**PRCE-001 Medical Data History**

The project aimed to analyze medical data history using a MySQL environment deployed via Docker. The primary goal was to understand patient medical histories and doctor involvement by executing specific problem queries on the "project\_medical\_data\_history" database. The project scope included creating a Docker environment, writing and executing SQL queries, and documenting the process and results.

**Key Steps:**

1. Environment Setup:

- Created a dedicated project directory on the desktop:

>>> mkdir medical\_data\_project

- Developed a custom Dockerfile for the MySQL environment connected to the given database, using command prompt:

>>> cd medical\_data\_project

>>> notepad medicaldata.dockerfile

- Successfully built and ran a Docker container with the required MySQL image, on Docker desktop Terminal:

>>> docker buildx build -f "C:\Users\Shivangi\OneDrive\Desktop\medical\_data\_project\medicaldata.dockerfile" -t mysql-workbench "C:\Users\Shivangi\OneDrive\Desktop\medical\_data\_project"

>>>docker run -it mysql-workbench

2. Query Execution:

- Performed multiple SQL queries on the medical data history database within the MySQL environment

- Utilized basic and advanced MySQL functions (such as COALESCE, CONCAT\_WS, and FLOOR division) for data analysis and grouping.

**Challenges Encountered and Solutions Implemented:**

1. Docker Desktop Compatibility:

Challenge: Docker Desktop wasn't functioning on Ubuntu due to graphics driver and virtualization issues in VirtualBox.

Solution: Switched to Windows environment and utilized Windows Subsystem for Linux (WSL) for Docker functionality.

2. Dockerfile Creation:

Challenge: Writing the Dockerfile script proved to be complex and error-prone.

Solution: Leveraged online resources and AI assistance (MetaAI) to correct syntax errors and create a functional Dockerfile.

3. Database Access Issues:

Challenge: Encountered access denied errors when attempting to make changes to the database in MySQL Workbench.

Solution: Employed alternative SQL functions like COALESCE and CONCAT\_WS to achieve desired results without altering the database structure.

**Outcomes and Learnings:**

1. Technical Skills Enhancement:

- Gained proficiency in advanced MySQL functions, improving data analysis capabilities

- Deepened understanding of virtualization concepts and the importance of WSL in cross-platform development

2. Problem-Solving and Adaptability:

- Successfully overcame environment setup challenges by switching platforms and leveraging appropriate tools

- Demonstrated ability to find workarounds for database access limitations using alternative SQL techniques

3. Areas for Further Improvement:

- Identified need for additional practice with SQL JOIN operations to enhance query writing skills

- Recognized importance of further study and practice in Dockerfile scripting for more efficient container deployments

**Conclusion:**

This project provided valuable hands-on experience in setting up a containerized database environment and performing complex data analysis tasks. The challenges encountered offered opportunities to enhance problem-solving skills and adapt to technical limitations. The successful implementation of Docker containerization and execution of SQL queries demonstrated practical application of data engineering principles. Moving forward, the identified areas for improvement will guide future learning and skill development in data engineering practices.