

PERSONAL PORTFOLIO WEBSITE

ASSIGNMENT 4 - SWE363

ARWA ALDAWoud

PROJECT OVERVIEW

OBJECTIVE

Create a modern, interactive portfolio website showcasing my skills, projects, and achievements as a Computer Science student at KFUPM.

MOTIVATION

- Demonstrate practical web development skills
- Apply course concepts to a real-world project
- Build a professional online presence for career opportunities

TECHNOLOGIES

HTML5
CSS3
JavaScript
GitHub API
LocalStorage API

INTERACTIVE FEATURES



THEME TOGGLE: LIGHT AND DARK MODE
WITH LOCALSTORAGE PERSISTENCE



VISITOR PERSONALIZATION: SAVE VISITOR
NAME FOR CUSTOMIZED GREETING



SESSION TIMER: REAL-TIME TRACKING OF
VISIT DURATION



PROJECTS TOGGLE: SHOW/HIDE
SECTIONS WITH SAVED PREFERENCES



GITHUB INTEGRATION: LIVE API INTEGRATION
DISPLAYING REAL-TIME REPOSITORY DATA



SMART CONTACT: FORM MULTI-STEP VALIDATION
WITH AI-POWERED MESSAGE ASSISTANT



STATE MANAGEMENT PERSISTENT DATA
USING LOCALSTORAGE AND SESSIONSTORAGE

DESIGN & INTERACTION

RESPONSIVE DESIGN

- Fully optimized for desktop, tablet, and mobile devices
- Fluid layouts using CSS Grid and Flexbox

SMOOTH ANIMATIONS

- Scroll-triggered section reveals
- 3D flip cards for projects and experiences
- Interactive carousel for skills showcase
- Hover effects and micro-interactions

VISUAL ELEMENTS

- Animated parallax star background
- Gradient blob backgrounds
- Custom theme toggle animation
- Professional contact card interactions

ACCESSIBILITY

- Semantic HTML
- keyboard navigation
- proper ARIA labels

SYSTEM ARCHITECTURE

FRONTEND STRUCTURE

- └ Semantic HTML5 markup
- └ CSS3 with custom properties
- └ Modular JavaScript architecture
- └ Performance-optimized assets

STATE MANAGEMENT

- └ localStorage: Theme, name, preferences, form data
- └ sessionStorage: Visit duration tracking
- └ Error handling for storage operations

API INTEGRATION

- └ Asynchronous GitHub API calls
- └ Error handling with fallbacks
- └ Retry logic for failed requests
- └ Loading states for better UX

PERFORMANCE OPTIMIZATIONS

Intersection Observer • Debouncing • Lazy Loading • GPU Acceleration

JAVASCRIPT FEATURES

ASYNCHRONOUS OPERATIONS

- Fetch API for GitHub data retrieval
- Async/await pattern implementation
- Promise-based error handling
- Loading state management

FORM VALIDATION SYSTEM

- Multi-step validation logic
- Real-time feedback with visual indicators
- Email format verification using regex
- Character count enforcement
- Auto-save with debouncing

EVENT HANDLING

- Smooth scroll navigation
- Active section highlighting
- Theme toggle persistence
- Form submission with validation

DATA PERSISTENCE

- Visitor preferences saved across sessions
- Form draft auto-save every 500ms
- Submission history (last 10 entries)
- Session timer using timestamps

AI-POWERED DEVELOPMENT

TOOLS USED

ChatGPT & Claude AI → Code suggestions and debugging support
GitHub Copilot → Inline code assistance

IN-APP AI FEATURES

Message template generator (4 types)
Text improvement for professional communication

BENEFITS

- ✓ Faster problem-solving
- ✓ Learned best practices through examples
- ✓ Improved code quality

CHALLENGES & SOLUTIONS

CHALLENGE: Saving User Data Between Visits

SOLUTION: Used localStorage to remember user preferences like theme and name, with error handling for safety

CHALLENGE: Form Validation Slowing Down Performance

SOLUTION: Added a small delay before checking inputs to avoid constant validation

CHALLENGE: Animations Causing Lag on Page

SOLUTION: Used efficient animation techniques that only run when elements are visible on screen

KEY LEARNINGS

TECHNICAL SKILLS

- ✓ JavaScript for interactive features
- ✓ API integration with GitHub
- ✓ Form validation and error handling
- ✓ LocalStorage for saving user data

DESIGN SKILLS

- ✓ Responsive design for all devices
- ✓ Smooth animations and transitions
- ✓ User-friendly interface design

PROFESSIONAL SKILLS

- ✓ Problem-solving and debugging
- ✓ Code organization and documentation
- ✓ Using AI tools effectively

ROADMAP & IMPROVEMENTS

- Interactive resume with PDF download
- Skills and certifications display
- Education and work experience timeline
- Technical blog for sharing knowledge
- Video demos of key projects
- Email notifications for contact form
- Enhanced contact form with categories
- Visitor analytics tracking

THANK YOU

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