Unit 2 - Data Access Application

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IN450 – Advanced Software Development Using Python  
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## Purpose

The purpose of this assignment is to design and implement a simple data access application using a three-tier architecture in Python.  
The application demonstrates:

* Creation of PostgreSQL database tables and loading CSV data.
* Implementation of a business layer class to manage database communication.
* Development of a Tkinter-based GUI that interacts with the business layer.
* Version control and repository management through GitHub.

## Assignment Overview

This project applies a layered software design pattern to promote clean separation of concerns:

* Data Layer: PostgreSQL tables (in450a, in450b, in450c) store raw data.
* Business Layer: Python class handles queries and returns data to the GUI.
* Presentation Layer: Tkinter GUI displays query results to the user.

All coding, testing, and Git operations were completed in Visual Studio Code on macOS terminal.

## Screenshots and Evidence

### PostgreSQL Row Counts (Database Layer)

*Shows that the three database tables—*in450a*,* in450b*, and* in450c*—were created and populated successfully.*

A screen shot of a computer

AI-generated content may be incorrect.

### GUI Application Open (Presentation Layer)

*Demonstrates that the Tkinter GUI window launched correctly.  
  
A screenshot of a computer

AI-generated content may be incorrect.*

### Get Row Count Functionality

*Shows the output from the “Get Row Count (in450a)” button, confirming the GUI can retrieve live data through the business layer.*  
A screenshot of a computer

AI-generated content may be incorrect.

### Show Names Functionality

*Displays the list of first and last names retrieved from* in450b *through the business layer.*

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### GitHub Repository (SCM Proof)

*Verifies that all project files were committed and pushed to the source-code management repository.*<https://github.com/andrescamacho-purdue/IN450-Unit2-Data-Access>

A screenshot of a computer

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## Reflection

Completing this assignment reinforced the importance of separating the data, logic, and presentation tiers to improve maintainability and scalability. Using Tkinter and PostgreSQL together demonstrated how a simple Python GUI can communicate efficiently with a database through a dedicated business layer. The exercise also emphasized best practices in version control and reproducibility using Git and GitHub.