

Project Document

Company Management System

1. Introduction

1.1 Team Details Group-22 Infinite Void

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1.2 Project Overview

This project aims to develop an Employee Management System that facilitates the hierarchical management of employees within an organization. The system will support three user roles: CEO, HR, and Employee, each with specific functionalities and access levels. The application will manage employee credentials, project assignments, and provide role-specific dashboards.

1.3 Scope

The system will include:

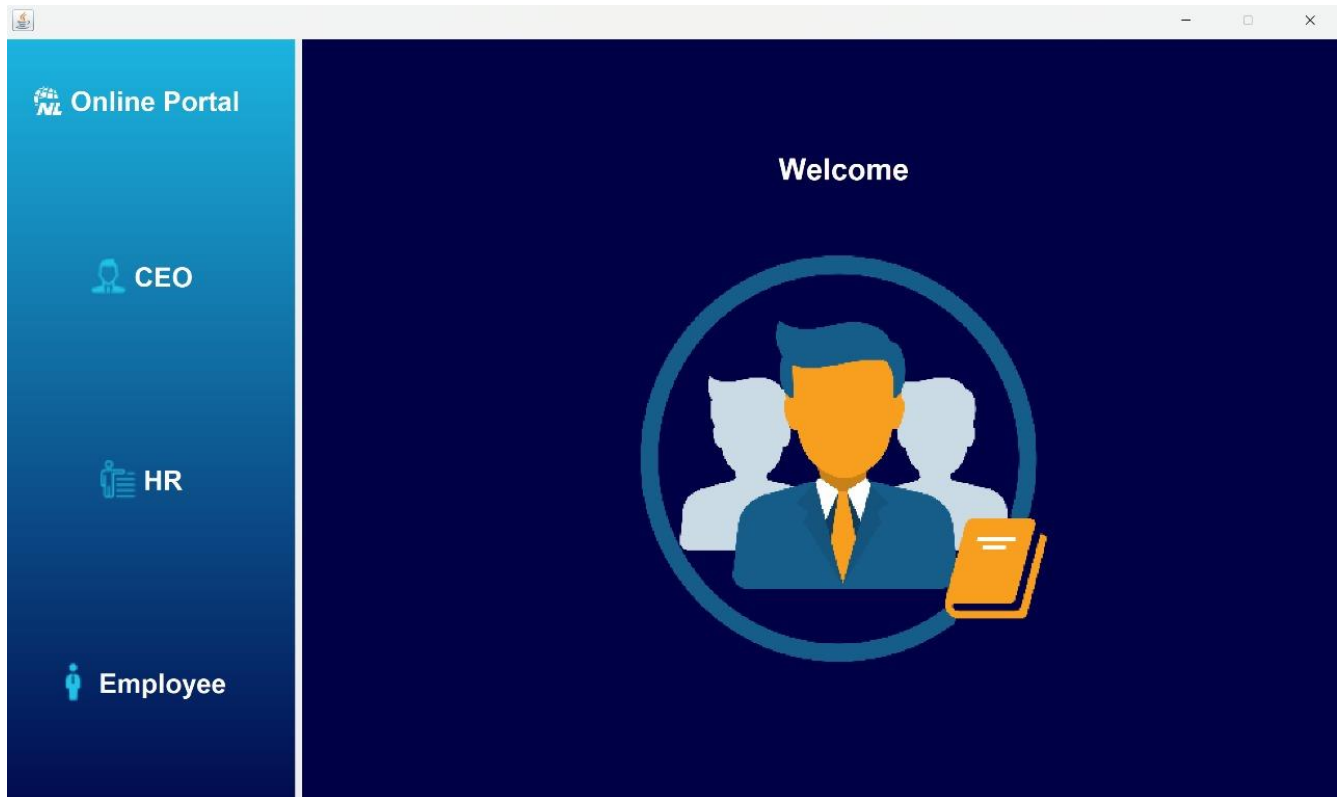
- User authentication and role-based access control
- Employee management (addition, removal, search)
- Project management (creation, assignment, completion)
- Role-specific dashboards
- Database integration for data persistence

2. Objectives

- Implement a secure login system with role-based access control
- Develop functionalities for CEO to manage HR personnel and projects

- Create HR capabilities for employee management and project assignment
- Design employee dashboards for viewing assigned projects and personal information
- Integrate database storage for persistent data management
- Implement using Java and C++ integration

3. System Overview



3.1 Technical Specifications

- Frontend: Java GUI using Swing
- Backend: C++ (core logic), Java (calls C++ methods)
- Database: MySQL
- Middleware: JDBC for database connectivity
- Integration: Java Native Interface (JNI) for C++ and Java integration

3.2 Input/Output Requirements

Inputs:

- User credentials
- Employee information
- Project details
- Role-specific commands (e.g., add/remove employee, assign project)

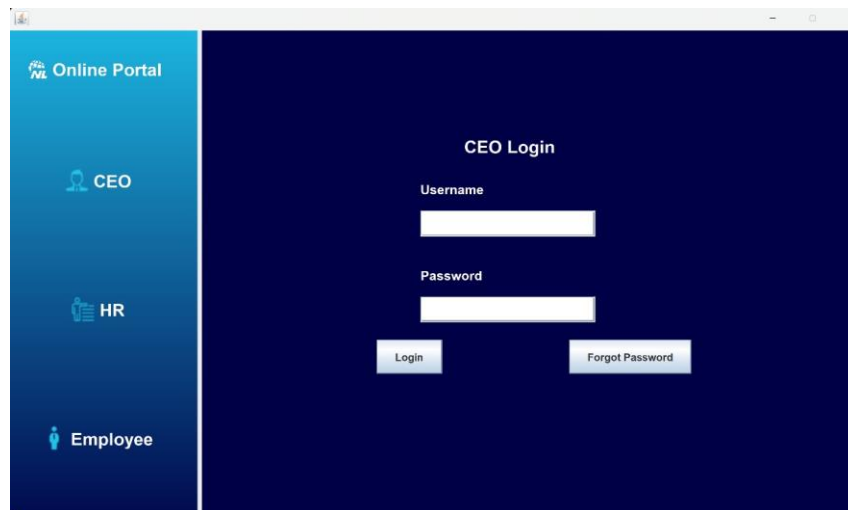
Outputs:

- Authentication results
- Employee lists and details
- Project assignments and status
- Role-specific dashboard information

4. Functional Requirements

4.1 Authentication System

- Feature: User Login
 - Description: Allow users to log in as CEO, HR, or Employee
 - Requirements:
 - CEO credentials are hardcoded (ID: CEO, password: preset)
 - HR and Employee credentials are generated upon hiring, which are sent via email to the concerned user along with an onboarding message
 - First-time employee passwords are randomly generated
 - Forgot password option allows the user to reset the password includes authentication via email OTP.



4.2 CEO Functionality

- Feature: HR Management
 - Description: Allow CEO to add, remove HR personnel and search HR via ID
- Feature: Project Creation
 - Description: Enable CEO to create new projects

4.3 HR Functionality

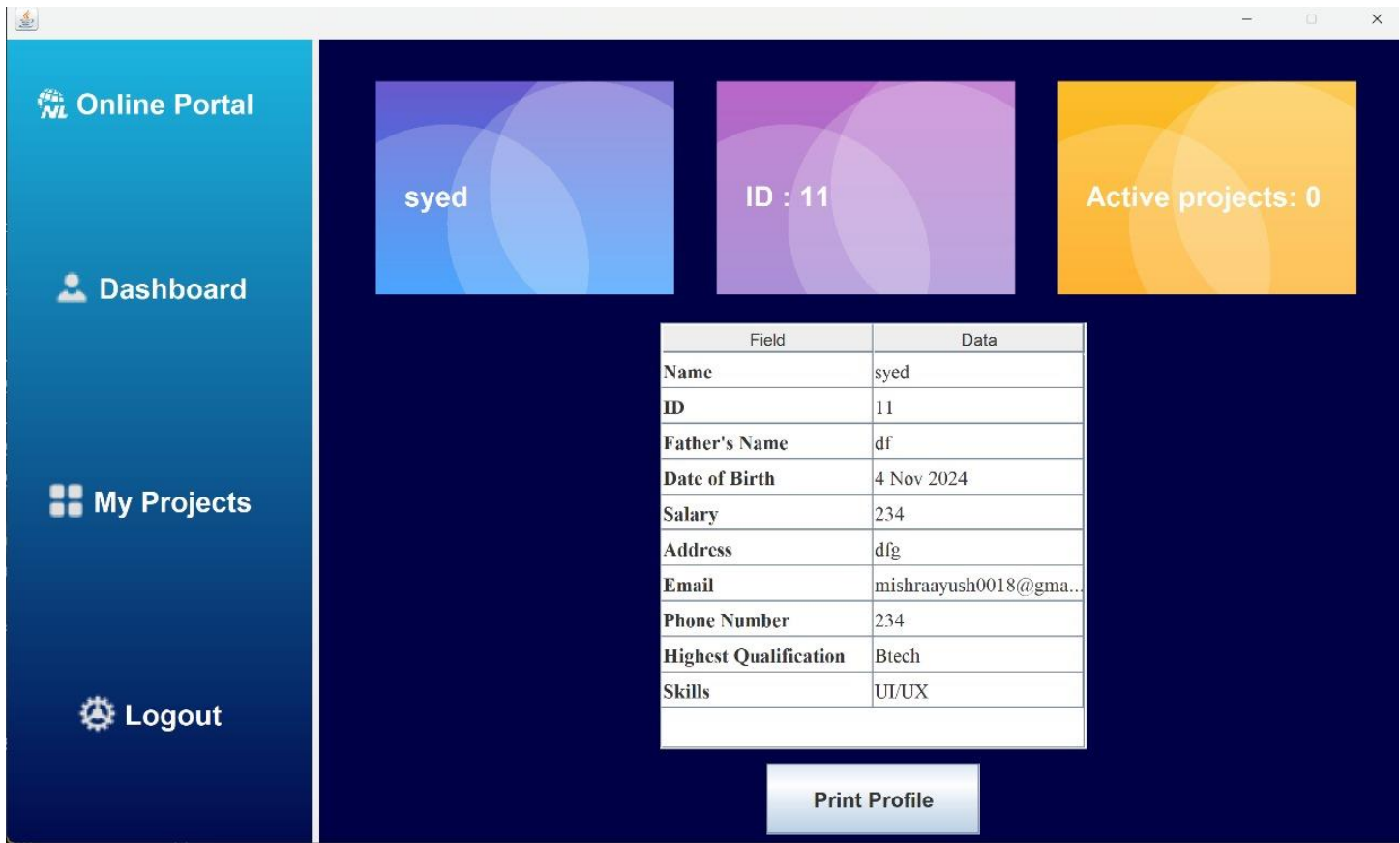
- Feature: Employee Management
 - Description: Allow HR to add, remove, and search for employees
- Feature: Project Assignment
 - Description: Enable HR to assign projects to employees based on number of employees required and skills
 - Constraints:
 - An employee can work on a maximum of 5 projects
 - Returns appropriate message if enough employees with skills not present
- Feature: Project Completion
 - Description: Allow HR to mark projects as completed once they get over
 - Effects: Frees up the project and all assigned employees

The screenshot shows a web application interface for an 'Online Portal'. On the left is a dark blue sidebar with white icons and text for navigation: 'Hire emp', 'Search Emp', 'Projects', 'Status', and 'Logout'. The main content area has a dark blue background. At the top, it says 'Filter by project status :'. Below this are two buttons, 'Search' and 'Back', and a dropdown menu showing 'Ongoing', 'All', 'Unassigned', 'Ongoing' (highlighted), and 'Completed'. Below the dropdown is a table with the following data:

Status	Project ID	Project Name	Number of Emplo...	Employee IDs
Ongoing	1	Project nuke	1	9
Ongoing	2	Project gpay	1	9

4.4 Employee Functionality

- Personal Dashboard: allows the employee to view their personal information like salary
- Project section: allows the employees to view the ongoing projects in which they are working



5.1 Usability

- The GUI should be intuitive and easy to navigate
- Error messages should be clear and informative

5.2 Security

- Passwords must be stored securely (hashed and salted)
- OTP verification for forgot password
- Role-based access control must be strictly enforced

	id	password	position
▶	1	\$2a\$10\$it4tZlgjb2JwnSywdiqBu.DqmAeV101QD...	CEO
	2	\$2a\$10\$Res9OndRVKrNqkFHQtwNxOK2RoXKFy...	HR
	3	\$2a\$10\$TDd4Qv1dQJTZauh2imlzi.29QdiLjmWz...	HR
	4	\$2a\$10\$0J8FKRXeHNVbElbdgbowsudf/R6.CfGH...	HR
	5	\$2a\$10\$SZ2omuMU.SiUBSCR20ADSeOJ.j40uYs...	HR
	6	\$2a\$10\$TpUX15zON.GohlBwoACwo.bg5TIEDd2...	EMP
	7	\$2a\$10\$tComkHY//TP5PTbzBkTb0uyx8vzG2ms9...	EMP
	8	\$2a\$10\$Nji97LquOgXDbzHCF7FQp.iyjDgz7PVs...	EMP

6. Workflow

1. Frontend (Java GUI):
 - a. Implement login screen and role-specific dashboards
 - b. Create forms for data input (e.g., adding employees, assigning projects)
2. Backend (C++):
 - a. Implement core business logic (e.g., employee management, project assignment)
3. Backend (Java):
 - Use JNI to call C++ functions from Java
4. Database Integration:
 - a. Use JDBC to connect Java with MySQL database
 - b. Implement data persistence logic

8. Important Files & Folders

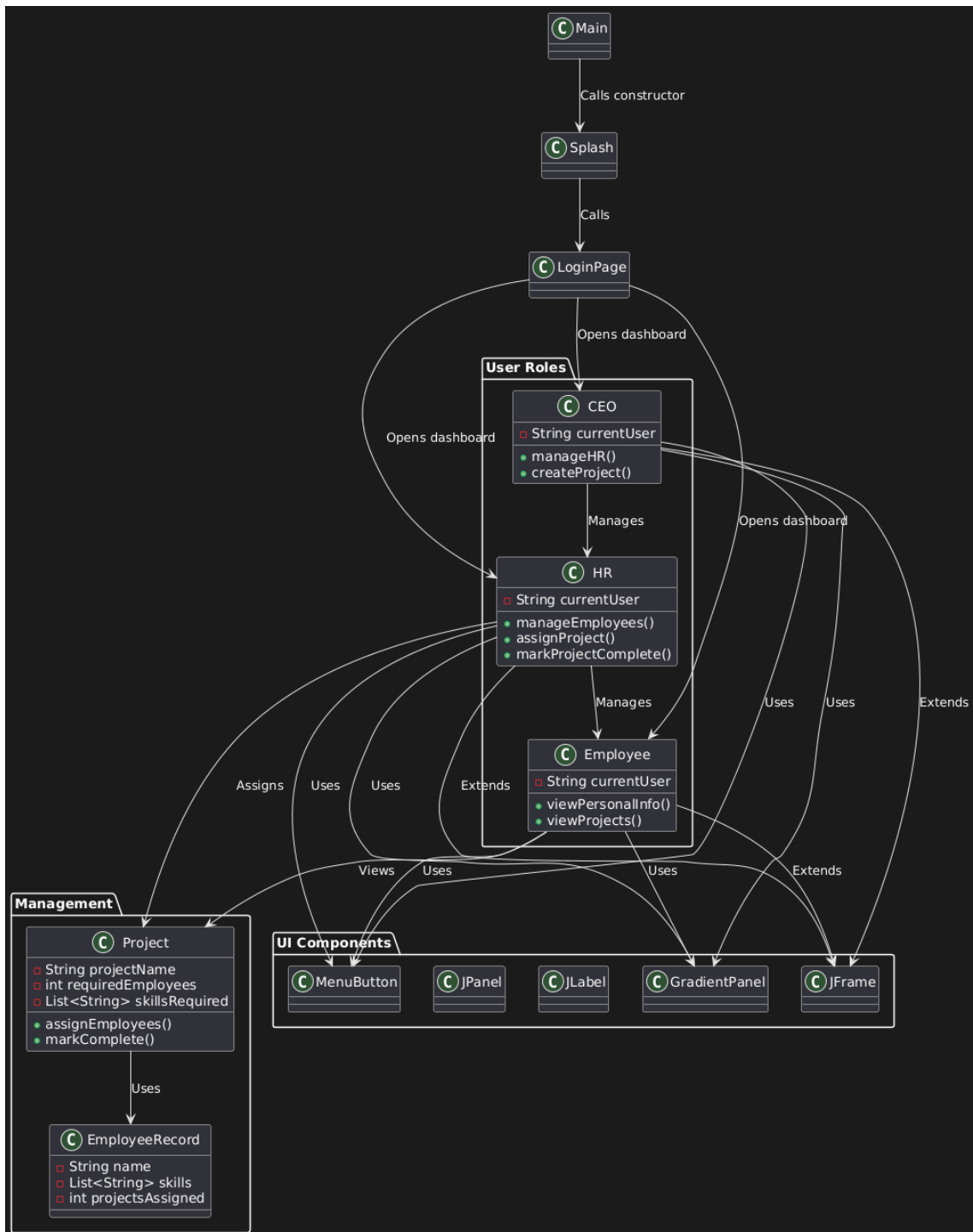
- src/main/Gui/: Gui source files
- src/main/db/: Java source files using JDBC to connect to database
- Src/main/Java_Main/: Main backend code in java along with C++ code
- database/: SQL scripts for database setup
- Icons-Employee , Icons-Login, Icons-Splash : Contains icons used in GUI

10. Conclusion

This Employee Management System can be used for managing organizational hierarchy, employee information, and project assignments. By leveraging a multi-language approach with Java and C++, the system aims to combine the strengths of both languages while providing a user-friendly interface for different roles within the organization.

11 UML Class Diagrams

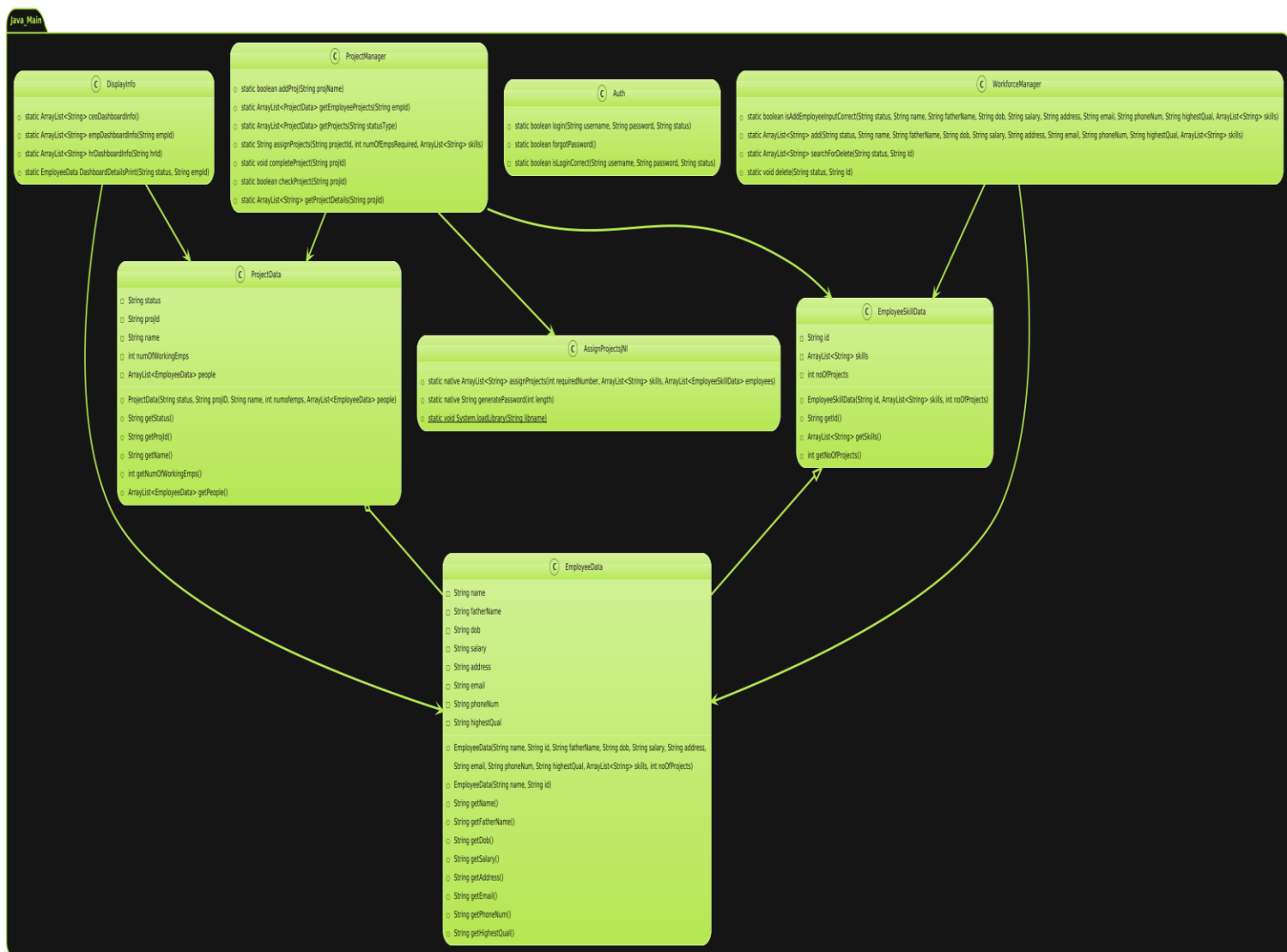
- GUI Class Diagram



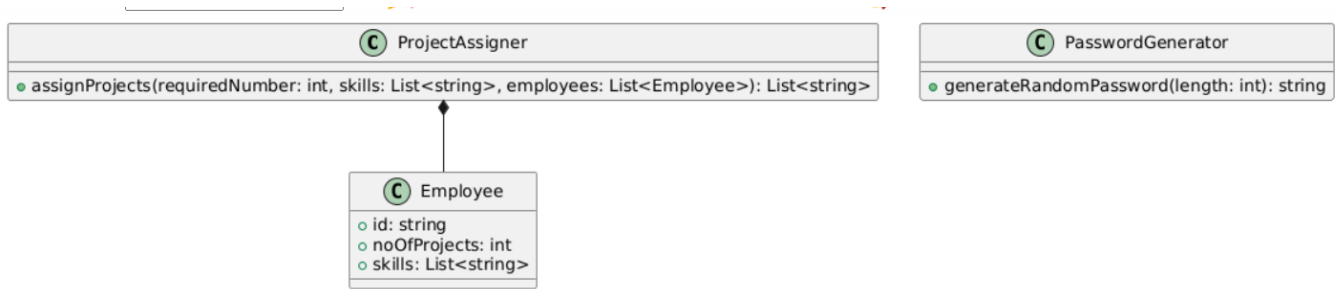
- Database UML daigram



- Class Diagram for Backend Code



- Class Diagram for C++ Code



Github repository link: https://github.com/kartikeya-dimri/Cpp_Java_Project/tree/completed-project_

Please go to the compete_project_ branch to see the final code