Csci 4131 Internet Programming
Fall 2021
Lecture 6
September 27th

Instructor: Dr. Dan Challou

Logistics – Csci 4131 Lecture 6, Sept 27th

- HW Assignment 3 out, available in week 4 on the Homepage of the class Canvas site (and in the assignments section). Due **Friday Oct 10th**
- ***If you haven't reviewed and started on HW3 already, please start as soon as possible (like one minute after class ends today!), it is a step-up in difficulty over HW2***

NOTE

- Our Programming Homework Solutions can be reviewed at any office hour or by appointment. ***We do not post them!!!***

Upcoming Zybooks Assignments

- Lecture 7 preparation, due 9:45am Wed, September 29
- Zybooks HW 4, due 11:59pm Saturday 10/2

Reading & Tutorials for the week

Google Maps / JavaScript API:
https://developers.google.com/maps/documentation/javascript/tutorial

Google Maps Geocoding
https://developers.google.com/maps/documentation/javascript/geocoding,

Google Maps Places API
https://developers.google.com/maps/documentation/javascript/places

Google Directions Service
https://developers.google.com/maps/documentation/javascript/directions

Google Click on Points of Interest (used to fill location field on Form when points of interest are selected/clicked on the map next to it):
https://developers.google.com/maps/documentation/javascript/examples/event-poi

Optional:

Sebesta: Chapters 5 and 6

Homework 3- sign up for Google Maps

https://developers.google.com/maps/documentation/javascript/get-api-key

You must enable billing and give google a credit or debit card number

You get a 200 dollar credit for their services

You should use, at most very little of the credit for this assignment or follow-up assignments (20 dollars or less)

Email the class help email (csci4131help-f21@umn.edu) immediately if you have an issue with signing up, or if you somehow manage to incur charges to your account for work you do in this course.

Make sure to sign up for all the google API's and review Google's documentation and Examples on the following Services / APIs:

- Google Maps
- The Geocoding Library – for markers
- The Places Service – for searching for places
- The Directions Service
  - The Directions Display Object
  - The Directions Renderer Object

- Note, w3schools has tutorials to get you started as well
  - https://www.w3schools.com/graphics/google_maps_intro.asp

HW 3 Demo

Questions?

Agenda

- Last Time:
  - Lecture 5 Exercise Review
  - CSS Intro wrap-up
  - Intro to the DOM & JavaScript
- Today
  - Lecture 6 Exercise Review
  - More JavaScript
    - Animation
    - Automation
    - Regular Expressions
    - JavaScript Closures

Review Exercise 1, Lecture 6. Use parseInt to refactor the following JavaScript so adds the 2 numbers input instead of concatenating them

```
<script>
    var number1; // first string entered by user
    var number2; // second string entered by user
    var sum; // sum of number1 and number2
    var product; // product of number1 and number2

    number1 = window.prompt( "Enter first integer" ); // 6 entered by user
    number2 = window.prompt( "Enter second integer" ); //5 entered by user

    sum = number1 + number2; // add the numbers
    product = number1 * number2; //multiply the numbers

    document.writeln( "<h1>The sum is " + sum + "</h1>" );
    document.writeln("<h1>The product is " + product + "</h1>" );
</script>
```

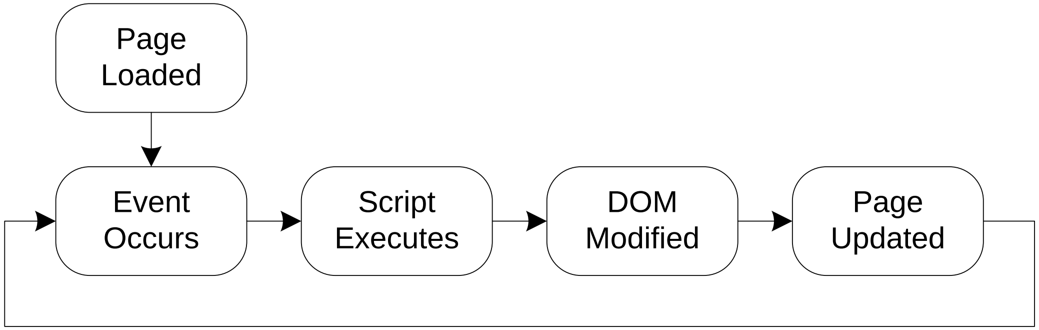
add_n_mult.html

add_n_mult_ans.html

Questions?

Event Driven Programming using HTML, JavaScript, DOM Revisited

Recall DOM Scripting / Event Cycle



- DOM Scripting – uses JavaScript to manipulate the DOM
- DOM Scripting is event-driven. An event is typically such a clicking a mouse, moving your mouse over a DOM element or typing on the keyboard
- When the event occurs JavaScript code (an event handler) is executed to handle the event
- The event handler has full access to the DOM – it can change the properties of those elements
- When the DOM is modified, the browser detects those changes and updates the page
- When the event handler is finished, the web browser waits for another event to occur (and repeats the cycle when it does)
- DOM scripting should be done only to enhance a web page – this is known as progressive enhancement.

Simplest Method: Calling JavaScript when an event is triggered on a DOM node. For example, The events mouseover and mouseout are set to respond to those events on a DOM img element

- https://www.w3schools.com/js/tryit.asp?filename=tryjs_events_onmouseover

Recall, examples that use different mechanisms to display and hide items on a Webpage

- pop_up.html
- displayPixEx.html
- https://www.w3schools.com/howto/howto_js_toggle_hide_show.asp
- https://www.w3schools.com/css/css_display_visibility.asp
- https://www.w3schools.com/cssref/pr_class_visibility.asp

An Example that associates behavior with a button when the window that displays the page in the browser is loaded

- event_handler_demo.html

Questions?

Rotating Images in JavaScript

- Next we'll use random numbers to produce an HTML/CSS/JavaScript combo that randomly displays images from a given set of images when we click on the currently displayed image

What about the Big 3 – #1 (Layout) First:

```
<!DOCTYPE html>

<!-- Fig. 10.11: RandomPicture.html -->
<!-- HTML5 document that displays randomly selected images. -->
<html>
  <head>
    <meta charset = "utf-8">
    <title>Random Image Generator</title>
    <script src = "RandomPicture.js"></script>
  </head>
  <body>
    <img id = "image" src = "CPE.png" alt = "Common Programming Error">
  </body>
</html>
```

Other 2 (Style, Behavior)

Not worried about style yet

Behavior:

```
register the main event handler
register an event handler on the IMAGE
When the user clicks on the image
Randomly select another image and
        RENDER IT!!
```

[Random Pictures]

Automating Image Rotation

Syntax and Description

setInterval(code,millisec,lang)

Parameter	Description
code	Required. The function that will be executed
millisec	Required. The intervals (in milliseconds) on how often to execute the code
lang	Optional. JScript | VBScript | JavaScript

clearInterval(*id_of_setInterval*)

Example (**code along**)

- Let's Build a Simple Clock That Displays the time in the format

HH:MM:SS AM/PM

With A Stop Button

Lets have a look (code along)

Clock

Exercise 1: **submit your answer to item Lecture 6, Exercise 1 in the week 4 module on Canvas**

- **Add a start and clear button to the clock we just built!**
  - Update the HTML to add the start and clear buttons
  - Clear should call a javascript function to clear the text field
  - Start should start the clock anew.

testclock.html

Hints:

The **Start** button and its behavior should remain the same

The **Stop** button should now call **clearInterval** in the onclick event of the "Stop" Button

The "Clear Clock" button should set the "value" attribute of the text element to **""** (the empty string)

Please close your computer when done!!!!

Next Time

- Automation using setInterval
- Regular Expressions
- JavaScript Closures
- Google Maps