**Week Three Homework *Due* Wednesday, February 26, 2020 at 6pm**

The **following** are ***homework exercises***, and will ***count towards*** **20%** of the **final grade**.

1. We are going to ***remove*** the inline **onclick** **attribute** from our **button tags** in our **index.html** file in our **Arithmetic Forms** ***project*** and ***attach*** the built-in **addEventListener()** method to them.

The **addEventListener()** method ***attaches*** a **click event** to the **button** and when the **user** ***clicks*** the **button**, it **triggers** the ***referenced function***, which is the **second argument** passed to **addEventListener()**. The first argument is the “click” event:

Element.addEventListener(“event”, function reference);

”**referencing a function**” means ***referring to*** an **external function** as opposed to ***calling*** an **external function**.

When you **reference a function**, you ***reference*** the **name** of the **function** and ***omit*** the **()** parentheses which you use when **calling/invoking** a ***function***.

If we were to ***add*** the **()** after the ***referenced function*** passed to the **addEventListener()** method, the function would be **called/invoked** ***before*** it was **needed**. This would ***result in*** the **function *continuously*** **executing**, whether or not the **button** was being ***clicked***.

We ***only need*** to **invoke** the **referenced function** on the ***click*** of the **button**. ***Not*** before, and ***not*** after the event has taken place. The **EventListener** “***listens***” for the “**click**” ***event*** on the **button** in question, and when ***that*** **takes place**, the **function** is ***invoked*** and **executed**.

The following is an ***example*** of ***using* addEventListener(),** using the **addition form** from the **Arithmetic Forms Project !**:

1. First we need to create a **button variable** that the **addEventListener()** method can ***listen to*** for a “**click**” ***event***. Then we ***attach*** that **button variable** to the **addEventListener**() method.

const btnAdd = document.getElementById(“add”);

btnAdd.addEventListener(“click”, addNums);

Following this process, ***please do this*** for your **addition form** and the **other 5 forms you created for the Arithmetic Forms Project 1**. Make sure to ***remove*** the **“onclick”** ***attribute*** residing in your **“button”** tag. Right now your **button tag** is ***looking*** something like **this**:

<button id=”add” onclick=”addNums()></button>

It should end up look something like this:

<button id=”add”></button>

After you have made the changes to your code, check that everything works as expected. It should work exactly as before.

***Please include*** the **index.html** file, the **Javascript** file, and the **CSS** file of your **Arithmetic Forms project** in your **week 3 homework folder**, ***or*** include a **link** to the **project repository** on **Github**.

1. ***Choose*** **one form** and **describe** what you have ***just created*** by **attaching** the **addEventListener()** method to the ***div form button*** and what ***everything does*** in the **code** you ***just added***, piece by piece.
2. Describe the ***difference*** between a **referenced function** and an **invoked** (aka **called**) **function**. Please ***provide*** a code **example** for ***both*** a **referenced function** and an **invoked function**. You may use part(s) of the answer to the ***first question*** in your homework as example(s), if ***applicable***.
3. Describe the ***difference*** between **named functions** and **function expressions**. Give one (code) example for ***each***.
4. Describe the ***difference*** between **arrow functions**, **named functions**, and **anonymous functions**. Give one (code) example for each.
5. ***Trigger*** a **click event** by the ***click*** of a **button** using the **addEventListener()** method. You have ***already*** **added** the **addEventListener()** ***method*** to your **Arithmetic Forms** project, but ***now*** I want you to ***add*** it to something **new**. I have ***created*** a **repository** called **toggle-square** which you can use as a ***reference***. However, I want you to **change** the **square** to a ***circle***, and ***call*** **your exercise** ***toggle-circle***. I also want you to use ***different*** **colors** than I did. And I want you to ***go to town*** with the **styling**! I am ***also*** **providing** a ***bonus* function** called **clearBg()**. You will probably want to ***re-use*** the **body** of the **function** (what is ***between*** the {}) in other projects. What it does is “***refresh***” the **browser window** and ***clear*** whatever was ***created*** with **JavaScript**. In other words, ***whatever*** DOM **manipulation** was **done** with **JavaScript**. Since it is all on the ***client side***, the **manipulation** does ***not*** persist. When the **page** is ***refreshed***, the **changes** to the **DOM** ***disappear***. When you ***do*** **re-use** this **function** in ***other*** **projects**, just make sure to provide a ***new***, **descriptive name** to the ***function*** that **describes** what it is ***doing*** in that **particular project**. In **toggle-square**, I ***named*** the **function** **clearBg()** because ***essentially*** it is **clearing** the **background color change** of the **square** that JavaScript ***executed*** on the DOM.
6. **Describe** what **window.location.reload()** ***means/does*** exactly. I have ***provided*** a couple of **links** in the **“Helpful Resources”** ***section*** that **break down** what it **means/does. The links** should ***help*** you **come up** with an ***answer*** to this **question**.
7. **Describe** the ***commands*** you need to **initialize** a **local git repository** on your computer ***inside*** a **project** you want to ***push*** to **Github** for the FIRST time, ***add*** any files or directories to the **staging area**, ***commit*** those files, and then ***push*** them to **Github**. **List** ***each command***, starting from the ***first command*** that **initializes** your **local Git repository** at the ***root*** (top) of **your project**, ***all the way*** to the **final command** which ***pushes*** your **project’s local repository** to ***Github***.
8. ***Which folder*** inside your **project** ***represents*** your **local Git repository** and ***confirms*** that you have actually ***initialized*** **Git** in your **project**? **Hint:** it is a ***hidden folder*** that starts with a . (dot). When you ***initialize*** **git** in your ***projects***, ***execute*** the **ls -a** **command** to ***list*** all the **files** and **folders** that ***reside*** **inside** your **project folder**, ***including*** **hidden files**. That is what the **-a flag** is for. To reveal any **hidden** . (dot) **files** or **folders** in your project’s **root directory**.
9. What ***else*** **signals** to you that you have ***initialized*** **Git** in your (project) **folder**? **Hint:** it ***represents*** your **default local branch** which has the ***same name*** as your **default remote branch** on **Github**. To ***test*** this, go into a folder that you do NOT care about, that has been “**Git**” ***initialized***. ***Check out*** what is **present** in the **Terminal** window. Then type the ls -a command followed by hitting the enter/return button. After you have determined what is present, **type** the **command** **rm -rf .git** in **Terminal followed by *hitting*** the **enter/return** key. After you have done that, ***execute*** the **ls -a** command again in **Terminal** and see ***which files*** and ***folders*** are **printed out**. Has ***anything*** **disappeared**? In ***addition***, has **anything else** ***disappeared*** from the **Terminal window** as a ***result*** of **rm -rf .git**?

If you have ANY questions, please reach out to me on ***Discord***. If, by any chance, you ***cannot*** **contact me** on **Discord**, you can ***email*** me at [MCampbell@citytech.cuny.edu](mailto:MCampbell@citytech.cuny.edu). I am also ***available*** on **Thursdays** between **10-11am** in **p117** during my **office hour**.

Reading:

[COMD3663 DYNAMIC WEB 1 - CONDITIONALS: Github](https://interglobalmedia.github.io/conditionals/#/)

[An Intro To Git And Github and Why You Should Git: Github](https://interglobalmedia.github.io/why-you-should-use-git/#/) (optional but highly recommended reading)

[Basic Git Commands: Github](https://interglobalmedia.github.io/basic-git-commands/#/) a step by step tutorial on the basic Git commands needed to create a local repository on your computer and then push it to remote origin (**Github**)

**Helpful Resources Towards Successful Homework Completion:**

[JavaScript Function Invocation](https://www.w3schools.com/js/js_function_invocation.asp): W3Schools

[HTML DOM addEventListener() Method:](https://www.w3schools.com/jsref/met_element_addeventlistener.asp) W3Schools

[Location reload() Method:](https://www.w3schools.com/jsref/met_loc_reload.asp) W3Schools

[Location.reload():](https://developer.mozilla.org/en-US/docs/Web/API/Location/reload) MDN

[Location Reload Method:](https://guide.freecodecamp.org/javascript/location-reload-method/) FreeCodeCamp

[How TO – Circles:](https://www.w3schools.com/howto/howto_css_circles.asp) W3Schools

[COMD3663 DYNAMIC WEB 1: EVENTS, LISTENERS, HANDLING:](https://interglobalmedia.github.io/events-listeners-handling/#/) Github gh-pages

[toggle-square:](https://github.com/interglobalmedia/toggle-square) **Github repository**. A **project repository** I created and ***pushed*** to **Github**, which also is being ***hosted*** on gh-pages. This little application first appeared on the Conditionals slide deck on slide 1, ***entitled*** “The if/else statement revisited”.

[Toggle-square:](https://interglobalmedia.github.io/toggle-square/) on **Github gh-pages**.

***Other repositories*** I have **created** which ***started off*** as **live examples** in ***various slide decks*** that we have ***already visited*** in **class** and for **homework reading** for ***this course***:

### [gallery-map](https://github.com/interglobalmedia/gallery-map): **Github repository**. This little **application** ***first appeared*** in the [data-structures slide deck](https://interglobalmedia.github.io/data-structures/#/42) on slide 42. I slightly ***changed*** the **layout** and **styling** of the **application**, but it ***still*** **uses** the **.map()** method and the ***same images***.

[gallery-map:](https://interglobalmedia.github.io/gallery-map/) **Github gh-pages**. The **gallery-map project** ***repository*** **hosted** on the **Github gh-pages** branch.

[toggle-can:](https://github.com/interglobalmedia/toggle-can) **Github repository**. This **little application** ***first appeared*** in the [basic-javascript slide deck](https://interglobalmedia.github.io/basic-javascript/#/) ***starting*** on **slide 42** and ***ending*** on **slide 43**.

[toggle-can:](https://interglobalmedia.github.io/toggle-can/) **Github gh-pages**. The **toggle-can** **project** ***repository*** **hosted** on **Github gh-pages** branch.

[gallery-toggle:](https://github.com/interglobalmedia/gallery-toggle) **Github repository**. Little application ***building on*** **toggle-square** and **toggle-can** applications ***combined with*** the **gallery-map** application.

[gallery-toggle:](https://interglobalmedia.github.io/gallery-toggle/) **Github gh-pages**. The **gallery-toggle project** ***repository*** **hosted** on **Github gh-pages** branch.

[creating-elements:](https://github.com/interglobalmedia/creating-elements) **Github repository**. Little **application** in which **new elements** (and associated text) are ***created*** using the **document.createElement()** method, and the **element.setAttribute()** method, **element.appendChild()** method, **document.createTextNode()** method, and **element.classList.add()** methods are also ***used*** to **build** the **application**.

[creating-elements:](https://interglobalmedia.github.io/creating-elements/) **Github gh-pages**. The **creating-elements project** ***repository*** **hosted** on **Github gh-pages branch**.

[changing-shapes:](https://github.com/interglobalmedia/changing-shapes) **Github repository**. Little **application** in which the ***geometric shape*** **rendered** to the **page** ***changes*** with the **click** of a ***button***, and **changes back** to its ***default state*** by the ***click*** of **another button**. It implements the if/else statement, document.getElementById(), and the HTML DOM **.style** property used within **JavaScript** code ***in conjunction with*** **CSS**.

Feel ***free*** to **git clone** any of these **repositories** on to your **laptop**, get ***acquainted*** with what they do, and ***play*** with them. This will **familiarize** you with ***some*** of the JavaScript **methods**, **functions**, and **properties**, etc., which we will be ***using*** throughout this **course**.

**Helpful Resources:**

[Document.createElement():](https://developer.mozilla.org/en-US/docs/Web/API/Document/createElement) MDN

[HTML DOM createElement() Method:](https://www.w3schools.com/jsref/met_document_createelement.asp) W3Schools

[HTML DOM setAttribute() Method:](https://www.w3schools.com/jsref/met_element_setattribute.asp) W3Schools

[Element.setAttribute():](https://developer.mozilla.org/en-US/docs/Web/API/Element/setAttribute) MDN

[HTML DOM appendChild() Method:](https://www.w3schools.com/jsref/met_node_appendchild.asp) W3Schools

[HTML DOM createTextNode() Method:](https://www.w3schools.com/jsref/met_document_createtextnode.asp) W3Schools

[HTML DOM classList Property:](https://www.w3schools.com/jsref/prop_element_classlist.asp) W3Schools

[Element.classList:](https://developer.mozilla.org/en-US/docs/Web/API/Element/classList) MDN

[JavaScript if/else Statement:](https://www.w3schools.com/jsref/jsref_if.asp) W3Schools

[if...else:](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Statements/if...else) MDN

[HTML DOM style Property:](https://www.w3schools.com/jsref/prop_html_style.asp) W3Schools

[JavaScript HTML DOM - Changing CSS:](https://www.w3schools.com/js/js_htmldom_css.asp) W3Schools