**Part 1: SDG Selection and Problem Definition**

* **SDG Selection**: I'll choose **SDG 3: Good Health and Well-Being**, which focuses on ensuring healthy lives and promoting well-being for all at all ages.
* **Problem Definition**: A specific problem within SDG 3 could be the **access to healthcare services** in rural areas. I’ll focus on tracking the number of healthcare facilities and the availability of medical resources (like doctors, nurses, and equipment) in remote locations.

**Part 2: Database Design**

1. **ERD (Entity-Relationship Diagram)**:
   * Entities might include **HealthcareFacility**, **Location**, **MedicalResource**, and **Doctor**.
   * Relationships will define how healthcare facilities are located, what medical resources they have, and which doctors are working there.
2. **Schema Design** (SQL statements):
   * I would create tables based on the ERD. For example:
   * CREATE TABLE HealthcareFacility (
   * facility\_id INT PRIMARY KEY,
   * name VARCHAR(100),
   * location\_id INT,
   * FOREIGN KEY (location\_id) REFERENCES Location(location\_id)
   * );
   * CREATE TABLE Location (
   * location\_id INT PRIMARY KEY,
   * city VARCHAR(50),
   * state VARCHAR(50),
   * country VARCHAR(50)
   * );
   * CREATE TABLE MedicalResource (
   * resource\_id INT PRIMARY KEY,
   * facility\_id INT,
   * resource\_name VARCHAR(100),
   * availability\_status BOOLEAN,
   * FOREIGN KEY (facility\_id) REFERENCES HealthcareFacility(facility\_id)
   * );
   * CREATE TABLE Doctor (
   * doctor\_id INT PRIMARY KEY,
   * name VARCHAR(100),
   * specialty VARCHAR(50),
   * facility\_id INT,
   * FOREIGN KEY (facility\_id) REFERENCES HealthcareFacility(facility\_id)
   * );
3. **Sample Data**: I will populate the tables with example data like:
   * **HealthcareFacility**: Hospital A, Hospital B, etc.
   * **Location**: City, State, Country.
   * **MedicalResource**: Equipment and supplies available (e.g., ventilators, beds).
   * **Doctor**: Doctors assigned to each hospital.

**Part 3: SQL Programming**

1. **Data Retrieval**: I would write queries to retrieve data, such as:
2. SELECT name, city, state FROM HealthcareFacility
3. JOIN Location ON HealthcareFacility.location\_id = Location.location\_id;
4. **Data Analysis**: To find hospitals with the most medical resources or most doctors:
5. SELECT HealthcareFacility.name, COUNT(Doctor.doctor\_id) AS total\_doctors
6. FROM HealthcareFacility
7. JOIN Doctor ON HealthcareFacility.facility\_id = Doctor.facility\_id
8. GROUP BY HealthcareFacility.name;

**Part 4: Data Analysis Using Excel**

1. **Import Data**: I’ll import the data from the SQL database into Excel using the "Data" tab in Excel and "From SQL Server" or "From Database" options.
2. **Analysis**:
   * Create a **pivot table** to summarize doctor counts by hospital.
   * Use **charts** like bar charts to visualize hospital resource availability.
3. **Dashboard**: Create an Excel dashboard to show key insights, including a summary of healthcare availability by region and a comparison of resource distribution.

**Part 5: Integration and Testing**

* **Integration**: I’ll ensure the SQL data imports correctly into Excel and is updated when new data is added.
* **Testing**: Verify that all formulas and charts on the dashboard are functioning as intended.

**Part 6: Presentation**

* I will create a **10-slide PowerPoint presentation** covering:
  + Project overview and SDG alignment.
  + Problem definition (Access to healthcare in rural areas).
  + Database design (ERD and schema).
  + Data analysis insights.
  + Excel dashboard demonstration.

**Deliverables**

* **SDG Problem Definition Document**: Outline the problem of healthcare access in rural areas.
* **ERD**: A diagram showing entities and relationships.
* **SQL Scripts**: Scripts to create tables, populate data, and analyze the data.
* **Excel Workbook**: Includes the analysis and dashboard.
* **Integration Documentation**: Steps to integrate SQL data with Excel.
* **Pitch Deck Presentation**: PowerPoint slides with key points and a demo.

This project would help me demonstrate how data and technology can help address a real-world SDG problem!