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Intro to JavaScript Homework

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Welcome! These are some bonus puzzles to accompany the Intro to JavaScript class. Please take a look at the puzzles, and work on one that looks challenging but not completely overwhelming. You can always reference [the slides](http://girldevelopit.github.io/gdi-featured-js-intro/index.html) if you get stuck. Commit to spend at least 20 minutes trying to figure out a problem before you look at the answers. It helps you learn!

Class 1

The Fortune Teller

Why pay a fortune teller when you can just program your fortune yourself?

* Store the following into variables: number of children, partner's name, geographic location, job title.
* Output your fortune to the screen like so: "You will be a X in Y, and married to Z with N kids."

Show/Hide Solution

The Age Calculator

Forgot how old someone is? Calculate it!

* Store the current year in a variable.
* Store their birth year in a variable.
* Calculate their 2 possible ages based on the stored values.
* Output them to the screen like so: "They are either NN or NN", substituting the values.

Show/Hide Solution

The Temperature Converter

Let's make a program to convert celsius tempatures to fahrenheit and vice versa, so we can complain about the weather with our friends oversees.

**Reminder:** To convert celsius to fahrenheit, multiply by 9, then divide by 5, then add 32. To convert fahrenheit to celsius, deduct 32, then multiply by 5, then divide by 9.

**Unicode Characters:** To print the degrees symbol in JavaScript, we need to use the write \u00B0 to represent the unicode character for the degress symbol.

* Store a celsius temperature into a variable.
* Convert it to fahrenheit and output "NN°C is NN°F".
* Now store a fahrenheit temperature into a variable.
* Convert it to celsius and output "NN°F is NN°C."

Show/Hide Solution

Challenge Question: Using Math functions

JavaScript has a built-in tool that can generate a random number between 0 and 1. This tool is called a *method*. We'll talk about methods more later in the class. For now, know if you type Math.random(), you'll get a random number between 0 and 1.

Using this tool, update your fahrenheit to celsius tempature conversion program to do the following:

* Instead of inputing a value for the Fahrenheit tempature, use Math.random() to generate a random tempature between 0 and 100
* Have to program output: "It is NN°F today. That's NN°C."

Show/Hide Solution

Class 2

The Fortune Teller: With Functions!

Let's turn one of the [Class 1 Exercises](http://girldevelopit.github.io/gdi-featured-js-intro/homework.html#Class1) into a function.

* Write a function named tellFortune that:
  + takes 4 arguments: number of children, partner's name, geographic location, job title.
  + outputs your fortune to the screen like so: "You will be a X in Y, and married to Z with N kids."
* Call that function 3 times with 3 different values for the arguments.

Show/Hide Solution

What number is bigger?

Write a function that compares two numbers and returns the larger one. Be sure to try it out with some different numbers. Bonus: add error messages if the numbers are equal or cannot be compared.

Don't forget to test it!

Show/Hide Solution

Pluralize

Write a function pluralize that takes in two arguments, a number and a word, and returns the plural. For example:

pluralize(5, 'cat'): '5 cats'

pluralize(7, 'turtle'): '7 turtles'

Bonus: Make it handle a few collective nouns like "sheep" and "geese".

Show/Hide Solution

The Calculator

* Write a function called squareNumber that will take one argument (a number), square that number, and return the result. It should also log a string like "The result of squaring the number 3 is 9."
* Write a function called halfNumber that will take one argument (a number), divide it by 2, and return the result. It should also log a string like "Half of 5 is 2.5.".
* Write a function called percentOf that will take two numbers, figure out what percent the first number represents of the second number, and return the result. It should also log a string like "2 is 50% of 4."
* Write a function called areaOfCircle that will take one argument (the radius), calculate the area based on that, and return the result. It should also log a string like "The area for a circle with radius 2 is 12.566370614359172."
  + Bonus: Round the result so there are only two digits after the decimal.
* Write a function that will take one argument (a number) and perform the following operations, using the functions you wrote earlier:
  + Take half of the number and store the result.
  + Square the result of #1 and store that result.
  + Calculate the area of a circle with the result of #2 as the radius.
  + Calculate what percentage that area is of the squared result (#3).

Show/Hide Solution

Challenge Question: String Manipulation

If you feel comfortable with the other exercises, it's time to expand your knowledge! These puzzles involve manipulating strings; to try them out, you'll need to use some of the [built-in JavaScript methods for strings](http://www.w3schools.com/jsref/jsref_obj_string.asp). Methods are pre-written functions that are built into the language.

These questions are not as straightforward as the others. They challenge you to really think like a programmer. Really try to solve them before you peek at the answer.

**MixUp**

Create a function called mixUp. It should take in two strings, and return the concatenation of the two strings (separated by a space) slicing out and swapping the first 2 characters of each. You can assume that the strings are at least 2 characters long. For example:

mixUp('mix', 'pod'): 'pox mid'

mixUp('dog', 'dinner'): 'dig donner'

Show/Hide Solution

**FixStart**

Create a function called fixStart. It should take a single argument, a string, and return a version where all occurrences of its first character have been replaced with '\*', except for the first character itself. You can assume that the string is at least one character long. For example:

fixStart('babble'): 'ba\*\*le'

fixStart('turtle'): 'tur\*le'

Show/Hide Solution

Class 3

Even/Odd Counter

Write a for loop that will iterate from 0 to 20. For each iteration, it will check if the current number is even or odd, and report that to the screen (e.g. "2 is even")

Show/Hide Solution

Top Choice

Create an array to hold your top choices (colors, presidents, whatever). For each choice, log to the screen a string like: "My #1 choice is blue."

Bonus: Change it to log "My 1st choice, "My 2nd choice", "My 3rd choice", picking the right suffix for the number based on what it is. [The method slice](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/String/slice) might be helpful here.

Show/Hide Solution

The Reading List

Keep track of which books you read and which books you want to read!

* Create an array of objects, where each object describes a book and has properties for the title (a string), author (a string), and alreadyRead (a boolean indicating if you read it yet).
* Iterate through the array of books. For each book, log the book title and book author like so: "The Hobbit by J.R.R. Tolkien".
* Now use an if/else statement to change the output depending on whether you read it yet or not. If you read it, log a string like 'You already read "The Hobbit" by J.R.R. Tolkien', and if not, log a string like 'You still need to read "The Lord of the Rings" by J.R.R. Tolkien.'

Show/Hide Solution

Class 4

Logo Hijack

* Open up [www.google.com](http://www.google.com/) in Chrome or Firefox, and open up the console.
* Find the Google logo and store it in a variable.
* Modify the source of the logo IMG so that it's a Yahoo logo instead. (http://www.logostage.com/logos/yahoo.GIF)

Show/Hide Solution

About Me

Start with this HTML and save it as "aboutme.html":

<!DOCTYPE html>

<html>

<head>

<meta charset="utf-8"/>

<title>About Me</title>

</head>

<body>

<h1>About Me</h1>

<ul>

<li>Nickname:

<span id="nickname"></span>

</li>

<li>Favorites:

<span id="favorites"></span>

</li>

<li>Hometown:

<span id="hometown"></span>

</li>

</ul>

</body>

</html>

* Add a script tag to the bottom.
* (In JavaScript) Change the body tag's style so it has a font-family of "Arial, sans-serif".
* (In JavaScript) Replace the content of each of the spans (nickname, favorites, hometown) with your own information.
* Iterate through each li and add a class of "listitem". Add a style tag that sets a rule for "listitem" to make the color red.
* Create a new img element and set its src attribute to a picture of you. Append that element to the body.

Show/Hide Solution

The Reading List Part II

* Create a webpage with an h1 of "My Book List".
* Add a script tag to the bottom of the page, where all your JavaScript will go.
* Copy the array of books from the previous exercise.
* Iterate through the array of books. For each book, create a p element with the book title and author and append it to the page.
* **Bonus**: Use a ul and li to display the books.
* **Bonus**: add a property to each book with the URL of the book cover, and add an img element for each book on the page.
* **Bonus**: Change the style of the book depending on whether you have read it or not.

Show/Hide Solution

Challenge Question: The Counter

Write a function that takes a certain type of tag and counts the number of elements with that tag. The function should return "There a X tags of type y on the page. For example:

countTags('p'): 'There are 3 tags of type p on the page'

Show/Hide Solution

References

* [Class slides](http://girldevelopit.github.io/gdi-featured-js-intro/index.html)
* [Khan Academy - Intro to JS: Drawing & Animation](https://www.khanacademy.org/computing/computer-programming/programming)
* [Code Academy - JavaScript](http://www.codecademy.com/en/tracks/javascript)

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