Coding Exercises for JavaScript Variables, Data Types & Operators

1. Write a program that calculates the sum of two numbers and displays the result.
2. Write a program that calculates the area of a rectangle. Prompt the user to enter the length and width of the rectangle and display the result.
3. Write a program that converts a temperature from Celsius to Fahrenheit. Prompt the user to enter the temperature in Celsius and display the equivalent temperature in Fahrenheit.
4. Write a program that checks if a given number is even or odd. Prompt the user to enter a number and display whether it is even or odd.
5. Write a program that concatenates two strings and displays the result. Prompt the user to enter two strings and display the concatenated string.
6. Write a program that calculates the average of three numbers. Prompt the user to enter three numbers and display the average.
7. Write a program that checks if a given year is a leap year. Prompt the user to enter a year and display whether it is a leap year or not.
8. Write a program that swaps the values of two variables. Prompt the user to enter two values, swap them, and display the new values.
9. Write a program that calculates the area and circumference of a circle. Prompt the user to enter the radius of the circle and display the area and circumference.
10. Write a program that checks if a given string is a palindrome. Prompt the user to enter a string and display whether it is a palindrome or not.

Coding Exercises from Branching and Iterations

1. Write a program that prompts the user to enter their age. If the age is less than 18, display "You are a minor." Otherwise, display "You are an adult."
2. Write a program that checks whether a given number is positive, negative, or zero. Display an appropriate message based on the input.
3. Write a program that prompts the user to enter a number. If the number is divisible by 3, display "Fizz." If it is divisible by 5, display "Buzz." If it is divisible by both 3 and 5, display "FizzBuzz." Otherwise, display the number itself.
4. Write a program that takes three numbers as input and determines the largest among them. Display the result.
5. Write a program that prompts the user to enter a month (1-12) and displays the corresponding season based on the input. For example, if the user enters 3, the program should display "Spring."
6. Write a program that generates and prints all prime numbers between 1 and 100.
7. Write a program that prompts the user to enter a positive integer and calculates its factorial.
8. Write a program that prints the Fibonacci sequence up to a specified number of terms entered by the user.
9. Write a program that prompts the user to enter a string. Count and display the number of vowels (a, e, i, o, u) present in the string.

Coding Challenges for String Methods

Beginner Level:

1. Write a function that takes a string as input and returns its length using the length method.
2. Write a function that takes a string as input and capitalizes the first letter using the toUpperCase and slice methods.
3. Write a function that takes a string as input and checks if it ends with a question mark using the endsWith method.
4. Write a function that takes a string as input and splits it into an array of words using the split method.
5. Write a function that takes a string as input and replaces all occurrences of a specified word with another word using the replace method.
6. Write a function that takes a string as input and checks if it starts with the word "Hello" using the startsWith method.
7. Write a function that takes a string as input and extracts the first three characters using the slice method.
8. Write a function that takes a string as input and checks if it contains only alphabetic characters using the match method and a regular expression.
9. Write a function that takes a string as input and counts the number of occurrences of a specified character using the split, filter, and length methods.
10. Write a function that takes a string as input and converts it to lowercase using the toLowerCase method.

Intermediate Level:

1. Write a function that takes a string as input and checks if it contains any digits using the match method and a regular expression.
2. Write a function that takes a string as input and returns the index of the first occurrence of the word "JavaScript" using the indexOf method.
3. Write a function that takes a string as input and counts the number of vowels using the split, filter, and length methods.
4. Write a function that takes a string as input and extracts the domain name from a URL using the slice and indexOf methods.
5. Write a function that takes a string as input and reverses the order of words using the split, reverse, and join methods.
6. Write a function that takes a string as input and removes all leading and trailing spaces using the trim method.
7. Write a function that takes a string as input and checks if it is a valid email address using the match method and a regular expression.
8. Write a function that takes a string as input and replaces all spaces with underscores using the replace method.
9. Write a function that takes a string as input and returns the first and last characters as a new string using the charAt method.
10. Write a function that takes a string as input and sorts the characters in alphabetical order using the split, sort, and join methods.

Advanced Level:

1. Write a function that takes a string as input and checks if it is a palindrome (reads the same forwards and backwards) using the split, reverse, and join methods.
2. Write a function that takes a string as input and finds the most frequently occurring word using the split, reduce, and map methods.
3. Write a function that takes a string as input and capitalizes the first letter of each word using the split, map, charAt, and toUpperCase methods.
4. Write a function that takes a string as input and removes all duplicate characters using the split, filter, and indexOf methods.
5. Write a function that takes a string as input and converts it to "Pig Latin" by moving the first letter to the end and adding "ay" using the slice, charAt, and concat methods.
6. Write a function that takes a string as input and checks if it is a valid URL using the match method and a regular expression.
7. Write a function that takes a string as input and finds the longest word using the split, reduce, and length methods.
8. Write a function that takes a string as input and checks if it contains a palindrome word (reads the same forwards and backwards) using the split, reverse, and join methods.
9. Write a function that takes a string as input and truncates it to a specified length, adding an ellipsis at the end if needed, using the slice method.
10. Write a function that takes a string as input and checks if it is a valid password, following certain criteria (e.g., minimum length, presence of uppercase and lowercase letters, and numbers) using the match method and regular expressions.

Coding Exercises from Arrays

Beginner Level:

1. *Create an array called colors with three favorite colors of your choice. Print the second color in the array.*
2. Create an array called numbers with five integers. Add the number 10 to the end of the array using the push() method.
3. Remove the last element from the numbers array using the pop() method. Print the modified array.
4. Create an array called fruits with four different fruits. Add two more fruits to the beginning of the array using the unshift() method.
5. Given an array pets with the values ["cat", "dog", "bird"], use the splice() method to replace "bird" with "fish". Print the modified array.

Intermediate Level:

1. Given an array names with the values ["John", "Jane", "Bob", "Alice"], use the slice() method to create a new array containing only the first two names. Print the new array.
2. Create an array called numbers with ten random integers. Use a for loop to calculate the sum of all the numbers in the array.
3. Given an array fruits with the values ["apple", "banana", "orange"], use the forEach() method to print each fruit in the array.
4. Create an array called grades with five random numbers representing grades. Use a for loop to calculate the average grade.

5. Given an array numbers with the values [1, 2, 3, 4, 5], use a for loop to double each number in the array. Print the modified array.

Advanced Level:

1. Create an array called names with five names. Write a function that takes an array as a parameter and returns the length of the longest name in the array.
2. Given an array numbers with random integers, write a function that finds and returns the smallest number in the array.
3. Create an array called words with five different words. Write a function that takes an array as a parameter and returns a new array with the lengths of each word.
4. Given an array numbers with random integers, write a function that checks if all the numbers in the array are positive.
5. Create a function called reverseArray that takes an array as a parameter and returns a new array with the elements in reverse order.

Expert Level:

1. Create a function called uniqueValues that takes an array as a parameter and returns a new array with only the unique values from the original array.
2. Given two arrays arr1 and arr2, write a function that combines the elements from both arrays and returns a new array.
3. Create a function called capitalizeNames that takes an array of names as a parameter and returns a new array with the names capitalized.
4. Given an array numbers with random integers, write a function that sorts the array in ascending order.
5. Create a function called matrixMultiplication that takes two 2D arrays as parameters and returns the result of matrix multiplication.

Coding Exercises for JavaScript Functions

Easy Level:

1. Write a function called greet that takes a name as a parameter and prints a greeting message, like "Hello, [name]!".
2. Create a function called calculateArea that takes the length and width of a rectangle as parameters and returns its area.
3. Write a function named isEven that takes a number as a parameter and returns true if it is even, and false otherwise.
4. Implement a function called concatenateArrays that takes two arrays as parameters and returns a new array containing the elements of both arrays.
5. Write a function called printNumbers that takes a number as a parameter and prints all numbers from 1 to that number.

Intermediate Level:

- Create a function called reverseString that takes a string as a parameter and returns the reverse of the string.
- Implement a function called calculateFactorial that takes a number as a parameter and returns its factorial.
- Write a function named filterEvenNumbers that takes an array of numbers as a parameter and returns a new array containing only the even numbers.
- Create a function called checkPalindrome that takes a string as a parameter and returns true if it is a palindrome, and false otherwise.
- Implement a function called calculateAverage that takes an array of numbers as a parameter and returns the average of those numbers.

Advanced Level:

1. Write a function named findMax that takes an array of numbers as a parameter and returns the maximum number in the array.
2. Create a function called removeDuplicates that takes an array of elements as a parameter and returns a new array with duplicates removed.
3. Implement a function called isPrime that takes a number as a parameter and returns true if it is prime, and false otherwise.

4. Write a function named capitalizeWords that takes a string as a parameter and returns a new string with the first letter of each word capitalized.
5. Create a function called sumAllNumbers that takes an array of numbers as a parameter and returns the sum of all numbers.

Expert Level:

1. Implement a function called sortByLength that takes an array of strings as a parameter and returns a new array with the strings sorted by their lengths in ascending order.
2. Write a function named findDuplicates that takes an array of elements as a parameter and returns a new array with only the duplicate elements.
3. Create a function called generateFibonacci that takes a number as a parameter and returns an array with the Fibonacci sequence up to that number.
4. Implement a function called countVowels that takes a string as a parameter and returns the number of vowels in the string.
5. Write a function named flattenArray that takes a nested array as a parameter and returns a new array with all the elements flattened into a single level.

Coding Exercises for JavaScript Objects

Beginner Level Exercises:

1. Create an object called "person" with properties for "name", "age", and "city". Print the person's name to the console.
2. Create an object called "car" with properties for "make", "model", and "year". Access the "model" property and store it in a variable. Print the variable.
3. Create an object called "book" with properties for "title" and "author". Add a property called "year" and set it to the current year. Print the book object.
4. Create an object called "restaurant" with properties for "name", "cuisine", and "rating". Change the rating to 4.5 and print the updated restaurant object.
5. Create an object called "student" with properties for "name" and "grades". Access the second grade in the "grades" array and print it.

Intermediate Level Exercises:

6. Create an object called "circle" with properties for "radius" and "calculateArea" method that calculates and returns the area of the circle.
7. Create an object called "bankAccount" with properties for "balance" and "withdraw" method that subtracts a given amount from the balance.
8. Create an object called "product" with properties for "name", "price", and "quantity". Add a method called "calculateTotal" that returns the total cost of the product.
9. Create an object called "playlist" with properties for "name" and "tracks". Add a method called "addTrack" that adds a track to the playlist.
10. Create an object called "inventory" with properties for "items" and "addItem" method that adds an item to the inventory.

Advanced Level Exercises:

11. Create an object called "timer" with properties for "startTime" and "start" method that starts the timer.
12. Create an object called "calculator" with properties for "add", "subtract", "multiply", and "divide" methods that perform the respective operations on given numbers.
13. Create an object called "weather" with properties for "temperature" and "convertTemperature" method that converts the temperature from Celsius to Fahrenheit.
14. Create an object called "shoppingCart" with properties for "items" and "checkout" method that calculates the total cost of all items in the shopping cart.
15. Create an object called "game" with properties for "score" and "updateScore" method that updates the score based on the given points.

Additional Exercises:

16. Create an object called "movie" with properties for "title", "director", and "actors". Add a method called "addActor" that adds an actor to the movie.
17. Create an object called "recipe" with properties for "name", "ingredients", and "cook" method that prints the recipe's cooking instructions.
18. Create an object called "calendar" with properties for "events" and "addEvent" method that adds an event to the calendar.
19. Create an object called "contact" with properties for "name" and "email". Add a method called "sendEmail" that sends an email to the contact's email address.
20. Create an object called "blogPost" with properties for "title", "content", and "publish" method that publishes the blog post.

21. Create an object called "employee" with properties for "name", "salary", and "calculateBonus" method that calculates and returns the bonus based on the salary.
22. Create an object called "gameCharacter" with properties for "name", "health", and "attack" method that reduces the health of the character by User a given amount when attacked.
23. Create an object called "musicPlayer" with properties for "playlist" and "play" method that plays the songs in the playlist.
24. Create an object called "shipping" with properties for "weight" and "calculateShippingCost" method that calculates the shipping cost based on the weight.
25. Create an object called "restaurantMenu" with properties for "items" and "addItem" method that adds a new item to the menu.
26. Create an object called "emailClient" with properties for "inbox" and "deleteEmail" method that deletes an email from the inbox.
27. Create an object called "bank" with properties for "name", "accounts", and "createAccount" method that creates a new bank account.
28. Create an object called "socialNetwork" with properties for "users" and "addFriend" method that adds a friend to a user's friend list.
29. Create an object called "gameBoard" with properties for "cells" and "checkWin" method that checks if a player has won the game.
30. Create an object called "quiz" with properties for "questions" and "gradeQuiz" method that grades a quiz based on the answers provided.