**Integration Documentation: SDG 4 Data-Driven Solution**

**1. Overview**

This document outlines the integration process between MySQL and Microsoft Excel for analyzing student financial aid and retention data. The goal is to ensure a seamless data pipeline for visualization and decision-making.

**2. System Components**

* **Database:** MySQL (Local Instance)
* **User Interface:** Microsoft Excel
* **Data Visualization:** Pivot Tables & Charts in Excel
* **Data Transfer Method:** ODBC Connector

**3. Database Setup**

**3.1 MySQL Configuration**

1. **Install MySQL** (Ensure MySQL Server is running locally).
2. **Create Database:**

CREATE DATABASE StudentAidDB;

1. **Use the Database:**

USE StudentAidDB;

1. **Create Required Tables:** (See SQL Schema Document for full scripts)

**3.2 Sample Data Import**

* Use SQL INSERT queries to populate tables with sample records.
* Verify data integrity by running SELECT \* FROM table\_name;.

**4. Data Extraction for Excel**

**4.1 Installing MySQL ODBC Connector**

1. Download and install **MySQL ODBC Driver** from the official MySQL website.
2. Open **ODBC Data Source Administrator** (Windows).
3. Add a **New DSN**:
   * Select MySQL ODBC Driver.
   * Enter **Database Name** (StudentAidDB), **Host** (localhost), **User**, and **Password**.
   * Test Connection.

**4.2 Importing Data into Excel**

1. Open **Microsoft Excel**.
2. Go to **Data** → **Get Data** → **From Other Sources** → **From ODBC**.
3. Select the configured MySQL DSN.
4. Choose the required tables and load them into Excel.

**5. Data Analysis & Visualization**

**5.1 Creating Pivot Tables**

1. Select imported data range.
2. Go to **Insert** → **Pivot Table**.
3. Choose desired rows, columns, and values (e.g., Total Aid by Student, Retention Trends).
4. Apply **filters and slicers** for interactivity.

**5.2 Creating Charts**

1. Select Pivot Table.
2. Go to **Insert** → **Choose Chart Type** (e.g., Bar, Pie, Line).
3. Customize labels, colors, and legends.

**6. Testing & Validation**

**6.1 Data Accuracy Checks**

* Compare MySQL query results with Excel data.
* Ensure **total sums & averages** match SQL calculations.

**6.2 Dashboard Functionality Tests**

* Test slicers, filters, and interactivity.
* Verify that charts update correctly with new selections.

**7. Deployment & Future Enhancements**

* Automate data refresh using **Excel Power Query**.
* Implement **real-time sync** via Python or ETL tools.
* Expand to a **cloud-based MySQL instance** for remote access.

**8. Conclusion**

This integration enables efficient data retrieval from MySQL to Excel, allowing for meaningful analysis of student financial aid, expenses, and retention. The process ensures data consistency, accuracy, and ease of use for decision-makers.

**🔗 Submission Checklist**

✅ MySQL Database Schema & Sample Data Scripts  
✅ Excel File with Pivot Tables & Charts  
✅ ERD Diagram  
✅ Canva Link for Presentation https://www.canva.com/design/DAGddfexWno/vBg1aHeTEMYd5hpaly0m2g/edit?utm\_content=DAGddfexWno&utm\_campaign=designshare&utm\_medium=link2&utm\_source=sharebutton  
✅ This Integration Documentation