# Milestone Four – Enhancement Three: Databases

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## What is the artifact? When was it created?

The artifact is a bookstore inventory and order management API created in CS-340 during the Fall 2024 term. It uses Flask and SQLite to manage books, customers, and orders.

## Why did you select this item?

This project involved real-world database use and business logic. It provided a good foundation to demonstrate reporting enhancements by integrating actual report generation, business insight, and visualizations.

## What specific components showcase your skills and abilities in databases?

The enhancement added multiple admin-facing reports including:  
- A bar chart showing total book sales  
- A tabular HTML report of top-selling books  
- A customer ranking report based on revenue  
These required using SQL joins, aggregates, and visual rendering with Matplotlib and HTML.

## How was the artifact improved?

The original project only supported basic CRUD endpoints. I enhanced it by:  
- Seeding the database with order data  
- Creating Flask routes to calculate and render key business metrics  
- Adding chart generation logic using matplotlib  
- Returning results in clear HTML tables and bar charts.

## Did you meet the course outcomes you planned to meet with this enhancement?

Yes. I demonstrated ability to analyze and transform business data using SQL, integrate visualization in Python, and present reports that are usable by decision makers.

## Reflect on the process of enhancing the artifact. What did you learn and what challenges did you face?

I learned how to apply SQL for business analysis and convert results to visual formats. The biggest challenge was formatting the outputs for human readability and ensuring the reports rendered correctly with Flask routing and matplotlib charting.

## Screenshots

Screenshots of reports are embedded below:

1. Top-selling books report (HTML table)

2. Top customers by revenue report (HTML table)

3. Bar chart of total book sales (matplotlib image)

(Insert actual screenshots before final upload)