<u>Architecture and User Interface Design</u>

By:

Vraj Patel - 249545250
Sandeep Kaur - 239685880
Asmi Patel - 239543330
Yash Desai - 239541990

October 11nd, 2024

COSC/ITEC 3506 001X
Amandeep S. Patti

Table of Contents

Index Page

1. Introduction

1.1 Purpose

The purpose of this UI documentation is to define the visual, interaction, and functional aspects of the user interface for the School Management System. This ensures a consistent, user-friendly, and accessible experience across all platforms (desktop, tablet, mobile).

1.2 Scope

This document covers the UI components, page layouts, interaction patterns, accessibility standards, and responsive behavior across different devices.

1.3 Audience

This document is intended for developers, UX/UI designers, testers, product managers, and stakeholders involved in the development of the School Management System.

1.4 Glossary of Terms

- **Breadcrumb**: A navigation aid showing the user's location in a hierarchy of pages.
- **WCAG**: Web Content Accessibility Guidelines, which outline accessibility standards for web content.

2. UI Design Principles and Standards

2.1 UI Design Guidelines

The UI will follow core design principles such as **Usability**, **Consistency**, **Clarity**, **Accessibility**, **Simplicity**, and **Responsiveness**.

2.2 Design Standards

- **Google Material Design** will serve as the foundation for the design structure.
- **WCAG 2.1 Level AA** standards will be followed for accessibility compliance.

2.3 UI Patterns and Best Practices

The system will use consistent UI patterns such as:

- **Card-based layout** for displaying information.
- **Responsive navigation bars** with a primary menu on desktop and a collapsible hamburger menu on mobile.

3. UI Layout and Design Specifications

3.1 Wireframes and Mockups

Wireframes and high-fidelity mockups of key pages such as the landing page and dashboard have been created to visualize the layout and design of the School Management System. The wireframes provide a low-fidelity representation of the UI components and their arrangement, while the high-fidelity mockups include detailed design elements, colors, fonts, and interaction states. These mockups serve as a reference for developers and designers during the implementation phase.

3.2 Page Layout Structure

- **Homepage Layout**: The layout will include a header with the logo, a search bar, and a three-column content grid.
- **Dashboard Layout**: This will feature a top navigation bar in **Dark Blue (#003366)** and light background elements in **Light Sky Blue (#87CEEB)**.

3.3 Visual Design Specifications

- **Fonts**:
  - **Arial** for body text to ensure readability.
  - **Times New Roman** for headings, providing a classic and professional look.
- **Color Palette**:
  - **Primary Color (Dark Blue)**: #003366
  - **Secondary Color (Light Sky Blue)**: #87CEEB
- **Icons and Imagery**: Icons will be sourced from the **FontAwesome** library in a minimalist flat style.

3.4 UI Components

Each UI component will have specific states:

- **Buttons**:
  - Normal: Rounded rectangle, **Dark Blue (#003366)** background.
  - Hover: Slightly darker shade.
- **Input Fields**: Standard text fields with a **Light Sky Blue** border for focus.

3.5 Interaction Design

- **Hover States**: Buttons and icons will show color changes on hover.
- **Loading Indicators**: A spinner will display during data fetch operations.

4. Navigation and Information Architecture

4.1 Navigation Structure

The navigation structure will consist of a top-level bar with links to the **Home**, **Students**, **Teachers**, and **Courses** pages. A collapsible menu will be used for mobile.

4.2 Menus and Navigation Elements

- Desktop: Standard horizontal menu with drop-down submenus.
- Mobile: Hamburger menu with swipe gestures for easier access.

4.3 Breadcrumbs and Links

Breadcrumb navigation will help users track their location within the system, appearing at the top of category and detail pages.

4.4 Search and Filters

The search bar will feature autocomplete and filters to refine search results for student or course data.

4.5 User Flows

User flow diagrams will illustrate the processes from login to course registration, providing a clear overview of user interactions and system responses.

5. Responsive Design and Mobile Specifications

5.1 Responsive Design Principles

The system will adopt a **mobile-first design** approach, with responsive layouts for all screen sizes.

5.2 Breakpoints and Layout Adjustments

- **<576px**: Single-column layout, hamburger menu for navigation.
- **768px and above**: Two or three-column layout depending on the page.

5.3 Mobile-Specific UI Elements

Swipe actions will allow mobile users to navigate, and touch-friendly buttons will be larger for easy interaction.

6. Accessibility Guidelines

6.1 Accessibility Standards

The system will adhere to **WCAG 2.1 Level AA** standards for accessibility.

6.2 Keyboard Navigation

All interactive elements will be fully accessible via keyboard, with clear focus indicators.

6.3 Screen Reader Compatibility

Proper semantic HTML and ARIA labels will be used to support screen readers.

7. Error Handling and Feedback

7.1 Error Messages

Error messages will appear next to invalid fields, with a red outline indicating the error state.

7.2 Success Messages and Feedback

Success messages will be displayed in a green banner at the top of the screen, confirming actions such as form submissions.

7.3 Loading Indicators

A centered loading spinner will appear during data fetches, and disappear once content is loaded.

8. Prototyping and Usability Testing

8.1 Prototyping

Interactive prototypes will be developed using Figma to simulate user interactions, allowing for a hands-on exploration of the user interface design.

8.2 Usability Testing

Usability tests will be conducted with a group of target users, and feedback will inform design improvements.

9. Version Control and Change Management

9.1 Version Control

The UI documentation will be version-controlled using **Git**, with branches used for major updates and changes approved by the lead designer.

9.2 Handling Design Changes

All design changes will follow a formal request process, reviewed by the product owner and lead designer before implementation.

10. Appendices

10.1 Design Assets

- **Fonts**:
    - **Arial**: Link to Arial
    - **Times New Roman**: Link to Times New Roman

- **Color Palette**:
    - **Primary Color (Dark Blue)**: #003366
    - **Secondary Color (Light Sky Blue)**: #87CEEB
- **Icons**: **FontAwesome** icons will be used: [FontAwesome](#)
- **Logos and Style Guide**: Link to Assets

10.2 References

- **Material Design Guidelines**: Material Design
- **WCAG 2.1**: [WCAG Guidelines](#)