Here’s an \*\*in-depth problem statement\*\* for the Flexbox Layout assignment, styled like a coding challenge from \*\*LeetCode\*\* or \*\*Codecademy\*\*:

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### \*\*Problem: Responsive Navigation Bar with Flexbox\*\*

\*\*Problem Statement\*\*:

You are tasked with designing a responsive navigation bar for a website using CSS Flexbox. The navigation bar should adapt to various screen sizes, ensuring that it remains user-friendly and visually appealing.

\*\*Requirements\*\*:

1. The navigation bar should contain the following menu items:

- Home

- About

- Services

- Portfolio

- Contact

2. Use the CSS property `display: flex;` to create a horizontal layout for the menu items.

3. The navigation bar should be styled such that:

- The background color is `#333` (dark gray).

- The text color of the menu items is `#fff` (white).

- Padding for the navigation items is `15px`.

4. On screens smaller than \*\*768 pixels\*\* in width, the navigation items should wrap into a vertical layout.

5. Add a hover effect on the menu items that changes their background color to `#555` (slightly lighter gray).

6. Ensure that the navigation bar is centered on the page.

\*\*Constraints\*\*:

- You may not use frameworks like Bootstrap; use pure HTML and CSS.

- Ensure proper accessibility by using `<nav>` and `<ul>` elements appropriately.

\*\*Example\*\*:

```html

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Responsive Navigation Bar</title>

<style>

body {

margin: 0;

}

nav {

background-color: #333;

display: flex;

justify-content: center; /\* Center navigation items \*/

flex-wrap: wrap; /\* Allow wrapping on small screens \*/

}

ul {

list-style-type: none; /\* Remove bullet points \*/

padding: 0;

margin: 0;

display: flex; /\* Horizontal layout for menu items \*/

}

li {

padding: 15px; /\* Padding for menu items \*/

}

a {

color: #fff; /\* Text color \*/

text-decoration: none; /\* Remove underline \*/

}

a:hover {

background-color: #555; /\* Hover effect \*/

}

/\* Media Query for small screens \*/

@media (max-width: 768px) {

ul {

flex-direction: column; /\* Change to vertical layout \*/

}

}

</style>

</head>

<body>

<nav>

<ul>

<li><a href="#home">Home</a></li>

<li><a href="#about">About</a></li>

<li><a href="#services">Services</a></li>

<li><a href="#portfolio">Portfolio</a></li>

<li><a href="#contact">Contact</a></li>

</ul>

</nav>

</body>

</html>

```

\*\*Expected Output\*\*:

- A responsive navigation bar that displays horizontally on larger screens and wraps vertically on smaller screens. The menu items should change background color on hover, and the navigation bar should be visually centered.

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This problem statement outlines the task clearly and provides necessary requirements and examples, guiding learners through creating a responsive navigation bar using Flexbox.