Employee Access Management – Database & Visualization Project

1■■ Project Overview

This project demonstrates the creation of a centralized access management database for tracking employee access across multiple systems such as Active Directory (AD), GitHub, and C360. The database is hosted on Neon (PostgreSQL) and connected to Google Looker Studio for building interactive dashboards and data visualizations.

2■■ Tools & Technologies Used

Component	Description	Link
Database Platform	Neon – Serverless PostgreSQL instance	https://console.neon.tech/app/projects/spring-truth-6417
Database Engine	PostgreSQL (latest stable version)	
Visualization Tool	Google Looker Studio	https://lookerstudio.google.com/reporting/61dfa0b7-c37
Connection Type	Direct PostgreSQL SSL connection	
Data Source	Sample employee access data created manually	

3■■ Objective

To design a normalized relational data model that captures employee details, group memberships, GitHub access, and C360 platform access, providing unified visibility through Looker Studio dashboards.

4■■ Database Design (ER Model)

The database uses a star-like schema with a central employee_details table connected to multiple child tables such as ad_groups, git_access, and c360_ad_groups via foreign keys (user_id). This ensures data normalization and easy scalability.

5■■ Tables & Schema

Table: employee_details

Column	Type	Description
user_id	VARCHAR (PK)	Unique identifier for each employee
resource_name	VARCHAR	Employee name
manager	VARCHAR	Reporting manager
role	VARCHAR	Employee role or designation

Table: ad_groups

Column	Type	Description
user_id	VARCHAR (FK)	Employee identifier

normal_admin_group	VARCHAR	Group name assigned in AD
status	VARCHAR	Current AD group status

Table: git_access

Column	Type	Description
user_id	VARCHAR (FK)	Employee identifier
domain	VARCHAR	GitHub/GitLab organization domain
packages	VARCHAR	Packages or repositories accessed

Table: c360_ad_groups

Column	Type	Description
user_id	VARCHAR (FK)	Employee identifier
c360_group_status	VARCHAR	C360 access group membership status

6■■ Data Normalization

Normalization applied up to 3rd Normal Form (3NF): ensuring atomic values (1NF), dependency on primary key (2NF), and no transitive dependency (3NF). This design minimizes redundancy and ensures scalability.

7■■ Unified Analytical View

A consolidated view ‘ team_access_full_view ’ joins all tables for unified visualization in Looker Studio.

8■■ Connection to Looker Studio

Looker Studio was connected to Neon PostgreSQL using SSL, selecting the unified view to build visual dashboards.

9■■ Visualization & Insights

The dashboard allows viewing employee-wise access, inactive groups, GitHub usage, and overall access distribution across AD, Git, and C360 systems.

■ Future Enhancements

Planned improvements include audit logging, API integrations, data validation, and role-based access control for secure and scalable data management.

■ Summary

Successfully created a normalized PostgreSQL database on Neon, linked to Google Looker Studio, and visualized access data with clean, scalable structure.

Dashboard: https://lookerstudio.google.com/reporting/61dfa0b7-c376-4a9b-bd43-33f1e90d1ccb

Neon Database: https://console.neon.tech/app/projects/spring-truth-64178874/auth