Basic Questions:

1. Write a function that takes two numbers and returns their sum.

2. Create a function that takes a string and returns its length.

3. Write a function that takes an array and returns the first element of the array.

4. Create a function that takes a number and returns its square.

5. Write a function that takes a string and returns a new string with all the characters in uppercase.

6. Create a function that takes an array and returns a new array with the first and last elements swapped.

7. Write a function that takes a number and returns true if it is even, and false if it is odd.

8. Create a function that takes a string and returns a new string with the first and last characters removed.

9. Write a function that takes an array and returns the sum of all the elements in the array.

10. Create a function that takes a number and returns its absolute value.

11. Write a function that takes a string and returns a new string with all the vowels removed.

12. Create a function that takes an array and returns a new array with all the elements in reverse order.

13. Write a function that takes a number and returns true if it is prime, and false otherwise.

14. Create a function that takes a string and returns a new string with all the characters in the original string, but with the first and last characters swapped.

15. Write a function that takes an array and returns the average of all the elements in the array.

16. Create a function that takes a number and returns true if it is a palindrome, and false otherwise.

17. Write a function that takes a string and returns a new string with all the words reversed, but the order of the words remains the same.

18. Create a function that takes an array and returns a new array with the unique elements only.

19. Write a function that takes a number and returns the sum of all the digits in the number.

20. Create a function that takes a string and returns a new string with all the characters in the original string, but with the characters in reverse order.

Intermediate Questions

1. Write a function that creates a private counter and returns an object with methods to increment, decrement, and retrieve the current count.

2. Create a generator function that generates the first n Fibonacci numbers.

3. Write a function that calculates the factorial of a given number using recursion.

4. Create a function that takes a callback and executes it after a specified delay.

5. Write a function that takes an array and returns a new array with all the elements reversed.

6. Create a function that takes two numbers and returns the larger of the two.

7. Write a function that takes an array of numbers and returns the sum of all the even numbers in the array.

8. Create a function that takes an object and a key, and returns the value associated with that key. If the key doesn't exist, return `undefined`.

9. Write a function that takes a string and returns a new string with all the vowels removed.

10. Create a function that takes two functions as arguments and returns a new function that is the composition of the two.

11. Write a function that memoizes the results of a function call, so that subsequent calls with the same arguments return the cached result.

12. Create a function that fetches data from an API and returns the response as a Promise.

13. Write a function that takes multiple arguments and returns a new function that can be called with the remaining arguments.

14. Create a function that throttles the execution of another function, limiting the number of times it can be called within a given time period.

15. Write a function that debounces the execution of another function, ensuring that it is only called after a certain amount of time has passed since the last call.

16. Create a function that takes a nested array and returns a flat array.

17. Write a function that calculates the nth Fibonacci number using recursion.

18. Create a function that traverses a directory structure and logs the paths of all files.

19. Write a function that traverses a tree data structure and logs the values of all nodes.

20. Create a function that demonstrates the "callback hell" problem and then refactor it using Promises.

21. Write a function that demonstrates how to handle errors in an async/await context.

22. Create a generator function that delegates to other generator functions.

23. Write a generator function that demonstrates how to handle errors.

24. Create a function that calculates the nth Fibonacci number using recursion and memoization.

25. Write a function that calculates the factorial of a number using recursion and tail call optimization.

26. Create a function that takes a callback function as an argument and executes it.

27. Write a function that takes a callback function with arguments and executes it.

28. Create a function that implements a simple event emitter.

29. Write a function that takes an array of functions and executes them in parallel.

30. Create a function that takes an array of functions and executes them in series.

Advanced Questions:

1. Write a function that implements the "Observer" design pattern, allowing objects to subscribe and unsubscribe to events.

2. Create a function that takes an array of functions and returns a new function that, when called, executes all the input functions in parallel and returns an array of their results.

3. Write a function that takes an array of functions and returns a new function that, when called, executes all the input functions in series and returns an array of their results.

4. Create a function that takes an array of numbers and returns the second-largest number in the array.

5. Write a function that takes a string and returns the first non-repeating character in the string.

6. Create a function that takes an array of objects and returns a new array with the objects sorted by a specified property.

7. Write a function that takes an array of strings and returns a new array with the strings sorted in alphabetical order, ignoring case.

8. Create a function that takes a string and returns a new string with all the words reversed, but the order of the words remains the same.

9. Write a function that takes an array of numbers and returns the median value.

10. Create a function that takes an object and returns a new object with the keys and values reversed.

11. Write a function that takes a string and returns a new string with all the vowels removed.

12. Create a function that takes an array of numbers and returns a new array with the numbers sorted in descending order.

13. Write a function that takes a string and returns a new string with all the characters in the original string, but with the first and last characters swapped.

14. Create a function that takes an array of strings and returns a new array with all the strings concatenated into a single string, separated by a specified delimiter.

15. Write a function that takes an array of numbers and returns a new array with the numbers sorted in ascending order using the bubble sort algorithm.

16. Create a function that takes an object and returns a new object with the keys sorted in alphabetical order.

17. Write a function that takes a string and returns a new string with all the words capitalized.

18. Create a function that takes an array of numbers and returns the sum of all the prime numbers in the array.

19. Write a function that takes a string and returns a new string with all the consecutive duplicate characters removed.

20. Create a function that takes an array of numbers and returns a new array with the unique numbers only.

21. Write a function that takes a string and returns a new string with all the characters in the original string, but with the vowels and consonants reversed.
22. Create a function that takes an array of objects, each with a 'name' and 'age' property, and returns a new array with the objects sorted by age in descending order.

23. Write a function that takes a string and returns a new string with all the words reversed, but the order of the words remains the same.

24. Create a function that takes an array of numbers and returns a new array with the numbers sorted in ascending order using the merge sort algorithm.

25. Write a function that takes a string and returns a new string with all the words capitalized and the rest of the characters in lowercase.

26. Create a function that takes an array of numbers and returns a new array with the numbers sorted in descending order using the quicksort algorithm.

27. Write a function that takes a string and returns a new string with all the characters in the original string, but with the first character of each word capitalized.

28. Create a function that takes an array of objects, each with a 'name' and 'age' property, and returns a new array with the objects sorted by name in alphabetical order.

29. Write a function that takes a string and returns a new string with all the characters in the original string, but with the vowels and consonants reversed.

30. Create a function that takes an array of numbers and returns a new array with the numbers sorted in ascending order using the insertion sort algorithm.

31. Write a function that takes a string and returns a new string with all the characters in the original string, but with the first and last characters of each word swapped.

32. Create a function that takes an array of objects, each with a 'name' and 'age' property, and returns a new array with the objects sorted by age in ascending order, and then by name in alphabetical order.

33. Write a function that takes a string and returns a new string with all the characters in the original string, but with the characters in reverse order.

34. Create a function that takes an array of numbers and returns a new array with the numbers sorted in descending order using the selection sort algorithm.

35. Write a function that takes a string and returns a new string with all the characters in the original string, but with the first character of each word capitalized and the rest of the characters in lowercase.

36. Create a function that takes an array of objects, each with a 'name', 'age', and 'gender' property, and returns a new array with the objects sorted by gender in alphabetical order, and then by age in descending order.

37. Write a function that takes a string and returns a new string with all the characters in the original string, but with the characters in reverse order and the first and last characters swapped.
38. Create a function that takes an array of numbers and returns a new array with the numbers sorted in ascending order using the radix sort algorithm.

39. Write a function that takes a string and returns a new string with all the characters in the original string, but with the characters in reverse order and the vowels and consonants reversed.

40. Create a function that takes an array of objects, each with a 'name', 'age', and 'gender' property, and returns a new array with the objects sorted by gender in alphabetical order, and then by age in ascending order, and finally by name in alphabetical order.

41. Write a function that takes a string and returns a new string with all the characters in the original string, but with the characters in reverse order and the first and last characters of each word swapped.

42. Create a function that takes an array of numbers and returns a new array with the numbers sorted in descending order using the heap sort algorithm.

43. Write a function that takes a string and returns a new string with all the characters in the original string, but with the characters in reverse order and the vowels and consonants reversed, and the first and last characters swapped.

44. Create a function that takes an array of objects, each with a 'name', 'age', 'gender', and 'salary' property, and returns a new array with the objects sorted by salary in descending order, and then by age in ascending order, and finally by name in alphabetical order.

45. Write a function that takes a string and returns a new string with all the characters in the original string, but with the characters in reverse order and the first and last characters of each word swapped, and the vowels and consonants reversed.

46. Create a function that takes an array of numbers and returns a new array with the numbers sorted in ascending order using the bucket sort algorithm.

47. Write a function that takes a string and returns a new string with all the characters in the original string, but with the characters in reverse order and the first and last characters of each word swapped, and the vowels and consonants reversed, and the first and last characters of the entire string swapped.
48. Create a function that takes an array of objects, each with a 'name', 'age', 'gender', 'salary', and 'department' property, and returns a new array with the objects sorted by department in alphabetical order, and then by salary in descending order, and finally by age in ascending order.

49. Write a function that takes a string and returns a new string with all the characters in the original string, but with the characters in reverse order and the first and last characters of each word swapped, and the vowels and consonants reversed, and the first and last characters of the entire string swapped, and all the words capitalized.

50. Create a function that takes an array of objects, each with a 'name', 'age', 'gender', 'salary', 'department', and 'years_of_experience' property, and returns a new array with the objects sorted by years_of_experience in descending order, and then by salary in ascending order, and finally by name in alphabetical order.