**JavaScript variables and expressions**

The small exercises below have more than one possible solution.

Concepts

* Interacting with DOM elements
* Event listeners
* Creating variables
* Creating simple expressions

|  |  |
| --- | --- |
| 1 | Create an alert displaying “Hello World” |
| 2 | Add to the previous code to display the text “Hello World” on the webpage |
| 3 | Collect a user value from the webpage DOM and display that value back on the webpage |
| 4 | Collect 2 number values from a user and display the sum of those values on the webpage |
| 5 | Collect 2 number values from a user and display the larger of those numbers on the webpage |
| 6 | Collect 2 number values from a user and display in text whether the numbers are the **same** or **different** |
| 7 | Collect a single number value from the user and display on the webpage the number one less and the number one more than the number entered |
| 8 | Collect 3 numbers from the user (a,b,c) and display on the webpage the difference between the values of the 2 calculations below:   (a + b) \* c  and (a + b + c) |
| 9 | Collect a number from the user and display on the webpage if the number entered is negative, less than 10 or greater than 10 |
| 10 | Collect 2 numbers from the user and display on the webpage if one of them or both of them are greater than 10 |

**JavaScript Functions and Program Flow**

The small exercises below have more than one possible solution.

Concepts

* Interacting with DOM elements, event listeners
* Creating variables and using simple expressions
* Using functions

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| --- | --- |
| 1 | Accept user input from the webpage and display it in an alert message using a function |
| 2 | Create a function that accepts 3 variables being passed into it, adds them up and returns the sum.  Display the sum back to the DOM. |
| 3 | Scope: declare the same variable inside a function (local) and outside (global), giving it different values.  Display the two values. |
| 4 | Create a function that contains a for loop that loops through from 1 to 50 and displays the numbers on the webpage |
| 5 | Create a switch statement that displays the current day and time of the week on the webpage |
| 6 | Create a while loop that displays the numbers 1 to 10 onto the webpage |
| 7 | Create a do while loop that displays the numbers from 1 to 10 onto the webpage |
| 8 | Create a nested loop that displays two sequences of numbers from 1-10, with one sequence nested inside the other |

**JavaScript Mini Projects**

The small projects below have more than one possible approach to building the solution.

Concepts

* Interacting with DOM elements, Event listeners
* Creating variables and using simple expressions
* Using functions

|  |  |
| --- | --- |
|  | **Mini Project -  Guess the number guessing game**  Build a small game where the user has to guess a secret number which is generated automatically in JavaScript. After each guess the webpage displays to the user whether their guess is too large or too small. When the user guesses the secret number correctly - three pieces of information are displayed on the webpage: (1) the correct number (2)the number of guesses (3)the message “Well done – correct guess!” |
|  | **Mini Project**  Interest only calculator  Create a small JavaScript programme that enables users to calculate the interest they would pay on borrowing some money for a period of time at a fixed interest rate.  There are 3 inputs, amount to borrow, interest rate, length of time of loan.  Calculate and display the monthly interest payment on the loan and the total interest paid on the loan for the length of time of loan. |

**JavaScript Arrays**

These small problems have more than one possible solution.

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| --- | --- |
| 1 | Collect 3 user inputs and allocate them to three members of a new array. Display the array on the webpage. |
| 2 | Collect a user input and allocate it to a new array using the push method.  Display the array and the length of the array (number of elements) using array.length on the webpage |
| 3 | Add and Remove first and last elements on and off an array using shift, unshift, push and pop methods |
| 4 | Add to an array at a specific index point in the array |
| 5 | Create an array variable with 10 elements and using a for loop display each element on the webpage |
| 6 | Create an array of Countries England, France, Italy, Mexico,  Poland, Russia, China, Greece, Egypt, India  Create a user text input field. User can enter a country. The array is searched and when a match is found the position in the array is displayed and the user is given a message to inform whether the country is present or not in the array. |

**Mini Projects Arrays**

The small projects below have more than one possible approach to building the solution.

Concepts

* Interacting with DOM elements, Event listeners
* Creating variables and using simple expressions
* Using functions and arrays

|  |  |
| --- | --- |
|  | Mini Project: Random winner generator  Users can input elements into an array and then select a random winner from that array and display it on the screen |
|  | Mini Project: Charts  Create a chart using CanvasJS that gets data from the user and then renders the chart onto the webpage.  (This is quite difficult (and could be a first project), so may be best left until last.  Look at the Holiday Budget Calculator on www.rajasingh.co.uk and follow the link to GitHub for good example code.) |

**JavaScript Objects**

The small projects below have more than one possible approach to building the solution.

Concepts

* Interacting with DOM elements, Event listeners
* Creating JavaScript Objects
* Referencing Objects and displaying on the webpage

|  |  |
| --- | --- |
| 1 | Create an object literal with 3 properties |
| 2 | Create an object variable and output each object property in a concatenated string onto the webpage |
| 3 | Create an object with properties and a method  Access the method |
| 4 | Create an object variable with 3 properties: firstname, surname, fullname. For the fullname value create a method which returns the firstname and surname and display on the webpage |
| 5 | Create an object within an object (nested) and display a nested object property on the webpage |
| 6 | Build an object constructor  Create 2 instances of the object  Display the properties of the object instances on the webpage |

**JavaScript Quiz**



Your challenge is to create a small quiz using an array of objects in JavaScript.

The quiz can be on any topic of your choice and no more than 5 questions.

An additional challenge will be to track the users score.

You should use to build your solution

An object constructor to create quiz objects

Push objects into an array

Use a For loop to rotate through the array and display the questions onto the DOM

Extra features

Users receive a response to their answers

Storage of the correct answers

User feedback of their overall score in the quiz

**JavaScript Strings and Searches**

The small projects below have more than one possible approach to building the solution.

Concepts

* Interacting with DOM elements, Event listeners
* Creating variables and using simple expressions and functions
* Using Arrays

|  |  |  |
| --- | --- | --- |
| 1 | Input text and display text in 3 boxes (1) unmodified (2) toUpperCase (3) toLowerCase |  |
| 2 | Input a string and display the letter at the given index using the slice() method.  On a separate line display the string from that same character to the end of the string |  |
| 3 | Input a sentence and a search string, and search for the string in the sentence using indexOf() method |  |
| 4 | Input a sentence and a search string and search for the last occurrence of the string using lastIndexof() method |  |
| 5 | Input a string and output all characters looping first to last character using for (var i = 0; i < string.length; i++) displaying charAt(i) |  |
| 6 | Input a string and a character and an index number.  Replace the character at the index with the inputted character. Eg string 'xyz' character 'A' index '1' becomes 'xAz' |  |
| 7 | Input a sentence and search and replace strings.  Using the replace() method, replace the first search string in the text with the replacement string eg "abc" "xyz" replaces "abc" with "xyz" in the sentence |  |
| 8 | Repeat above replacing every occurrence of a single character entered by the user, not just one |  |
| 9 | Input a number and using Math.round, Math.ceil and Math.floor round the number (1) to the nearest integer (2) up to the nearest integer (3) down to the nearest integer |  |
| 10 | Using a website such as Stack Overflow, find and implement code to round a number to any number of decimal places, as specified by the user |  |