" GyanArjan - A Scholarship Management System" A Project Report Submitted to Rajiv Gandhi Proudyogiki Vishwavidyalaya



Towards Partial Fulfillment for the Award of Bachelor of Engineering in Computer Science & Engineering

Submitted by: Guided by:

Aeshna Jain Prof. Priyanka Jangde

(0827CS201017) Prof. Narendra Pal Singh



Acropolis Institute of Technology & Research, Indore
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EXAMINER APPROVAL

The Project entitled "GyanArjan - A Scholarship Management System" submitted by Aeshna Jain (0827CS201017) has been examined and is hereby approved towards partial fulfillment for the award of Bachelor of Engineering degree in Computer Science & Engineering discipline, for which it has been submitted. It understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein, but approve the project only for the purpose for which it has been submitted.

(Internal Examiner)	(External Examiner)
Date:	Date:

GUIDE RECOMMENDATION

This is to certify that the work embodied in this project entitled "GyanArjan - A Scholarship Management System" submitted by Aeshna Jain (087CS201017) is a satisfactory account of the bonafide work done under the supervision of Prof. Priyanka Jangde and Prof. Narendra Pal Singh are recommended towards partial fulfillment for the award of the Bachelor of Engineering (Computer Science & Engineering) degree by Rajiv Gandhi Proudyogiki Vishwavidhyalaya, Bhopal.

(Project Guide)

(Project Coordinator)

STUDENTS UNDERTAKING

This is to certify that a project entitled "GyanArjan - A Scholarship Management System" has been developed by me under the supervision of Prof. Priyanka Jangde and Prof. Narendra Pal Singh Rathore. The whole responsibility of the work done in this project is mine. The sole intention of this work is only for practical learning and research.

We further declare that to the best of our knowledge, this report does not contain any part of any work which has been submitted for the award of any degree either in this University or in any other University / Deemed University without proper citation and if the same work is found then we are liable for explanation to this.

AESHNA JAIN (0827CS201017)

Acknowledgement

I thank the almighty Lord for giving me the strength and courage to sail out through the tough and reach shore safely. There are a number of people without whom this project's work would not have been feasible. Their high academic standards and personal integrity provided me with continuous guidance and support. I owe a debt of sincere gratitude, and a deep sense of reverence and respect to our guide and mentors Prof. Priyanka Jangde and Prof. Narendra Pal Singh Rathore, Associate Professor, AITR, for their motivation, sagacious guidance, constant encouragement, vigilant supervision and valuable critical appreciation throughout this project work, which helped me to successfully complete the project on time. I express profound gratitude and heartfelt thanks to Dr. Kamal Kumar Sethi, HOD CSE, AITR Indore for his support, suggestion and inspiration for carrying out this project. I am very much thankful to other faculty and staff members of the CSE Dept, AITR Indore for providing me with all support, help and advice during the project. I would be failing in our duty if I do not acknowledge the support and guidance received from Dr. S C Sharma, Director, AITR, Indore whenever needed. I take the opportunity to convey my regards to the management of Acropolis Institute, Indore for extending academic and administrative support and providing me with all the necessary facilities for the project to achieve our objectives.

I am grateful to **my parents** and **family members** who have always loved and supported me unconditionally. To all of them, I want to say, "Thank you", for being the best family that one could ever have and without whom none of this would have been possible.

Aeshna Jain (0827CS201017)

Executive Summary

GyanArjan - A scholarship Management system

This project is submitted to Rajiv Gandhi Proudyogiki Vishwavidhyalaya, Bhopal(MP), India

for partial fulfillment of Bachelor of Engineering in Computer Science & Engineering branch

under the sagacious guidance and vigilant supervision of Prof. Priyanka Jangde and Prof.

Narendra Pal Singh Rathore.

The project is based on Flask, FlaskSQLAlchemy, and FlaskMail, which are the python web

application framework used for making well-working websites. This project is designed for

managing information about the scholarships provided by the government and non-

governmental organizations in our country. This project uses FlaskSQLAlchemy for backend

programming and FlaskMail for the notification system.FlaskSQLAlchemy facilitates database

connectivity with the portal and results in a well-functioning website.

Keywords: Flask, FlaskSQLAlchemy, FLaskMail.

"Education is the manifestation of perfection already existing in man"

- Swami Vivekananda

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CHAPTER 1: INTRODUCTION

Introduction

Decision-making is an integral part of the functioning of any organization. To facilitate Decision making in this ever-competitive world managers must have the right information at the right time to bridge the gap between need and expectation. To facilitate a better flow of information adequate Information Management Systems are the need of the hour. Earlier information is stored in the file systems and all work like the selection of information to show, redundant data filtering etc, all these work was done manually. The Digital era replaced all these manual work with a system that reduced manpower to a greater extent. This project focuses on the management of information-related scholarships given by the Union government, and state government as well as international scholarships given by governmental and non-governmental organizations.

1.1 Overview

Scholarships are the need of every student in every field of the education system. The education system is among the most demanding sectors of our country and the literacy rate is known to be a powerful factor for measuring the country's development. The government is trying to strengthen the education system by launching various policies and terming them as scholarships. Earlier scholarships were managed manually using paperwork but the digital era has replaced it through portals and websites and made all scholarships available to access from any place. Ease and comfort is the demand of today's era and the web is continuously working on providing more and more comfort to users through user-friendly and interactive interfaces. The scholarship management system manages all the information needed by students to select the best scholarship out of a heap of information.

1.2 Background and Motivation

The motivation and idea behind building this project are to make the work of youth easy and provide them with compiled versions of their scholarships. There are tons of scholarships in our country which are offered by governmental as well as non-governmental organizations, all these scholarships are scattered and youth find it difficult to collect all scholarships at one place and apply for those scholarships without missing any deadline and choose the best fit scholarship for themselves. Another major motivation for this project is to propose a system that features scholarships given by non-governmental organizations about which many people are not aware. So this project focuses on spreading awareness and reducing manpower for managing information about scholarships.

1.3 Problem Statement and Objectives

• PROBLEM STATEMENT:

Scattered information and there is no tool through which any analysis can be done on eligibility criteria and comparison between various scholarships. Students who belong to the group that is not eligible for any governmental scholarship missed out on chances of applying for any NGO-related scholarship due to a lack of information.

• OBJECTIVE -1:

To provide authorized and complete information about scholarships including their eligibility criteria, start date, end date, type of scholarship and provider information etc.

• OBJECTIVE -2:

To spread awareness about non-profitable scholarships by some non-governmental organizations. They can feature their scholarship on our portal so that lots of students can be benefited from their schemes.

• OBJECTIVE-3:

To develop a platform where all scholarships including Union Government scholarships, State government scholarships, and international scholarships by governmental and non-governmental sources are integrated to give proper statistics of all schemes.

1.4 Scope of the Project

- This project serves people with information about scholarships given by the Union government, State government, Union Territories, and International Scholarships given by governmental organizations as well as by some non-governmental organizations (private scholarships).
- It filters out scholarships based on gender, type of scholarship, caste, and other criteria so that users can filter their scholarships according to their needs. Students can register themselves on the portal and can view scholarships that best suit them.
- Non-governmental Organizations can apply for their scholarships to be featured
 on this portal. All requests are collected and admins verify their scholarships
 manually, if found valuable then featured on the portal.
- The future scope of this project includes a recommendation system that
 recommends users those scholarships that are based on their details of registration
 or based on the actions on the portal. Recommendations based on most users'
 actions on the portal can be added to provide users with a competitive and useful
 experience.

1.5 Report Structure

The project **GyanArjan** is primarily concerned with the management of information regarding scholarships including their eligibility criteria, deadlines and their type. The whole project report is categorized into five chapters.

Chapter 1: Introduction- introduces the background of the problem followed by the rationale for the project undertaken further the chapter describes the objectives, scope and applications of the project which subsequently ended with a report structure.

Chapter 2: Review of Literature- explores the work done in the area of the Project undertaken and discusses the limitations of the existing system and highlights the issues and challenges of the project area. The chapter finally ends up with the required identification for the present project work based on findings drawn from reviewed literature and end-user interactions.

Chapter 3: **Proposed System** - starts with the project proposal based on the requirement identified, followed by the benefits of the project. The chapter also illustrates the software engineering paradigm used along with different design representations.

Chapter 4: Implementation - includes the details of different Technology/ Techniques/ Tools/ Programming Languages used in developing the Project. The chapter also includes the different user interfaces designed for the project along with their functionality. Further, it discusses the experimental results along with the testing of the project.

Chapter 5: Conclusion - Concludes with objective-wise analysis of results and limitations of present work which is then followed by suggestions and recommendations for further improvement.

CHAPTER 2: REVIEW OF LITERATURE

Review of Literature

2.1 Preliminary Investigation

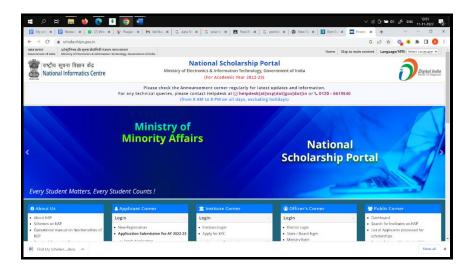
The increasing cost of education is leaving very limited options for students. Fortunately, scholarships from both the public and private sectors are there to provide opportunities to numerous deserving students. Educational institutions are processing thousands of applications and managing existing scholars during the admission period. As a result, scholarship management software has become an essential tool to ensure that each scholar receives benefits accordingly.

2.1.1 Current System

Current Systems for Scholarship management includes many software but Indian portals for managing students' information as well as scholarship information given by the union government, state government, and private sector are very limited.

1. National Scholarship Portal:

NSP is a digital scholarship platform that carries multiple scholarships offered by the central government, state governments and different government agencies like UGC (University Grants Commission). The National Scholarship Portal hosts about 104 scholarship schemes worth hundreds of crores for the scholarship seekers registered on the platform. According to officials, the platform has, so far, helped the government implement and disburse scholarships worth more than INR 2,700 crores. The platform boasts more than 127 Lakh applications out of which over 84 Lakh applications are verified also.



Advantages:

- All governmental Scholarships including central, state, and union territories are provided within the system with deadlines.
- Language translation is available for different users across the country.

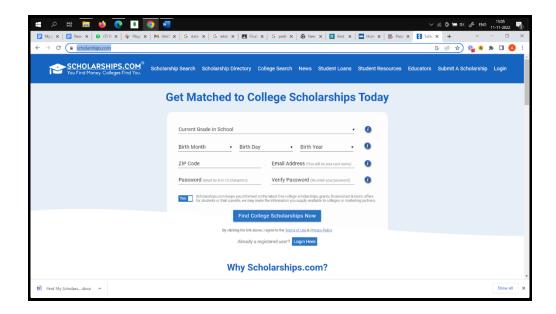
Disadvantages:

- International Scholarships and scholarships by non-governmental organizations are not available.
- Only site managed for all scholarships hence increased load.

Reference link: https://scholarships.gov.in/

2. Scholarship Portal:

Scholarships.com offers a simple and accessible approach to finding and applying for scholarships for students of all ages. We tried the tested and acclaimed search engine that delivers targeted lists of scholarships for the investment of just a few minutes. This site offers free college scholarship search and financial aid information resources on the Internet and has been recognized by high schools, colleges and universities nationwide, among others.



Advantages:

- Contains all useful information required for applying for a scholarship.
- Good bonds with colleges and scholarship providers to help the student get good benefits.

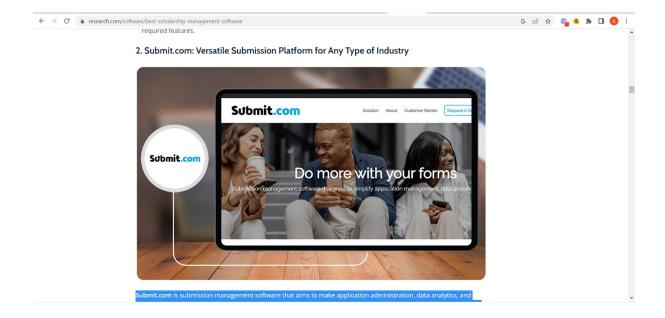
Disadvantages:

- Indian Colleges and Universities are not included in the list of colleges on the portal.
- User Interface should be upgraded.

Reference link: https://www.scholarships.com/

3. Scholarship Management Software:

Submit.com is submission management software that aims to make application administration, data analytics, and compliance easier. From government organizations to TV and film production enterprises, the platform is ideal for any institution that collects inputs from a large number of individuals. Educational institutions may use their capabilities to handle education programs, ranging from kindergarten to post-graduate. It is scalable to any scholarship program on a single common platform, making scholarship administration and monitoring easier.



Advantages:

- The platform adapts to any type of program, including student admissions, scholarships and fellowships, research programs, accreditations, grants, and student placements.
- Users can streamline their selection process using multiphase submissions, autoscoring, and auto-tagging features.

Disadvantages:

- Not free of cost
- Doesn't contain information about private scholarships.

Reference link: https://submit.com/

2.2. Limitations of Current System

Current systems Lack information about all scholarships in the Country at the same time. In one portal if central scholarships are present then it might be missed out on state scholarships or any other non-governmental scholarships. There are portals where governmental scholarships are present but scholarships given by private institutions like some non-governmental organizations are not present.

One major shortcoming of the existing system is that there is only one functioning system under the government of India for the management of scholarships that is NSP, although, state government is also managing their portals but just for their state. Students studying in another state and willing to apply for their dont have much awareness about their portals. So, there is a need for a system that is accessible for all people across the country.

2.3 Requirement Identification and Analysis for Project

Various studies and work has been done in the field of management of Information . It's not easy to manage huge amounts of data from disparate sources. So, a system is required to manage this much amount of data. The review of literature leads to draw certain major findings which are as under:

- Study of how to manage scholarship data ends up by creating a website to store
 information related to the same. For creating a portal, the study of databases is done
 ,study of how backend work and connect frontend with databases. Study of appropriate
 technology is done in order to make process easier and to ensure proper working of the
 project.
- Out of many technologies, Flask will be used as the technology to work on for backend work. For frontend, HTML, CSS, Bootstrap is used to make the website attractive and well functioning.

2.3.1 Conclusion

This chapter reviews the literature surveys that have been done during the research work. The related work that has been proposed by many researchers has been discussed. The research papers related to Information Management and Scholarship Management system were studied and decisions were made to use Flask and FlaskSQLAlchemy as the backend support for effective functioning of the project.

CHAPTER 3: PROPOSED SYSTEM

Proposed System

3.1 The Proposal

The proposal is to deploy a portal which consists of all types of scholarships including central, state, union territories and international scholarships and some non-governmental organization's scholarships. Now users can filter out their Scholarships and compare their scholarships by just one click. This will not only just help the scholarship holders but also help scholarship providers to feature their scholarships at a big level. The purpose is to spread awareness about scholarships and reduce manual work and manpower for selecting scholarships for education. This portal shows scholarships and sends mail to registered users about their activity. Proposed system is built to provide authenticated and updated information at the right time.

3.2 Benefits of the Proposed System

- User Friendly and interactive.
- All information is just one click away from users.
- Registration is simple and easy to do.
- NGOs get a golden opportunity to implement their ideas freely.
- Students now have a chance to apply for more scholarships.
- Awareness increases and consequently contribution towards the education sector increases.
- Deserving students won't miss out on opportunities as deadlines are mentioned on portal and updated timely.
- Students and scholarship holders can make better decisions based on comparative study by scrolling out various different types of scholarships.
- One major problem arises when we are searching for scholarships is that we
 get wrong or not working URLs. This system overcomes those limitations by
 updating the system timely.

3.3 Design Representation

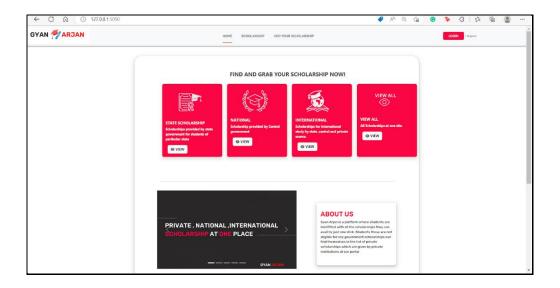


Figure 1: Home page

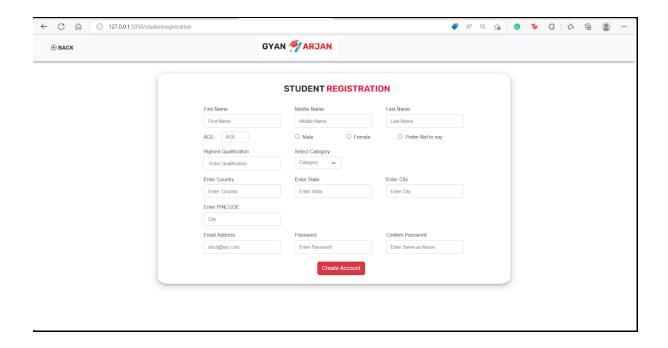


Figure 2: Student Registration Page

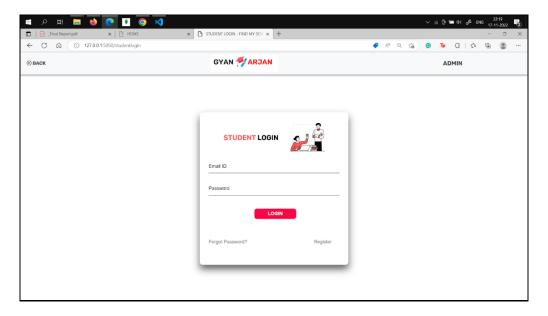


Figure 3: Student Login Page

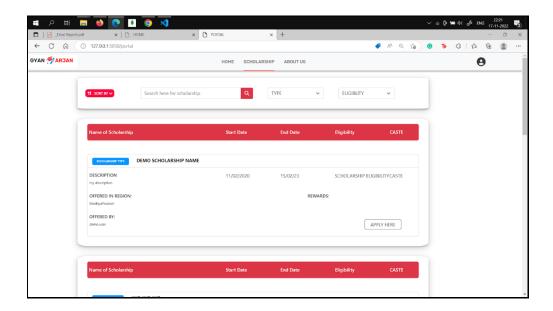


Figure 4: Portal Page

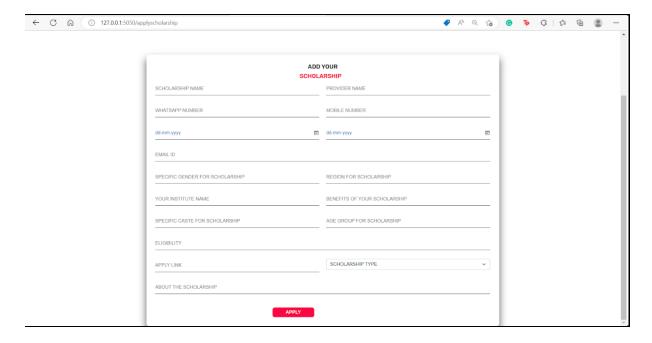


Figure 5: Apply For Scholarship Page for private scholarship providers

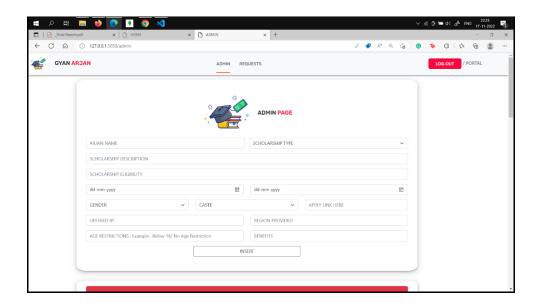


Figure 6: Admin Page

3.4 Diagrams

Use Case Diagram

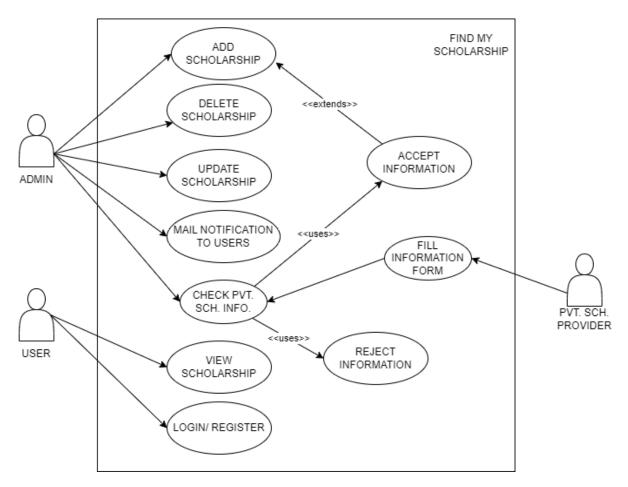


Figure 7: Use Case Diagrams

A use case diagram is a way to summarize details of a system and the users within that system. It is generally shown as a graphic depiction of interactions among different elements in a system. Use case diagrams will specify the events in a system and how those events flow, however, use case diagrams do not describe how those events are implemented. The method creates a document that describes all the steps taken by a user to complete an activity. According to this use case diagram, there are three entities - admin, user, and private scholarship providers. Their roles and responsibilities are as follows:

- Admin: The person manages all Scholarships and students. It has its user-id password and can change any part of the portal.
- Students- Students can register on the portal and can filter information provided by the portal as per their needs.

• Private Scholarship provider: organizations that want to add their scholarship can add their scholarship on the apply_your_scholarship section.

Data Flow Diagrams (DFD)

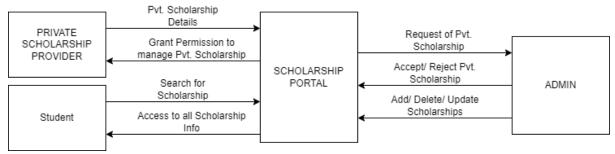


Figure 8: Level 0 DFD

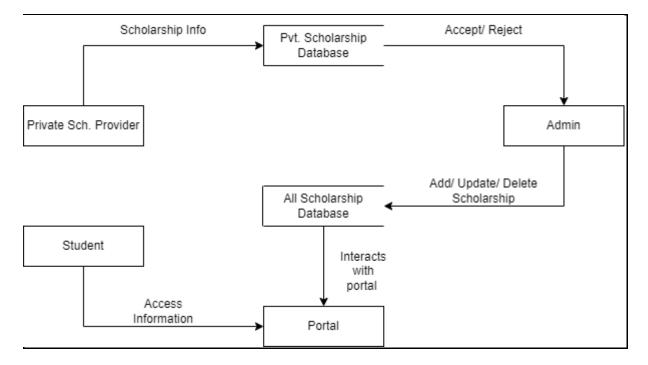


Figure 9: Level 1 DFD

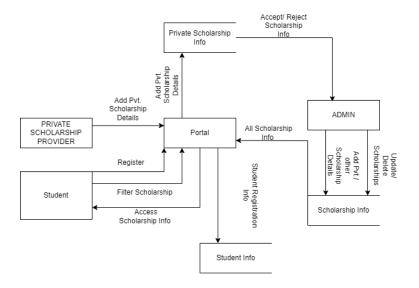
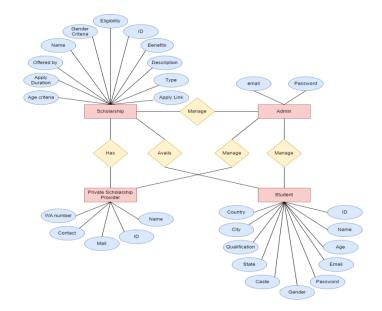


Figure 10: Level 2 DFD

A data flow diagram (DFD) is a visual representation of the information flow through a process or system. DFDs help you better understand process or system operations to discover potential problems, improve efficiency, and develop better processes. They range from simple overviews to complex, granular displays of a process or system. The level 0 diagram shows the simplified and primary working of the system. Level 1 shows the detailed form of working and level 2 gives a great insight into the project by describing the functions of how data flows from students to the portal to the administrator.

Entity Relationship Diagram



An Entity Relationship Diagram is a diagram that represents relationships among entities in a database. It is commonly known as an ER Diagram. An ER Diagram in DBMS plays a crucial role in designing the database. The ER Diagram is a structural design of the database. It acts as a framework created with specialized symbols to define the relationship between the database entities. ER diagram is created based on three principal components: entities, attributes, and relationships. Here the entities are: Scholarship, Admin, private_scholarship provider and Student. Admin for the portal is fixed and add-ons can be done as per need, scholarships and students are related to each other as students will apply for scholarships so they avail of scholarships. Admin manages every other entity so it is related to each other by relationship "manage". Private scholarship providers have their scholarships which they can add to the portal by further acceptance of the administrator.

CHAPTER 4: IMPLEMENTATION

Implementation

To address the problem of searching many websites for a single scholarship which results in a very tedious task and to spread awareness about existing scholarships, this portal is designed. Youth can easily find all types of scholarships including central, state, International and scholarships from some other sources like NGOs. Also, the implementation of the project follows the idea of providing those NGOs and institutes a platform to bring out their ideas and policies and contribute to the education sector of our country.

4.1 Technique Used

4.1.1 HTML 5

HTML stands for Hyper Text Markup Language. It is the standard markup language for creating web pages. It describes the structure of a web page. HTML consists of a series of elements. HTML elements tell the browser how to display the content. HTML5 is a markup language used for structuring and presenting content on the World Wide Web. It is the fifth and final major HTML version that is a World Wide Web Consortium recommendation.

4.1.2 CSS 3

Cascading Style Sheets (CSS) is a simple mechanism for adding style (e.g., fonts, colours, spacing) to Web documents.CSS3 is the latest evolution of the Cascading Style Sheets language and aims at extending CSS2.1. It brings a lot of new features and additions, like rounded corners, shadows, gradients, transitions or animations, as well as new layouts like multi-columns, flexible boxes or grid layouts.

4.1.3 Javascript

JavaScript, often abbreviated as JS, is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS.JS or Javascript is used to program the behaviour of web pages. JS libraries and frameworks make website and application development easier with wide-ranging features and functionalities.

4.1.4 Jquery

jQuery is a fast, small, and feature-rich JavaScript library. It makes things like HTML document traversal and manipulation, event handling, animation, and Ajax much simpler with an easy-to-use API that works across a multitude of browsers. With a combination of versatility and extensibility, jQuery has changed the way that millions of people write JavaScript.

4.1.5 Flask

Flask is a micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions. Flask depends on the Jinja template engine and the Werkzeug WSGI toolkit. Additional add-ons in Flask make it ready for web development.

• Jinja:

Jinja is a fast, expressive, extensible templating engine. Special placeholders in the template allow writing code similar to Python syntax. Then the template is passed data to render the final document.

• WSGI:

WSGI is the Web Server Gateway Interface. It is a specification that describes how a web server communicates with web applications, and how web applications can be chained together to process one request.

Werkzeug:

Werkzeug is a comprehensive <u>WSGI</u> web application library. It began as a simple collection of various utilities for WSGI applications and has become one of the most advanced WSGI utility libraries. Werkzeug can instantiate objects for request, response, and utility functions. It can be used as the basis for a custom software framework and supports Python 2.7 and 3.5 and later.

4.1.6 FlaskSQLAlchemy:

Flask-SQLAlchemy is an extension for Flask that adds support for SQLAlchemy to your application. It simplifies using SQLAlchemy with Flask by setting up common objects and patterns for using those objects, such as a session tied to each web request, model, and engine. Flask-SQLAlchemy does not change how SQLAlchemy works or is used.

4.1.7 FLask Mail:

The Flask-Mail extension provides a simple interface to set up SMTP with your Flask application and to send messages from your views and scripts. Web-based applications typically require the ability to send mail to the user/client. Flask doesn't have an out-of-the-box solution to send mail. Instead, the Flask-Mail extension makes it easy to establish a simple interface with any email server.

4.1.8 SQLite

SQLite is a C-language library that implements a small, fast, self-contained, high-reliability full-featured, SQL database engine. SQLite is the most used database engine in the world. The SQLite file format is stable and cross-platform. SQLite database files are commonly used as containers to transfer rich content between systems and as a long-term archival format for data, There are over 1 trillion (1e12) SQLite databases in active use.

4.2 Testing

Testing is the process of evaluation of a system to detect differences between given input and expected output and also to assess the features of the system. Testing assesses the quality of the product. It is a process that is done during the development process.

The testing process used in the project is Black box testing and white box testing. The whole code is checked and tested by running various test cases, also the functionality is also tested.

4.2.1 Testing at the front end

At the registration page all the dropdowns are working fine, all tab clicks are accurate, confirm password field working fine and the form gets submitted by entering

clicks. At the login and registration page, all the passwords are hidden while entered. All the measures and test recordings are done by the developer. Cards used in showing information about scholarships are arranged in an effective manner. The validation of the entries of data is also done using jquery and it gives successful results by determining the word limit whether it is too short or long.

4.2.2 Testing at the backend

At the backend, all three databases namely student, private scholarship and scholarships are linked and bound to each other. Password confirmation is done successfully. Url validations are also done at the backend and are done successfully. All the CURD operations are working well and contribute towards the good deployment of the project.

4.2.3 Test Results

Testing fields	Executed	Passed	Pending	Performance
Registration form	100%	PASS	0%	Positive
Login form	100%	PASS	0%	Positive
Portal main page	100%	PASS	0%	Positive
Apply scholarship page	100%	PASS	0%	Positive
Request form page	100%	PASS	0%	Positive
CURD operation on databases	100%	PASS	0%	Positive

Table 1: Testing progress report

CHAPTER 5: CONCLUSION

Conclusion

5.1 Conclusion

In today's world, it's so difficult to manage the information we have, daily a huge amount of data is generated and implemented, and to keep track of that information it's necessary to introduce an information system. This portal is an information system which manages all the information related to scholarships and fixes the problems that youth face, like difficulty in finding appropriate and authorized data at the right time. Education is perhaps among the most important investments one can make to secure a bright future. It can help one build a network of professional contacts, find better job opportunities, as well as gain financial stability. However, quality education does not come cheap, the increasing cost of education is leaving very limited options for students. Fortunately, scholarships from both the public and private sectors are there to provide opportunities to numerous deserving students. Implementation of a system that manages data regarding scholarships and gives a compact and collected form of information reduces man work of arranging a big amount of data and management of information, this makes searching and application work much easier. Earlier when records of these scholarships were stored in the file system manually there were huge chances of incomplete data and corrupted data but the online system reduced those possibilities and made the process smooth for users. The interactive user interface where data is properly arranged makes users feel comfortable and motivated to search for their desired information and make good use of the existing system.

5.2 Limitations of the Work

This system is not able to give facilities like submitting forms on our portal and it will be directly submitted to the government handlers, although we provide URLs for applying for those scholarships. Further, this system is not able to handle users' actions so it is not able to send emails about which scholarships they are applying for and what are the deadlines for the same.

5.3 Future Advancements

According to planning, a recommendation system needs to be added so, a module of the same should be added so that users get recommendations about the scholarships which are either accessed by most of the students or those scholarships which best suit their profile. Also, the notification system needs to be improved so the work on these modules will be taken for future advancements.

Bibliography

- [1] Forat Falih Hasan: "A Review Study of Information Systems" International Journal of Computer Applications(0975 8887) Volume 179 No.18, February 2018.
- [2] Sauser, Eric Irvin, "Scholarship management system" (2011). Honors Program Theses. 20.
- [3] Adil Mahmoud Mohamed Mahmoud, Asim Seedahmed Ali Osaman: "An Automated WebBased System for Follow up on the Scholarships of Faculty Members" IJCSNS International Journal of Computer Science and Network Security, VOL.19 No.10, October 2019.
- [4] Burton R.Clark: "The higher Education system" University of California Press, Ltd. London, England

