JavaScript Array Methods - Notes

push

- Pushes element(s) at the end of an array.
- Mutates the array (changes its length).
- Returns the new length of the array.

pop

- Removes the last element from the array.
- Mutates the array (changes its length).
- Returns the removed element.

filter

- Returns a new array containing elements that pass the test defined in the callback function.
- Does not mutate the original array.
- If callback returns truthy → element included; falsy → element excluded.

map

- Creates a new array populated with the results of calling a callback function on each element.
- Does not mutate the original array.

forEach

- Executes the callback function once for each array element.
- Does not return a new array (always returns undefined).
- Mainly used for side effects (logging, external changes).

reduce

- Reduces an array to a single value using a callback function.
- Parameters of callback: accumulator (running total) and currentElement.
- If initialValue is provided → accumulator starts with it.
- If no initialValue → first element is accumulator, iteration starts at second element.
- Throws error if array is empty and no initialValue provided.

slice

- Returns a new array containing a portion of the original array from startIndex to endIndex (end not included).
- Does not mutate the original array.

splice

- Adds, removes, or replaces elements in an array.
- Mutates the original array.

- Returns an array containing the removed elements.

concat

- Returns a new array that merges two or more arrays/values.
- Does not mutate the original array.

sort

- Sorts the elements of the array in place (mutates the original).
- Accepts an optional compare function:
- - Negative result → a comes before b
- - Positive result → a comes after b
- - Zero → a and b are equal
- If no compare function, elements are converted to strings and compared using UTF-16 code units.

Array Methods Quick Reference Table

Method	Mutates Original Array?	Return Value
push	Yes (adds at end)	New length of array
pop	Yes (removes last)	The removed element
filter	No	New array with elements that passed the test
map	No	New array with transformed elements
forEach	No	`undefined` (used for side effects)
reduce	No	Single value (callback + initial value)
slice	No	New array (selected portion)
splice	Yes (add/remove/replace)	Array of removed elements
concat	No	New array (joined arrays/values)
sort	Yes (rearranges elements)	Sorted array (same reference)