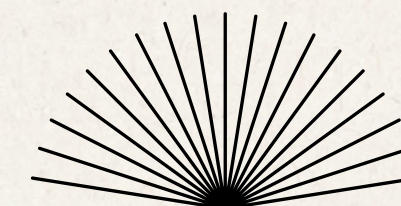University of Perpetual Help
Binan

UNIVERSITY PERFORMANCE DASHBOARD

Group CS2 - Section J4A

MEMBERS:
Barreno, Lance Kenneth | Imamura, Hiro Andrei
Ogues, Juancho Miguel | Sacdalan, Juan Paulo

Overview

Business Problem

A university wants to track enrollment and academic performance trends to improve curriculum planning and identify struggling departments.

01 Which programs have the highest and lowest enrollment over the past 5 years?

02 What's the pass rate per course or department?

03 Are there gender-based or year-level performance trends?

Objectives and Goals

To provide a comprehensive data-driven view of university enrollment and academic performance over the past five years, enabling administrators to identify trends, evaluate departmental effectiveness, and support strategic decisions in curriculum planning, resource allocation, and student success initiatives.

Goal # 1

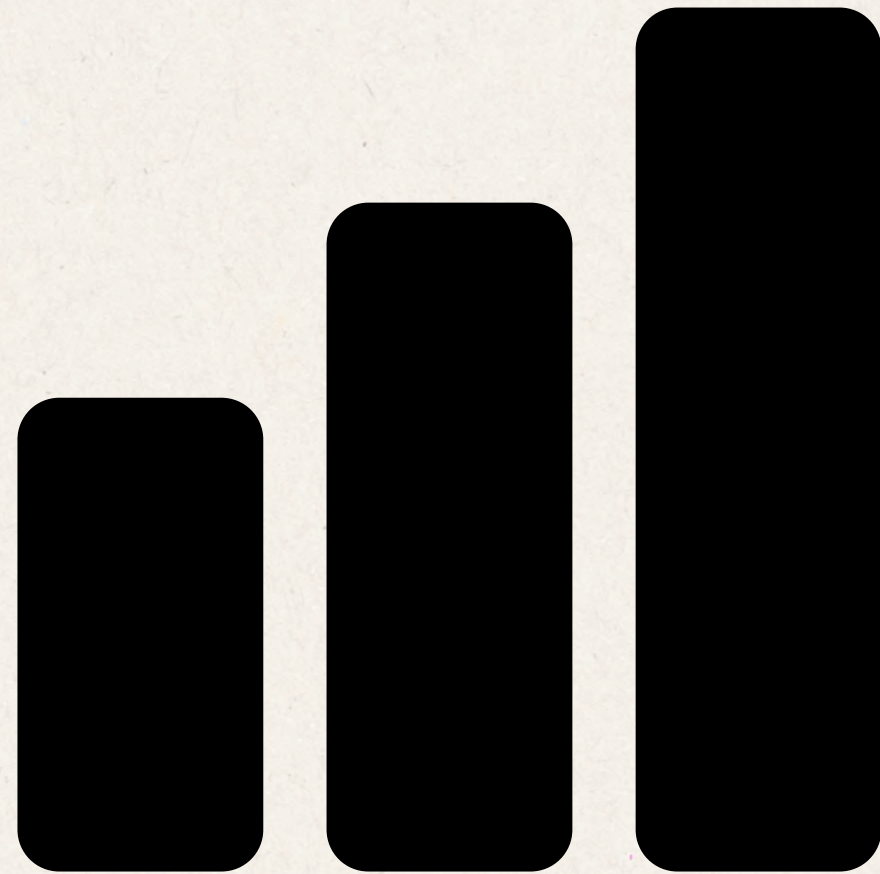To analyze 5-year enrollment patterns per program and department
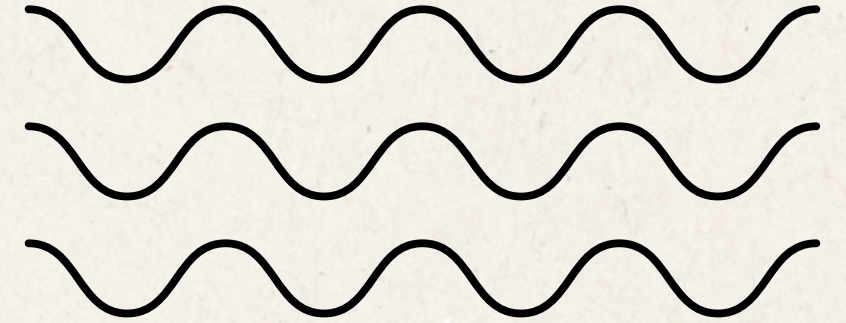
Goal # 2

To compute and track course-level and department-level pass rates, and average grades

Goal # 3

To uncover gender-based or year-level academic trends that may highlight performance gaps .

Data Exploration

Data Background

Why We Used Generated Data

We used generated data because publicly available online datasets typically cannot contain **student grades** and do not include detailed **course** or **program** structures due to privacy restrictions and institutional confidentiality. Real academic datasets rarely publish sensitive information such as grades, program enrollment, or course-level performance, as these are protected by data privacy regulations and internal university policies.

By generating our own dataset, we were able to:

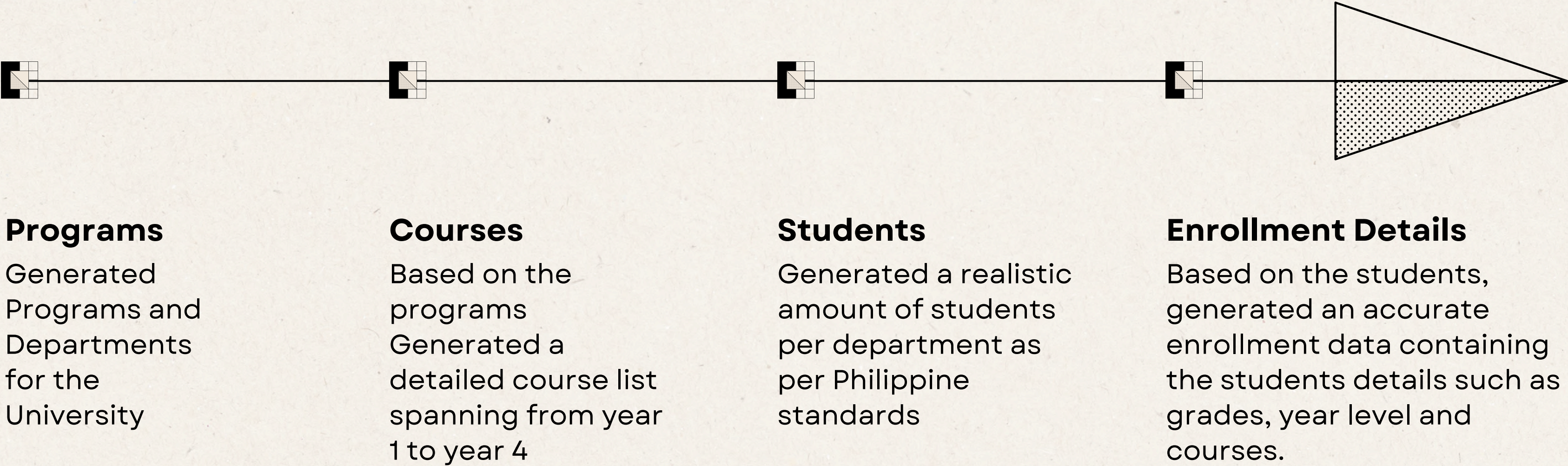- Include realistic grades, courses, and program information that are not available online
- Build a complete and consistent structure required for the data warehouse
- Perform meaningful analysis on enrollment, performance trends, and pass rates
- Avoid any privacy risks or exposure of actual student records

This ensures the project remains fully compliant and still supports accurate modeling and analysis.

Timeline

Data generation Timeline

Programs

Generated Programs and Departments for the University

Courses

Based on the programs Generated a detailed course list spanning from year 1 to year 4

Students

Generated a realistic amount of students per department as per Philippine standards

Enrollment Details

Based on the students, generated an accurate enrollment data containing the students details such as grades, year level and courses.

Data Warehousing

Data Ingestion

01 Efficient Star Schema Construction

02 Big Data

03 Cloud Native Dominance Due to Distributed Data Processing
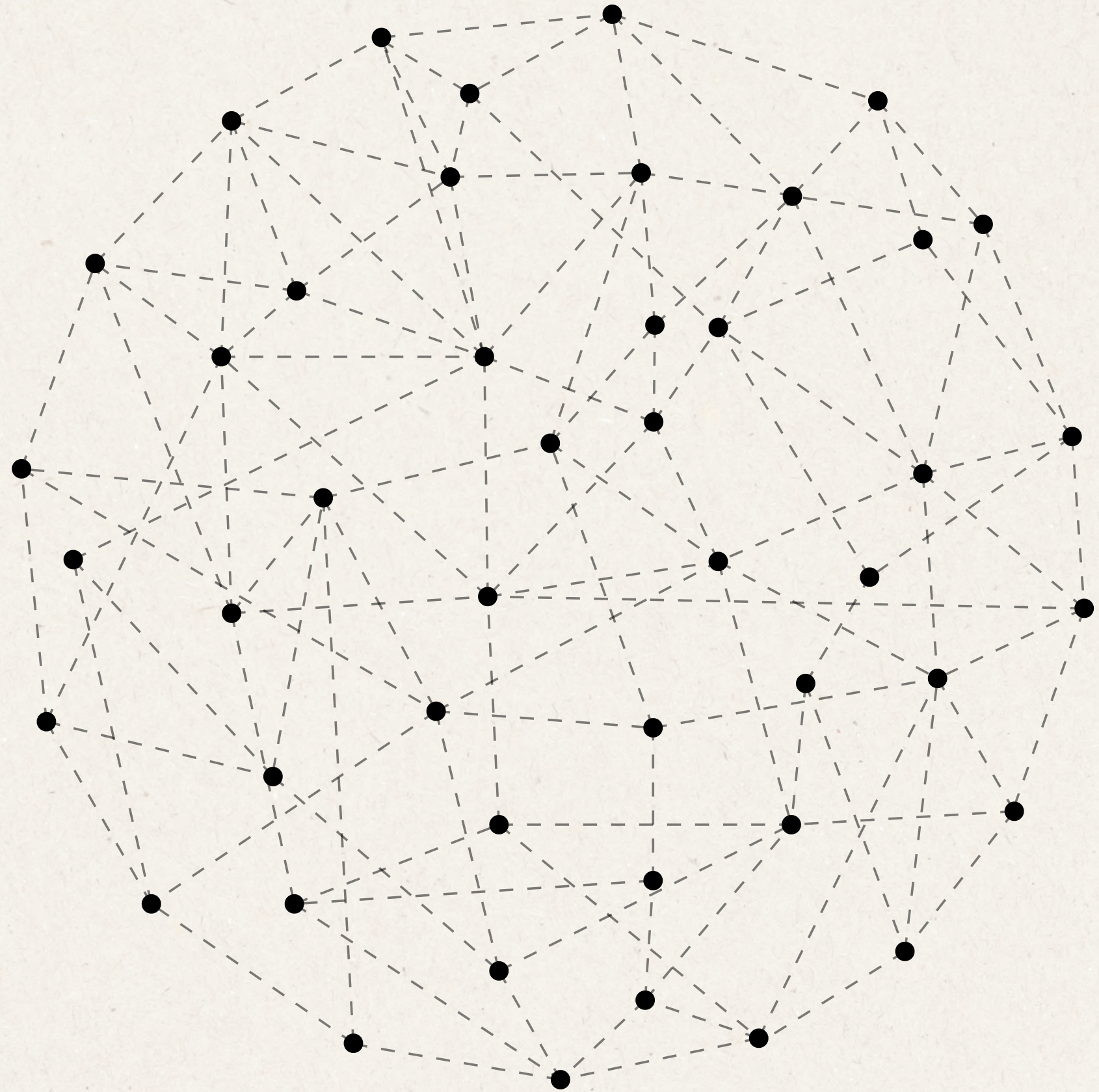
Data Warehouse

01   Databricks Free Edition

02   Data Lakehouse Architechture: Direct Query on Delta Lake

03   Native "Partner Connect"

Data Visualization

Data Visualization

Data Visualization

Power BI

01 Native, Optimized Connectivity With Databricks

02 Strong Data Modeling Capabilities for Lakehouse Architecture

03 Best Fit for Business Users and Enterprise Reporting

CONCLUSIONS

FINDINGS

✦ **Which programs have the highest and lowest enrollment over the past 5 years?**

Analysis of the five-year enrollment trend identifies a dominant preference for two academic units: **Business and Accountancy** and **Engineering and Architecture**. Together, these departments represent a substantial portion of the university's student population, indicating a market-driven alignment of student interests and the institution's program offerings

While the university boasts strength in high-demand fields, The **Maritime** and **Aviation** programs represent a niche but specialized segment of our academic portfolio. Their consistently lower enrollment figures over the past five years present a strategic consideration for targeted recruitment, enhanced marketing, or program review to explore potential for growth

FINDINGS

✦ What's the pass rate per course or department?

Rank	Department	Passing Rate
1	Computer Studies	67.32%
2	Teacher Education	65.19%
3	Business and Accountancy	61.18%
4	Aviation	60.59%
5	Criminology	60.38%
6	Engineering and Architecture	60.33%
7	Maritime Education	59.59%
8	Arts and Sciences	59.55%
9	Hospitality Management	59.38%

The mid-tier passing rates of high-enrollment programs like **Business** and **Engineering** suggest that student choice is driven by career prospects, not academic ease. Conversely, **Maritime's** low enrollment and low pass rate indicate a challenging cycle where small size and lower success may reinforce each other, requiring targeted support.

FINDINGS

✦ **Are there gender-based or year-level performance trends?**

Students generally perform **higher** in **lower year levels**, and performance gradually **declines** as academic difficulty increases. This indicates increasing curricular rigor, course load, or potential support gaps in upper years.

Male students consistently perform **slightly higher** than **females** across all year levels, but the gaps are **extremely small (ranging from 0.02 to 0.12 points).**

These differences are not large enough to indicate any meaningful gender-based performance trend. Both genders follow the same pattern of gradual grade decline through higher years.

Thank you

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