**EduTech Student Performance Dashboard & Report Generator**

**Project Overview**

EduTech Student Performance Dashboard & Report Generator is a comprehensive solution developed to address the common challenges faced by educators in Nigeria and across Africa. The application automates the analysis of student performance data and simplifies the generation of official report cards. Key features include:

* **Automated Calculations:** Computes subject totals, overall totals, averages, ranks, and letter grades from raw student data.
* **AI-Powered Feedback:** Utilizes the Groq API to generate personalized summaries and teacher remarks for each student's term record.
* **Interactive Dashboard:** Provides visual insights such as overall grade distribution, top-performing students, and students who need additional support.
* **Report Generation:** Automatically creates individual PDF report cards for each student.
* **Local File Management:** Supports file uploads and saves data in teacher-specific folders for easy retrieval and tracking.

**Problem Statement**

Educators in many Nigerian and African schools face significant challenges when processing student performance data manually. Tasks such as calculating scores, determining ranks, and generating official report cards are labour-intensive and prone to human error. Moreover, providing actionable insights for student improvement without advanced analytics is difficult. This project aims to:

* Automate data processing and report card generation.
* Provide AI-powered insights and personalized feedback for students.
* Offer an interactive dashboard for real-time data visualization.
* Help teachers save time and improve communication with parents and administrators.

**Market Value & Startup Opportunity**

**Market Value**

* **EdTech Growth:** With the global EdTech market projected to reach billions of dollars by the mid-20s and increasing smartphone and internet penetration in Africa, the demand for digital learning and administrative tools is rising.
* **Efficiency & Cost Savings:** Automation of report generation significantly reduces administrative overhead, allowing schools to redirect resources toward quality education.

**Startup Opportunity**

* **Target Audience:** Schools, private academies, and tutoring centers across Nigeria and Africa.
* **Revenue Streams:**
  + **Subscription Model:** Offer the solution as a SaaS platform with tiered pricing based on the number of students or features.
  + **Freemium Model:** Provide essential functionalities for free with premium features (advanced analytics, automated emails, etc.) available as add-ons.
  + **Licensing:** Partner with educational authorities to integrate the solution into existing school management systems.
* **Scalability:** Initially designed for local use with potential to scale via cloud hosting for multi-user access and integration with mobile applications.

**How It Helps Others**

**For Teachers**

* **Time Efficiency:** Automates calculations, report generation, and provides AI-generated performance summaries.
* **Accuracy:** Minimizes human errors in data processing.
* **Insights:** Interactive charts help identify top performers and students needing extra attention.

**For Students**

* **Personalized Feedback:** Receives tailored, constructive remarks that guide improvement.
* **Self-Assessment:** Visual feedback clearly shows areas of strength and weakness.

**For Schools & Parents**

* **Streamlined Communication:** Generates professional, easy-to-read report cards.
* **Data-Driven Decisions:** Offers actionable insights to support academic interventions.
* **Trust Building:** Enhances transparency in monitoring and improving student performance.

**Alignment with SDG Goal 4: Quality Education**

This project supports Sustainable Development Goal 4 by:

* **Enhancing Educational Outcomes:** Automating administrative tasks frees up teachers to focus on delivering quality education.
* **Promoting Inclusivity and Equity:** Provides advanced analytics to under-resourced schools, ensuring every institution can benefit from modern data tools.
* **Encouraging Lifelong Learning:** Detailed feedback and performance trends foster a culture of continuous improvement among students and educators.

**Features**

* **File Upload & Storage:** Teachers upload Excel files containing student performance data. Files are stored locally in teacher-specific folders.
* **Automated Data Processing:** Calculates subject totals, overall totals, averages, ranks, and letter grades.
* **AI Summaries & Remarks:** Integrates with the Groq API to generate concise, personalized student performance summaries.
* **Dashboard Visualizations:** Interactive charts display overall grade distribution, top-performing students, and students needing help.
* **PDF Report Generation:** Generates professional PDF report cards for each student.
* **Customization:** Teachers can personalize report cards with custom header/footer text, logos, and theme colours.
* **Teacher Folder Management:** Automatically creates a folder for each teacher based on the teacher’s name.

**Tech Stack**

* **Programming Language:** Python 3.13.1
* **GUI Framework:** Tkinter
* **Data Processing:** Pandas
* **PDF Generation:** FPDF
* **Charting & Visualization:** Matplotlib
* **AI Integration:** Groq API
* **Others:** OS, subprocess, platform (for folder management and system operations)

**Usage**

1. **Clone the Repository:**
2. git clone https://github.com/yourusername/edutech-report-generator.git
3. cd edutech-report-generator
4. Create the Virtual Environment: python -m venv venv
5. Activate the Virtual Environment: venv\Scripts\activate
6. **Install Dependencies:**
7. pip install -r requirements.txt
8. **Set Environment Variables:** Set your GROQ\_API\_KEY in your system:
   * **Windows:**
   * set GROQ\_API\_KEY=your\_api\_key\_here
   * **macOS/Linux:**
   * export GROQ\_API\_KEY=your\_api\_key\_here
9. **Run the Application:**
10. python app.py
11. **Using the Application:**
    * Enter your teacher name.
    * Use the **Settings** button to customize header/footer text, choose a logo, and set a theme color.
    * Click **Select Excel File** to upload student performance data(use sample data).
    * Optionally filter the data by entering student IDs.
    * Generate reports and view interactive charts.
    * Use the **Open Teacher Folder** button to quickly access the folder with your generated report cards.

**Future Enhancements**

* **Advanced Analytics:** Integrate more detailed performance trends and predictive analytics.
* **Cloud Integration:** Develop a web-based version to allow multi-user access and remote data storage.
* **Mobile Application:** Extend the solution to mobile platforms for on-the-go access.
* **Automated Notifications:** Implement automated email notifications to parents with report cards attached.
* **Enhanced Customization:** Add more personalization options for report layout and branding.

**Team Information**

* **Team Name:** Giftivus
* **Team Members:**
  + **[Gift Ahmed]:** Project Lead,Data Processing & API Integration Specialist

**Live Demo**

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**Conclusion**

EduTech Student Performance Dashboard & Report Generator automates the administrative tasks associated with student performance tracking while providing valuable, actionable insights through AI and data visualization. This project not only improves efficiency but also supports quality education by ensuring that every student receives the feedback and attention they need to excel.