



Create a MEME Generator!

Create a MEME Generator using HTML, CSS and JavaScript.

In the next three weeks you will be taken through the basics of creating web pages, adding behaviour and styling to them - make sure you understand this before moving on to the next part, it will make it easier to improve in the long term!

You will be working and keeping your files on your own computer, which means that you will be able to work and improve on your project at home if you desire (not obligatory but much encouraged!).

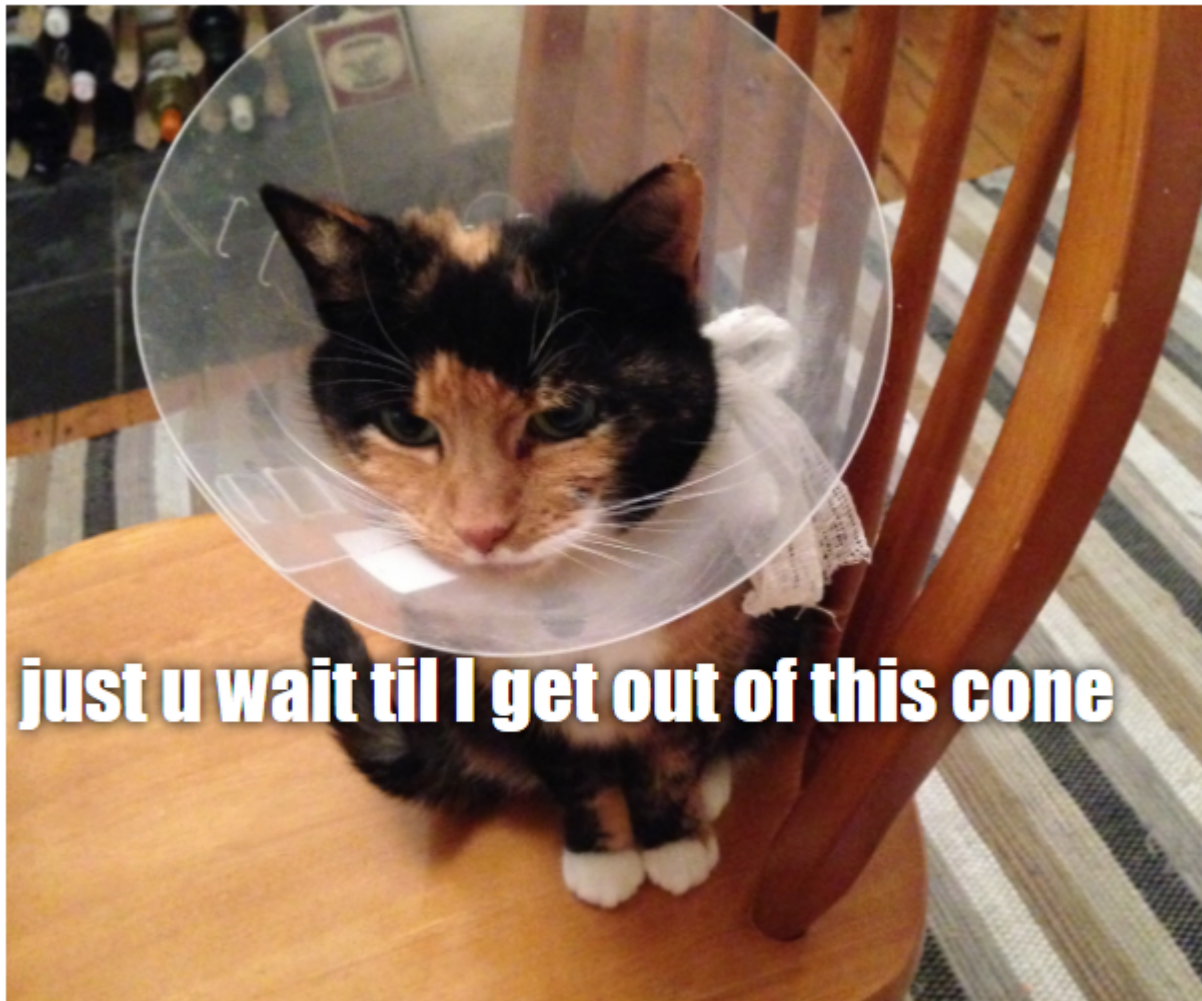
Once you have grasped the basics, there are a few Challenges that can be done and will be released upon request.

If you have any particular interests or any questions as the weeks go on, do not hesitate to ask, maybe we can make your ideas come true within the sessions for you to take home, improve and demonstrate to friends and family!

1. Introduction

What you will make

In this resource you will make a cat meme generator. Using an image of your cat, you can create your own cat meme to show off to your friends.



What you will learn

By creating a cat meme generator you will learn:

- How to write functions in JavaScript

- How to use JavaScript to manipulate data input by a user
- How to use ***oninput*** and ***onchange*** to make things happen live on a web page in response to user actions

2. What you will need

What you will need

Hardware

- A computer

Software

- A web browser (e.g. Internet Explorer, Chrome, Safari)
- A text editor (e.g. Notepad, TextEdit, nano)

Extras

- A picture of a cat in JPG, GIF, or PNG format

3. Create a web page

Create a web page

- Open up a blank file in your chosen text editor and save the file in your desired location with your chosen filename and the ***.html' extension*** at the end (let us know if you need a hand) – eg: myfilename.html

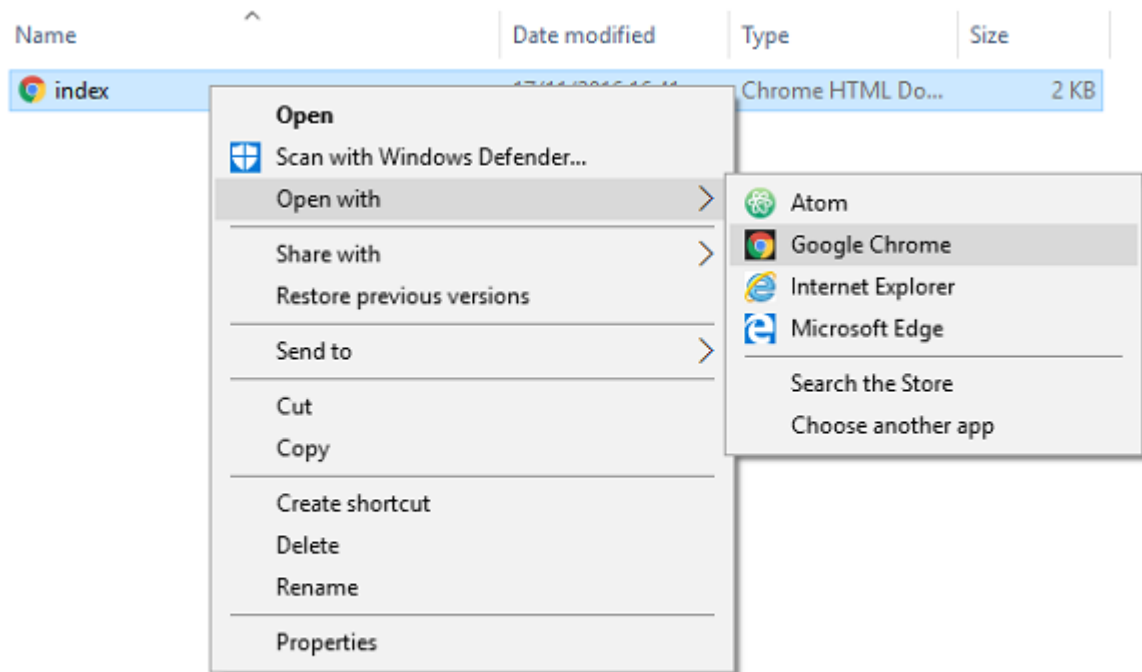
Create and save a HTML file

- The HTML code below gives you the basic structure of a page. Copy and paste it into the file you created, then save the file. Keep the text editor open so you can edit the file.

```
<html>  
<head>  
  <title>My page</title>  
</head>  
<body>  
  My content here  
</body>  
</html>
```

- **These are elements (or tags) and all need to be opened eg: '<html>' and then closed eg: '</html>'** (another eg: '<body>' and '</body>'). This is very important and any typography might prevent the file from working in your browser correctly.

- The **HTML <html> element** represents the root (top-level element) of an HTML document, so it is also referred to as the *root element*. All other elements must be descendants of this element.
- The **HTML <head> element** provides general information (metadata) about the document, including its title and links to its scripts and style sheets.
- The **HTML <body> Element** represents the content of an HTML document. There can be only one <body> element in a document.
- The **HTML <title> element** defines the title of the document, shown in a browser's title bar or on the page's tab. It can only contain text, and any contained tags are ignored.
- Go to the folder where you saved your webpage. Open the file with your internet browser as well, so you have the same file open in both your text editor and your browser.
- On Windows, you may need to right-click the file, choose Open with, and then select your internet browser.



- Whenever you change the code in your text editor, save it and then press the refresh button on your browser to see the updated page.

4. Getting the picture and text

Getting the picture and text

We want people to be able to use their own picture and text to make the meme, so we need a way for them to provide these. Let's add a form that our user can fill in.

Put this code between `<body>` and `</body>`

- Add the tags `<form>`, which indicates the start of the form, and `</form>` which indicates the end of the form.

```
<form>  
</ form >
```

- Inside your `<form>`, add a text box so that you can type in the meme text:

```
Meme text: <input type="text" id="user_text"  
maxlength="70"><p>
```

- Save your code and refresh your browser to see the box you created, you should see something like this:

MEME Text:

- Add code to create another input box on the line below your first box. This time the input box will not be a text box, but a special box to select the image file for the meme. The input type should be **file**, and the name of the input should be **user_picture** – try to figure this out on your own, if you struggle, read below or ask for a hand.
- **HINT 1:** Here's what the code you already wrote does:
 - **input** says we are creating a way for the user to provide some data
 - **type="text"** says that the data will be text
 - **id="user_text"** gives this particular box a name or ID, a bit like a variable name, this will be used to add some behaviour later on
 - **maxlength="70"** is optional - it stops you from typing in more than 70 letters so your text doesn't take up space past the bottom of the image
 - The **<p>** tag after the input box adds a paragraph (a bit of space before the next input box)

Can you work out how to create another input box using this information?

- **HINT 2:** You will need to change the parts of the code highlighted with ******* below:

Select a picture: **<input type="***" id="***"><p>**

- **Solution:** Ask if you get stuck!

- Save your code and refresh your browser to see the box you created, you should see something like this:

MEME Text:

Select a picture: No file chosen

- You can use these boxes to type into and to select a file, but nothing will happen yet, you will need to add some more code to handle the behaviour. **Note:** all images are kept on your computer - this program does not upload anything to the internet.

5. Build the meme

Build the meme

We need to create an area where the meme will be displayed. This area will start off blank because when the page first loads, we won't know which picture or what text the person wants to use.

- **Underneath the `</form>` tag**, add in a new line of code:

```
<div id="meme_text">Example text here</div>
```

- This is a **`<div>`** element - it's an invisible box which will eventually hold the text for our meme. We have given it an id just like we did to the input boxes.
- Now add another `<div>` below the previous one:

```
<div id="meme_picture"><img src="" height="500" width="600"></div>
```

- Inside this `<div>`, there's also another **``** tag which displays an image.

- **src=""** indicates which image to display. In this case, we've left the image blank, because we don't yet have the picture from the user.
- Save and refresh. The picture will be a blank box and the example text will display in the default font, which isn't very meme-like:

MEME Text:

Select a picture: No file chosen

Example text here



- Find the `<head>` section in your code and **add this code between `<head>` and `</head>` to allow some CSS styling rules to your web page:**

```
<style>
</style>
```

- Paste the code below **between the <style> tags** to give your text a meme style.

```
#meme_text {
  background-color: transparent;
  font-size: 40px;
  font-family: "Impact";
  color: white;
  text-shadow: black 0px 0px 10px;
  width: 600px;
  position: absolute;
  left: 15px;
  top: 400px;
}
```

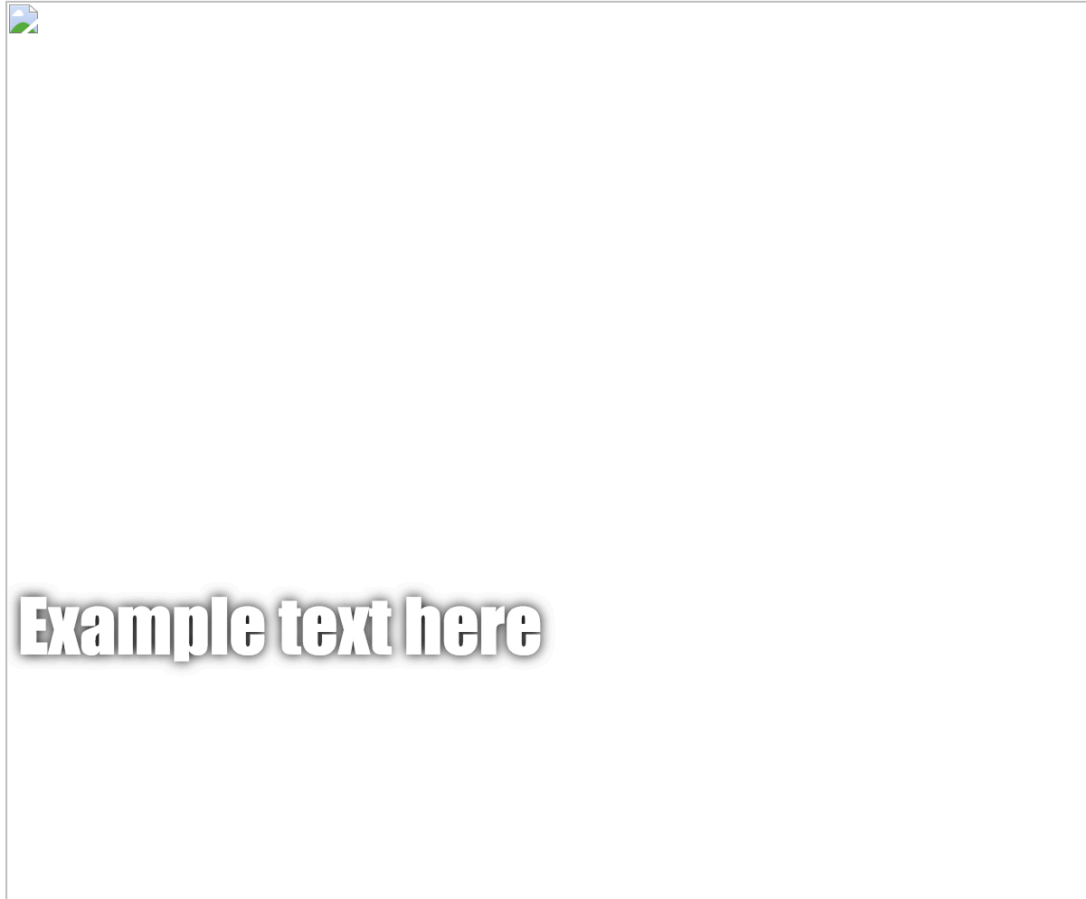
- **The left: 15px** and **top: 400px** lines determine how far the text is from the left and the top of the page. You can alter these numbers to make the text appear in a different place on your meme if you like.

If you would like to know more about CSS styles, visit <https://developer.mozilla.org/en-US/docs/Web/CSS/Reference>

- Save and refresh. The example text should now have some style like below:

MEME Text:

Select a picture: No file chosen



6. Display the text

Display the text

So far, all of the code you have written is HTML code, which tells the page what it should look like. You have then added a little CSS to style the example text. Now we're going to add some JavaScript code to tell the page what to do.

When someone types text into the text box, we want their text to display inside the `<div id="meme_text">` that we just created.

- **Add these tags underneath your `<div>` tags and before the closing `</body>` tag to create a section in which to write JavaScript code.**

```
<script type="text/javascript">  
</script>
```

- Firstly, we'll write a JavaScript function to tell the web page to take any text that's in the input box and display it in the "meme_text" `<div>`.
Between the two `<script>` tags you just created, add the code below. It looks pretty different to the code we've written so far, because it's JavaScript, which is a different language.

```
function update_text(){  
  
}
```

- You've just created a JavaScript function called `update_text()`. There are no instructions in the brackets at the moment, so the function won't do anything yet.
- **Between the curly brackets { },** add the code below to **create and set the variable `user_text` to point to the text box where the user types** the text they want to appear on the meme.

```
var user_text = document.getElementById("user_text");
```

- Now it's your turn to write a line of code. **Below the line you just wrote,** create code to **create and set the variable called `meme_text` to point to the element with the ID `meme_text`,** which is where the meme text will display. This is the `<div>` we created earlier.
- **HINT 1:** Let's break down the code you already wrote so that you understand what it does:
 - **`var user_text`** creates a new variable with the name "user_text"
 - **`=`** sets the value of this variable to...

- ... **document.getElementById("user_text")**, which looks through the web page and points to the element with the ID "user_text", the input text box we created earlier.

Using this information, can you work out how to create the new line of code?

- **HINT 2:** The parts of the code you need to change are highlighted with *** in the code below:

```
var *** = document.getElementById("*** ");
```

- **Solution:** Ask if you get stuck!
- We want to set the 'meme_text' <div> to contain the same text the user has typed into the meme_text textbox. **Add this line of code to your JavaScript function:**

○

```
meme_text.innerHTML = user_text.value;
```

- **.innerHTML** refers to what is displayed inside the <div>
 - **.value** refers to what is typed into the text box called user_text
- Lastly, we need to tell the text box that when someone types into it, it should call the function we just wrote so that the text in the meme will update. **Find the code for your text box and add in an attribute for oninput="update_text()"** so that it now looks like this:

```
Meme text: <input type="text" id="user_text" maxlength="70"  
oninput="update_text()"><p>
```

- Save and refresh your page, then try typing into your text box and see what happens. If your code is working, the text you type should appear as the meme text, almost like magic!

7. Display the image

Display the image

We will now write some code to take the cat image that the user has selected and display it on the meme.

- **Define a new JavaScript function called `update_image`.** Be careful to type this code after the closing curly bracket `}` of the previous function you created.

```
function update_image(){  
}
```

Create a function in JavaScript

- **Inside the `update_image` function, create two new variables:**

```
var img = document.querySelector("img");
```

- **This first variable selects the first (and only!) `` tag in the document,** so that we can tell the page where to display the selected image.

```
var file = document.querySelector("input[type=file]").files[0];
```

- **This second variable points to the selected cat picture file.**
- Set the image tag to contain the picture that the user has uploaded:

```
img.src = window.URL.createObjectURL(file);
```

- **Now add some code to tell the file input to call the `update_image()` function when someone selects a file.**
- **Hint 1:** Remember that in the previous step, you called the function `update_text()` when new text was written into the `user_text` input box. Using what you learned then, can you work out how to call the function `update_image()` when the user selects a file in the `user_file` input box?
- **Hint 2:** You will need to add `onchange=""` and then replace the `***` with the function you would like to call:

```
Select a picture: <input type="file" id="user_picture"
onchange="****"><p>
```

- **Solution:** Ask if you get stuck!
- Save and refresh the page. If your code is working, when you select a picture using the Select a picture input box, that picture should appear in the meme box below. If you also type something into the text box, your meme text should appear on top of the picture.

Meme text:

Select a picture tab.png



8. The finished code

The finished code

Now generate an awesome meme yourself, perhaps starring your own cat. The finished code is available for you upon request!

Show off your meme to your friends!

It's pretty tricky to make the page automatically generate the meme as a picture you can save. However, if you want to keep your meme, you could use the Print Screen button (Windows) / Cmd + Shift + 4 (Mac OS) / scrot command in the terminal (Linux on Raspberry Pi) to take a screenshot of the page, and then crop it using your favourite image editor.

Project Online Resource:

<https://projects.raspberrypi.org/en/projects/cat-meme-generator>

Learn more about HTML:

<https://developer.mozilla.org/en-US/docs/Web/HTML>

Learn more about CSS:

<https://developer.mozilla.org/en-US/docs/Web/CSS/Reference>

Learn more about JavaScript:

<https://developer.mozilla.org/bm/docs/Web/JavaScript>

Online Tutorials:

<https://www.codecademy.com/>

<https://teamtreehouse.com>