

# Problem Statement: Recipe Management System

You are tasked with creating a simple Recipe Management System for a food blog. The system will manage a list of recipes, each recipe containing a title, a list of ingredients, and instructions. The goal is to implement a variety of JavaScript concepts to manipulate and interact with the recipe data.

## Requirements:

### 1. Recipe Data Structure:

- Each recipe should be an object with the following properties:
  - **title** (string): The name of the recipe.
  - **ingredients** (array of strings): List of ingredients.
  - **instructions** (string): A description of how to prepare the dish.

### 2. Functions to Manage Recipes:

- **Add Recipe:** Create a function **addRecipe** that takes a recipe object and adds it to an array of recipes.
- **Remove Recipe:** Create a function **removeRecipe** that removes a recipe from the array based on the recipe title.
- **Find Recipe by Ingredient:** Create a function **findRecipeByIngredient** that takes an ingredient and returns an array of recipes that include that ingredient.

### 3. Array Manipulations:

- Use **forEach** to display the title of each recipe in the console.
- Use **map** to create an array of recipe titles.
- Use **filter** to find recipes that contain a specific ingredient.
- Use **reduce** to count the total number of recipes.

### 4. Object Manipulations:

- Use dot notation and bracket notation to access and modify recipe properties.
- Use object destructuring to extract **title** and **ingredients** from recipes.

### 5. Additional Features:

- **Recipe Destructuring:** Implement a function **describeRecipe** that takes a recipe object and logs a description in the format: "Title: [title], Ingredients: [ingredients], Instructions: [instructions]".
- **Recipe Update:** Create a function **updateRecipe** that updates the ingredients of a recipe based on the title.
- **Recipe Statistics:** Implement a function **getStatistics** that provides the average number of ingredients per recipe.

### 6. Optional Advanced Features:

- Implement **sort** to display recipes sorted by title.
- Implement **find** to get the first recipe that contains a specified ingredient.

- Use `fill` to initialize a list of recipes with placeholder values.
- Use `splice` to remove a specific recipe based on its index.

### 📌 Example Usage:

```
// 🌟 Add Recipes
addRecipe({
  title: "🥬 Veggie Stir-Fry",
  ingredients: ["broccoli", "carrots", "bell peppers", "soy sauce", "garlic"],
  instructions: "🔪 Stir-fry vegetables with soy sauce and garlic until
tender."
});

addRecipe({
  title: "🥑 Avocado Toast",
  ingredients: ["avocado", "whole grain bread", "lemon juice", "salt",
"pepper"],
  instructions: "🔪 Mash avocado with lemon juice, salt, and pepper. Spread on
toasted bread."
});

// 📖 Display Recipe Titles
console.log('📖 Recipe Titles:');
recipes.forEach(recipe => console.log(`- ${recipe.title}`));

// 🔍 Find Recipes with "avocado"
const avocadoRecipes = findRecipeByIngredient("avocado");
console.log('🔍 Recipes with avocado:');
avocadoRecipes.forEach(recipe => console.log(`- ${recipe.title}`));

// 🔄 Update Avocado Toast Recipe
updateRecipe("🥑 Avocado Toast", ["avocado", "whole grain bread", "lemon juice",
"salt", "pepper", "chili flakes"]);
console.log('🔄 Avocado Toast updated with new ingredients!');

// 🔍 Describe a Specific Recipe
console.log('🔍 Recipe Description:');
describeRecipe(recipes[0]);

// 📊 Get and Display Recipe Statistics
const stats = getStatistics();
console.log('📊 Recipe Statistics:');
console.log(`- Total Recipes: ${stats.totalRecipes}`);
console.log(`- Average Ingredients per Recipe: ${stats.averageIngredients}`);

// 📄 Sort Recipes by Title
const sortedRecipes = [...recipes].sort((a, b) => a.title.localeCompare(b.title));
console.log('📄 Sorted Recipes by Title:');
sortedRecipes.forEach(recipe => console.log(`- ${recipe.title}`));

// 🍷 Find the First Recipe with "carrots"
```

```
const carrotRecipe = recipes.find(recipe =>
recipe.ingredients.includes("carrots"));
console.log('🥕 First Recipe with Carrots:');
console.log(carrotRecipe ? carrotRecipe.title : 'No recipe found.');
```

  

```
// 🍴 Fill Placeholder Recipes
const placeholderRecipes = new Array(3).fill({
  title: "🥣 Placeholder Recipe",
  ingredients: ["ingredient1", "ingredient2"],
  instructions: "📖 Placeholder instructions."
});
console.log('🍴 Placeholder Recipes:');
console.log(placeholderRecipes);
```

  

```
// 🗑️ Remove a Recipe by Index
recipes.splice(1, 1); // Removes the second recipe (index 1)
console.log('🗑️ Recipes after Splice:');
recipes.forEach(recipe => console.log(`- ${recipe.title}`));
```

### Breakdown of Example Usage:

1. **Adding Recipes:** 🗨️ (Veggie Stir-Fry), 🥑 (Avocado Toast)
  2. **Displaying Titles:** 📖
  3. **Finding Ingredients:** 🔍
  4. **Updating Recipes:** 🔄
  5. **Describing Recipes:** 🔍
  6. **Statistics:** 📊
  7. **Sorting Recipes:** 🔄
  8. **Finding Ingredients in Recipes:** 🥕
  9. **Placeholder Recipes:** 🍴
  10. **Removing Recipes:** 🗑️
-