

Experiment no. 01

AIM: Build Responsive and Interactive UIs using Tailwind CSS

THEORY:

Prerequisites

Before you start working with Tailwind CSS, make sure you have the following:

- **Basic Knowledge** of HTML, CSS, and JavaScript
- **Installed Software & Tools:**
 - Node.js (with npm for packages)
 - Code Editor (VS Code preferred)
 - Web Browser (Chrome/Edge/Firefox)
- **Development Environment Setup** (Git Recommended)
- **Tailwind CSS Knowledge (Basic)**
- **Package Installation Skills**
- **Build Tool Familiarity**

♦ **What is TailwindCSS?**

Tailwind CSS is a **utility-first CSS framework** used to design responsive and interactive UIs faster. It provides predefined low-level classes (e.g., `flex`, `grid`, `bg-blue-500`, `hover:shadow-lg`) instead of large component styles.

♦ **How to install TailwindCSS?**

1. Open your IDE and **terminal prompt**.

Install Tailwind CSS:

```
npm install -D tailwindcss postcss autoprefixer  
npx tailwindcss init -p
```

2.

Add Tailwind directives in `input.css`:

```
@tailwind base;  
@tailwind components;  
@tailwind utilities;
```

3.

4. Configure paths in `tailwind.config.js`.

Start development with:

```
npx tailwindcss -i ./src/input.css -o ./dist/output.css --watch
```

5.

♦ Why is TailwindCSS required?

1. **Rapid UI Development** – Build interfaces faster using predefined utility classes.
2. **Responsiveness** – Built-in breakpoints (`sm:`, `md:`, `lg:`, `xl:`).
3. **Customization** – Configure themes, fonts, spacing, colors in `tailwind.config.js`.
4. **Design Consistency** – Same design patterns throughout.
5. **Small Bundle Sizes** – Removes unused CSS automatically in production.
6. **Great for Frameworks** – Works seamlessly with React, Vue, Next.js, etc.

♦ Types of Components in Tailwind

1. UI Components (HTML + Utility Classes)

Reusable building blocks created with utility classes directly in HTML. Examples:

buttons, cards, forms, alerts.

Example:

```
<button class="bg-blue-500 hover:bg-blue-700 text-white font-bold py-2  
px-4 rounded">  
  Click Me  
</button>
```

Benefits: Fast prototyping, customizable, no separate CSS required, clean.

2. Extracted Component Classes using @apply

You can **group utility classes** into custom CSS classes.

Example (`styles.css`):

```
.btn-primary {  
  @apply bg-blue-600 hover:bg-blue-700 text-white font-bold py-2 px-4  
  rounded;  
}
```

Use in HTML:

```
<button class="btn-primary">Submit</button>
```

Benefits: Cleaner HTML, reusable, readable.

3. Component Files in Frameworks (React, Vue, etc.)

Works perfectly with **JSX/TSX templates** in frameworks.

Example (React):

```
function Button({ label }) {  
  return (  

```

```

        <button className="bg-green-500 hover:bg-green-600 text-white py-2
px-4 rounded">
            {label}
        </button>
    );
}

```

Benefits: Supports component-based development, responsive directly in template.

4. Tailwind UI (Paid Library)

A premium collection of ready-made UI components.

👉 Example Modal:

```

<div class="relative bg-white rounded-lg shadow p-6">
    <h3 class="text-lg font-medium text-gray-900">Confirm Action</h3>
    <p class="mt-2 text-sm text-gray-500">Are you sure you want to
proceed?</p>
    <div class="mt-4 flex justify-end">
        <button class="bg-blue-600 text-white px-4 py-2 rounded
hover:bg-blue-700">
            Confirm
        </button>
    </div>
</div>

```

The **30% extra work**, we enhance the project by adding **dark mode support**, **animated transitions**, and an **interactive contact form**. Dark mode is enabled using Tailwind's **dark:** variant. By toggling a button, users can switch between light and dark themes, and elements automatically adjust their colors, e.g., **bg-white dark:bg-gray-800** and **text-gray-800 dark:text-gray-200**. We also add **Framer Motion-like animations** using Tailwind's built-in **animate-bounce**, **animate-pulse**, and smooth transition classes for better user experience. Finally, we build a responsive **contact form** with fields for name, email, and message. The form uses Tailwind's focus utilities (**focus:ring-2 focus:ring-blue-500**) for accessibility and clear input feedback.

Source Code Implementation

```
import type { Config } from "tailwindcss";  
  
export default {  
  darkMode: ["class"],  
  content: [  
    "./src/**/*.ts,tsx",  
    "./components/**/*.ts,tsx",  
    "./app/**/*.ts,tsx",  
    "./index.html"  
  ],  
  theme: {  
    container: {  
      center: true,  
      padding: '2rem',  
      screens: { '2xl': '1400px' },  
    },  
    extend: {  
      colors: {  
        primary: { DEFAULT: '#2563eb', foreground: 'white' },  
        secondary: { DEFAULT: '#64748b', foreground: 'white' },  
        destructive: { DEFAULT: '#dc2626', foreground: 'white' },  
        sawatsya: {  
          earth: '#8B6E4F',  
          leaf: '#7F9968',  
          terracotta: '#C06C44',  
          cream: '#F5F0E6',  
          sand: '#DBC8AA',  
          wood: '#5C4F3D',  
          amber: '#D9A566'  
        },  
      },  
      borderRadius: {  
        lg: '12px',  
        md: '8px',  
        sm: '4px'  
      },  
    },  
  },  
};
```

Fig 1.1

```
export default {  
  colors: {  
    primary: { DEFAULT: '#2563eb', foreground: 'white' },  
    secondary: { DEFAULT: '#64748b', foreground: 'white' },  
    destructive: { DEFAULT: '#dc2626', foreground: 'white' },  
    sawatsya: {  
      earth: '#8B6E4F',  
      leaf: '#7F9968',  
      terracotta: '#C06C44',  
      cream: '#F5F0E6',  
      sand: '#DBC8AA',  
      wood: '#5C4F3D',  
      amber: '#D9A566'  
    },  
  },  
  borderRadius: {  
    lg: '12px',  
    md: '8px',  
    sm: '4px'  
  },  
};
```

Fig 1.2

```

export default {
  screens: { '2xl': '1400px' },
},
extend: {
  colors: {
    primary: { DEFAULT: '#2563eb', foreground: 'white' },
    secondary: { DEFAULT: '#64748b', foreground: 'white' },
    destructive: { DEFAULT: '#dc2626', foreground: 'white' },
    sawatsya: {
      earth: "#8B6E4F",
      leaf: "#7F9968",
      terracotta: "#C06C44",
      cream: "#F5F0E6",
      sand: "#DBC8AA",
      wood: "#5C4F3D",
      amber: "#D9A566"
    }
  },
  borderRadius: {
    1: "140px"
  }
}

```

Fig 1.3

```

export default {
  animation: {
    "fade-in": "fadeIn 0.5s ease-out forwards",
    "slide-in": "slideIn 0.6s ease-out forwards"
  },
  fontFamily: {
    sans: ['Inter', 'sans-serif'],
    serif: ['Playfair Display', 'serif']
  }
},
},
plugins: [require("tailwindcss-animate")],
} satisfies Config;

/* App.css
#root {
  max-width: 1280px;
  margin: 0 auto;
  padding: 2rem;
  text-align: center;
}

.logo {
  height: 6em;
  padding: 1.5em;
  will-change: filter;
  transition: filter 300ms;
}
.logo:hover {
  filter: drop-shadow(0 0 2em #646cffaa);
}

```

Fig 1.4

OUTPUT:

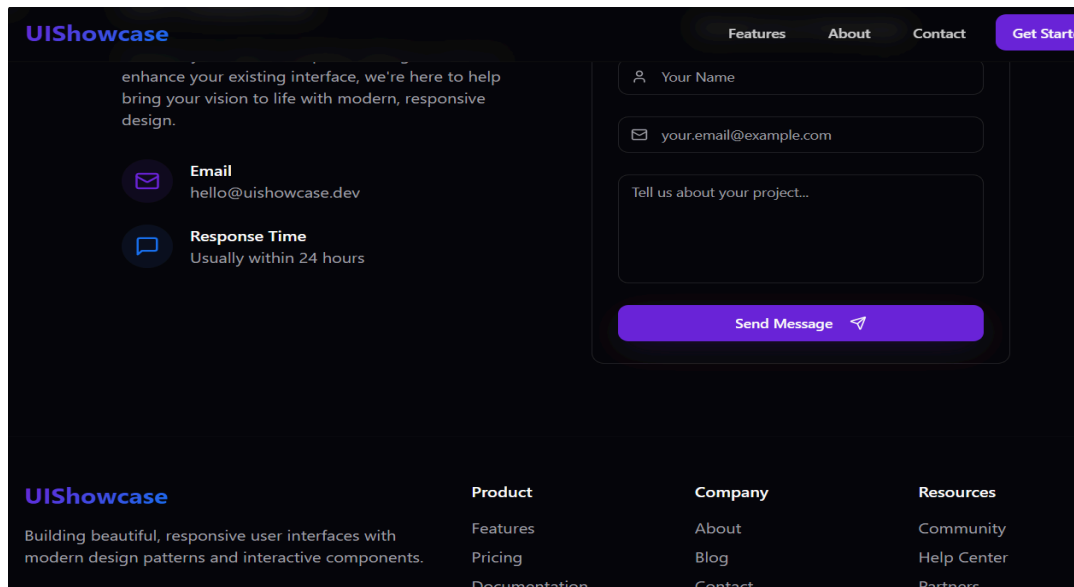


Fig 2.1

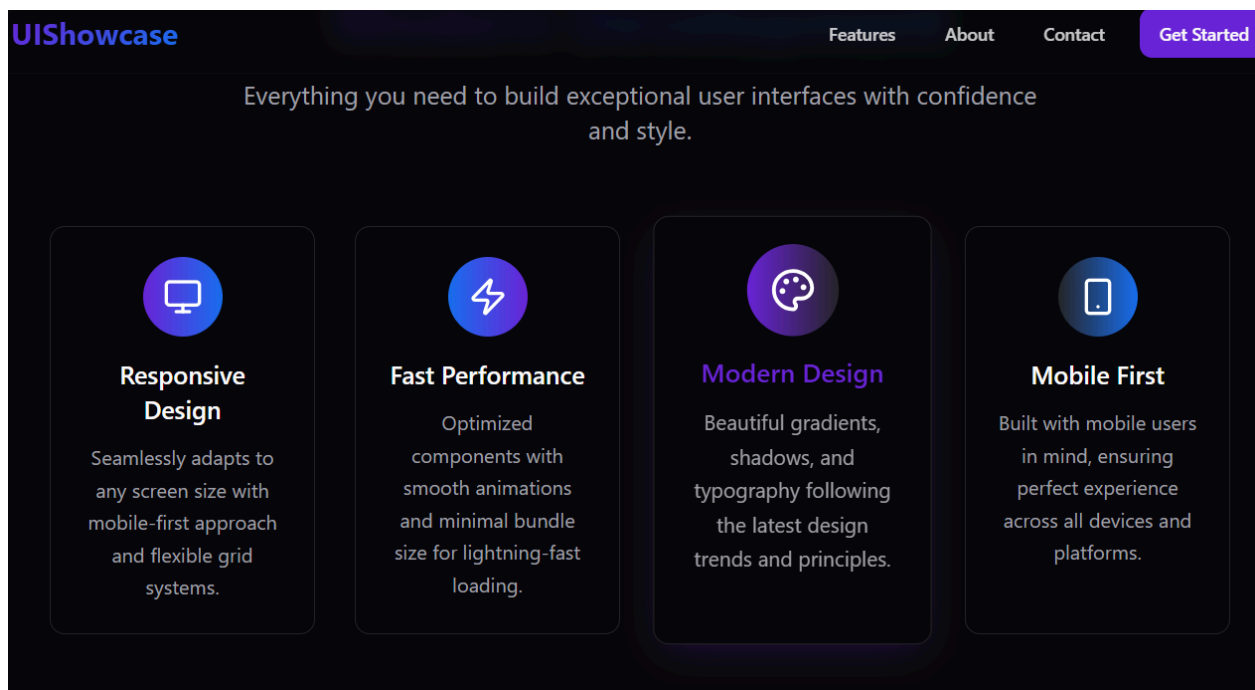


Fig 2.2

Conclusion:

Building responsive and interactive UIs with Tailwind CSS makes frontend development faster, cleaner, and more maintainable. Instead of writing long custom CSS, developers can directly apply utility-first classes that handle spacing, colors, typography, flex/grid layouts, and responsiveness through breakpoints.