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JAVASCRIPT

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JavaScript is a light-weight and object-oriented scripting language.

JS is a dynamic, cross-platform language originally used for creating interactive websites.

JS is now popular server-side and client side-side.



JavaScript runs in all browsers and most modern browsers have a JavaScript console that can be used for writing, running, and debugging code.

JavaScript is a loosely typed or dynamic language, so you don't have to declare a variable type ahead of time.







CLIENT-SIDE JAVASCRIPT

Client-side JavaScript extends the core language by supplying objects to control a browser and its Document Object Model (DOM).











Server-side JavaScript extends the core language by supplying objects relevant to running JavaScript on a server.

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JAVASCRIPT COMPARED

















JavaScript

Object-oriented. No distinction between types of objects. Inheritance is through the prototype mechanism, and properties and methods can be added to any object dynamically.

Variable data types are not declared (dynamic typing).

Cannot automatically write to hard disk.

C#

Class-based. Objects are divided into classes and instances with all inheritance through the class hierarchy. Classes and instances cannot have properties or methods added dynamically.

Variable data types must be declared (static typing).

Can automatically write to hard disk.

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CONSOLE OUTPUT

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PRINTING TO THE CONSOLE

When programming in JavaScript, much of the output is tracked via the console.

























console.log("The statement you want to output.");

• D F T R D I T •



















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You must first declare a variable then initialize the variable. These can be done in one line or separate statements. The equals sign is used to assign a value.



Because JavaScript is loosely typed, there are two ways of declaring a variable. You can use the keyword var or you can simply assign a value to a variable name.

VARIABLE NAMING

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Must begin with a letter, _, or \$.

Must contain letters, numbers, _, or \$.

As with C# and other languages, camel-casing and similar conventions are good practice.









DECLARE A VARIABLE



var myVariable; myVariable = [value];



myVariable = [value];





















































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DATA TYPES



JavaScript has three primitive data types: strings, numbers, and booleans. The value of a variable differentiates its type.





















```
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```



```
var myVariable = 25;
var myVariable = "word";
var myVariable = "25";
var myVarialbe = true;
```







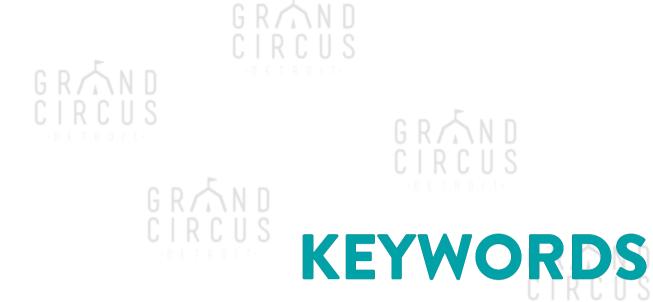
















break	CIRCU continue		debugger
dowhile		for	function
ifelse	GRÁND	return	switch
1	LIKLUS		

try...catch

var

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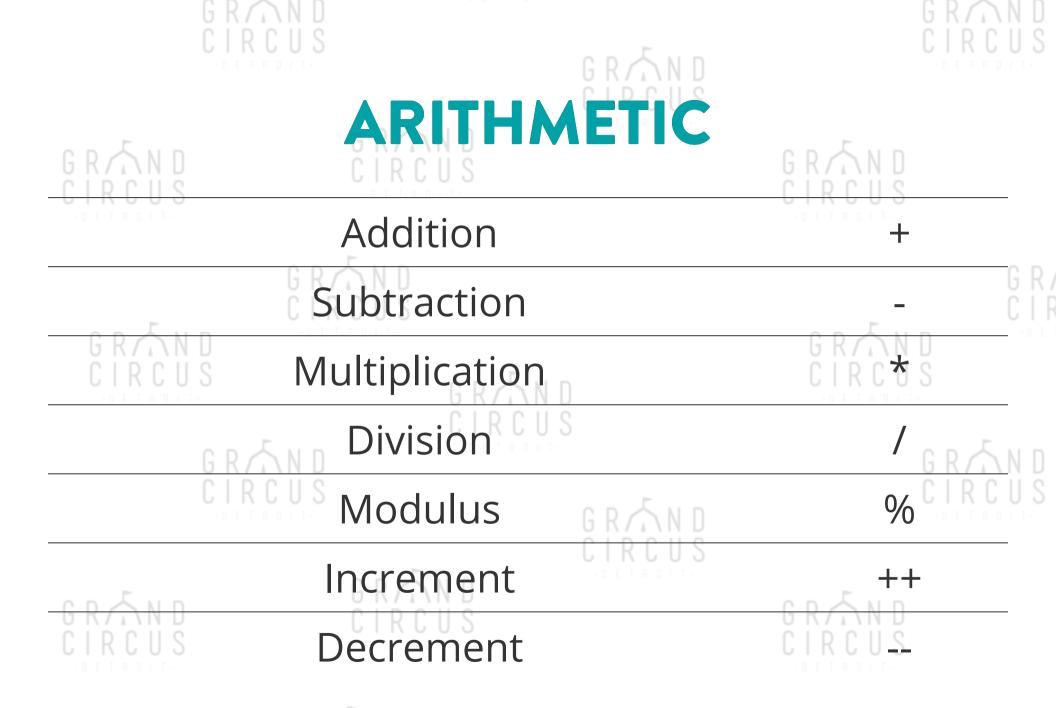




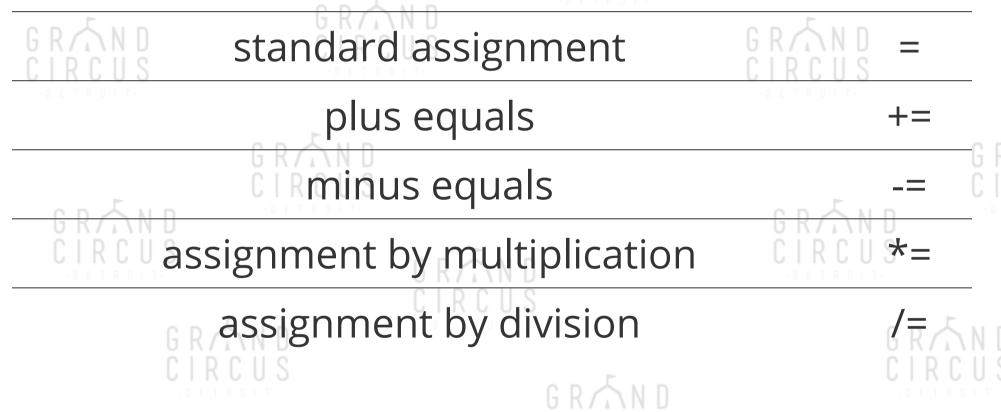


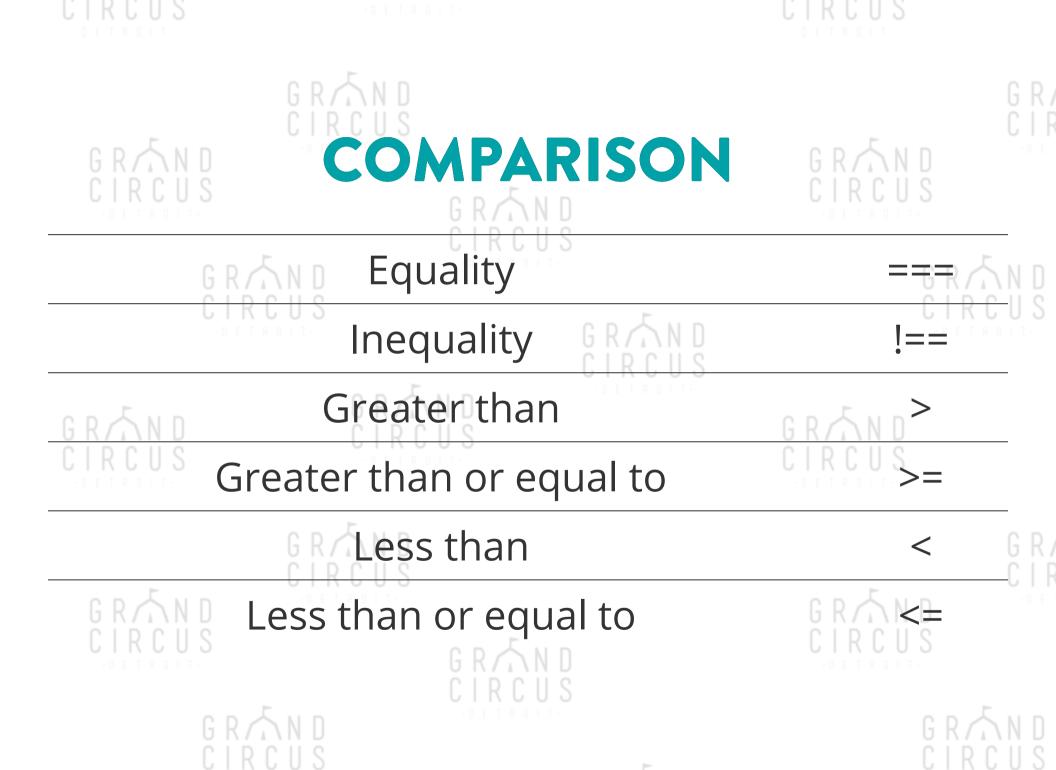


















DOUBLE EQUALS

- 'Shallow' equals ==
- 'Shallow' inequals

!=













```
true == "true" // > false
true === "true" // > false
```

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Don't use double equals.

CIRCUS The equivalent to C#'s == is ===.



















































```
if(condition) {
        Do something;
} else {
        Do something else;
```









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FUNCTIONS

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FUNCTION DECLARATION

In JavaScript, a function can be written for reusable blocks of code. You must declare a function, give the function some instructions, and call the function.



















FUNCTION DECLARATION





























```
function myFunction(x,y) {
        return x*y;
myFunction(3,4);
```

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- 1. Objects in JavaScript
- 2. The Document Object Model (DOM)





















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PROMPT()

prompt() is a DOM method that allows a program to (you guessed it) prompt a user for input.

If the method is just called by itself, it simply returns the user's input in the form of a string. But the return from the method can also be stored to a variable and used. i.e.

var name = prompt('Please enter your name');

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CODE CHALLENGE





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STEP 1

Work in Pairs

- 1. Write a simple program that accepts user input from a prompt. In the prompt, say "Please enter your name".
- 2. Store the result in a variable.
- 3. Use an alert() function to print "Hello" where is the input entered by the user.

Step 2 – Simple Error Checking What happens if the user types some kind of unusable input (i.e. only one letter for their name). No one has a name that short! (For this example, assume this is true)

• Add some logic to your function that checks the length of the input (ex. shorter than 2 characters) and alerts an error if their name is too short. Bonus: If the user input is not accepted, have the program ask again until the input is acceptable.









```
var name = "";
var done = false;
function ask() { return prompt("Please enter your name");}
function helloName() {
  while(!done) {
    usernput = ask();
    if(isTooShort(userinput)) {
       alert("Your name is short. Too short.\n Do it again!");
    } else {
       alert("Hello " + userinput);
       done = true;
    }
}
```



























```
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```

```
function isTooShort(inputName) {
  return inputName.length < 2;</pre>
helloName (name);
```



Sample solution continued

















































































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The document object model (DOM) is an interface which allows programs and scripts to dynamically access and update the content, style and structure of a document

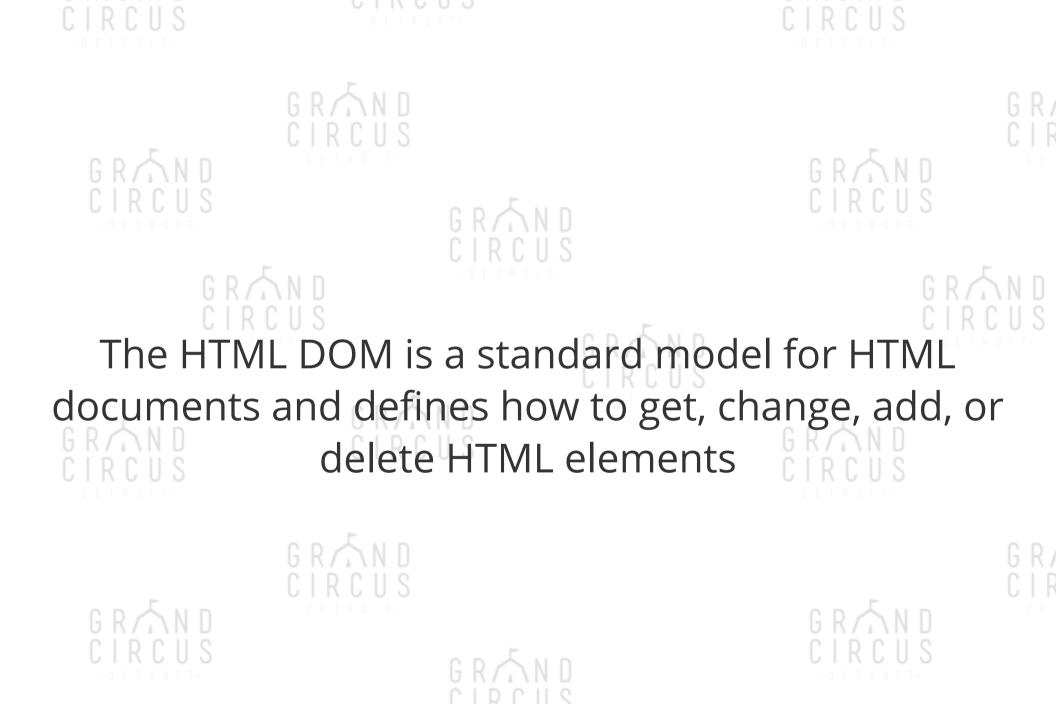














In order to integrate services like Twitter, Facebook, etc. into our own applications, we have to use their APIs (application programming interfaces). The HTML DOM is an API for manipulating HTML documents.



```
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   var byNode = document.body; //
```

```
var htmlNode = document.body.parentNode; //
var childNodes = document.body.childNodes[]; // all elements inside
```

The DOM has a tree structure and identifies objects using nodes











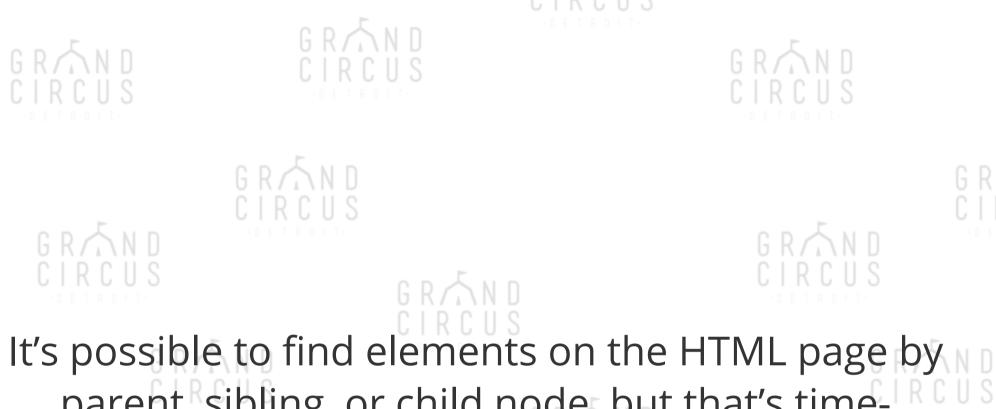




Watch what happens when you put this command in your js file.

document.write("JavaScript all the things!");

For extra fun, try that in the console on any website. In the DOM, your HTML page is known as the 'document'



It's possible to find elements on the HTML page by parent, sibling, or child node, but that's time-consuming and will make you crazy.









Pizza







```
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```



```
Sushi
Hummus

var listItems = document.getElementByTagName('li');

for (var index = 0; index < listItems.length; index++) {
  var listItem = listItems[index];
  // Do stuff with listItem
}</pre>
```

HTML elements can be located by tag



























A happy paragraph!

var paragraph = document.getElementById('happy');

... or by id or class

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```
var img = document.getElementById('myImage');
img.getAttribute('src');
img.setAttribute('src', './images/newImage');
```

The attributes of HTML elements can also be accessed and modified through the DOM

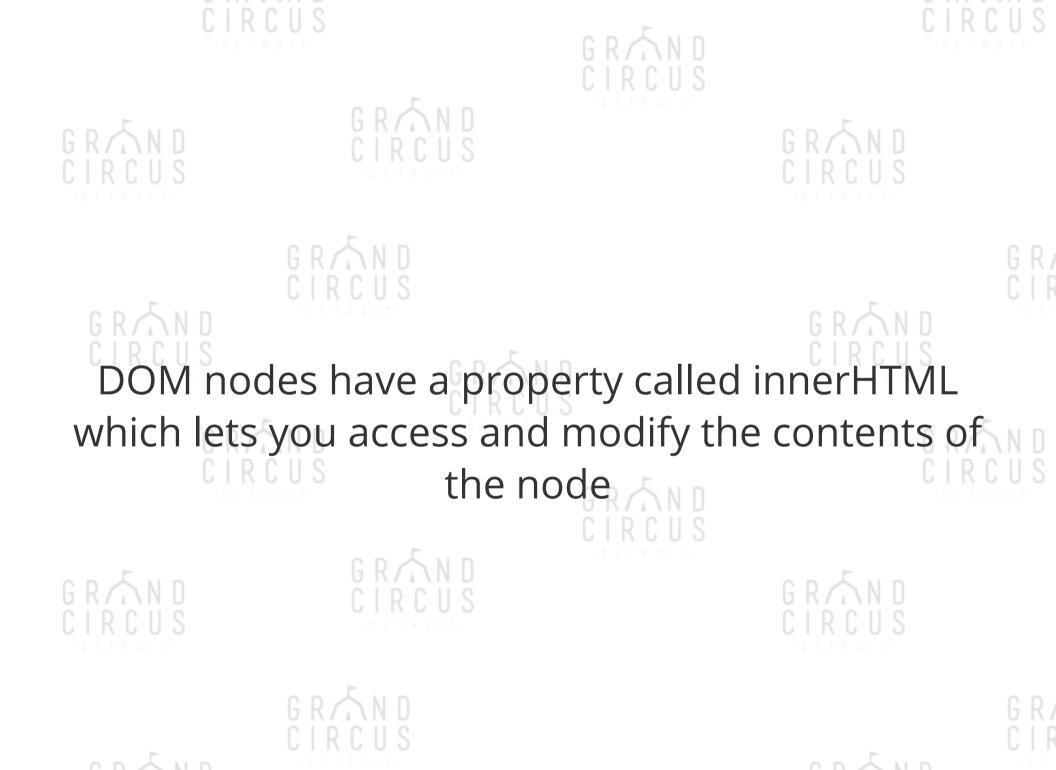
























```
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```

```
<!DOCTYPE html>
<html>
 <head>
   <title>JavaScript Demo</title>
   <script src="sample.js"></script>
 </head>
 <body>
   A happy paragraph!
 </body>
</html>
```



Set up a simple HTML file





















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document.body.innerHtml = 'I changed the whole page!'

Set up sample.js like this. What happens when you load the page?















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Now change sample.js to this (remove all previous statements)

What happens? To make sure you notice, add border to all

tags via CSS

var paragraph = document.createElement('p');
paragraph.innerText = "I made a new tag!";
document.body.appendChild(paragraph);









































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GOALS FOR TODAY





1. Introduction to jQuery 2. jQuery 101







































WHAT IS A LIBRARY?

A software library is a collection of functions. When you include a library in your code, you have access to all the functions contained in the library. jQuery is a big honkin' library packed full with functions intended to help you 'write less, do more' when working with the DOM

WHAT DOES JQUERY HELP WITH?

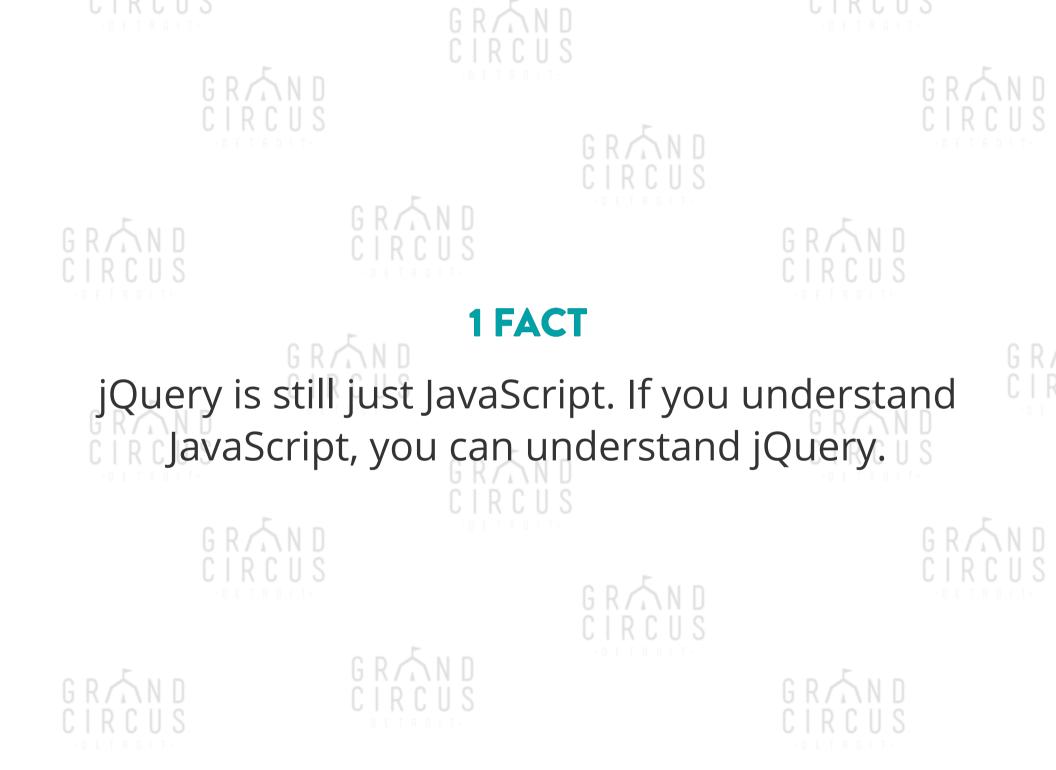
jQuery simplifies DOM scripting and other common JavaScript tasks including: HTML element selection and manipulation, CSS manipulation, and JavaScript events and animations





FACTS ABOUT JQUERY

- The most popular JavaScript library
- Extensive Docs
- Numerous tutorials online
- Used by 20 million websites



I'M SOLD! HOW DO I GET ME SOME JQUERY?

Two ways:

- 1. Download the library and store it locally in your project folder.
- 2. Link to a live version of the library via CDN. Bonus: Display each object with a statement using concatenation. Ex: Sparky the dog. Coco the cat.





CIRCUS WHICH WAY IS BEST?

Each has pros and cons. Live code can change but jQuery is popular enough that there are stable versions of each major release of jQuery out there. Keeping it local is stable but bloats the overall size of your site.



WHICH WAY IS BEST? (CONT'D)

For this class, download it. The network might flake and then your site will not work. Plus a call will be made to get the whole library every time you refresh (which will be a lot).













WHICH WAY IS BEST? (CONT'D)

For active development it's fine to link. For production sites, I tend to lean toward sourcing it locally with your project.





HOW TO DOWNLOAD JQUERY FOR THIS CLASS

- 1. Go to jquery.com/download
- 2. Click the link Download the uncompressed, development jQuery 1.11.1. This takes you to a raw text file.
- 3. Select All > copy > paste into empty file > save As 'jquery-1.11.1.js'
- 4. Place the saved file into a 'lib' folder in your site project



Or just link to a hosted CDN in a script tag on your page. Both script tags link to a working jQuery file.

```
>head<
     <script src="lib/jquery-1.11.1.js"></script>
     <script src="http://code.jquery.com/jquery-1.11.0.min.js"></script>
     >/head
```



























Does that selector syntax look familiar?

```
var divs = $("div");
// All divs on the page
var happyThing = $("#happy");
// Element with id "happy"
var rounds = $(".roundedCorner");
// Elements with class "roundedCorner"
```



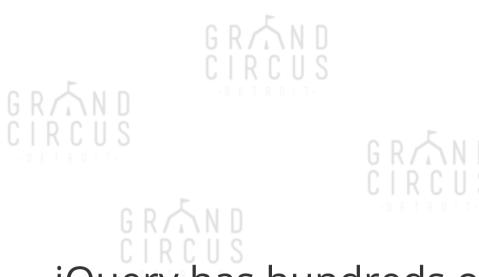


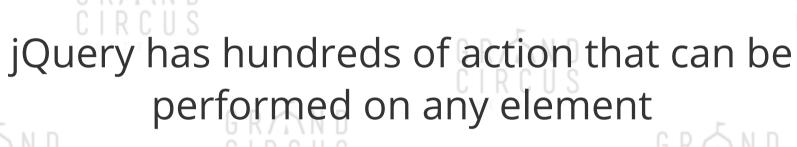












All actions are functions (or methods).







jQuery makes it simple to accomplish a huge number of common tasks such as updating element's attributes or CSS (and pretty much anything else)

```
var img = $('#myPicture');
img.attr('src');
img.attr('src', 'http://www.myPictureLivesHere.com');
img.css('width');
img.css('width', 200px);
```







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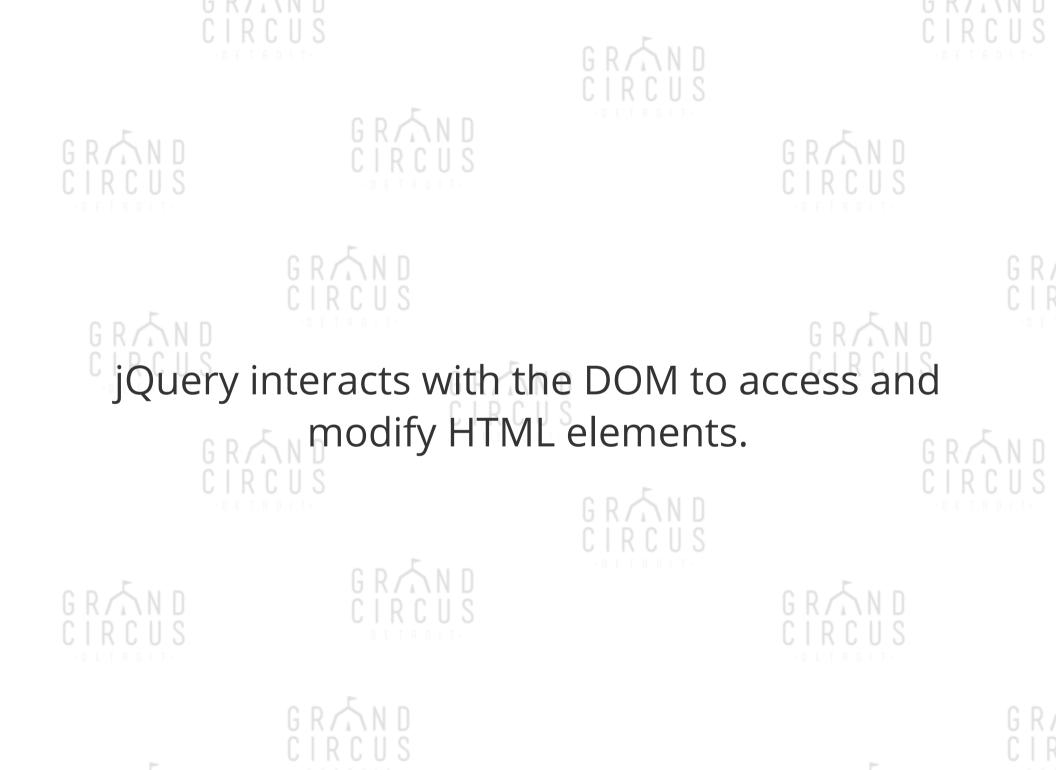


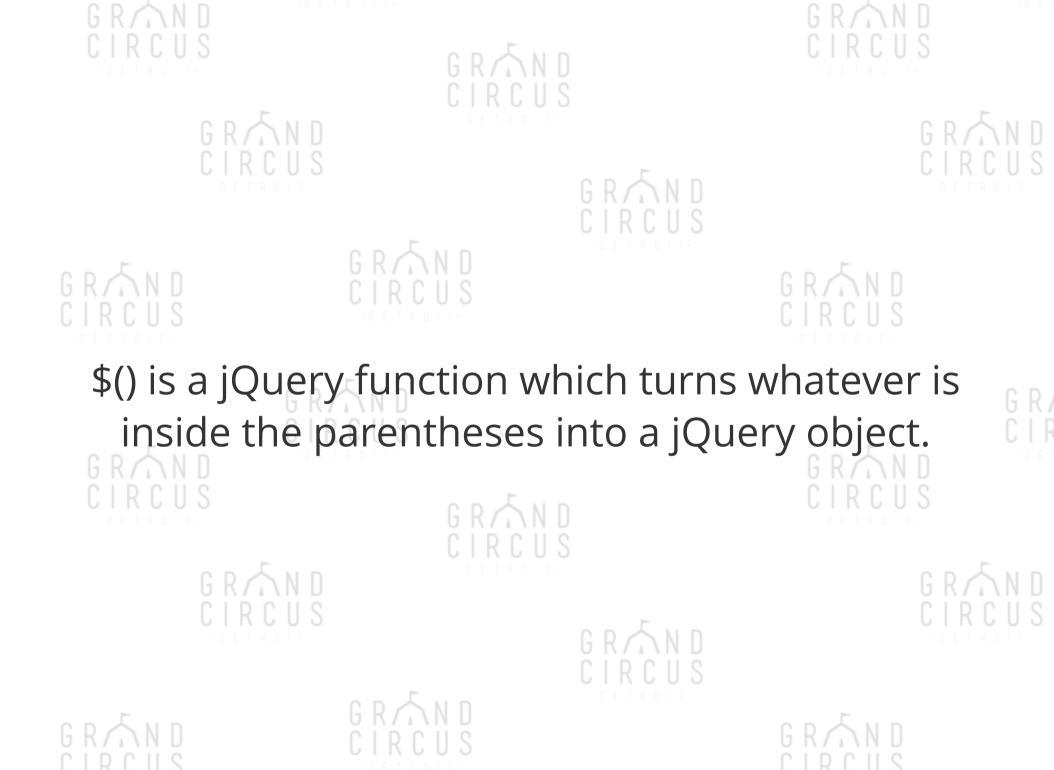
If you haven't done so yet, please download the example project named 'jquery-demo.zip' and 'jquery101-exercises.zip' from Slack.



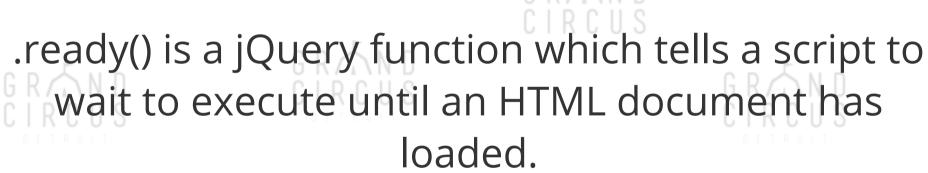


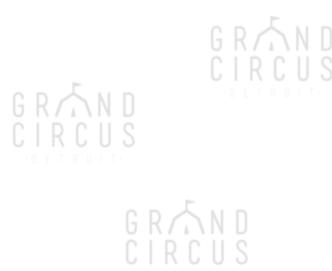


















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\$ (document) .ready();

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The argument for the .ready() function is an anonymous function which will be executed as soon as the HTML document loads.

We can put other jQuery functions inside this outer function to make sure our code waits for the whole document to load before executing.











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\$ (document).ready(function() {
 \$ ("header").slideDown('slow')
});



























\$('img').fadeTo("slow", 0.5);
var \$img = \$("img");
\$img.fadeTo("slow", 0.5);





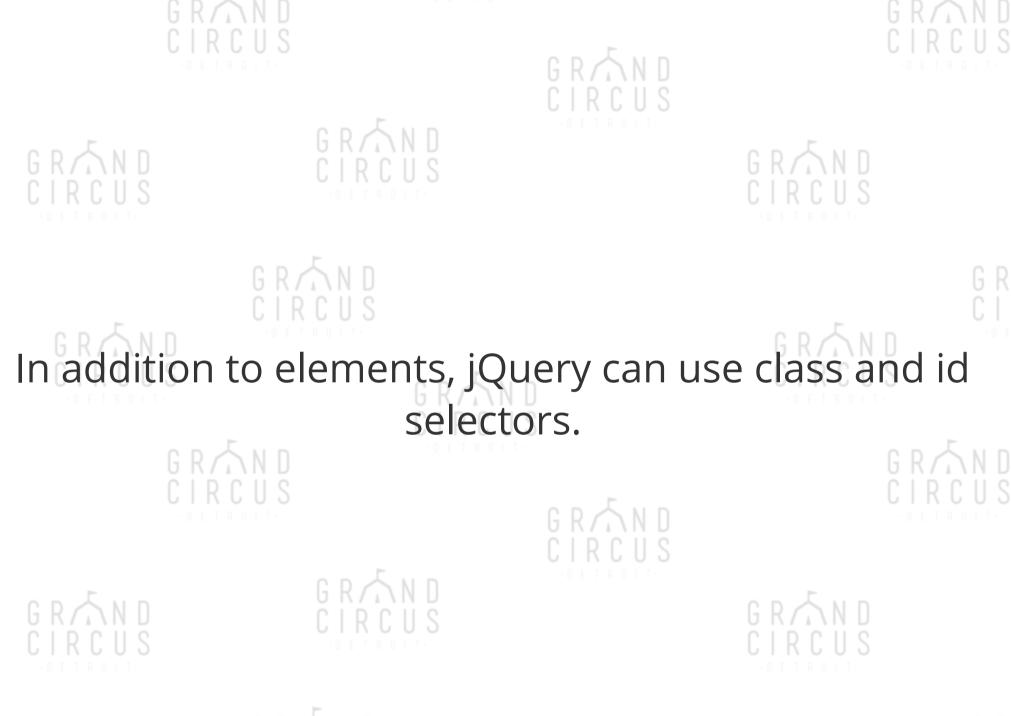










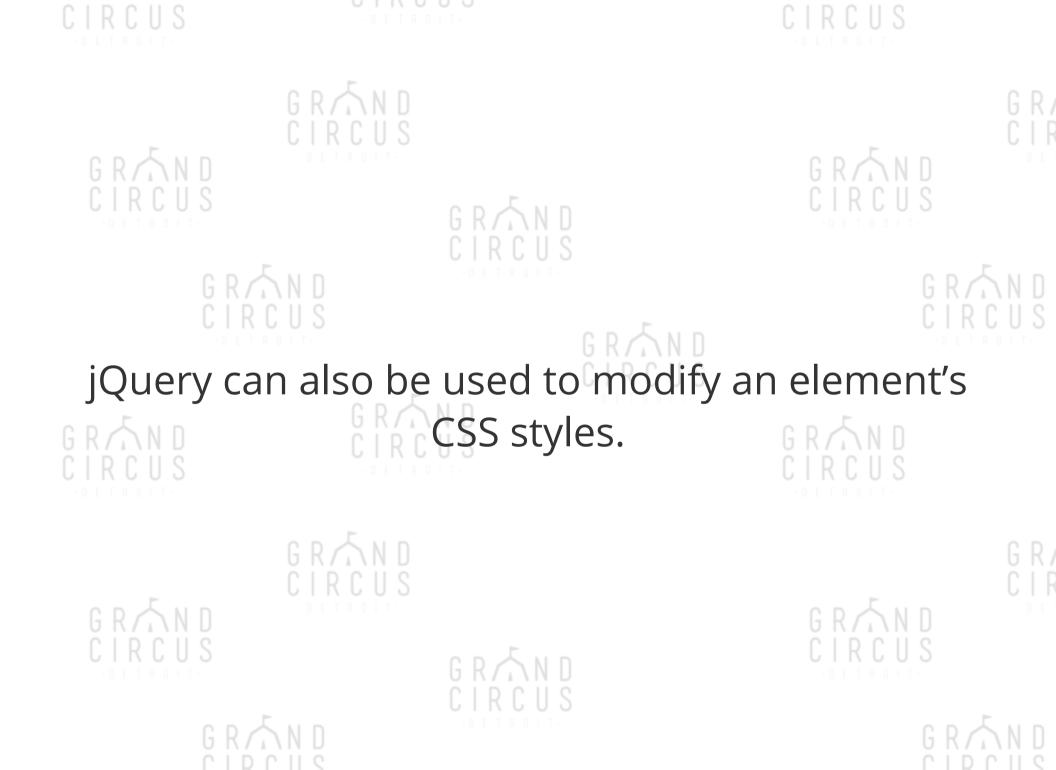


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be selected and modified using jQuery.













THE CSSO METHOD ROUS

The .css() method is used to dynamically modify CSS styles.













































































EFFECTS

In jQuery, functions like fadeTo() and slideDown() that add animations to a web page are called effects.











In jQuery, functions like click() and hover() that refer to user interactions with the browser are called events.













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IN YOUR PROJECT:

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• Find the img tag in the page.

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• In your JavaScript file add the following code (some of it is already there).

```
$ (document).ready(function() {
   $("img").mouseenter(function() {
     $("img").fadeTo("fast", 0.5);
   });
});
```

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IN YOUR PROJECT (CONT'D):

- Save and reload the page. Mouseover the image, what happens?
- Can you figure out how to make the img return to full opacity when your mouse is no longer inside the element?











```
$ (document).ready(function() {
  $("img").mouseenter(function() {
    $("img").fadeTo("fast", 0.5);
 $("img").mouseLeave(function() {
    $("img").fadeTo("fast", 1.0);
```





















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.click() is one of the most frequently-used event handlers in jQuery.

.click() captures a click on the selected element.













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```
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```

```
{
```

```
$("div").click(function() {
    // Do stuff when I click a div!
});
$("img").click(function() {
    // Do stuff when I click an img!
});
```





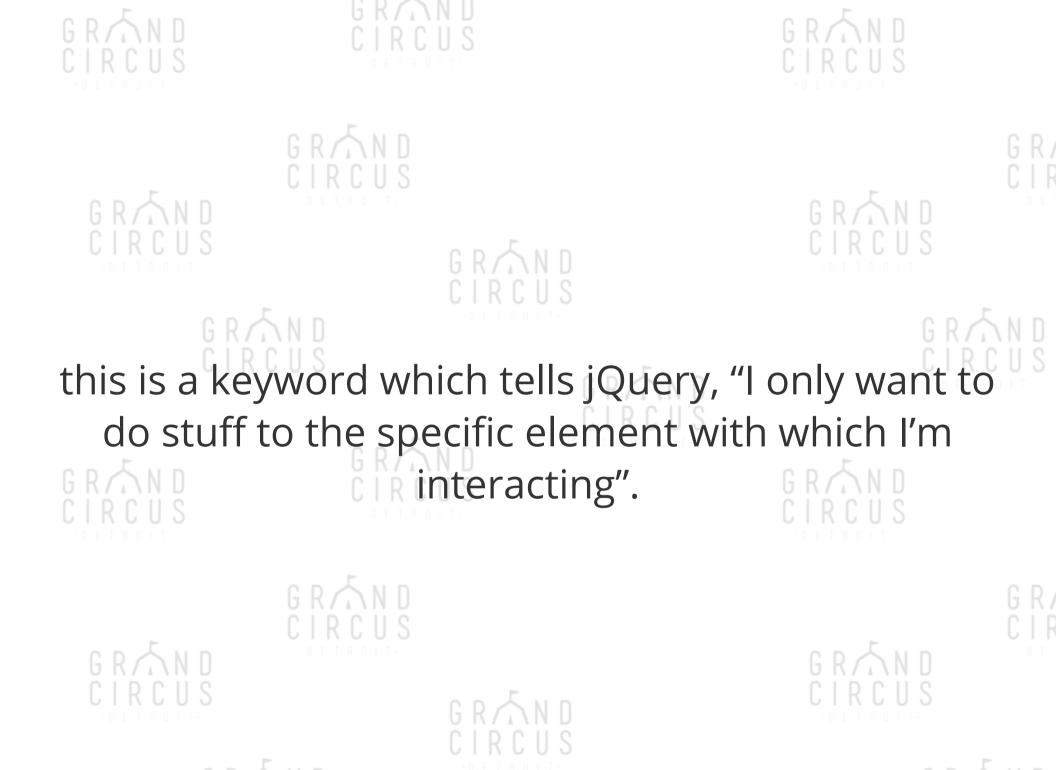




















```
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```



```
$ (document).ready(function() {
   $("div").click(function() {
      $(this).fadeOut("slow");
   });
});
```





















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JQUERY EFFECTS

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\$("#myPicture").hide();



























.show() hides a visible element

\$("#myPicture").show();



















.toggle() hides or shows an element depending on its current state (hides a visible element and shows a hidden element).





































































.fadeTo() adjusts the opacity of an element according to the opacity specified in the arguments.

```
$("button").click(function(){
   $("div").fadeTo(0.25);
});
```













.fadeToggle() hides or shows an element depending on its current state by animating its opacity.













.slideUp() hides an element with an upward sliding motion.



















.SLIDEDOWN()



.slideDown() displays an element with a downward sliding motion.

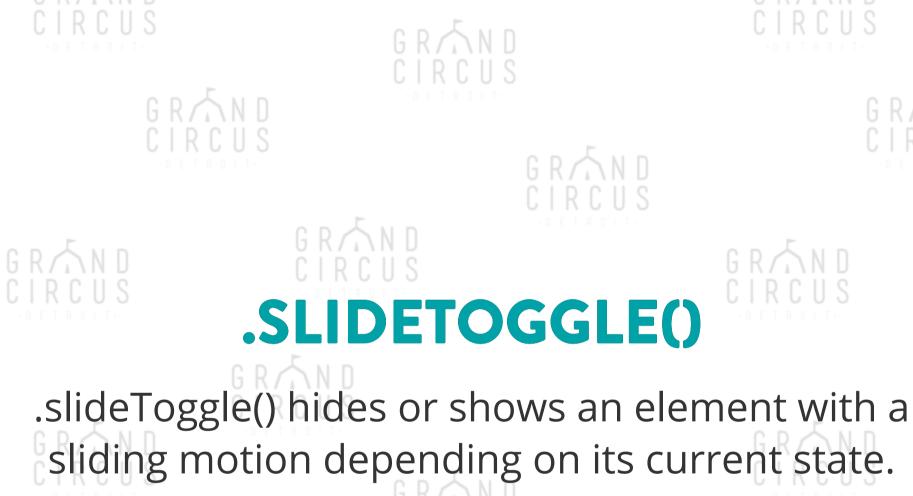












sliding motion depending on its current state.

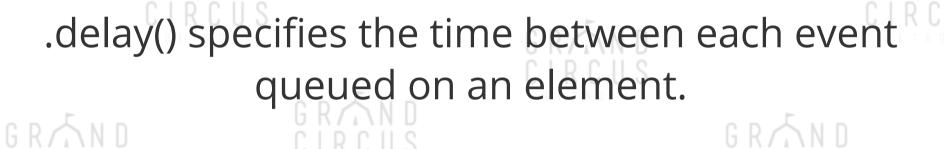












```
$("button").click(function() {
   $("div.first").slideUp(300).delay(800).fadeIn(400);
$("div.first").slideUp(300).delay(800).fadeIn(400);
});
```





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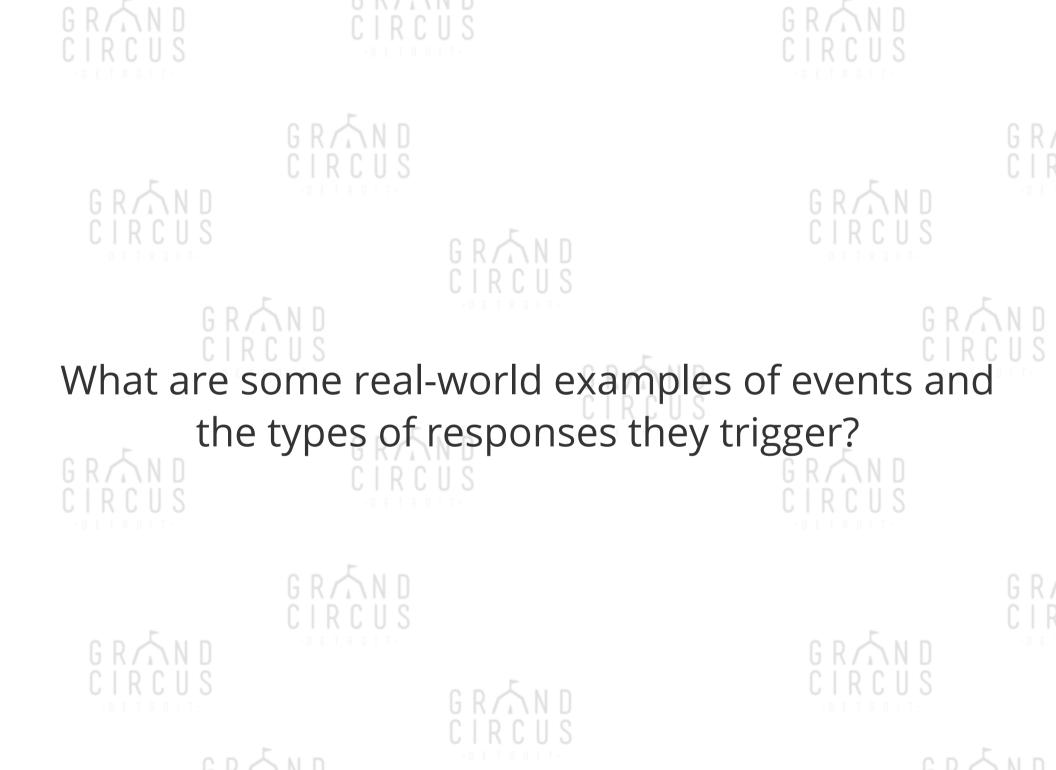




JQUERY EVENTS

An event refers to any kind of action a web page can recognize, including mouse clicks, hovering, scrolling, page loading, and resizing windows.

jQuery uses event handlers to define specific behavior which should occur in the web page when certain events are triggered.















.click() captures a click on the selected element.

```
$("div").click(function() {
```

```
$("img").click(function() {
```





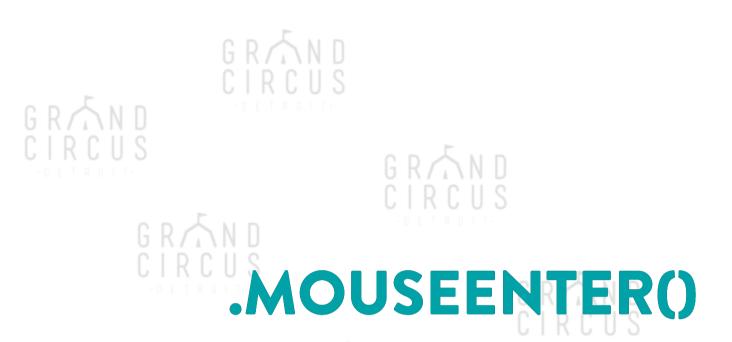






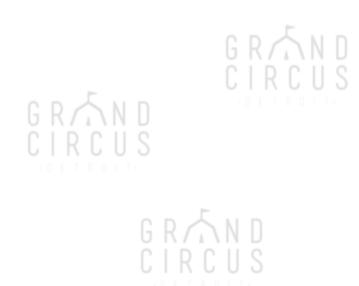








.mouseenter() is triggered when the mouse is moved over a selected element.





















.mouseleave() is triggered when the mouse is moved out of the area of a selected element.

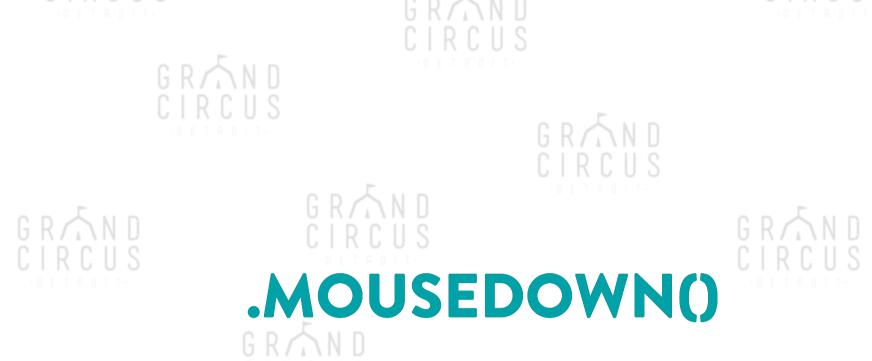












.mousedown() is triggered when the mouse is moved over a selected element and the mouse button is pressed.

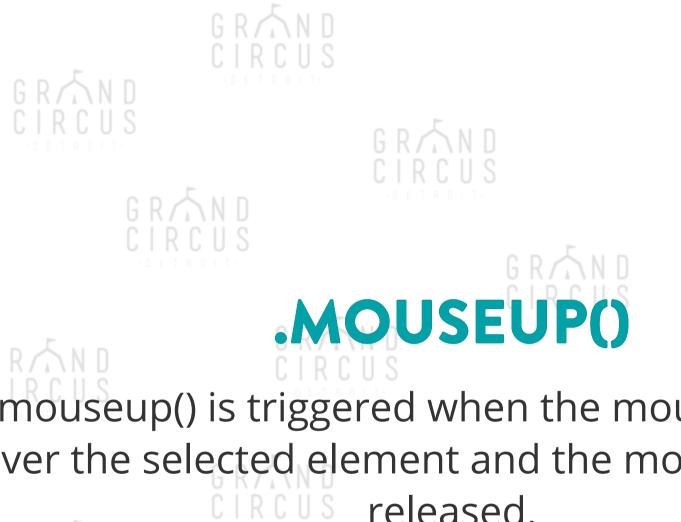












.mouseup() is triggered when the mouse is moved over the selected element and the mouse button is released.

















.MOUSEMOVE()

.mousemove() is triggered when the mouse is moved within the area of a selected element.













```
$("#book").load(function() {
   // Do stuff!
});
```

















The .unload() event is triggered when a user navigates away from the page (don't do that).

```
$(window).unload(function() {
  alert("Thanks for visiting");
});
```





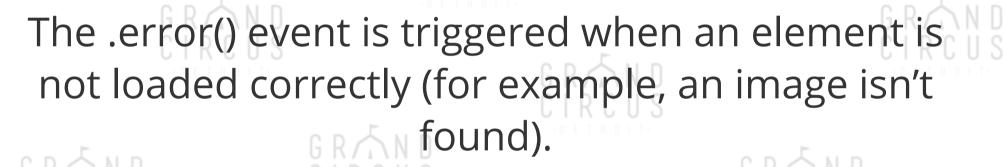












```
$("img").error(function() {
   $(this).hide();
}).attr("src","missing.png");
```













The .resize() event is is sent to the window when the size of the browser window changes.





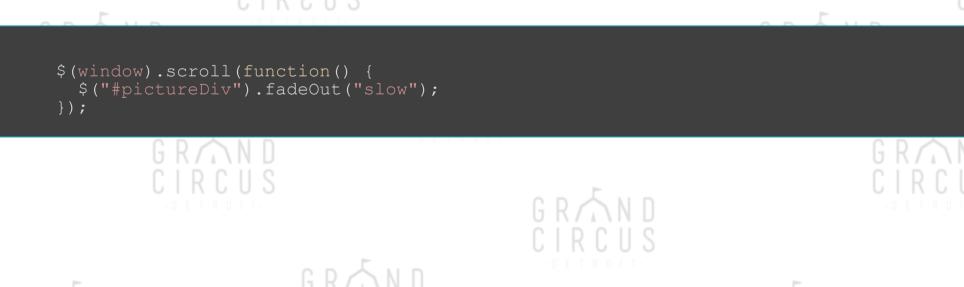








The .scroll() event is is sent to an element when the user scrolls to a different place in the element.





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ROCKIN' WITH JQUERY

Create a website that lists and demonstrates the jQuery topics we've covered so far. Include:

- GRAND Selectors
 - Effects
 - Slide actions
 - Fade actions
 - Show / hide
 - Events
 - click
 - hover
 - dblClick