✅ 1. Arrays and Array Methods

🟢 Beginner

- Find the sum of all elements in an array: [10, 20, 30, 40, 50].
- Find the length of an array without using .length.
- Add an element to an array without .push or .unshift.
- Remove the last element of an array without .pop.
- Remove one element from an array manually.
- Merge two arrays manually.
- Find if a given element exists in an array (no .includes).
- Find the first occurrence of a target value in an array.
- Separate even and odd from an array.
- Sum all elements in an array.
- Find the average of numbers in an array.
- Count the number of even and odd numbers in an array.
- Count how many times each element appears.
- Check if an array has duplicates.
- Frequency of each number in an array.
- Insert a new element into an array without built-in methods.
- Move zeros to the end of an array.
- Move zeros to the beginning of an array.
- Delete the last element from an array manually.
- Filter even numbers from an array: [10, 20, 30, 40, 50].

🟡 Intermediate

- Reverse an array without using .reverse() or extra array.
- Remove duplicates from an array (no Set).
- Remove duplicate even numbers from an array.
- Remove all zeros from an array.
- Remove even numbers from an array.
- Remove odd numbers from an array.
- Remove prime numbers from an array.

- Remove the second last element from an array.

- Remove the nth element from an array.

- Remove the smallest number from an array.

- Remove the smallest string from an array.

- Remove null and undefined values from an array.

- Remove multiples of 3 from an array.

- Remove the middle element from an array.

- Delete consecutive odd numbers from an array.

- Replace even numbers with 0 using recursion.

- Insert a value between two values in an array using splice.

- Get the orange and lemon from an array using slice.

- Merge two arrays using spread operator.

- Filter out non-strings from an array.

- Move zeros to the front of an array.

- Sort an array in ascending and descending order.

- Find the last index of a number in an array.

- Count the frequency of '1' in each element of an array: [155, 101, 17711, 100].

- Find all occurrences of a target value in an array.

- Find max and min values without Math.max or Math.min.

- Remove duplicates from an array without built-in methods.

- Find the difference between max and min values.

- Check if two arrays are equal.

- Find common elements between two arrays.

- Split an array at a given index.

- Check if an array is a palindrome.

- Find intersection of two arrays.

- Find union of two arrays (no duplicates).

- Merge two sorted arrays into one sorted array.

- Find the missing number in a sequence.

- Check if an array contains all unique elements.

- Delete even numbers from an array.

- Delete prime numbers from an array.

- Elements that appear only once in an array.

- Remove multiples of 2 from an array.

- Shift array elements one position to the left.

- Rotate an array n times to the right.

- Shift the elements of an array to the right n times wrapping around.

- Find the second largest number.

- Find the second smallest number.

- Find second highest in an array.

- Find the largest number using reduce.

- Find the second largest even or odd using reduce.

- Find the largest odd number using reduce.

- Find the longest string in an array using reduce.

- Find the maximum mark earned by a student.

- Split an array into two equal halves.

- Implement custom filter.

🔴 **Advanced**

- Flatten nested arrays without .flat(): [1, [2, 3], [[4], 5], [6, [7, 8]]].

- Find the second largest and second smallest element from array.

- Find class with most students from array of objects.

- Sort an array manually (no .sort()).

- Sort strings in ascending order.

- Rearrange an array's elements in ascending order manually.

- Rotate array to the right n times efficiently.

- Merge two sorted arrays and keep it sorted (no .sort()).

- Union of arrays without using Set or built-ins.

- Find longest subarray with condition (extensible).

- Use exception handling with array ops.

✅ **2. Objects and Object Manipulation**

🟢 **Beginner**

- Sum values in an object: {a: 10, b: 20, c: 40, d: 80}.

- Add a new key-value pair to object.

- Delete a property from object.

- Check if an object is empty.

- Loop through object to print keys and values.

- Use Object.keys, Object.values, Object.entries.

🟡 **Intermediate**

- Remove key with smallest value from object.

- Remove key with largest value from object.

- Remove keys with odd values.

- Remove the last property from an object.

- Merge two objects: {a:10, b:20} and another.

- Merge objects without replacing keys.

- Destructure an object.

- Spread an object while changing property.

- Destructure nested object.

- Concatenate strings in an object.

🔴 **Advanced**

- Create deep copy of an object.

- Find the key of highest value.

- Find the key of lowest value.

- Find the sum of af values in objects: [{af: [4, 5, 3], p: 3}].

- Find total salary in an object.

✅ **3. String Operations**

🟢 **Beginner**

- Reverse a string: "How Are You" → "uoY erA woH".

- Convert first letter of string to uppercase.

- Capitalize the first and last letter.

- Capitalize each word in sentence.

- Count vowels in a string.

- Remove a character from string.

- Change "hello world" to "world hello".

- Use replaceAll() in string.

🟡 Intermediate

- Split a string in middle.

- Split first two elements from string.

- Convert 2.2 to 3 (ceiling).

- Convert number to sum of digits (no string).

- Check if string is palindrome (recursion).

- Frequency of each character.

- Remove vowels.

✅ 4. Functions & Execution

🟢 Beginner

- Function to sum two numbers.

- Arrow function to sum two numbers.

- Arrow function with unknown args (rest).

- Largest of 3 numbers.

- Even or odd check.

- Function to run only once.

- Generate 6-digit OTP.

- Convert to single-line arrow function with ternary.

- Throw error if values same.

- Throw error if not string.

🟡 Intermediate

- HOF to find average of ages.

- Callback for sum of numbers.

- Callback hell to Promise.

- Process array with callback.

- Currying function (sum).

- Example of HOF.

- Modify arrow to accept n numbers.

🔴 **Advanced**

- Generator to print even numbers with delay.
- Yield random array elements (no repeat).
- Generate infinite multiples of a number.
- Yield multiples of 5 in reverse.
- Generate 5 prime numbers using generator.
- Sum odd numbers, replace even with 0 (recursion).
- Binary search using recursion.
- Memoization function.

✅ **5. Timers & Async Concepts**

🟢 **Beginner**

- Print 1 to 10 with 1-second delay.
- Cancel a setTimeout after 2 sec.
- Stop setInterval after n sec.

🟡 **Intermediate**

- Print 10 to 1 with delay.
- Countdown timer from 10 to 0.
- Print multiples of 5 from 100 to 1 with delay.
- Sum of 3 functions with different timings.

🔴 **Advanced**

- Async/await to fetch from API and print JS object.
- Use async/await with Promise to sum.
- Combine async/await and fs to write to file.

✅ **6. Promises**

🟢 **Beginner**

- Basic Promise to sum an array.

🟡 **Intermediate**

- Promise resolves/rejects in time, log to file.

- Promise chaining.

- Promise with async logic.

🔴 **Advanced**

- Use Promise.all, allSettled, race, any.

✅ **7. Express.js & Node.js**

🟢 **Beginner**

- API to add two numbers.

- Create HTTP server with Express.

- Use express.static for static files.

- express.urlencoded, express.nocache.

🟡 **Intermediate**

- App-level middleware to block GET.

- Log PUT with timestamp.

- Dynamic routing using req.params.

- Router-level middleware.

- Use router.route chaining.

- app.all usage.

🔴 **Advanced**

- Transform stream.

- Use child_process to demo spawn vs fork.

✅ **8. File System (Node.js)**

🟢 **Beginner**

- Write to file using fs.

- Delete a file using fs.unlink.

✅ **9. MongoDB**

🟢 **Beginner**

- Reduce age of all docs by 10.

- Find names ending in "n".

- Average price where year > 2020.

- Increment salaries by 10%.

- Use $exists, $in, $all, $expr.

🟡 **Intermediate**

- Use $lookup with stages.

- $setUnion, $elemMatch examples.

- Query with logical operators.

- distinct query.

- bulkWrite usage.

- Create capped collection.

🔴 **Advanced**

- Create index.

- Create geo index.

- Use $facet, $fill, $addToSet.

✅ **10. Loops**

🟢 **Beginner**

- do-while to print multiples of 3.

- while to print multiples of 6.

🟡 **Intermediate**

- Reverse array in place.

🔴 **Advanced**

- Reverse nested array.

- Recursive nested array reversal.

✅ **11. Math & Date**

🟢 **Beginner**

- Generate random number 0–100.

- Check if number has decimal.

🟡 Intermediate

- Count hours since New Year.
- Get date 15/25 days ago.
- Format a date.

✅ 12. OOP

🟢 Beginner

- Class with constructor and methods.
- Factory function to generate object.

🟡 Intermediate

- Inheritance in JS.

✅ 13. DOM & Events

🟢 Beginner

- Change background on click.
- Toggle checkbox on click.
- Prevent right-click on button.
- Change h1 color on click.
- Add event listener.
- appendChild, removeChild.

🟡 Intermediate

- Event delegation.
- Use preventDefault.
- Use stopPropagation.

✅ 14. Miscellaneous

🟢 Beginner

- Largest among 4 variables.
- Convert Set to array.

- Sum two numbers to reach target.
- Print: 100*1=100, 50*2=100,....

🟡 **Intermediate**

- Function borrowing with call, apply, bind.
- Debounce function.
- Throttle function.

🔴 **Advanced**

- Polyfill for method (e.g., filter).
- Trie for autocomplete.
- Error if not Error object.
- try, catch, finally usage.
- React: change parent color via child (context).