext('2d');
rectangle.rect(25,25,50,50);
rectangle.stroke();
</script>
```

<input> (input) tag

adds an input field where the user enters data.
type sets the type of input.
value sets the text of the input.
checked pre-selects the input when the page loads.
maxlength sets the maximum number of characters that can be entered.
name sets the name and tells the form to send this input to the server when the form is submitted.

Example code:

```
<input type="radio" checked>Radio Button<br>
<input type="checkbox" checked>Checkbox<br>
<input type="color"><br>
<input type="range"><br>
<input type="time"><br>
<input type="week"><br>
<input type="month"><br>
<input type="date" name="birthday"><br>
<input type="datetime-local"><br>
<input type="hidden"><br>
<input type="search"><br>
<input type="number" value="1234"><br>
<input type="text" maxlength="2"><br>
<input type="password" value="text"><br>
<input type="button" value="Button"><br>
<input type="file"><br>
```

input number

adds an input field where the user enters a number.
min sets the minimum number.
max sets the maximum number.
step sets the size of the intervals between legal numbers.

Example code:

```
<style>
input:invalid {
  background-color: red;
}
</style>
<input id="min" type="number" value="1" min="0">min<br>
<input id="max" type="number" value="1.5" max="5">max<br>
<input id="minMax" type="number" value="5.2" min="5"
max="10">min and max<br>
<input id="step" type="number" value="1.07"
step="0.01">step<br>
<button id="numberButton">Show Number Values</button>
<script>
  function showValues() {
    alert(min.value + '\n' + max.value + '\n' + minMax.value
+ '\n'
        + step.value);
  }

  numberButton.onclick = showValues;
</script>
```

input range

adds a range slider element.
min sets the minimum range number.
max sets the maximum range number.
step sets the size of the intervals between numbers.
value sets the initial value of the range slider.

Example code:

```
<p><label>Pick a number between 1 and 20:</label>
<input id="pickNumber" step="1" type="number" value="7"
readonly>
<input id="pickRange" max="20" min="1" step="1" type="range"
value="7">

<script>
  function updateNumber() {
    pickNumber.value = pickRange.value;
  }
  pickRange.oninput = updateNumber;
</script>
```

<p> (p) tag

is put at the start of each paragraph of text.

Example code:

```
<p>Paragraph 1, line 1
<br>Paragraph 1, line 2
<p>Paragraph 2
<p>Paragraph 3, line 1
<br>Paragraph 3, line 2
```

!=

means *not equal to*; a `!=` b is true if a and b have different values.
E.g. code>age != 0 is true if age is any value except 0

Example code:

```
alert(8 != 4);
alert(8 != 4 * 2);
alert('CodeAvengers' != 'Code' + 'Avengers');
```

&&

means *AND*; a `&&` b is true if both a **and** b are true.

Example code:

```
alert(5 > 3 && 3 < 4);
alert('a' < 'z' && 'b' < 'a');
```

+

adds numbers and joins strings
`4 + 8` equals 12
`'4' + '8'`, `4 + '8'` and `'4' + 8` are equal to `'48'`

Example code:

```
//Add numbers
alert(8 + 4);

//Join strings
alert('8' + '4');
alert('8' + 4);
alert(8 + '4');
```

-

subtracts numbers, e.g. `32 - 24` equals 8

Example code:

```
//Subtract numbers
alert(8 - 4);

//Subtract strings
alert('8' - '4');
alert('8' - 4);
alert(8 - '4');
```

==

means *equal to*; a `==` b is true if a and b have the same value.
E.g. age `==` 15 is true if age is 15

Example code:

```
alert(8 == 4);
alert(8 == 4 * 2);
alert('CodeAvengers' == 'Code' + 'Avengers');
```

alert(message)

displays a message box with an OK button.
message: the text to display.

Example code:

```
alert('Hello');
```

Array.join(separator)

joins the elements of an array into a string and returns it. The elements will be separated the specified separator.
separator: the separator.
The default separator is a comma {{,}}.

Example code:

```
var array = ['this','is','it'];
console.log(array.join());
console.log(array.join('_'));
```

Array.length

property that stores the length of the array.
E.g. {{[1, 2, 3, 4].length}} is '"4"'

Example code:

```
var array = [1, 2, 3];
console.log(array.length);
array.push(4, 5, 6);
console.log(array.length);
```

Array.push(items)

adds items to the end of an array and returns the new length of the array
items: 1 or more items to add to the end of the array

Example code:

```
var array = [1, 2, 3];
array.push(4, 5, 6);
console.log(array);
```

Array.sort([compareFunction])

sorts an array
compareFunction(optional): sets the sort order. If left out, the array items are converted to strings and sorted alphabetically.

Example code:

```
var array = [101, 5, 92, 10, 25];
array.sort();
console.log(array);

array.sort(function (a, b) {
  return a - b;
});
console.log(array);
```

for

Example code:

```
var total = 0;

for(var i = 1; i <= 3; i++) {
  var number = prompt('Enter number ' + i);
  total = total + Number(number);
}

alert('The total is ' + total);
```

if

Example code:

```
var age = prompt('How old are you?', '21');

if (age <= 12) {
  alert('You are a child');
} else if (age < 20) {
  alert('You are a teen');
} else if (age < 0 || age > 125) {
  alert('Invalid age');
} else {
  alert('You are an adult');
}
```

Math.abs(x)

returns the absolute value of a number
x: a number.

Example code:

```
console.log( Math.abs(-10) );
console.log( Math.abs(10) );
```

Math.ceil(x)

returns the smallest integer greater than or equal to a number
x: a number.

Example code:

```
console.log( Math.ceil(1.4) );
console.log( Math.ceil(1.499) );
console.log( Math.ceil(1.5) );
console.log( Math.ceil(-1.4) );
console.log( Math.ceil(-1.499) );
console.log( Math.ceil(-1.5) );
```

Math.floor(x)

returns the largest integer less than or equal to a number
x: a number.

Example code:

```
console.log( Math.floor(1.4) );
console.log( Math.floor(1.499) );
console.log( Math.floor(1.5) );
console.log( Math.floor(-1.4) );
console.log( Math.floor(-1.499) );
console.log( Math.floor(-1.5) );
```

Math.PI

Represents the ratio of the circumference of a circle to its diameter, i.e. approximately 3.14159

Example code:

```
console.log( Math.PI );
```

Math.pow(base exponent)

Returns base to the power of exponent (i.e. $base^{exponent}$)

Example code:

```
console.log( Math.pow(2, 4) );
console.log( Math.ceil(4, 2) );
```

Math.random()

Returns a random floating point (decimal) number from 0 (inclusive) up to but not including 1, which you can scale to a desired range

Example code:

```
//Get a decimal no. from 0 up to but excluding 1
console.log(Math.random());

//Get a random no. between 0 to 99
console.log(Math.floor(Math.random() * 100));

//Get an even no. up to but not including 100
var evenNo = Math.floor((Math.random() * 50) * 2);
console.log(randomEven);

//Get a random no. from 1 to 6
var diceRoll = Math.floor(Math.random() * 6 + 1);
console.log(diceRoll);
```

Math.round(x)

returns the next highest integer if the fractional protion of the number is .5 or greater; otherwise it returns the next lower integer
x: a number.

Example code:

```
console.log( Math.round(1.4) );
console.log( Math.round(1.499) );
console.log( Math.round(1.5) );
console.log( Math.round(-1.4) );
console.log( Math.round(-1.499) );
console.log( Math.round(-1.5) );
```

Math.sqrt(x)

returns the square root of a number
x: a number.

Example code:

```
console.log( Math.sqrt(25) );
console.log( Math.sqrt(10) );
```

Number.toFixed()

formats a number to fixed number of decimal points
The parameter sets the number of digits to appear after the decimal point; this may be a value between 0 and 20 inclusive. If this parameter is omitted, it is treated as 0

Example code:

```
var n = 12345.6789;
n.toFixed();
n.toFixed(1);
n.toFixed(6);

(1.23e+20).toFixed(2);
(1.23e-10).toFixed(2);

2.34.toFixed(1);
-2.34.toFixed(1);
(-2.34).toFixed(1);
```

Number.toPrecision()

formats a number to a specified precision
The parameter sets the number of significant digits

Example code:

```
var n = 5.123456;
console.log(n.toPrecision());
console.log(n.toPrecision(5));
console.log(n.toPrecision(2));
console.log(n.toPrecision(1));
```

prompt(question, [defaultAnswer])

asks the user a question
question: the question to ask the user
defaultAnswer(optional): the text shown as the default answer
returns the response as a string, or `null` if the user clicks cancel

Example code:

```
var name = prompt('What is your name?');

if (name != null) {
  alert('Hello ' + name);
}

//Ask the user's age, conver it to a number and store in a
variable
var age = Number(prompt('How old are you?', '21'));
```

String.charAt(index)

returns a single character in a string
index: an integer between 0 and 1 less than the length of string; it specifies the character to return
E.g. {{'CodeAvengers'.charAt(0)}} is '"C"', and {{'CodeAvengers'.charAt(3)}} is '"e"'

Example code:

```
console.log('[' + 'CodeAvengers'.charAt(0) + ']');
console.log('[' + 'CodeAvengers'.charAt(3) + ']');
console.log('[' + 'CodeAvengers'.charAt(15) + ']');
```

String.split([separator], [limit])

splits a string object into an array of substrings.
separator(optional): a sequence of 1 or more characters used to separate the string.
limit(optional): an integer specifying a limit on the number of substrings to return. The function splits normally but shortens the returned array to at past .

Example code:

```
console.log('1 2 3 4'.split(' '));
console.log('cabbababba'.split('a'));
console.log('cabbababba'.split('a', 2));
console.log('testtesttest'.split('tt'));
```

String.substring(indexA, [indexB])

returns a substring from `indexA` up to but not including `indexB`
indexA: a number between 0 and the length of the string
indexB(optional): a number between 0 and the length of the string; if omitted, `substring` gets characters from `indexA` to the end of the string
If `indexA` equals `indexB`, `substring` returns an empty string
If either parameter is less than 0 or is `NaN`, it is treated as 0.
If either parameter is greater than the string length it is treated as if it were the string length.
If `indexA` is larger than `indexB`, the effect is as if the 2 parametrers were swapped
E.g. `'CodeAvengers'.substring(4)` is **Avengers** and `'CodeAvengers'.substring(5, 8)` is **ven**

Example code:

```
var s = 'CodeAvengers';
console.log(s.substring(4));
console.log(s.substring(0,1));
console.log(s.toUpperCase(5, 8));
```

String.toLowerCase()

converts a string to lowercase
E.g. `'CodeAvengers'.toLowerCase()` is **codeavengers**

Example code:

```
console.log('CodeAvengers'.toLowerCase());
console.log('CodeAvengers'.toUpperCase());
```

String.toUpperCase()

converts a string to uppercase
E.g. `'CodeAvengers'.toUpperCase()` is **CODEAVENGERS**

Example code:

```
console.log('CodeAvengers'.toLowerCase());
console.log('CodeAvengers'.toUpperCase());
```

var

creates a variable, optionally giving it an initial value.
The variable name can consist of letters, numbers, $ and _, but can\'t begin with a number.

Example code:

```
var x;
console.log(x);
x = 5;
console.log(x);

var y = 10;
console.log(y);
```

while

Example code:

```
var count = 0, total = 0;

while(count < 3) {
  var number = prompt('Enter number ' + count);
  total = total + Number(number);
  count = count + 1;
}

alert('The total is ' + total);
```

||

means *OR*; a `||` b is true if either a **or** b or both are true.
E.g. age `==` `5` `||` age `==` `10` is true if age is 5 or 10
The | key is normally above the **Enter** key.

Example code:

```
alert(5 < 3 || 4 > 3);
alert('a' > 'z' || 'b' < 'a');
```

Path.fillColor

the fill color of the shape.

Example code:

```
var rect = new Path.Rectangle(10, 40, 100, 200);
rect.fillColor = 'red';
rect.strokeColor = 'blue';
rect.strokeWidth = 5;
```

Path.Rectangle(xPos, yPos, width, height)

creates a rectangle.
xPos: distance of the left edge from the left of the canvas.
yPos: distance of the top edge from the top of the canvas.
width: width of the canvas.
height: height of the canvas.

Example code:

```
var rect = new Path.Rectangle(10, 40, 100, 200);
rect.fillColor = 'red';
rect.strokeColor = 'blue';
rect.strokeWidth = 5;
```

Path.RegularPolygon(center, sides, radius)

creates a regular polygon.
center: the position of the center of the polygon.
sides: the number of sides.
radius: the radius of the polygon.

Example code:

```
var center = new Point(100, 100);
var p = new Path.RegularPolygon(center, 5, 60);
p.strokeWidth = 3;
p.strokeColor = 'red';
```

Path.strokeWidth

the width of the outline of the shape.

Example code:

```
var rect = new Path.Rectangle(10, 40, 100, 200);
rect.fillColor = 'red';
rect.strokeColor = 'blue';
rect.strokeWidth = 5;
```

*=

Multiplies a variable by a number and stores it back in the variable.

Example code:

```
price = 100

#Add 15% sales tax
price *= 1.15
print(price)
```

<

Less than - a comparative operator: a `<` b is `True` if the value of a is less than b .

Example code:

```
print(3 < 4)
print(4 < 3)

#Can be used on strings too, alphabetically
print("apple" < "banana")
```

<=

Less than or equal to - a comparative operator: a `<=` b is `True` if the value of a is less than b , or a and b have the same value.

Example code:

```
print(3 <= 4)
print(3 <= 3)
print(9 <= 8)
```

>

Greater than - a comparative operator: a `>` b is `True` if the value of a is greater than b .

Example code:

```
print(6 > 7)
print(7 > 6)

#Can be used on strings too, alphabetically
print("apple" > "banana")
```

>=

Greater than or equal to - a comparative operator: `a >= b` is `True` if the value of `a` is greater than `b` , or `a` and `b` have the same value.

Example code:

```
print(4 >= 4)
print(5 >= 4)
print(8 >= 9)
```

turtle.forward(distance)

Moves the turtle forwards on the canvas. Forwards is the direction the turtle's head is facing.
distance: the distance in pixels

Example code:

```
import turtle
tiny = turtle.Turtle()

#Move tiny forwards 100 pixels
tiny.forward(100)
```