REC Pulse

Problem Statement and Motivation

- **Problem Statement:**

  A significant communication gap often exists between educational institutions and parents regarding a student's day-to-day academic status.

  Traditional communication methods like email reports or term-end report cards are slow, resulting in delayed awareness of critical issues like poor attendance or falling grades.

- **Motivation:**

  To bridge this communication gap by providing parents with **immediate and actionable information**.

  We are motivated to build a solution that empowers parents to be more proactive in their child's education.

  This project will also demonstrate our ability to build a modern, scalable, and impactful cloud application using low-code tools on the Microsoft Azure platform.

Abstract

REC Pulse is a cloud-native Student-Parent Communication App developed on the Microsoft Azure and Power Platform. The solution provides parents and students with real-time access to academic data, including grades and attendance, via a user-friendly mobile application built with Power Apps. Its core feature is an event-driven notification system, powered by Azure Notification Hubs and Power Automate, which pushes instant alerts to parents for critical events like absences or new grade publications. An accompanying model-driven Power App serves as an administrative portal for staff to manage student data efficiently. The project aims to demonstrate a practical, scalable, and low-code approach to building impactful communication solutions on the Azure cloud.

Objective

- To design and develop a mobile app for parents and students using Power Apps to view academic data.
- To implement a secure and easy-to-manage backend using SharePoint Online Lists.

- To build a functional administrative portal using a model-driven Power App for data management.
- To configure **Azure Notification Hubs** to enable reliable push notification capabilities.
- To automate the notification logic using **Power Automate** flows that trigger based on real-time data changes.
- To deliver a fully functional prototype demonstrating the end-to-end communication flow.

Azure Services Required

1. **Azure Notification Hubs:**
    - **Purpose:** The core notification engine. It will be used to send instant, cross-platform push notifications to the parent and student mobile apps in a scalable manner.
2. **Azure Active Directory (AAD):**
    - **Purpose:** To provide secure identity and access management. AAD will ensure that only authenticated students, parents, and administrators can access the applications and their respective data.
3. **Azure for Students Subscription:**
    - **Purpose:** The foundational subscription that provides us with free-tier access to the necessary Azure services to build and host this project.

Tools Required

1. **Microsoft Power Apps:**

    Purpose: The primary low-code development tool. We will use **Apps** for the parent/student mobile experience and a **Model-Driven App** for the administrative portal.

2. **Microsoft Power Automate:**

    Purpose: The workflow and automation engine. It will act as the "glue" connecting our database (SharePoint) to our notification service (Azure Notification Hubs).

3. **SharePoint Online:**

    Purpose: To serve as our simple, no-code database. It will host the lists for student, parent, grade, and attendance data, integrating seamlessly with Power Apps and Power Automate.