Q1. Reverse a Stack You are given a stack of integers. Your task is to reverse the order of the elements in the stack using only stack operations (push and pop) and without using any additional data structures. Ex. stack = [1, 2, 3, 4, 5] reverse Stack(stack) print(stack) Output should be [5, 4, 3, 2, 1].

**Program :**

```
# Function to insert element at the bottom of the stack
def insert_at_bottom(stack, item):
    if not stack:
        stack.append(item)
    else:
        top = stack.pop()
        insert_at_bottom(stack, item)
        stack.append(top)

# Function to reverse the stack
def reverse_stack(stack):
    if stack:
        top = stack.pop()
        reverse_stack(stack)
        insert_at_bottom(stack, top)

# Example usage:
stack = [1, 2, 3, 4, 5]
reverse_stack(stack)
print(stack)  # Output: [5, 4, 3, 2, 1]
```

**Output :**

```
[5, 4, 3, 2, 1]

=== Code Execution Successful ===
```

Q2. Depth-First Search (DFS) Sample Problem: Implement Depth- First Search (DFS) to traverse a graph starting from a given vertex. The graph is represented by an adjacency list.

## Program :

```
def dfs(graph, start, visited=None):
    if visited is None:
        visited = set()  # Initialize visited set if it's not passed

    # Mark the current node as visited
    visited.add(start)
    print(start)  # Process the current node (you can change this as needed)

    # Recur for all the vertices adjacent to this vertex
    for neighbor in graph[start]:
        if neighbor not in visited:
            dfs(graph, neighbor, visited)

# Example usage
if __name__ == "__main__":
    # Sample graph represented as an adjacency list
    graph = {
        'A': ['B', 'C'],
        'B': ['A', 'D', 'E'],
        'C': ['A', 'F'],
        'D': ['B'],
        'E': ['B', 'F'],
        'F': ['C', 'E']
    }

    print("DFS starting from vertex 'A':")
    dfs(graph, 'A')
```

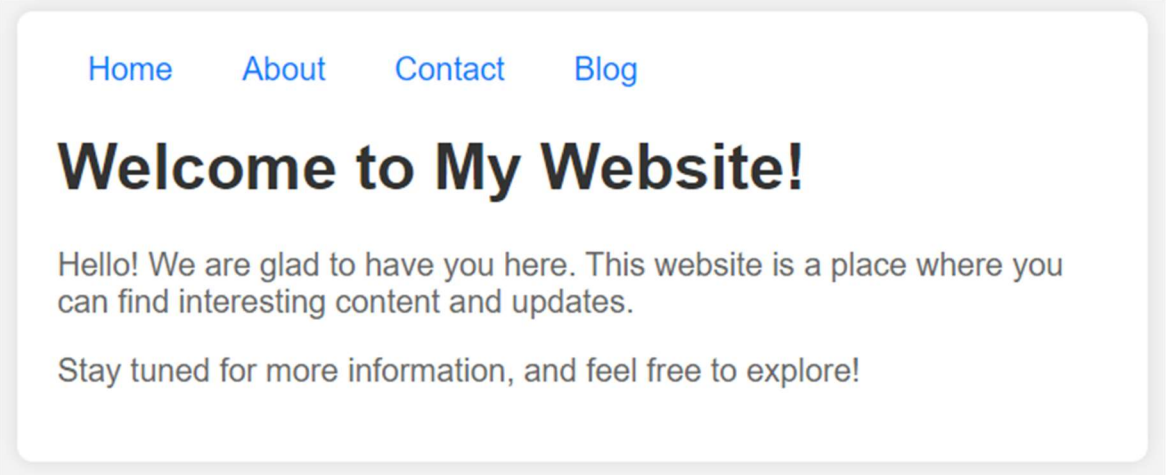
## Output :

```
DFS starting from vertex 'A':
A
B
D
E
F
C

=== Code Execution Successful ===
```

Q3. Create a Simple Website with the Following Features: a. Display a welcoming message and a brief description. Include navigation links to the homepage, about page, contact page, and blog page.

## Program :

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Welcome to My Website</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            background-color: #f4f4f4;
            margin: 0;
            padding: 20px;
        }
        .container {
            max-width: 800px;
            margin: auto;
            background: white;
            padding: 20px;
            border-radius: 8px;
            box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
        }
        h1 {
            color: #333;
        }
        p {
            color: #666;
        }
        nav {
            margin-bottom: 20px;
        }
        nav a {
            margin: 0 15px;
            text-decoration: none;
            color: #007BFF;
        }
        nav a:hover {
            text-decoration: underline;
        }
    </style>
</head>
<body>

<div class="container">
    <nav>
        <a href="index.html">Home</a>
        <a href="about.html">About</a>
        <a href="contact.html">Contact</a>
        <a href="blog.html">Blog</a>
    </nav>

    <h1>Welcome to My Website!</h1>
    <p>Hello! We are glad to have you here. This website is a place where you
    can find interesting content and updates.</p>
    <p>Stay tuned for more information, and feel free to explore!</p>
</div>

</body>
</html>
```



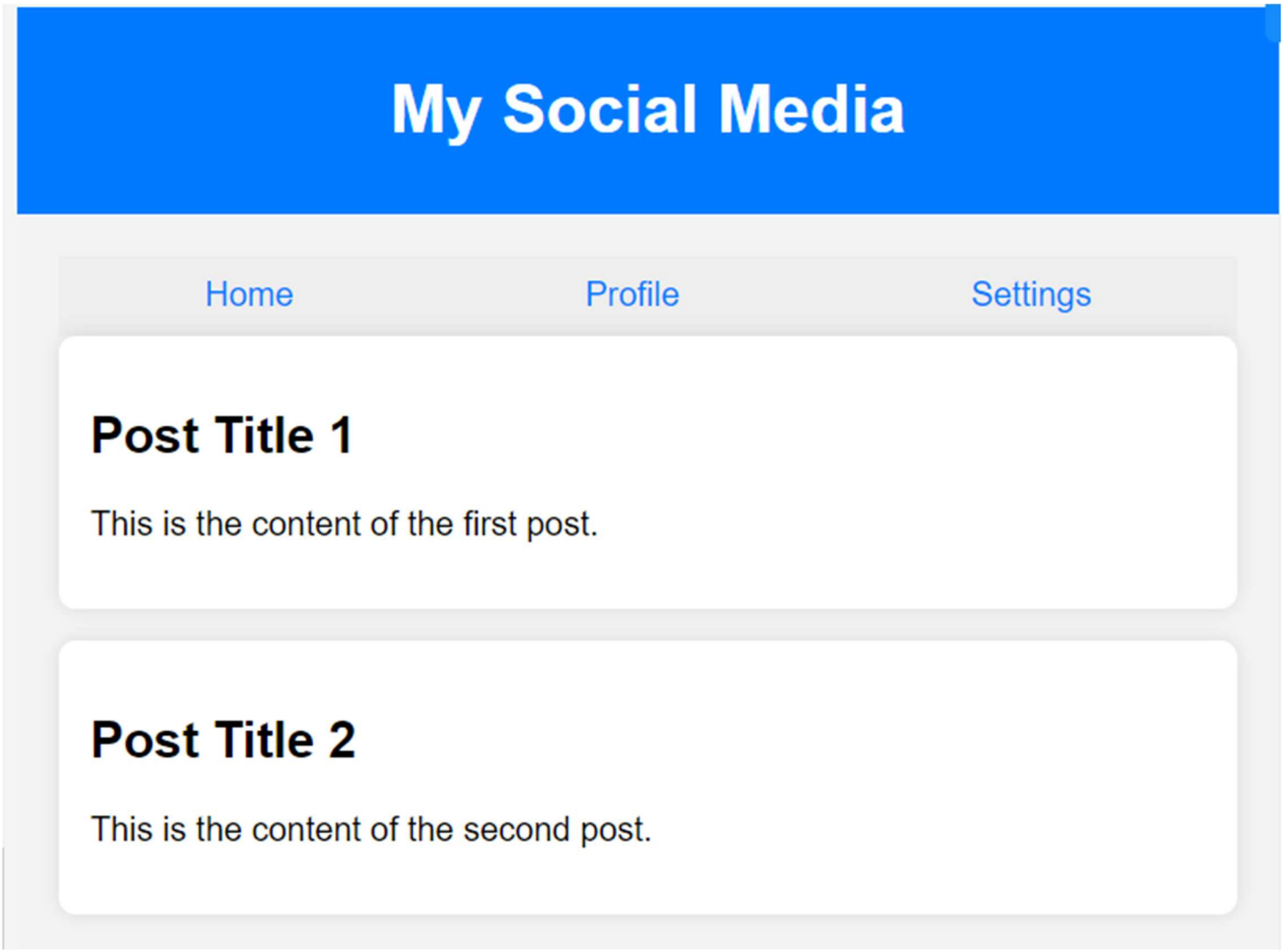

Q4. Implement a responsive social media platform using HTML, CSS, and JavaScript. Ensure that the UI displays properly on both desktop and mobile devices, with features like swipe gestures for navigation on touch enabled devices.

**Program :**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Simple Social Media Platform</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            margin: 0;
            padding: 0;
            background-color: #f4f4f4;
        }
        header {
            background: #007BFF;
            color: white;
            padding: 10px;
            text-align: center;
        }
        .container {
            max-width: 800px;
            margin: auto;
            padding: 20px;
        }
        .post {
            background: white;
            margin-bottom: 15px;
            padding: 15px;
            border-radius: 8px;
            box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
        }
        .nav {
            display: flex;
            justify-content: space-around;
            background: #eee;
            padding: 10px 0;
        }
```

```
        .nav a {
            text-decoration: none;
            color: #007BFF;
        }
        @media (max-width: 600px) {
            .nav {
                flex-direction: column;
            }
            .nav a {
                margin: 5px 0;
            }
        }
    </style>
</head>
<body>

<header>
    <h1>My Social Media</h1>
</header>

<div class="container">
    <nav class="nav">
        <a href="#" onclick="showSection('home')">Home</a>
        <a href="#" onclick="showSection('profile')">Profile</a>
        <a href="#" onclick="showSection('settings')">Settings</a>
    </nav>

    <div id="home" class="section">
        <div class="post">
            <h2>Post Title 1</h2>
            <p>This is the content of the first post.</p>
        </div>
        <div class="post">
            <h2>Post Title 2</h2>
            <p>This is the content of the second post.</p>
        </div>
    </div>
    <div id="profile" class="section" style="display: none;">
        <h2>Your Profile</h2>
        <p>This is where your profile information will go.</p>
    </div>

    <div id="settings" class="section" style="display: none;">
        <h2>Settings</h2>
        <p>Change your settings here.</p>
    </div>
</div>

<script>
    function showSection(section) {
        const sections = document.querySelectorAll('.section');
        sections.forEach((sec) => {
            sec.style.display = 'none'; // Hide all sections
        });
        document.getElementById(section).style.display = 'block'; // Show the selected section
    }

    // Swipe functionality for touch devices
    let touchstartX = 0;
    let touchendX = 0;
    const handleGesture = () => {
        if (touchendX < touchstartX) showSection('profile'); // Swipe left
        if (touchendX > touchstartX) showSection('home'); // Swipe right
    }

    document.addEventListener('touchstart', e => {
        touchstartX = e.changedTouches[0].screenX;
    });

    document.addEventListener('touchend', e => {
        touchendX = e.changedTouches[0].screenX;
        handleGesture();
    });
</script>
</body>
</html>
```

**Output :**


My Social Media
Home
Profile
Settings
Post Title 1
This is the content of the first post.
Post Title 2
This is the content of the second post.