Project Idea Definition

Goal: Design and implement a relational database system to monitor and improve water quality and student health outcomes in schools, aligned with the Sustainable development goal (SDG)

Specific Objective:

- To create a database that tracks water point installations, maintenance activities, and student health outcomes in schools.
- To provide actionable insights for improving water quality and student health.

Key Functionalities and Features:

1. **Data Management:**
   - Store and manage information about schools, water points, maintenance activities, and student health outcomes.
2. **Tracking and Monitoring:**
   - Track the installation and maintenance of water points.
   - Monitor water quality and functionality status.
   - Record student health metrics.
3. **Reporting and Analysis:**
   - Generate reports on water quality, maintenance schedules, and health outcomes.
   - Analyze data to identify trends and areas for improvement.

Main Stakeholders:

- **School Administrators:** To monitor water quality and student health.
- **Health Officials:** To analyze health data and plan interventions.
- **Maintenance Teams:** To track and schedule maintenance activities.
- **Policy Makers:** To make informed decisions based on data insights.

Entities and Attributes
1. **Schools Table:**
   - **SchoolID:** Primary Key
   - **SchoolName**
   - **Location**
   - **ContactInfo**
2. **WaterPoints Table:**
   - **WaterPointID:** Primary Key
   - **SchoolID:** Foreign Key
   - **InstallationDate**
   - **WaterQuality**

- o **FunctioningStatus**
3. **Maintenance Table:**
   - o **MaintenanceID:** Primary Key
   - o **WaterPointID:** Foreign Key
   - o **MaintenanceDate**
   - o **Details**
   - o **NextMaintenanceDate**
4. **StudentHealthOutcomes Table:**
   - o **HealthRecordID:** Primary Key
   - o **SchoolID:** Foreign Key
   - o **Date**
   - o **HealthMetrics:** (e.g., number of sick days, reported illnesses)

Relationships Between Entities

- **Schools** to **WaterPoints:** One-to-Many (One school can have multiple water points)
- **WaterPoints** to **Maintenance:** One-to-Many (One water point can have multiple maintenance records)
- **Schools** to **StudentHealthOutcomes:** One-to-Many (One school can have multiple health records)

Cardinality and Participation Constraints

- **Schools** to **WaterPoints:** Each school must have at least one water point (mandatory participation).
- **WaterPoints** to **Maintenance:** Each water point must have at least one maintenance record (mandatory participation).
- **Schools** to **StudentHealthOutcomes:** Each school must have at least one health record (mandatory participation).