**KFUPM ICS/SWE 399 - Progress Report #1 (Weeks 1-3)**

**Al Fozan Real Estate Insights Platform**

**Student Information**

**Name**: [Your Name]  
**ID**: [Your Student ID]  
**Major**: Information and Computer Science  
**Email**: [Your Email]

**Company, Department and Team Information**

**Company Name**: Al Fozan Holding  
**Department / Division Name**: Digital Transformation & Business Intelligence  
**Your Team Size**: 1 (Individual Project)

**Team Role Description** (50 words max):

Creation of a business intelligence platform in the real estate business. Data-driven insights dashboard to help in putting things right in project management, analysis of competitors, and performance monitoring. Facilitating increased revenue by utilizing automated reports and strategic decision monitoring systems.

**Project Information**

**Brief Summary of Project Scope and Objectives** (70 words max):

Design or develop the program of deep real estate insights tools and a dashboard to manage projects, analyze competitors, and business intelligence. Digital transform the real estate business operations at Al Fozan with full-stack React/Next.js frontend, Flask back end, identity provider and management, CRUD and automated reports generation and other integers operations.

**Your Responsibilities and Tasks** (50 words max):

Full-stack development including UI/UX design, frontend React components, backend API development, database design, authentication implementation, data visualization, report generation, testing, deployment, and documentation creation.

**Training Plan for Weeks 1-3**

| **Week #** | **Tasks** | **Outcomes** |
| --- | --- | --- |
| **1** | Environment setup, requirements gathering, technology stack selection, project architecture design | Set development environment, dwelt and documented project needs, and settled on the technology stack (Next.js, Flask, Tailwind CSS) |
| **2** | Frontend development - Dashboard UI, Navigation system, Responsive design, Building of component library | Responsive dashboard interface completed, navigation system implemented, mobile-optimized layouts created |
| **3** | Backend API development - Flask server setup, database design, CRUD endpoints, authentication system | REST API with 15+ endpoints, authentication system, CRUD operations for projects and competitors |

**Tasks Completed**

**Task 1: Development Environment Setup & Project Architecture**

**Brief Description** (50 words max):

Configured complete development environment with Node.js, Python, Git version control. Designed system architecture for full-stack application with modern technology stack selection and project structure planning.

**Accomplishments**:

* Development environment fully configured
* Properly structured project repository has been created
* Technology stack approved and put into writing
* System architecture designed
* Development workflow established

**Technical Skills Applied/Learned**:

* **Frontend**: Next.js 14, React 18, TypeScript, Tailwind CSS, shadcn/ui
* **Backend**: Python Flask, REST API design, JWT authentication
* **Tools**: Git version control, VS Code, npm/pip package management
* **Deployment**: Vercel (frontend), Render (backend)
* **Design**: Responsive web design, UI/UX principles

**Challenges Faced and Solutions**:

* **Challenge**: The choice of the best technology stack to apply in the field of real estate
* **Solution**: Examined new and modern scalable technologies and sector best practices, selected modern technologies and best practices
* **Challenge**: Designing scalable architecture for future growth
* **Solution**: Implemented modular design with clear separation of concerns

**Task 2: Responsive Dashboard Frontend Development**

**Brief Description** (50 words max):

Designed with high fidelity dashboard interface with latest react components, fully responsive to all devices, interactive top navigation system and professionally branded UI with Tailwind CSS and shadcn/ui react component library.

**Accomplishments**:

* Dashboard which is responsive and is divided into 8 key sections
* Mobile-first design approach implemented
* Tab-based system of interactive navigation
* Professional UI with homogenous design system
* Component library integration completed

**Technical Skills Applied/Learned**:

* **React Concepts**: Hooks (useState, useEffect, useContext), Component composition
* **Styling**: Tailwind CSS utility classes, Responsive design breakpoints
* **UI Components**: shadcn/ui integration, Custom component development
* **State Management**: React Context API, Local state management
* **TypeScript**: Type definitions, Interface design, Generic types

**Challenges Faced and Solutions**:

* **Challenge**: Ensuring consistent design across all screen sizes
* **Solution**: Implemented mobile-first approach with Tailwind responsive utilities
* **Challenge**: Managing complex state across multiple components
* **Solution**: Used React Context API for global state management

**Task 3: Backend API Development & Authentication**

**Brief Description** (50 words max):

Coded full Flask REST API with authentication policies, crud APIs on projects and competitors, data processing routes as well as secure JWT tokens as the backend controllers of authentication sessions.

**Accomplishments**:

* Flask server with 15+ API endpoints
* JWT-based authentication system
* Role-based access control (Admin, Manager, Analyst)
* Full CRUD operations implemented
* Data validation and error handling
* CORS configuration for frontend integration

**Technical Skills Applied/Learned**:

* **Backend Development**: Flask framework, REST API design principles
* **Authentication**: JWT tokens, Session management, Password hashing
* **Database**: Data modeling, CRUD operations, Query optimization
* **Security**: Input validation, CORS configuration, Error handling
* **API Design**: RESTful conventions, Status codes, Response formatting

**Challenges Faced and Solutions**:

* **Challenge**: Implementing secure authentication with role-based access
* **Solution**: Used JWT tokens with role validation middleware
* **Challenge**: Handling CORS issues between frontend and backend
* **Solution**: Configured Flask-CORS with proper origin settings