More Intro to JavaScript

CS 115 Computing for the Socio-Techno Web
Instructor: Brian Brubach
Announcements

• Office hours today 3:00 – 4:15pm
• Quiz out, due Saturday
• Team accounts
• Meeting times
• Project questions?
Research resources

• Page for this course by Wellesley science librarian Sarah Barbrow
  • https://libguides.wellesley.edu/CS115/Home

• Google scholar
  • Sarah’s video also has good general search tips → https://wellesley.zoom.us/rec/share/uv53D6vMqE9Ia4XA70PDWLIIB6jEaaa8hnUd_fQMyUddyoJTvjjjcozjMXkkqNWV
  • Can find legal access to articles behind paywall (author’s webpage, arxiv.org, etc.)

• ACM Digital Library
  • Sarah’s video also has good info on how publication works in CS → https://wellesley.zoom.us/rec/share/uexSHpTu_WZLRKPV7X77Wu0nRonBaaa803lc_6YOzxrkBNGAsSy_G7_b2Fyyycyk1?startTime=1590720727000

• Wayback Machine → https://archive.org/web/
Some relevant ACM conferences

• WWW (World Wide Web Conference)
• FAccT (Conference on Fairness, Accountability, and Transparency)
  • Formerly FATML, then FAT*, now FAccT
• SIGCHI/CHI (Conference on Human Factors in Computing Systems)
• Many more…
Using news articles as sources

• Be careful how you use articles
• Good starting point to decide where to dive deeper
• Reputable news orgs great for primary sources
  • E.g., Mark Zuckerberg said, “X”
• Even disreputable news orgs can be cited as examples
  • E.g., noting that some extremist political website is promoting a false claim
• Science journalism not a substitute for academic sources
  • Often hyperbolic or misleading
  • Different objectives than an academic research paper
  • Tendency to express certainty and answers
Endangered neck gaiters

- WaPo → Wearing a neck gaiter may be worse than no mask at all, researchers find
  - Example of hyperbolic, misleading coverage of a scientific publication

*Update: Since this story ran, more research has been done on gaiter efficacy. You can read about those new studies by aerosol scientists, who have pushed back against the characterization that thin gaiters may be “worse than nothing,” here.*

- Several other outlets have picked up on this with similar headlines and content
Clarifications from better sources

• NPR ➔ How Should I Cover My Face? A Deeper Look Into Neck Gaiters And Face Shields

• ScienceNews ➔ 4 reasons you shouldn’t trash your neck gaiter based on the new mask study

• Original paper ➔ Low-cost measurement of face mask efficacy for filtering expelled droplets during speech
  • See first paragraph in Discussion section
  • [https://advances.sciencemag.org/content/6/36/eabd3083](https://advances.sciencemag.org/content/6/36/eabd3083)
Conflicts of interest

• USA Today → Confused about the safety of neck gaiters? Here's what you need to know
  • Corrects some prior misinformation
  • Links to comments/clarifications by original study authors
  • Also links to neck gaiter product pages
The best neck gaiters you can buy

You can find gaiters in all different prints and colors. (Photo: Blackstrap/Amazon)

You can find neck gaiters at a number of retailers online, from Amazon to REI to Etsy. The top-rated one on Amazon is the [Blackstrap neck gaiter](https://www.amazon.com/dp/B08QPY1J7J) — which has over 3,100 rave reviews for being both comfortable and breathable — followed closely by the [Achiou one](https://www.amazon.com/dp/B08QPY1I3K), which also has thousands of reviews for its snug fit and plethora of stylish designs. Over at REI, the most popular neck gaiter is one from [Blackstrap](https://www.rei.com/product/826927), which people say fits securely and feels soft against your skin. And finally, Etsy offers [tons of different neck gaiter options](https://www.etsy.com/), including [this highly recommended one](https://www.etsy.com/), which even has an adjustable nose piece to prevent it from slipping.
Checking for affiliate links

You can find neck gaiters at a number of retailers online, from Amazon to REI to Etsy. The top-rated one on Amazon is the **Mission neck gaiter**—which has over 3,100 rave reviews for being both comfortable and breathable—followed closely by **this Achiou one**, which also has

• Copying that link gives...

  https://www.amazon.com/Mission-Multi-Cool-Multifunctional-Gaiter-Headwear/dp/B00UR4HHC8/ref=as_li_ss_tl?ots=1&slotNum=0&imprToken=2cba4c6c-4073-786f-a8b&ie=UTF8&linkCode=ll1&tag=usatdeals-20&linkId=f09c6e1e6b1ebb91dcbf79d2e8aafaea&language=en_US

• Another link...

Linking a JavaScript (.js) file

- `<script src="file.js"></script>`
- Like having the contents of the file appear between the script tags
Chrome JavaScript console

• If there are any errors in your code you get a blank page
• Use the Chrome JavaScript Console for help
  • View ➔ Developer ➔ JavaScript Console
JavaScript dialog boxes

• We can perform input and output via dialog boxes
• Input via prompt()
• Template → prompt("message_to_display", "default_value")
  • , "default_value" is optional
• Example file → input_output.html
  • Notice we can define several variables at the same time
  • prompt() is a function that displays a dialog box to read any data
• You can read numbers and strings via prompt
• prompt() returns a string
• If you need to perform some mathematical computation, you might need to explicitly convert the value read into a number
Output

• document.writeln() ➞ Write to HTML output at that point
• console.log() ➞ Write to browser console
• innerHTML ➞ Write to an HTML element
• window.alert() ➞ Write to an alert box
• Quick reference ➞ https://www.w3schools.com/js/js_output.asp
Strings

• Can use ‘‘ or “ ” for strings, we will use “ ” in this class

• Get the number of characters in a string by accessing the length value

```javascript
var s = "Hello";
var x = s.length;  // x = 5
```

• Some functions you can use with strings:
  • toLowerCase()
  • toUpperCase()
Implicit conversions

• In JavaScript, you don’t specify the “type” of variables
• Most of the time implicit transformations will take care of transforming a value to the expected one
• Example → Integer type age can implicitly become the string “10”

```javascript
let age = 10;
var s = "John Age: " + age;
```
Explicit conversions

• Sometimes you need to explicitly transform a value
  • Converting number to string
    • var stringValue = String(number);
  • Converting string to number
    • var number = Number(stringValue);
    • var number = parseInt(stringValue);
    • var number = parseFloat(stringValue);

• Example: conversions_bad.html // What goes wrong here?
• Example: conversions_fixed.html // How to fix it
Math functions/ constants

- **Math.abs()** $\rightarrow$ Absolute value
  
  ```javascript
  Math.abs(-10) // 10
  ```

- **Math.max()** $\rightarrow$ Maximum of two values
  
  ```javascript
  Math.max(10, 20) // 20
  ```

- **Math.sqrt()** $\rightarrow$ Square root
  
  ```javascript
  Math.sqrt(4) // 2
  ```

- **Math.random()** $\rightarrow$ Random value between 0 and less than 1

- **Constants**
  
  ```javascript
  Math.PI // Mathematical constant pi
  ```
Boolean type

• We have seen integer, float, and string values
• New type → boolean type
• Assumes the value true or false
• Variable declaration and initialization
  let found = true;
  let attending = false;
JavaScript comparisons

• You can compare values by using equality/inequality operators
  - === → Returns true if the values and types are equal, false otherwise
  - !== → Returns true if the values or types are different, false otherwise
  - == and != → Attempt type conversion before comparing values, should usually be avoided due to sometimes unpredicted behavior

• Relational Operators
  - < → Less than, returns true if left value is less than right value (e.g., x < y)
  - > → Greater than
  - <= → Less than or equal
  - >= → Greater than or equal

• Example files → comparison_string.html, comparison_number.html
JavaScript if statement

• If statement → Control statement that allows us to make decisions
• First Form → if
  ```javascript
  if (expression)
      statement; // executed if expression is true
  ```
• Second Form → if else
  ```javascript
  if (expression)
      statement1; // executed if expression is true
  else
      statement2; // executed if expression is false
  ```
• To execute more than one statement use a set of {} around statements
• Example files → if_statement1.html, if_statement2.html
Some tools and advice

• Indentation → http://jsbeautifier.org/
• Finding errors in JS → http://jshint.com/
• Advice from Nelson Padua-Perez (great CS instructor at UMD)
  • http://www.cs.umd.edu/~nelson/classes/resources/writingComputerPrograms/
• JS Fiddle → https://jsfiddle.net/
  • Interact with HTML, CSS, JS, and webpage output in a split browser window