**PPM**

# CSCI 5050 : FINAL PRESENTATION

University of Colorado **Boulder**
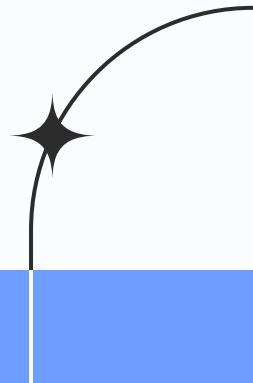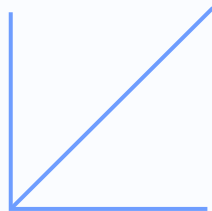
# Project Details

| | |
|---|---|
| **Company Name** | Easy Key Technology LLC, Pacific Program Management Group |
| **Group Number** | Group 3 |
| **Team Members** | Rakshith, Chintan, Kunal, Sarthak, Minyan, Shaily |
| **Manager** | Frank Lineberger |

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# 01
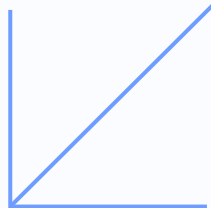
# Project Intro

# Current Method

| | A | B | C |
|---|---|---|---|
| 1 | Project | Value | |
| 2 | Project | Seattle Medical Clinic | |
| 3 | PPM Id | 2023-0010 | |
| 4 | Client | | |
| 5 | Start Date | 1/1/2023 | |
| 6 | End Date | 12/31/2024 | |
| 7 | Project Manager | | |
| 8 | RSF | | |
| 9 | USF | | |
| 10 | GSF | 50000 | |
| 11 | Headcount | | |
| 12 | Industry | Healthcare | |
| 13 | Address | 1000 Seattle Blvd | |
| 14 | Location | Seattle, WA 98202 | |
| 15 | Billing Type | Time and Materials | |
| 16 | Business Unit | Seattle | |
| 17 | Service Line | CPM | |
| 18 | ProjectBudget | $ 3,000,000 | |
| 19 | ProjectActuals | $ - | |
| 20 | PPM Fee To-Date | $ - | |
| 21 | Status | In Progress | |
| 22 | | | |
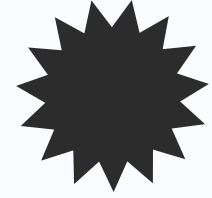
# Integrated Program Management Solution

- Our project aims to develop a comprehensive, web-based application that will serve as the central hub for managing commercial real estate projects.
- The goal is to create a holistic project management solution that is streamlined and captures most project management lifecycle workstreams.
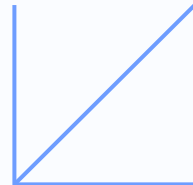
# Requirements

- Track financial changes for contract amendments and budgets.
- Define and baseline project scopes, schedules, and budgets.
- Estimate, allocate, and control project costs.
- Allow vendors to upload and submit expense invoices.
- Review and approve expenses for budget tracking.
- Provide clients with a project dashboard.
- Dashboard shows project timeline, expenses, and status.

# Deliverables

- Develop a sophisticated and user-friendly application to replace the spreadsheet-based approach.
- Ensure the application covers project initiation to closeout phases.
- Provide comprehensive source code and system documentation for future maintenance and enhancements.
- Produce a final project report outlining the work completed, challenges encountered, solutions applied, and recommendations for future improvements.

# 02
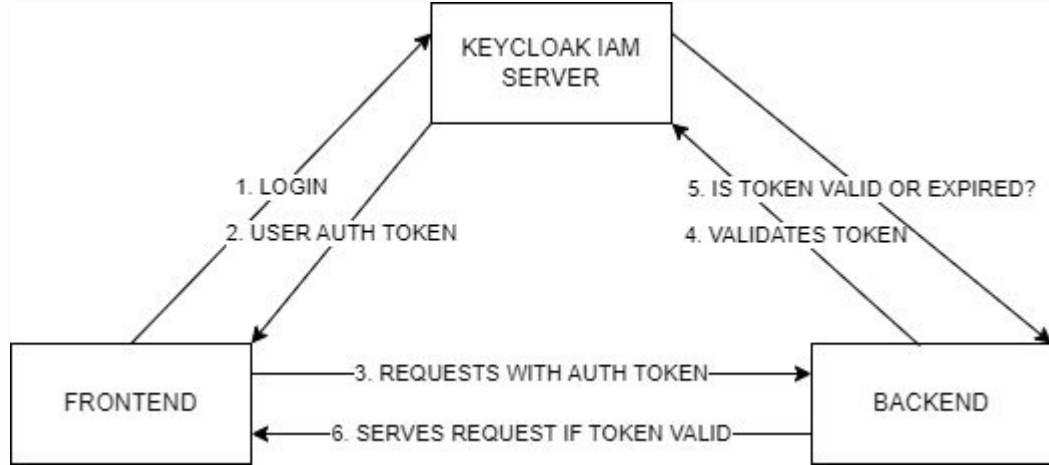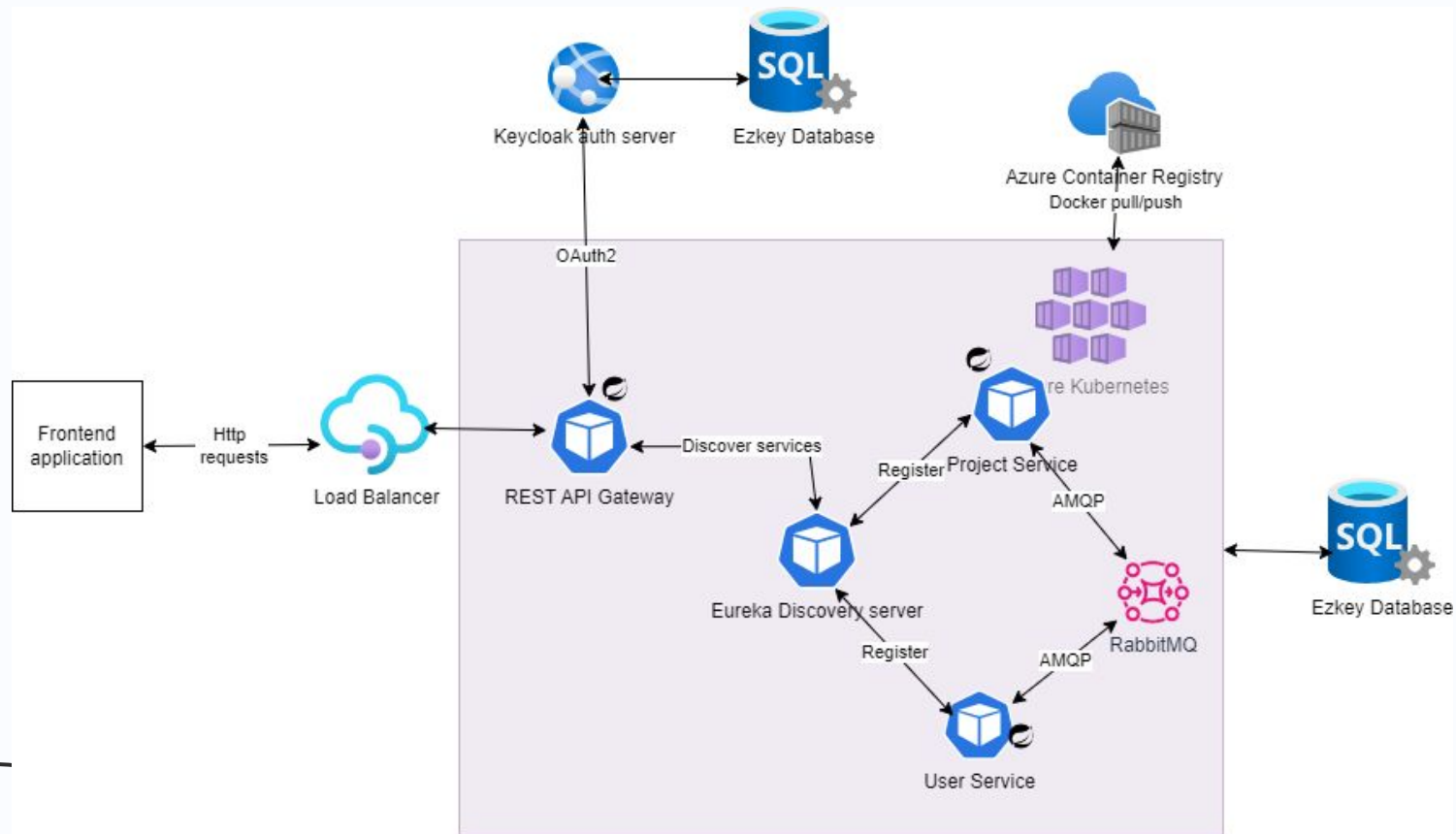
# Backend
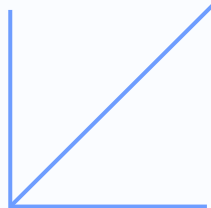
# User Interaction Diagram
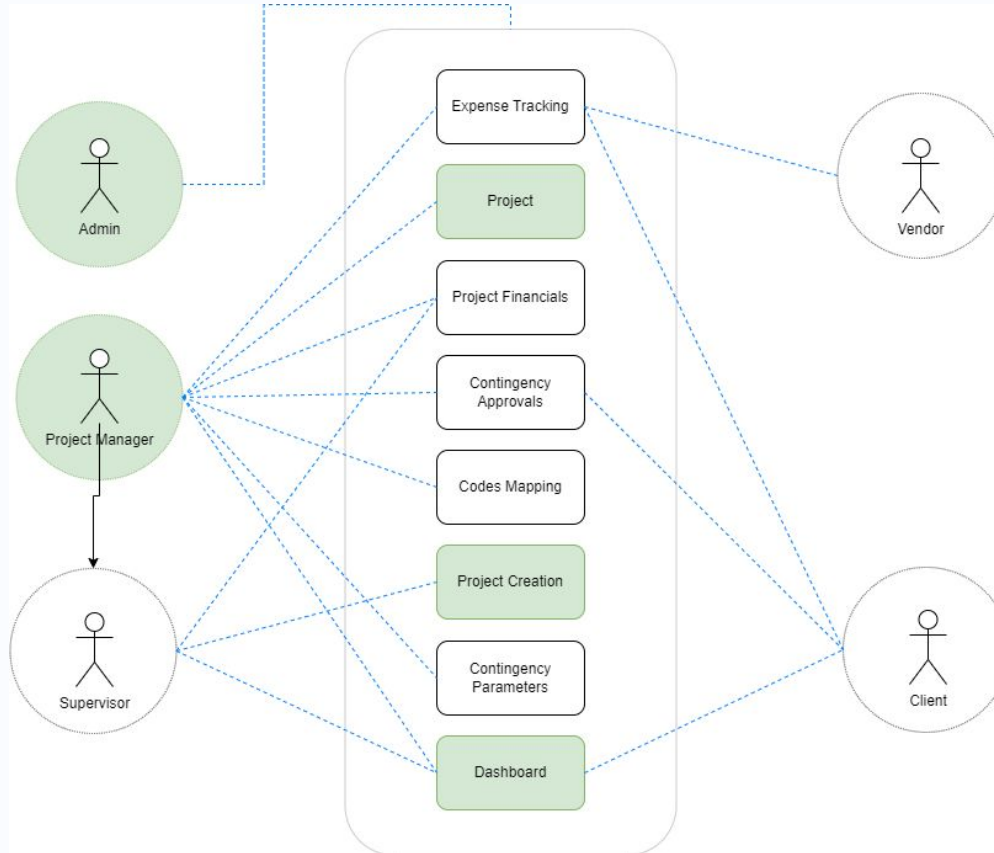
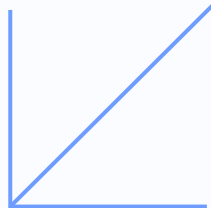# User Access and Security



- Keycloak Login and Session Management
- Keycloak IAM OAuth2 Server with Spring security
- Role Based Access Control (RBAC) with spring security

# Architecture Diagram

# 03
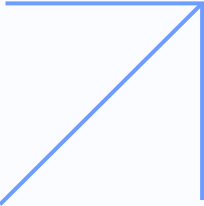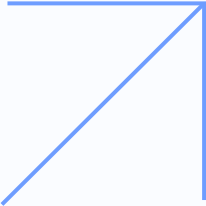
# Database

# 1. Requirement Analysis

- Collaborate with Clark and Frank to understand the data and database requirements
- Understanding domain
- Identify Entities and Relationships
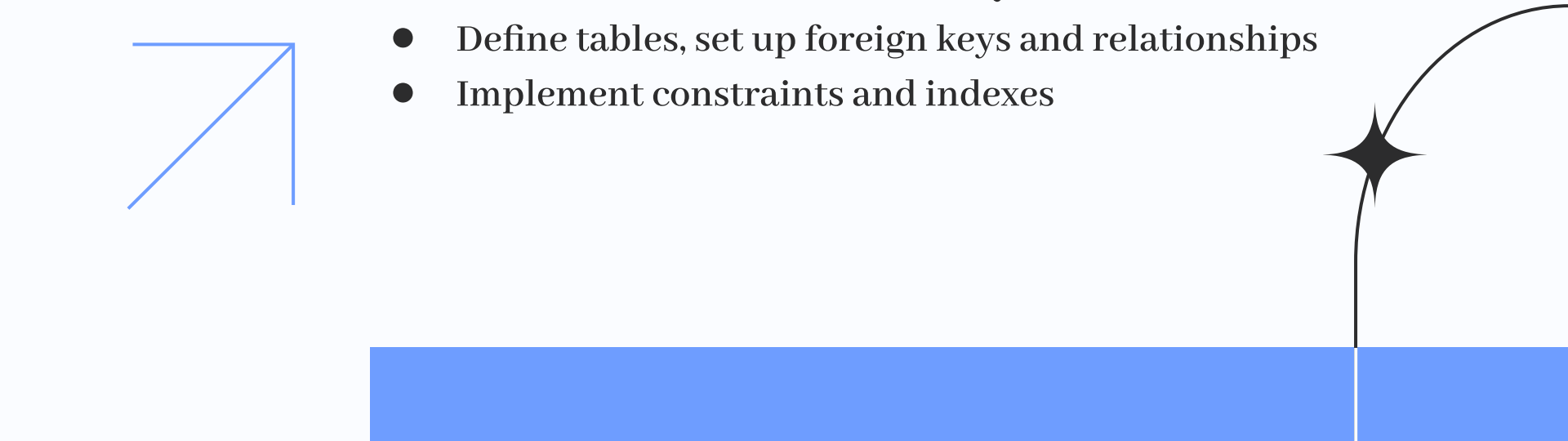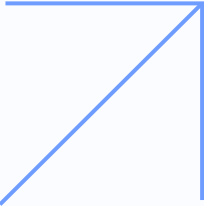
# 2. Database Design

- Create a detailed ERD
- Define constraints (unique, not null, foreign keys)
- Normalization

# 3. Database Setup

- Create the database in Azure SQL Database
- Define tables, set up foreign keys and relationships
- Implement constraints and indexes

# 4. Data Management

- Develop data insertion scripts, populating records
- Perform unit testing and validate performance
- Maintain data consistency

# Tables

**dbo.ProjectServiceLines**

| int | ProjectServiceLinesId | PK |
|---|---|---|
| int | ProjectId | FK |
| int | ServiceLineId | FK |

**dbo.ProjectPhases**

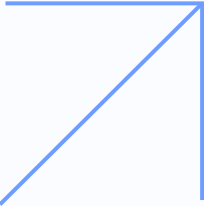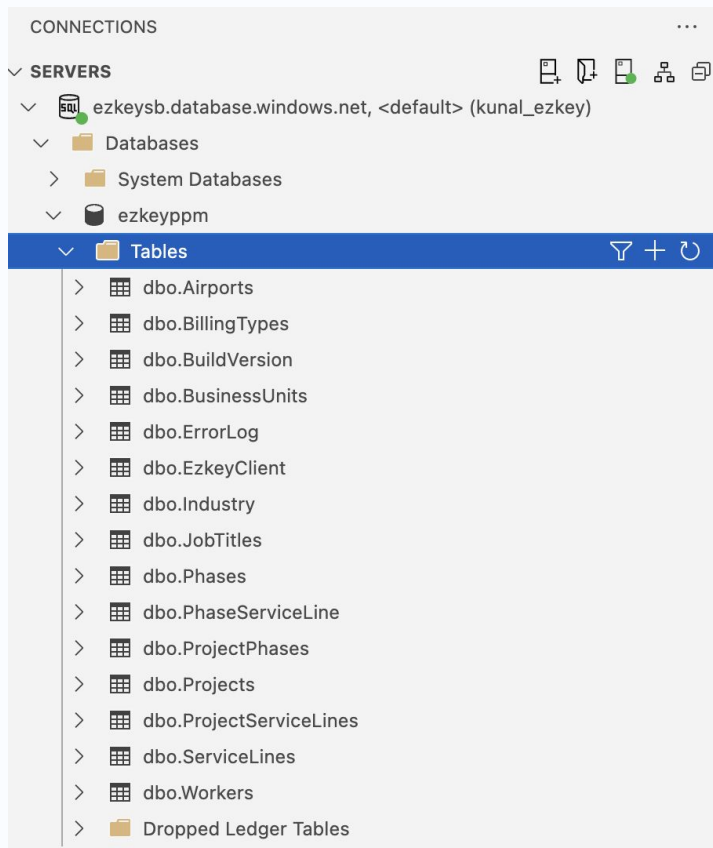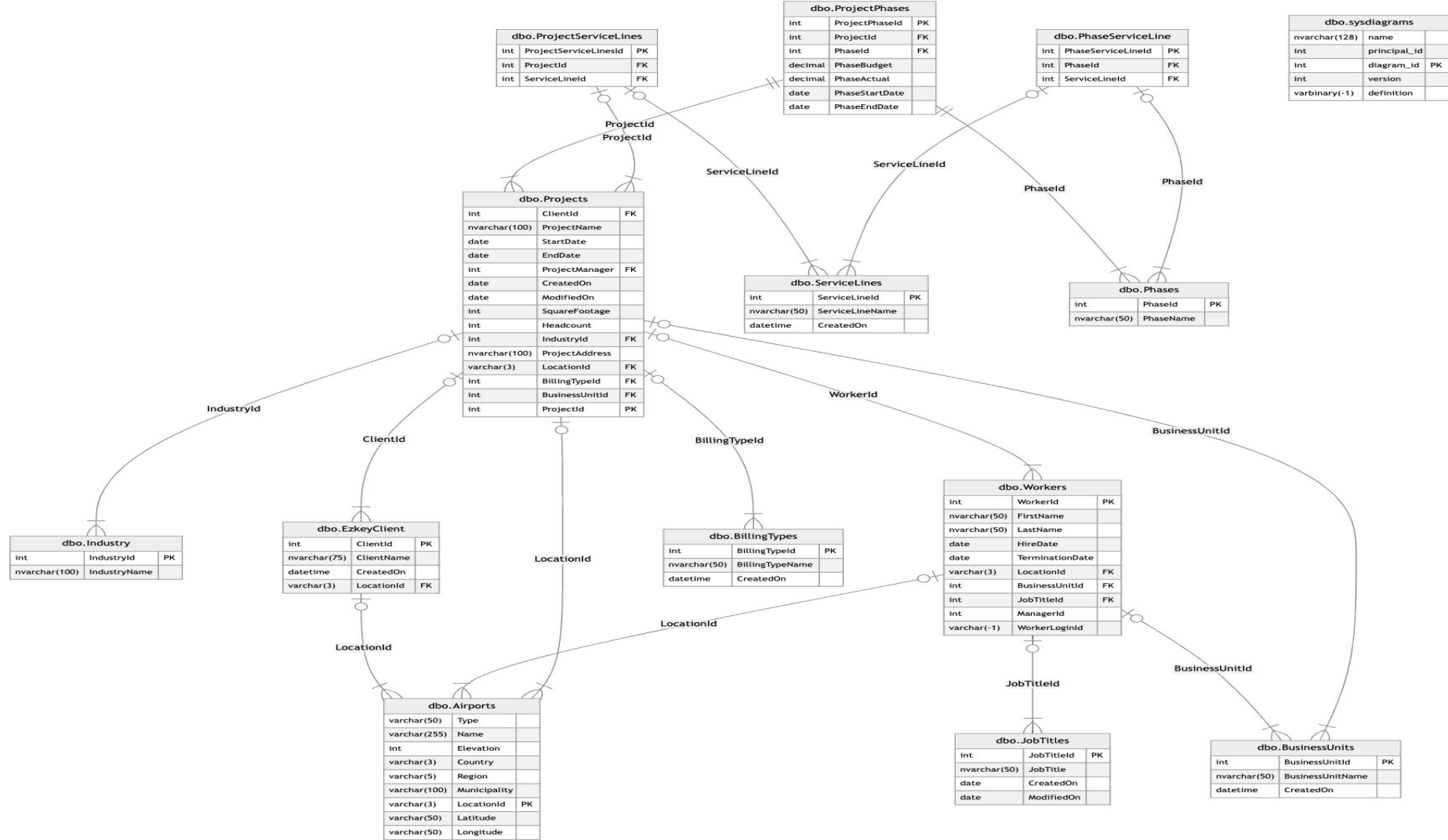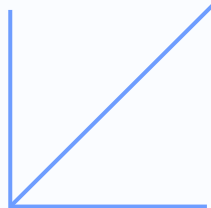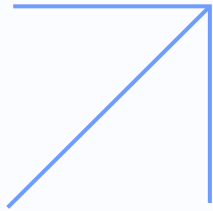| int | ProjectPhaseId | PK |
|---|---|---|
| int | ProjectId | FK |
| int | PhaseId | FK |
| decimal | PhaseBudget | |
| decimal | PhaseActual | |
| date | PhaseStartDate | |
| date | PhaseEndDate | |

**dbo.PhaseServiceLine**

| int | PhaseServiceLineId | PK |
|---|---|---|
| int | PhaseId | FK |
| int | ServiceLineId | FK |

**dbo.sysdiagrams**

| nvarchar(128) | name | |
|---|---|---|
| int | principal_id | |
| int | diagram_id | PK |
| int | version | |
| varbinary(-1) | definition | |

**dbo.Projects**

| int | ClientId | FK |
|---|---|---|
| nvarchar(100) | ProjectName | |
| date | StartDate | |
| date | EndDate | |
| int | ProjectManager | FK |
| date | CreatedOn | |
| date | ModifiedOn | |
| int | SquareFootage | |
| int | Headcount | |
| int | IndustryId | FK |
| nvarchar(100) | ProjectAddress | |
| varchar(3) | LocationId | FK |
| int | BillingTypeId | FK |
| int | BusinessUnitId | FK |
| int | ProjectId | PK |

**dbo.ServiceLines**

| int | ServiceLineId | PK |
|---|---|---|
| nvarchar(50) | ServiceLineName | |
| datetime | CreatedOn | |

**dbo.Phases**

| int | PhaseId | PK |
|---|---|---|
| nvarchar(50) | PhaseName | |

**dbo.Industry**

| int | IndustryId | PK |
|---|---|---|
| nvarchar(100) | IndustryName | |

**dbo.EzkeyClient**

| int | ClientId | PK |
|---|---|---|
| nvarchar(75) | ClientName | |
| datetime | CreatedOn | |
| varchar(3) | LocationId | FK |

**dbo.BillingTypes**

| int | BillingTypeId | PK |
|---|---|---|
| nvarchar(50) | BillingTypeName | |
| datetime | CreatedOn | |

**dbo.Workers**

| int | WorkerId | PK |
|---|---|---|
| nvarchar(50) | FirstName | |
| nvarchar(50) | LastName | |
| date | HireDate | |
| date | TerminationDate | |
| varchar(3) | LocationId | FK |
| int | BusinessUnitId | FK |
| int | JobTitleId | FK |
| int | ManagerId | |
| varchar(-1) | WorkerLoginId | |

**dbo.Airports**

| varchar(50) | Type | |
|---|---|---|
| varchar(255) | Name | |
| int | Elevation | |
| varchar(3) | Country | |
| varchar(5) | Region | |
| varchar(100) | Municipality | |
| varchar(3) | LocationId | PK |
| varchar(50) | Latitude | |
| varchar(50) | Longitude | |

**dbo.JobTitles**

| int | JobTitleId | PK |
|---|---|---|
| nvarchar(50) | JobTitle | |
| date | CreatedOn | |
| date | ModifiedOn | |

**dbo.BusinessUnits**

| int | BusinessUnitId | PK |
|---|---|---|
| nvarchar(50) | BusinessUnitName | |
| datetime | CreatedOn | |

Relationship labels: ProjectId, ProjectId, ServiceLineId, ServiceLineId, PhaseId, PhaseId, IndustryId, ClientId, WorkerId, BillingTypeId, BusinessUnitId, LocationId, LocationId, LocationId, JobTitleId, BusinessUnitId
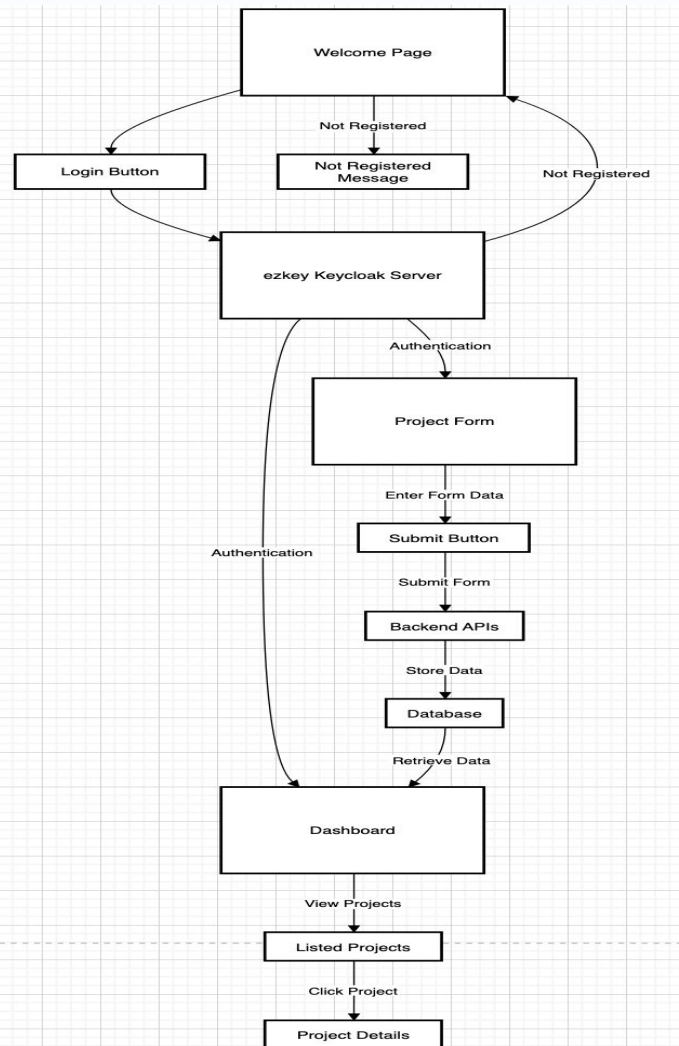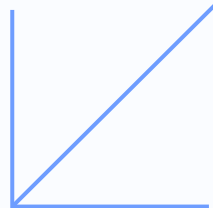
04

# Frontend

# Frontend Technologies

- JavaScript- Programming Language
- CSS - Styling
- React- UI Framework
- Npm - Package Manager
- Axios - HTTP Library
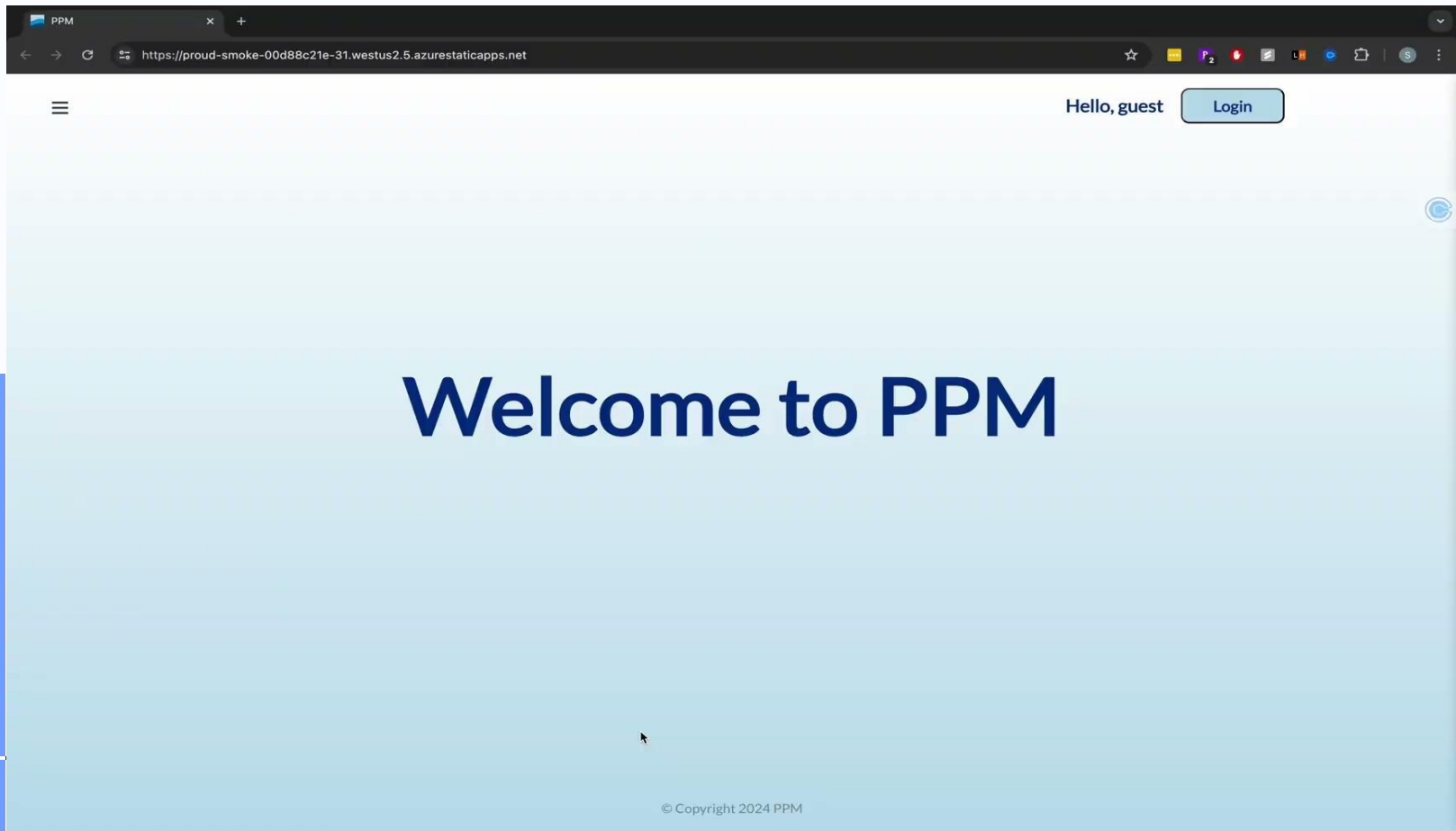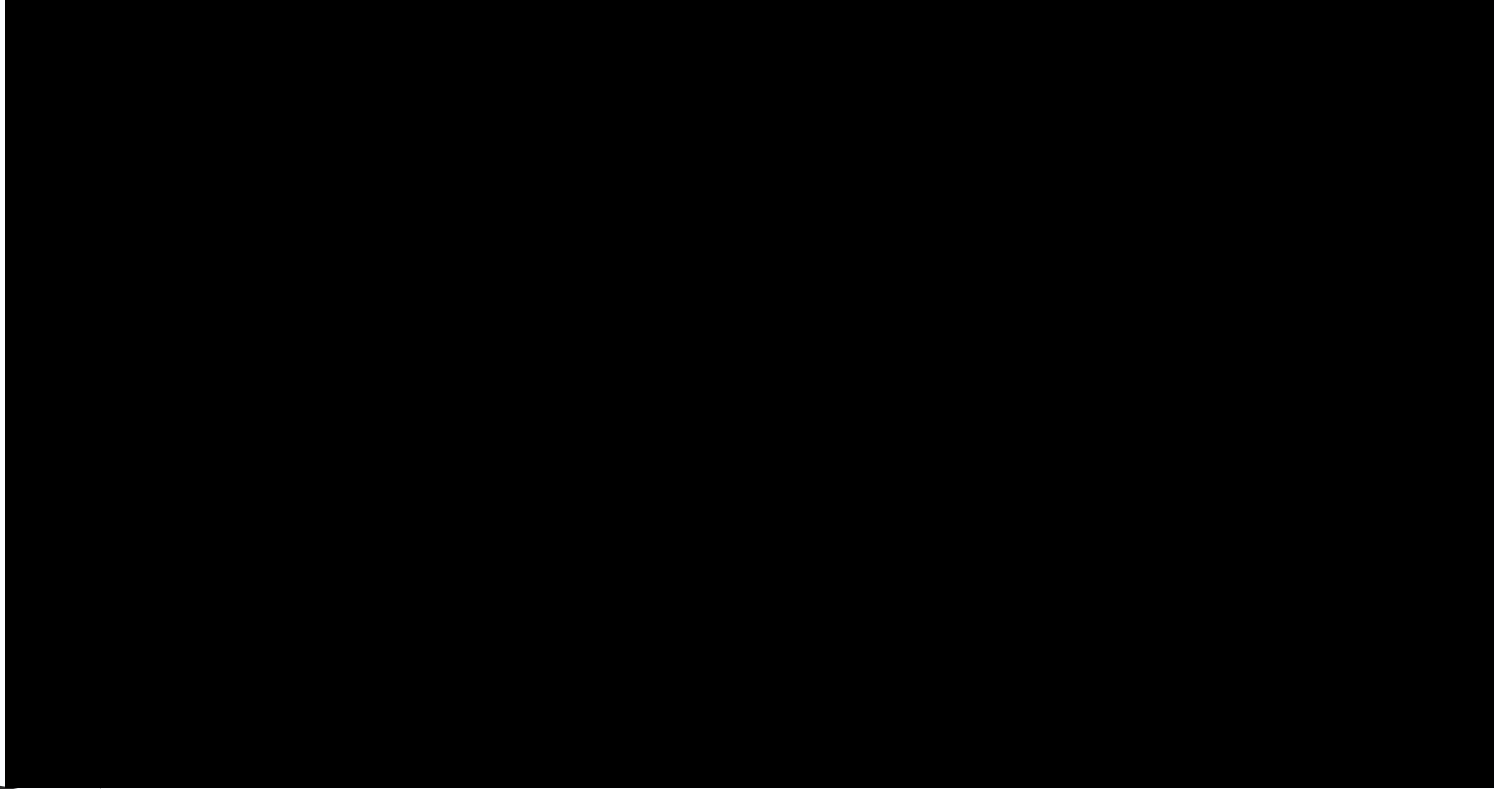- Git - Version Control

# Frontend Architecture

05

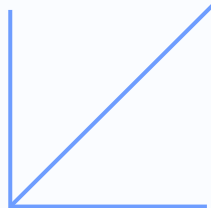**Demo**

# Demo FE

# Demo BE

# 06

# Challenges

# Challenges/Opportunities

## Frontend/Backend

Limited experience with the tech stack ➡️ Skill sets expanded

Debugging and testing a system with limited resources ➡️ Valuable insight into the industry

## Database

Gathering business requirements ➡️ Thoroughly understood the business domain

Data integrity across multiple tables ➡️ Foreign key constraints & database transaction management

# Challenges/Opportunities

## Team

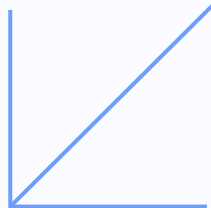Building everything from scratch, including design, system setup, code

➡ Good learning experience

Didn't have access to resources until February

➡ Manage up!

# 07

# Future Scope

# Future Scope

- Inclusion of the following features :
    - Contingency Approvals
    - Project Financials
    - Contingency Parameters
    - Expense Tracking

# THANK YOU!