

# Software Design Document (SDD)

## 1. Introduction

This document describes the design architecture of the Placement Management System (PMS), presenting a structured view of how the system is organized and implemented. It outlines the overall system structure, major design components, database design, and key implementation constraints that guide the development process. The document explains how different modules such as user management, job and internship handling, application processing, and interview scheduling are designed to work together in an efficient and scalable manner.

Additionally, this document serves as a technical reference for developers, testers, and evaluators by clearly explaining the interaction between system components and data flow across layers. It supports system understanding, testing, and maintenance by providing a clear blueprint of the PMS architecture, ensuring that the system is developed in accordance with defined design principles and institutional requirements.

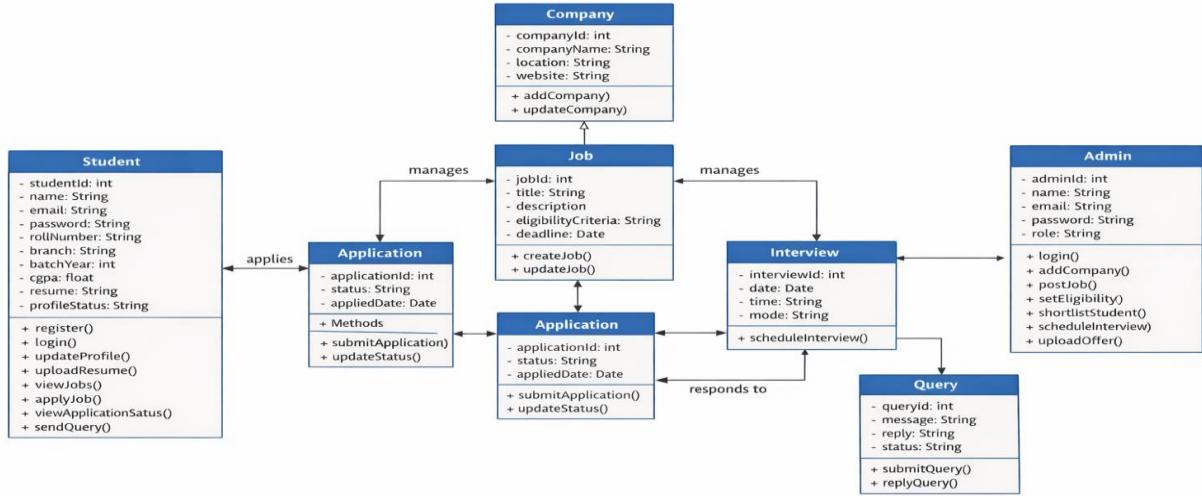
## 2. System Architecture

This section describes the high-level architecture of the Placement Management System (PMS), including its major modules and components. The architecture defines the interaction between the presentation layer, business logic layer, data layer, and integration services, ensuring a modular, scalable, and maintainable system design.

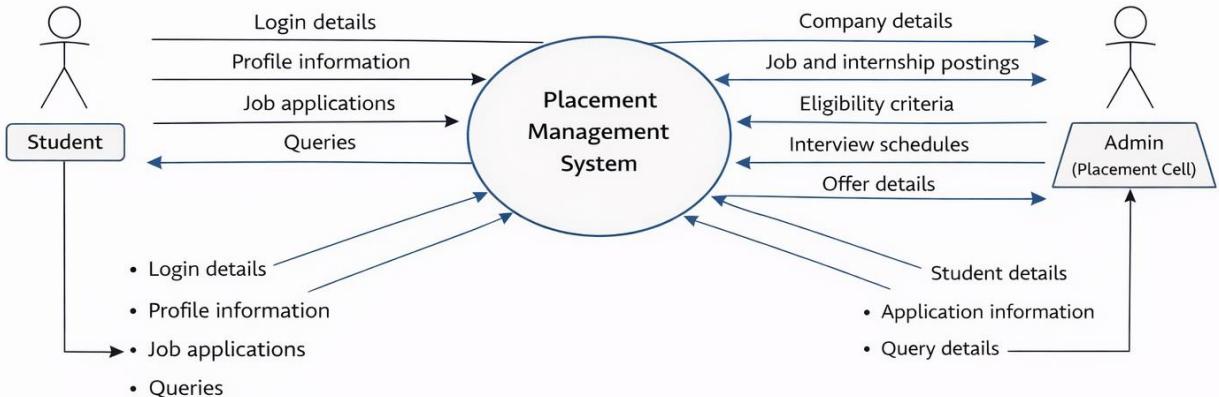
The system is composed of modules such as user authentication, student profile management, job and internship management, application processing, interview scheduling, notifications, and database management. Each module performs a specific function and communicates with other components through well-defined interfaces to ensure efficient system operation.

## 3. Detailed Design

This section explains the internal design of the Placement Management System. It includes class diagrams, data flow diagrams, and logic descriptions to show how the system is structured, how data moves, and how decisions are made inside the system.



Class Diagrams



Data Flow Diagrams (DFD)

### Logic Description

The logic of the Placement Management System defines how the system behaves step by step:

- The student logs in and updates profile information
- Admin posts job or internship with eligibility criteria
- System automatically checks student eligibility
- Eligible students can apply for jobs
- Applications are stored and shown to admin
- Admin shortlists, rejects, or selects candidates
- Interview schedules are assigned and notified
- Final selection leads to offer upload and placement confirmation

#### **4. Database Design**

The database design of the Placement Management System (PMS) is based on an Entity-Relationship (ER) model that represents the core entities and their interactions within the placement process. Key entities include Student, Admin, Company, Job/Internship, Application, Interview, Offer, and Query. Relationships among these entities define how students apply for jobs, how administrators manage recruitment activities, and how interview and placement outcomes are recorded. The ER diagram visually represents these entities, their attributes, primary keys, and relationships, providing a clear understanding of data flow and system structure.

The Placement Management System follows a structured and centralized data storage approach to ensure efficient data management and scalability. Student profiles, job postings, applications, interview schedules, and offer details are stored in dedicated collections/tables with unique identifiers to maintain data integrity. The database supports secure access, efficient querying, and reliable data retrieval, enabling smooth system operation and future enhancements. This approach ensures consistency, reduces redundancy, and supports backup and recovery mechanisms.

#### **5. Design Constraints**

The design and implementation of the Placement Management System (PMS) are subject to certain constraints that influence system architecture and functionality.

**Hardware Constraints:** The system is designed to operate on standard computing devices such as desktops, laptops, and mobile devices. It requires reliable internet connectivity and does not depend on any specialized hardware components.

**Software Constraints:** The system is developed as a web-based application using modern web technologies and database systems. It must support common web browsers and follow standardized development frameworks to ensure compatibility, maintainability, and scalability.

**Regulatory Constraints:** The system must comply with institutional policies, data privacy regulations, and security standards. Sensitive user information such as student data and credentials must be protected through secure authentication, authorization, and data handling mechanisms.