Functionality Investigation Sheet

Feature: Search Functionality

Problem:

Optimizing the search functionality to provide the best performance and user experience when filtering recipes based on user input.

Option 1: Filter Mapping (Master Branch)

Description:

The `filterBySearchTerm` function in the master branch uses functional programming methods like `.filter()` and `.some()` to filter the recipes based on the search term. It checks the recipe name, description, appliance, ingredients, and utensils for matches.

Benefits:

Readable code: The use of functional methods like `.filter()` and `.some()` makes the code compact and easier to understand.

Native optimization: JavaScript's built-in methods like `.filter()` are optimized internally, leading to better performance for large datasets.

Winner in performance tests: Benchmarked using JSBench, this implementation showed better performance compared to the loop-based approach.

Disadvantages:

Potential memory usage: Functional methods may use more memory overhead due to intermediate arrays and callbacks.

Option 2: Loop-Based Search Functionality (Search_2)

Description:

This function explicitly uses `for` loops to iterate over the recipes and their properties. It also exits early (`continue` or `break`) when a match is found, potentially reducing unnecessary checks.

Benefits:

Custom optimizations possible: Developers can fine-tune the logic for specific use case.

Efficient for smaller datasets: The loop-based approach can perform comparably or better for small datasets due to reduced overhead from callbacks.

Disadvantages:

Lower readability: The code is longer and more complex compared to the functional approach, which might make it harder to maintain.

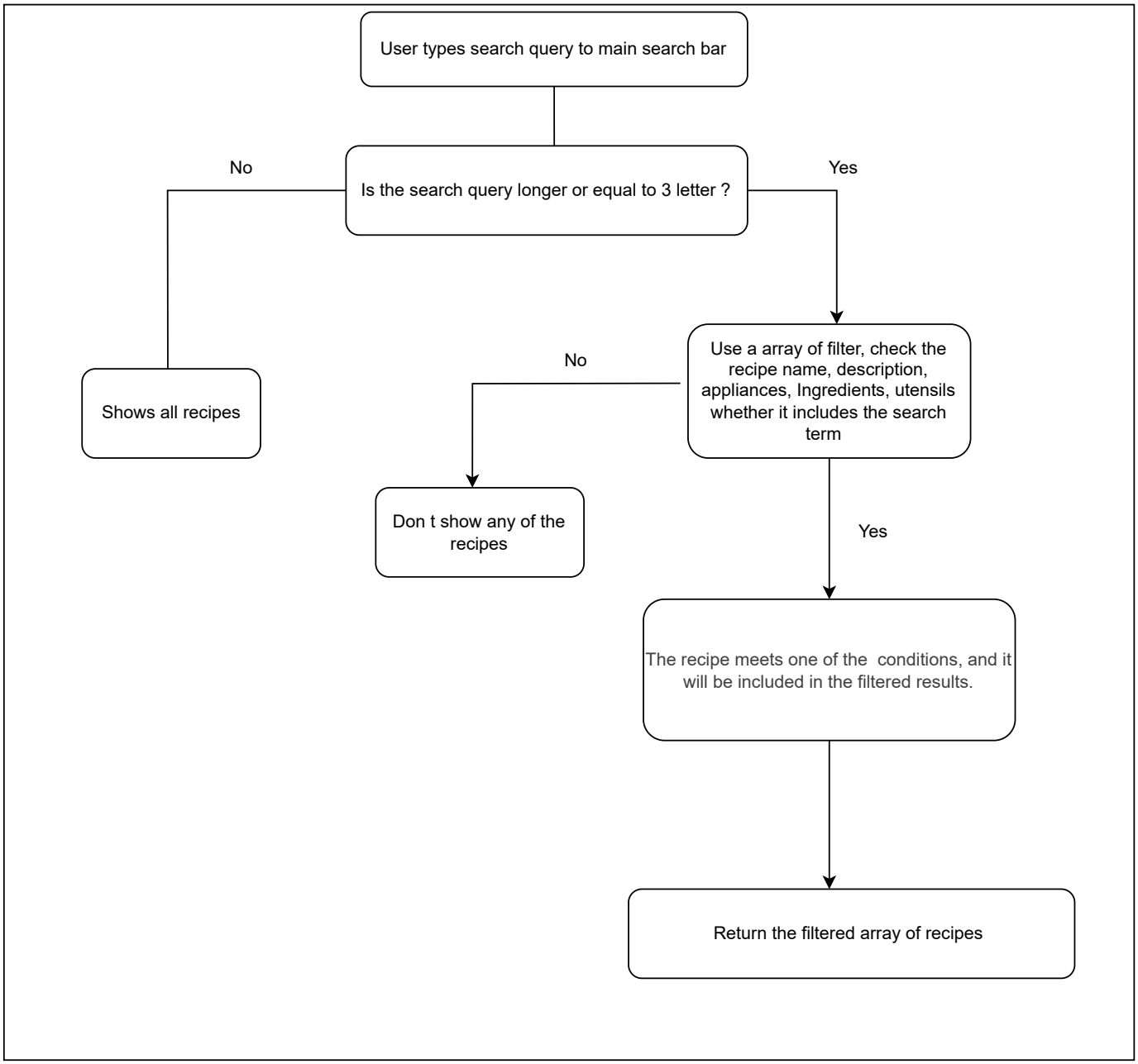
Solution Retention:

I have chose the **filter mapping approach** from the master branch. The reason is that it performs better in performance benchmarks and is easier to maintain.

The master branch's filter method was more performant in JSBench tests, making it a better solution.

Annexes

Option 1: Filter Mapping (Master Branch)



Annexes

Option 2: Loop-Based Search Functionality (Search_2)