

## Beginner Friendly Questions

1. **\*\*Print "Hello, World!"\*\***
  - Task: Write a function that prints "Hello, World!" to the console.
2. **\*\*Add Two Numbers\*\***
  - Task: Write a function that takes two numbers and returns their sum.
  - Test: ``sum(3, 5)``
  - Expected Output: ``8``
3. **\*\*Find the Largest Number\*\***
  - Task: Write a function that takes three numbers and returns the largest.
  - Test: ``findLargest(2, 8, 5)``
  - Expected Output: ``8``
4. **\*\*Check if a Number is Even or Odd\*\***
  - Task: Write a function that checks if a number is even or odd.
  - Test: ``isEven(4)``
  - Expected Output: ``true``
5. **\*\*Calculate the Factorial of a Number\*\***
  - Task: Write a function that returns the factorial of a number.
  - Test: ``factorial(5)``
  - Expected Output: ``120``
6. **\*\*Reverse a String\*\***
  - Task: Write a function that takes a string and returns it reversed.
  - Test: ``reverseString('hello')``
  - Expected Output: ``olleh``
7. **\*\*Check for Palindrome\*\***
  - Task: Write a function that checks if a given string is a palindrome.
  - Test: ``isPalindrome('madam')``
  - Expected Output: ``true``
8. **\*\*Find the Minimum Number in an Array\*\***
  - Task: Write a function that takes an array and returns the smallest number.
  - Test: ``findMin([3, 1, 4, 1, 5])``
  - Expected Output: ``1``
9. **\*\*Sort an Array\*\***
  - Task: Write a function that sorts an array of numbers in ascending order.
  - Test: ``sortArray([3, 1, 4, 1, 5])``
  - Expected Output: ``[1, 1, 3, 4, 5]``

10. **\*\*Check if a String Contains a Substring\*\***

- Task: Write a function that checks if a string contains another substring.
- Test: ``containsSubstring('hello world', 'world')``
- Expected Output: ``true``

11. **\*\*Sum All Elements in an Array\*\***

- Task: Write a function that returns the sum of all numbers in an array.
- Test: ``sumArray([1, 2, 3, 4, 5])``
- Expected Output: ``15``

12. **\*\*Generate Fibonacci Sequence\*\***

- Task: Write a function that generates the first ``n`` Fibonacci numbers.
- Test: ``fibonacci(5)``
- Expected Output: ``[0, 1, 1, 2, 3]``

13. **\*\*Check if a Number is Prime\*\***

- Task: Write a function that checks if a number is prime.
- Test: ``isPrime(7)``
- Expected Output: ``true``

14. **\*\*Count the Number of Vowels in a String\*\***

- Task: Write a function that counts the number of vowels in a given string.
- Test: ``countVowels('hello')``
- Expected Output: ``2``

15. **\*\*Find the Index of an Element in an Array\*\***

- Task: Write a function that returns the index of a given element in an array. If the element is not found, return -1.
- Test: ``findIndex([1, 2, 3, 4, 5], 3)``
- Expected Output: ``2``

16. **\*\*Remove Duplicates from an Array\*\***

- Task: Write a function that removes duplicate elements from an array.
- Test: ``removeDuplicates([1, 2, 2, 3, 4, 4, 5])``
- Expected Output: ``[1, 2, 3, 4, 5]``

17. **\*\*Find the Intersection of Two Arrays\*\***

- Task: Write a function that returns an array of the common elements in two arrays.
- Test: ``findIntersection([1, 2, 3], [2, 3, 4])``
- Expected Output: ``[2, 3]``

18. **\*\*Check if Two Strings are Anagrams\*\***

- Task: Write a function that checks if two strings are anagrams of each other.

- Test: `areAnagrams('listen', 'silent')`
- Expected Output: `true`

19. **Capitalize the First Letter of Each Word**

- Task: Write a function that capitalizes the first letter of each word in a string.
- Test: `capitalizeWords('hello world')`
- Expected Output: `'Hello World'`

20. **Flatten a Nested Array**

- Task: Write a function that flattens a nested array (an array of arrays) into a single array.
- Test: `flattenArray([1, [2, 3], [4, [5, 6]]])`
- Expected Output: `[1, 2, 3, 4, 5, 6]`

21. **Generate a Random Number within a Range**

- Task: Write a function that generates a random number between a given range.
- Test: `randomNumber(1, 10)`
- Expected Output: `'A random number between 1 and 10'`

22. **Check if a String is a Valid Email**

- Task: Write a function that checks if a given string is a valid email address.
- Test: `isValidEmail('test@example.com')`
- Expected Output: `true`

23. **Convert Celsius to Fahrenheit**

- Task: Write a function that converts a temperature from Celsius to Fahrenheit.
- Test: `celsiusToFahrenheit(0)`
- Expected Output: `32`

24. **Remove a Specific Element from an Array**

- Task: Write a function that removes a specific element from an array.
- Test: `removeElement([1, 2, 3, 4, 5], 3)`
- Expected Output: `[1, 2, 4, 5]`

25. **Find the Second Largest Number in an Array**

- Task: Write a function that returns the second largest number in an array.
- Test: `secondLargest([1, 2, 3, 4, 5])`
- Expected Output: `4`

26. **Find the Longest Word in a String**

- Task: Write a function that returns the longest word in a string.
- Test: `longestWord('The quick brown fox jumped over the lazy dog')`
- Expected Output: `'jumped'`

27. **Find the Missing Number in an Array**

- Task: Write a function that finds the missing number in a sequence from 1 to n.
- Test: `findMissingNumber([1, 2, 4, 5, 6])`
- Expected Output: `3`

#### 28. **\*\*Calculate the GCD of Two Numbers\*\***

- Task: Write a function that calculates the greatest common divisor (GCD) of two numbers.
- Test: `gcd(12, 18)`
- Expected Output: `6`

#### 29. **\*\*Calculate the LCM of Two Numbers\*\***

- Task: Write a function that calculates the least common multiple (LCM) of two numbers.
- Test: `lcm(4, 6)`
- Expected Output: `12`

#### 30. **\*\*Check for Balanced Parentheses\*\***

- Task: Write a function that checks if a string has balanced parentheses.
- Test: `isBalanced('()')`
- Expected Output: `true`

#### 31. **\*\*Rotate an Array\*\***

- Task: Write a function that rotates an array by k steps.
- Test: `rotateArray([1, 2, 3, 4, 5], 2)`
- Expected Output: `[4, 5, 1, 2, 3]`

### **String Questions**

#### 1. **\*\*Reverse a String\*\***

- Task: Write a function that reverses a given string.
- Test:
 

```
``javascript
console.log(reverseString("hello"));
...`
```
- Expected Output: `"olleh"`

#### 2. **\*\*Check if a String is a Palindrome\*\***

- Task: Write a function that checks if a given string is a palindrome (reads the same forward and backward).
- Test:
 

```
``javascript
console.log(isPalindrome("racecar"));
console.log(isPalindrome("hello"));
...`
```
- Expected Output:
 

```
``javascript
```

```
true
false
...
```

3. **\*\*Count the Number of Vowels in a String\*\***

- Task: Write a function that counts the number of vowels (`a, e, i, o, u`) in a given string.

- Test:

```
```javascript
console.log(countVowels("hello world"));
...
```

- Expected Output: `3`

4. **\*\*Find the First Non-Repeated Character in a String\*\***

- Task: Write a function that finds the first non-repeated character in a string.

- Test:

```
```javascript
console.log(firstNonRepeatedCharacter("swiss"));
...
```

- Expected Output: `w`

5. **\*\*Count the Number of Words in a String\*\***

- Task: Write a function that counts the number of words in a string. Assume words are separated by spaces.

- Test:

```
```javascript
console.log(countWords("This is a test string"));
...
```

- Expected Output: `5`

6. **\*\*Check if Two Strings are Anagrams\*\***

- Task: Write a function that checks if two strings are anagrams (contain the same characters in different orders).

- Test:

```
```javascript
console.log(areAnagrams("listen", "silent"));
console.log(areAnagrams("hello", "world"));
...
```

- Expected Output:

```
```javascript
true
false
...
```

7. **\*\*Replace All Spaces in a String with Hyphens\*\***

- Task: Write a function that replaces all spaces in a string with hyphens (`-`).

- Test:

```
```javascript
console.log(replaceSpaces("Hello World"));
```
```

- Expected Output: `"Hello-World"`

#### 8. **\*\*Convert a String to Title Case\*\***

- Task: Write a function that converts a string to title case (capitalizes the first letter of each word).

- Test:

```
```javascript
console.log(toTitleCase("this is a test string"));
```
```

- Expected Output: `"This Is A Test String"`

#### 9. **\*\*Check if a String Contains Only Digits\*\***

- Task: Write a function that checks if a string contains only numeric digits.

- Test:

```
```javascript
console.log(isNumeric("12345"));
console.log(isNumeric("123a5"));
```
```

- Expected Output:

```
```javascript
true
false
```
```

#### 10. **\*\*Remove Duplicates Characters from a String\*\***

- Task: Write a function that removes duplicate characters from a string.

- Test:

```
```javascript
console.log(removeDuplicates("programming"));
```
```

- Expected Output: `"progamin"`

#### 11. **\*\*Find the Longest Word in a String\*\***

- Task: Write a function that finds the longest word in a string.

- Test:

```
```javascript
console.log(findLongestWord("The quick brown fox jumped over the lazy dog"));
```
```

- Expected Output: `"jumped"`

12. **\*\*Capitalize the First Letter of Each Word in a String\*\***

- Task: Write a function that capitalizes the first letter of each word in a string.

- Test:

```
````javascript
console.log(capitalizeFirstLetters("javascript is fun"));
````
```

- Expected Output: `"Javascript Is Fun"`

13. **\*\*Repeat a String N Times\*\***

- Task: Write a function that repeats a given string `n` times.

- Test:

```
````javascript
console.log(repeatString("abc", 3));
````
```

- Expected Output: `"abcabcabc"`

14. **\*\*Check if a String Contains a Substring\*\***

- Task: Write a function that checks if a string contains a given substring.

- Test:

```
````javascript
console.log(containsSubstring("hello world", "world"));
console.log(containsSubstring("hello world", "planet"));
````
```

- Expected Output:

```
````javascript
true
false
````
```

15. **\*\*Convert a String to an Array of Words\*\***

- Task: Write a function that converts a string to an array of words.

- Test:

```
````javascript
console.log(stringToWords("This is a test"));
````
```

- Expected Output: `["This", "is", "a", "test"]`

16. **\*\*Truncate a String\*\***

- Task: Write a function that truncates a string to a specified length and adds "..." at the end.

- Test:

```
````javascript
console.log(truncateString("This is a long string", 10));
````
```

- Expected Output: ``"This is a..."``

17. **\*\*Check if a String Starts with a Specific Substring\*\***

- Task: Write a function that checks if a string starts with a given substring.

- Test:

```
````javascript
console.log(startsWith("hello world", "hello"));
console.log(startsWith("hello world", "world"));
...````
```

- Expected Output:

```
````javascript
true
false
...````
```

18. **\*\*Check if a String Ends with a Specific Substring\*\***

- Task: Write a function that checks if a string ends with a given substring.

- Test:

```
````javascript
console.log(endsWith("hello world", "world"));
console.log(endsWith("hello world", "hello"));
...````
```

- Expected Output:

```
````javascript
true
false
...````
```

19. **\*\*Insert a Substring at a Specific Position in a String\*\***

- Task: Write a function that inserts a substring at a specific position in a string.

- Test:

```
````javascript
console.log(insertSubstring("Hello World", "Beautiful ", 6));
...````
```

- Expected Output: ``"Hello Beautiful World"```

20. **\*\*Remove All Instances of a Substring\*\***

- Task: Write a function that removes all instances of a substring from a string.

- Test:

```
````javascript
console.log(removeSubstring("This is a test. This is only a test.", "test"));
...````
```

- Expected Output: ``"This is a . This is only a ."```



## Array Questions

1. **\*\*Sum All Elements in an Array\*\***
  - Task: Write a function that returns the sum of all numbers in an array.
  - Test: ``sumArray([1, 2, 3, 4, 5])``
  - Expected Output: ``15``
2. **\*\*Find the Largest Number in an Array\*\***
  - Task: Write a function that returns the largest number in an array.
  - Test: ``findLargest([1, 5, 3, 9, 2])``
  - Expected Output: ``9``
3. **\*\*Find the Smallest Number in an Array\*\***
  - Task: Write a function that returns the smallest number in an array.
  - Test: ``findSmallest([1, 5, 3, 9, 2])``
  - Expected Output: ``1``
4. **\*\*Sort an Array in Ascending Order\*\***
  - Task: Write a function that sorts an array in ascending order.
  - Test: ``sortArray([5, 2, 9, 1, 5, 6])``
  - Expected Output: ``[1, 2, 5, 5, 6, 9]``
5. **\*\*Sort an Array in Descending Order\*\***
  - Task: Write a function that sorts an array in descending order.
  - Test: ``sortArrayDescending([5, 2, 9, 1, 5, 6])``
  - Expected Output: ``[9, 6, 5, 5, 2, 1]``
6. **\*\*Reverse an Array\*\***
  - Task: Write a function that reverses the elements of an array.
  - Test: ``reverseArray([1, 2, 3, 4, 5])``
  - Expected Output: ``[5, 4, 3, 2, 1]``
7. **\*\*Check if an Array Contains a Specific Element\*\***
  - Task: Write a function that checks if an array contains a specific element.
  - Test: ``containsElement([1, 2, 3, 4, 5], 3)``
  - Expected Output: ``true``
8. **\*\*Find the Index of a Specific Element in an Array\*\***
  - Task: Write a function that returns the index of a specific element in an array. If the element is not found, return -1.
  - Test: ``findIndex([1, 2, 3, 4, 5], 3)``
  - Expected Output: ``2``
9. **\*\*Remove Duplicates from an Array\*\***

- Task: Write a function that removes duplicate elements from an array.
- Test: ``removeDuplicates([1, 2, 2, 3, 4, 4, 5])``
- Expected Output: ``[1, 2, 3, 4, 5]``

10. **\*\*Merge Two Arrays\*\***

- Task: Write a function that merges two arrays into one.
- Test: ``mergeArrays([1, 2, 3], [4, 5, 6])``
- Expected Output: ``[1, 2, 3, 4, 5, 6]``

11. **\*\*Find the Intersection of Two Arrays\*\***

- Task: Write a function that returns the intersection of two arrays.
- Test: ``findIntersection([1, 2, 3], [2, 3, 4])``
- Expected Output: ``[2, 3]``

12. **\*\*Find the Union of Two Arrays\*\***

- Task: Write a function that returns the union of two arrays.
- Test: ``findUnion([1, 2, 3], [2, 3, 4])``
- Expected Output: ``[1, 2, 3, 4]``

13. **\*\*Check if an Array is Sorted\*\***

- Task: Write a function that checks if an array is sorted in ascending order.
- Test: ``isSorted([1, 2, 3, 4, 5])``
- Expected Output: ``true``

14. **\*\*Find the Difference of Two Arrays\*\***

- Task: Write a function that returns the difference of two arrays (elements in the first array that are not in the second array).
- Test: ``findDifference([1, 2, 3], [2, 3, 4])``
- Expected Output: ``[1]``

15. **\*\*Rotate an Array by K Positions\*\***

- Task: Write a function that rotates an array by ``k`` positions.
- Test: ``rotateArray([1, 2, 3, 4, 5], 2)``
- Expected Output: ``[4, 5, 1, 2, 3]``

16. **\*\*Find the Maximum Difference Between Two Elements in an Array\*\***

- Task: Write a function that finds the maximum difference between any two elements in an array.
- Test: ``maxDifference([2, 3, 10, 6, 4, 8, 1])``
- Expected Output: ``8``

17. **\*\*Find the Second Largest Element in an Array\*\***

- Task: Write a function that returns the second largest element in an array.
- Test: ``secondLargest([1, 2, 3, 4, 5])``

- Expected Output: `4`

18. **\*\*Find the Pair of Elements with the Maximum Sum in an Array\*\***

- Task: Write a function that finds the pair of elements with the maximum sum in an array.

- Test: `maxSumPair([1, 2, 3, 4, 5])`

- Expected Output: `[4, 5]`

19. **\*\*Find the Pair of Elements with the Minimum Sum in an Array\*\***

- Task: Write a function that finds the pair of elements with the minimum sum in an array.

- Test: `minSumPair([1, 2, 3, 4, 5])`

- Expected Output: `[1, 2]`

20. **\*\*Move All Zeros to the End of an Array\*\***

- Task: Write a function that moves all zeros in an array to the end, preserving the order of the other elements.

- Test: `moveZeros([0, 1, 0, 3, 12])`

- Expected Output: `[1, 3, 12, 0, 0]`

21. **\*\*Count the Frequency of Each Element in an Array\*\***

- Task: Write a function that counts the frequency of each element in an array.

- Test: `countFrequency([1, 2, 2, 3, 3, 3])`

- Expected Output: `{1: 1, 2: 2, 3: 3}`

22. **\*\*Find the Most Frequent Element in an Array\*\***

- Task: Write a function that finds the most frequent element in an array.

- Test: `mostFrequent([1, 2, 2, 3, 3, 3])`

- Expected Output: `3`

23. **\*\*Find the Longest Increasing Subsequence in an Array\*\***

- Task: Write a function that finds the longest increasing subsequence in an array.

- Test: `longestIncreasingSubsequence([10, 22, 9, 33, 21, 50, 41, 60, 80])`

- Expected Output: `[10, 22, 33, 50, 60, 80]`

24. **\*\*Find the Longest Consecutive Sequence in an Array\*\***

- Task: Write a function that finds the longest consecutive sequence in an array.

- Test: `longestConsecutive([100, 4, 200, 1, 3, 2])`

- Expected Output: `4` (sequence is `[1, 2, 3, 4]`)

## Object Questions

1. **\*\*Create a Simple Object\*\***

- Task: Create an object representing a person with properties `name`, `age`, and `city`.

- Test:

```javascript

```
const person = createPerson("John", 25, "New York");
console.log(person);
...
```

- Expected Output: `{ name: 'John', age: 25, city: 'New York' }`

## 2. **\*\*Access Object Properties\*\***

- Task: Write a function that returns the value of a given property from an object.

- Test:

```
```javascript
const obj = { name: 'Alice', age: 30 };
console.log(getProperty(obj, 'name'));
...
```

- Expected Output: `Alice`

## 3. **\*\*Add a New Property to an Object\*\***

- Task: Write a function that adds a new property to an object.

- Test:

```
```javascript
const car = { brand: 'Toyota', model: 'Corolla' };
addProperty(car, 'year', 2020);
console.log(car);
...
```

- Expected Output: `{ brand: 'Toyota', model: 'Corolla', year: 2020 }`

## 4. **\*\*Delete a Property from an Object\*\***

- Task: Write a function that deletes a property from an object.

- Test:

```
```javascript
const user = { username: 'john_doe', password: '12345' };
deleteProperty(user, 'password');
console.log(user);
...
```

- Expected Output: `{ username: 'john\_doe' }`

## 5. **\*\*Check if an Object has a Property\*\***

- Task: Write a function that checks if an object has a specific property.

- Test:

```
```javascript
const obj = { name: 'Alice', age: 30 };
console.log(hasProperty(obj, 'age'));
...
```

- Expected Output: `true`

## 6. **\*\*Merge Two Objects\*\***

- Task: Write a function that merges two objects into one.

- Test:

```
```javascript
const obj1 = { a: 1, b: 2 };
const obj2 = { b: 3, c: 4 };
console.log(mergeObjects(obj1, obj2));
```
```

- Expected Output: `{ a: 1, b: 3, c: 4 }`

#### 7. **\*\*Clone an Object\*\***

- Task: Write a function that creates a deep clone of an object.

- Test:

```
```javascript
const original = { name: 'Alice', details: { age: 30, city: 'NYC' } };
const clone = cloneObject(original);
clone.details.city = 'LA';
console.log(original.details.city);
console.log(clone.details.city);
```
```

- Expected Output:

```
```
'NYC'
'LA'
```
```

#### 8. **\*\*Loop Through Object Properties\*\***

- Task: Write a function that loops through all the properties of an object and prints them.

- Test:

```
```javascript
const user = { name: 'John', age: 30, city: 'New York' };
printProperties(user);
```
```

- Expected Output:

```
```
name: John
age: 30
city: New York
```
```

#### 9. **\*\*Count the Number of Properties in an Object\*\***

- Task: Write a function that counts the number of properties in an object.

- Test:

```
```javascript
const obj = { name: 'Alice', age: 30, city: 'NYC' };
```
```

```
console.log(countProperties(obj));  
...
```

- Expected Output: `3`

10. **\*\*Convert Object to Array of Keys\*\***

- Task: Write a function that converts an object to an array of its keys.

- Test:

```
````javascript  
const obj = { name: 'Alice', age: 30, city: 'NYC' };  
console.log(objectKeysToArray(obj));  
...
```

- Expected Output: `['name', 'age', 'city']`

11. **\*\*Convert Object to Array of Values\*\***

- Task: Write a function that converts an object to an array of its values.

- Test:

```
````javascript  
const obj = { name: 'Alice', age: 30, city: 'NYC' };  
console.log(objectValuesToArray(obj));  
...
```

- Expected Output: `['Alice', 30, 'NYC']`

12. **\*\*Convert an Array of Objects to a Single Object\*\***

- Task: Write a function that converts an array of objects into a single object. Assume each object in the array has a unique `key` property.

- Test:

```
````javascript  
const arr = [{ key: 'a', value: 1 }, { key: 'b', value: 2 }];  
console.log(arrayToObject(arr));  
...
```

- Expected Output: `{ a: 1, b: 2 }`

13. **\*\*Group Objects by a Property\*\***

- Task: Write a function that groups an array of objects by a specific property.

- Test:

```
````javascript  
const users = [  
  { name: 'Alice', age: 30 },  
  { name: 'Bob', age: 20 },  
  { name: 'Charlie', age: 30 }  
];  
console.log(groupBy(users, 'age'));  
...
```

- Expected Output:

```
``javascript
{
  20: [{ name: 'Bob', age: 20 }],
  30: [{ name: 'Alice', age: 30 }, { name: 'Charlie', age: 30 }]
}
``
```

14. **\*\*Find the Object with the Maximum Value of a Property\*\***

- Task: Write a function that finds the object with the maximum value of a given property in an array of objects.

- Test:

```
``javascript
const users = [
  { name: 'Alice', age: 30 },
  { name: 'Bob', age: 20 },
  { name: 'Charlie', age: 35 }
];
console.log(findMax(users, 'age'));
``
```

- Expected Output: `{ name: 'Charlie', age: 35 }`

15. **\*\*Sum the Values of a Specific Property in an Array of Objects\*\***

- Task: Write a function that sums the values of a specific property in an array of objects.

- Test:

```
``javascript
const items = [
  { name: 'item1', price: 10 },
  { name: 'item2', price: 15 },
  { name: 'item3', price: 20 }
];
console.log(sumProperty(items, 'price'));
``
```

- Expected Output: `45`