



# LEAVING CERTIFICATE GENERATOR AND DATA MANAGEMENT PORTAL

<sup>1</sup>Gaikwad Harshad Ulhasrao, <sup>2</sup>Dhokale Rahul Rajendra, Pawar Swapnil Sanjay, <sup>3</sup>Nikam Rushikesh Anasaheb,  
<sup>4</sup>Shaikh S.F\*

<sup>1</sup>UG Scholar, Dept. of Computer Engineering, SND Polytechnic., Yeola

<sup>2</sup>UG Scholar, Dept. Computer Engineering, SND Polytechnic., Yeola

<sup>3</sup>UG Scholar, Dept. of Computer Engineering, SND Polytechnic., Yeola

<sup>4</sup>UG Scholar, Dept. of Computer Engineering, SND Polytechnic., Yeola

**ABSTRACT-** In today's digital age, the management of student data in schools and colleges has become increasingly complex. Traditional paper-based methods of storing and managing student data have become inadequate and pose a significant risk of data loss due to accidents like fires, flooding, or even damage from rodents. Losing such data can have far-reaching consequences on the future of students and the reputation of the educational institution. To address these challenges, the Leaving Certificate Generator and Data Management Portal was developed. The portal is a Python-SQL based automation system that provides an efficient and secure method of storing and retrieving student data for educational institutions. By using this portal, educational institutions can overcome the limitations of traditional paper-based methods of storing and managing student data.

All related data, such as private data, academic performance, attendance records, and exam results, are centralised in the Leaving Certificate Generator and Data Management Portal.

By automating data entry, management, and retrieval, this portal lowers the possibility of human error and data loss. Additionally, it makes sure that data is properly backed up, giving educational institutions the ability to access and restore data in case of any unanticipated data loss situations.

**Index Terms-** Django, Python, SQL.

## I. INTRODUCTION

However, this traditional system has several drawbacks that have become increasingly apparent in recent years. One of the main problems is the high risk of losing important student data. When data is stored in physical files, there is always the possibility of misplacement or damage. Additionally, the process of manually searching for student data and certificates can be time-consuming and tedious.

Furthermore, the traditional method of leaving certificate generation is often not very efficient. It can take a significant amount of time and resources to manually generate leaving certificates for each individual student. This can be a major burden for educational institutions, especially those with large student populations.

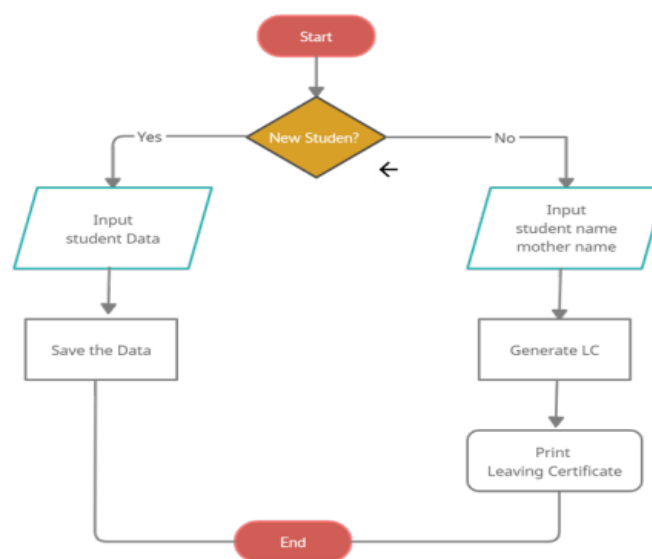
The student data management system and leaving certificate generator were created to address these issues. This system is intended to make managing student data and producing leaving certificates more efficient.

The solution enables educational institutions to store and retrieve student data in a more effective and safe manner by utilising database technology. The objective of this web application portal is to reduce the risks associated

with physical file management of student data. The portal saves time and effort by providing a centralized platform for storing and retrieving student data and certificates. This eliminates the need for manual searches through physical files, making the process faster and more efficient.

The existing system of leaving certificate generation relied on a clerk to distribute the certificates. While this method may have been effective in the past, it is no longer practical given the increasing amount of student data that needs to be managed. With the leaving certificate generator and student data management portal, educational institutions can automate the process of certificate generation and data management, freeing up staff to focus on other important tasks.

## II. SYSTEM DESIGN



The Leaving Certificate Generator and Student Data Management Portal is a web application designed to facilitate the process of generating Leaving certificates for students, as well as managing their data in a secure and efficient manner. The system is developed using the Django framework for the backend and SQL for data storage.

The system is primarily designed for schools, colleges, and universities, but can be used by any organization that requires a comprehensive student data management system. The system is flexible and can generate various types of certificates such as bonafide certificates and organizational certificates in addition to Leaving certificates.

The system is accessed through a login page, which is only accessible to authorized personnel. Upon successful login, the system redirects the user to the home page, where they can choose to either admit new students or generate certificates.

The student object is one of the central components of the system. It contains multiple fields such as name, address, previous school, enrollment number, cast, religion, DOB, mothers name, fathers name, and department. The student object is stored in a relational database management system (RDBMS) using SQL.

The system also includes a certificate generation feature that enables the user to generate Leaving certificates for students. The certificate generation process involves entering the student's valid credentials, such as their



enrollment number, and clicking on the generate certificate button. The system then routes the user to a PDF format of the certificate that can be downloaded, printed, or shared as needed.

## 2.1 System Architecture

The system is built on the Django framework, which is a high-level Python web framework that encourages rapid development and clean, pragmatic design. Django follows the Model-View-Controller (MVC) architectural pattern. The model contains the data of the application, the view contains the presentation logic, and the controller manages the interaction between the model and the view.

The system is divided into three main layers: the presentation layer, the application layer, and the database layer. The presentation layer is responsible for handling user interface (UI) interactions. The application layer contains the business logic of the system, including data processing, data validation, and data manipulation. The database layer is responsible for storing and retrieving data from the RDBMS.

The system uses SQL to store data in the RDBMS. SQL is a standard language for managing relational databases. It is used to create, modify, and delete database tables and their fields, as well as to retrieve data from the database. The system uses Django's Object-Relational Mapping (ORM) to map the SQL database to the Django model, which enables the system to interact with the database using Python code instead of SQL queries.

The system also uses several Python packages, including FPDF2, Num2Words, and Datetime. FPDF2 is a Python package used for generating PDF documents, Num2Words is used for converting numbers to words, and Datetime is used for working with dates and times.

## III. COMPONENT USED

The Leaving Certificate Generator and Student Data Management Portal consists of several components that work together to provide a seamless user experience. The system is built using the Django web framework for the backend, and uses SQL to save and retrieve data. The system also uses FPDF2, Num2Words, and Datetime packages for PDF generation.

- Login:

The first component of the system is the login page. Once the administrator or organization admin logs in, they are redirected to the homepage which is the admission page.

Admission:

The admission page allows the administrator to add new students to the college database. This is done by filling in various details such as the student's name, address, previous school, enrollment number, cast, religion, DOB, mother's name, father's name, and department.

- Certificates:

The certificates section can be accessed from the navigation bar, and provides the option to generate Leaving Certificates. When the administrator clicks on the Leaving Certificate option, the system opens up the main Leaving Certificate portal.

- Leaving Certificate Portal:

The Leaving Certificate portal requires the administrator to enter valid credentials such as the enrollment number. Once the administrator enters the valid data, they can click on the generate certificate button.

- PDF Generation:



After clicking on the generate certificate button, the system routes the administrator to the chrome application that opens up the PDF format of the certificate. The certificate contains all the relevant information such as the student's name, address, enrollment number, date of birth, mother's name, father's name, and department.

- **Student Data Management:**

Apart from generating certificates, the system also facilitates the management of student data. This includes the ability to search for and retrieve student records based on various parameters such as name, enrollment number, department, etc.

- **Security:**

The system ensures that all the data stored in the database is secure and can only be accessed by authorized users. It also provides various security measures such as encryption and backup to prevent data loss.

Overall, the Leaving Certificate Generator and Student Data Management Portal is a comprehensive solution for educational institutions to manage student data and generate Leaving Certificates. The system is user-friendly and efficient, and helps to reduce the risks associated with physical file handling. By using the latest web technologies, the system ensures that the data is secure and easily accessible.

#### **IV. SUMMARY**

In conclusion, the Leaving Certificate Generator and Student Data Management Portal is a useful tool for educational institutions to store and manage student data efficiently. The portal reduces the risks associated with physical file management and provides a user-friendly interface for generating leaving certificates and other important documents. By using the Django backend and SQL database, the portal ensures data security and reliability. The web application's design and implementation were thoroughly explained, outlining the system components, software and tools used. The paper objective was to develop a system that reduces the time and The online application gateway has successfully completed the necessary work to manage student data physical files. Additionally, other scenarios were used to show how system worked, including registration of new students and the generation of diplomas using the names of the student and their mothers. For PDF generation, the FPDF2 package, Num2Words, and Datetime libraries were used, which increased the system's adaptability usability.

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