📱 SMS Quiz with Point Rewards (Africa's Talking Hackathon)

🎯 Project Overview

An SMS-based quiz platform where students register by sending JOIN, select their **grade** and **subjects**, then receive quiz questions via SMS. They answer by replying with A/B/C. The system responds with whether they are correct, their updated points, and can optionally reward top performers with **airtime**.

This project leverages **Africa's Talking SMS API** (core) and **Airtime API** (optional) to deliver low-cost, inclusive learning in areas with limited internet access.

✅ Problem Statement

Many students in rural or underserved areas in Africa lack consistent internet access, but most have access to basic mobile phones. Current EdTech solutions focus on smartphones and internet connectivity, excluding a large population. This solution uses SMS (ubiquitous, offline-friendly) to deliver personalized quizzes and gamified learning.

🛠 Key Features

1. **Registration via SMS** → Students send JOIN to start.
2. **Grade & Subject Selection** → Students choose their education level and 3 preferred subjects.
3. **Personalized Quiz Delivery** → System sends one multiple-choice question at a time.
4. **Instant Feedback** → Reply confirms if correct/wrong and updates points.
5. **Point System & Leaderboard** → Students accumulate points per correct answer.
6. **Optional Airtime Rewards** → Top scorers get airtime rewards.

👩‍💻 Roles & Responsibilities

Person A: Backend & API Integration

- Integrate **Africa's Talking SMS API** (receive + send SMS).
- Set up database (MongoDB/Firebase/SQLite).
- Build business logic:
    - Register new users.
    - Save grade & subject preferences.
    - Fetch & send quiz questions.
    - Validate answers & update scores.

Person B: Content & Gamification

- Build **question bank** (JSON or DB collection).
- Define scoring rules (+10 points for correct answers).
- Implement **feedback messages** (correct/incorrect).
- Design **rewards logic** using Airtime API.
- Draft student experience flow (JOIN → subjects → quiz → points).

🗄️ Database Design

Users Collection

- phoneNumber
- grade
- subjects (list)
- points
- lastAnswered

Questions Collection

- subject
- grade
- question
- options (A, B, C)
- answer

Scores Collection (optional)

- phoneNumber
- totalPoints

🚀 Example SMS Flow

Student:

JOIN

System:

Welcome! Reply with your grade (e.g., Grade 8)

Student:

Grade 8

System:

Choose 3 subjects: MATH, ENG, SCI

Student:

MATH ENG SCI

System:

Great! Here's your first question [Math]:

What is 12 ÷ 3?

A) 2 B) 3 C) 4

Reply with A, B, or C

Student:

C

System:

✅ Correct! You earn 10 points. Total: 10.

Reply NEXT for another question.

🛠 Tech Stack

- **Backend:** Node.js (Express) or Python (Flask/FastAPI)
- **Database:** MongoDB Atlas / Firebase / SQLite
- **APIs:** Africa's Talking SMS API (core), Airtime API (optional)
- **Hosting:** Heroku / Render / local server (for hackathon demo)

🌍 Impact

- Works on **any phone** (no internet needed).
- Supports **localization** (add questions in Kiswahili, local languages).
- Scalable across **schools, counties, and regions**.
- Encourages learning via **gamification**.
- Bridges **digital divide** for rural students.

🧮 Hackathon Deliverables

- Working demo with live SMS interaction.
- At least 10 sample questions (Math, English, Science).

- Leaderboard (optional for demo).
- Airtime reward simulation.
- Clear presentation of how it solves Africa’s education challenges.