A

Project Report

On

“DEPARTMENT MANAGEMENT SYSTEM”

Submitted By

Mr. Vishal Vishwakarma

Mr. Suhas Pawar

Mr. Ajay Supekar

Guided By

Mr. Sonawane G.S.

In partial fulfilment for award of the degree

BACHELOR OF COMPUTER SCIENCE

LOKNETE DR. BALASAHEB VIKHE PATIL (PADMABHUSHAN AWARDEE)

PRAVARA RURAL EDUCATION SOCIETY’S

PADMASHRI VIKHE PATIL COLLEGE OF ARTS SCIENCE AND COMMERCE, PRAVARANAGAR

TAL-RAHATA, DIST-AHMEDNAGAR Pin-413713

Year: 2022-23

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CERTIFICATE

This is to certify that the work embodied in the project **"DEPARTMENT MANAGEMENT SYSTEM"** is the original work done by **MR. Vishal Vishwakarma, Mr. Suhas Pawar & Mr. Ajay Supekar** for the degree of Bachelor in Computer Science of Savitribai Phule Pune University, Pune in **"HTML, CSS, JavaScript & PHP"** under my personal guidance and has completed to my entire satisfaction.

Project Guide **HOD**

Internal Examiner **External Examiner**

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Project Introduction

Now-a-days, in 21st century every sector is being digitized, from marketing to health sectors, so that educational institutes are also diverting towards digital technology. The DMS is a system that empowers different departments which can handle their data digitally.

Previously, the system for deportment management was used manual records to store data and/or used local computer for storing data in the form of excel sheets which was inefficient in the sense of time and security. DMS, having different role-based entities like student, teacher, HOD, principal and an admin are limited with password based login system.

It provides different key features like it is a web system hence remotely accessible, provides functionality to add/remove entities, change password if forgotten and provides simple forms to store data like book publications, sport activities, extra-curricular activities, etc.

This application is very useful for report generation in different formats like PDF, Excel, DOC, etc. These reports are not bound to their content, we can easily customize it according to our needs and requirements. Also it provides functionalities for annual, quarter or monthly reports on a single click!

It also provides the features of expansion and development of the system. The need for computerization is in order to do overcome the hard work done manually and to do it easily & faster than manual system. It has functionality to save and print the records.

In summary, this report represents my dedicated efforts in computerizing the system of my best level.

System Requirement

HARDWARE REQUIREMENTS

- i3 processor.
- 4GB RAM
- 256 GB Hard-Disk.

SOFTWARE REQUIREMENTS

- Linux, Ubuntu 22.04.1.
- Front End – HTML, CSS, Bootstrap, JavaScript & JQuery
- Back End – PHP, PostgreSQL
- Server – Apache Server 2.4
- Design Tool – Visual Studio Code
- Documentation Tools – Microsoft Word

WEB REQUIREMENTS

- Bandwidth – 1mbps (minimum)
- Internet – 512 kbps (minimum)
- Browser – Internet Explorer 8.0 or any browser

Scope

The System is mainly designed for managing academic records and generating reports in different formats. Scope of this project is to investigate and design a web-software application that facilitates teachers in performing their task in easy and simple manner. It will help to manage academic reports as well as different outlets like books or research papers published, sport activities, training and placement units, alumni details and much more. It provides quick way of operation by capturing the manual process and automating them. It will help them to manage new entities, academic data, and historical data and also in producing reports in different formats for Teachers, Head of the Department (HOD) and Principal. This solution will help teachers in reducing effort spend on managing records. It will also provide them opportunity to explore possibility of generating documents, handling academic reports.

Objective

- This project is a web-application that provides academic process management.
- It is designed in PHP for managing academic records, reports which are going out for NAAC. Details are maintained in centralized database.
- It will generate academic reports in different formats and customized.
- It is capable of storing data in the PostgresDB with complete information.
- The main goal of the system is to provide user friendly GUI based dashboard, which will be simple and powerful.
- Reports should be sorted in specified date or period of time.
- To provide fast, efficient and reliable environment.
- Send OTP through mail server for authentication, if user forgets password.
- Provide an option for student to send their certification online in the form of image validation.
- It has capability to keep the complete information of a transaction.

Limitations

- The system is only designed for an education institute. Thus, out sources are not allowed.
- Data backup is not easy.
- It needs an expert for technical maintenance.
- It has some security concern for large community.
- Inability of the system to manage the whole history of student.
- The size of the database increases day-by-day, increasing the load onthe database and data maintenance activity.
- The system is unable to fetch previous data from excel or docs.

PROPOSED SYSTEM

Problem statements

The existing system is a manual system is very complex to be managed and searching or updating the information. The main problem is to manage students as well as teachers data online.

Objectives Of Propose System

The main objective of the Proposed System is to Computerize the functioning easily and comfortably to interact with computerized system with efficient Management Control.

The advantages of the Proposed System are as follows……..

- Reduces human-efforts.
- It's Very easy to generate customized reports.
- Easy to add and remove entities.
- Maintain each record details of students.
- Ability to generate outstanding reports in different formats.
- Ability to store and print certificates directly.
- Its store records in various Format. Many options to export data.
- Accuracy and Quality Report can be achieved

REQUIREMENT DETERMINATION AND ANALYSIS

To study the system we need to collect facts.

The specific methods used for collecting data are called fact finding techniques. Different fact finding techniques are:

- Interview Technique
- Record Review technique
- Observation Technique

1. Interviews-> Analyst uses interviews to collect information from individual or from groups. The interview is the best method for producing the qualitative information

2. Questionnaire-> Questionnaires allows analyst to collect information about various aspects of the system from large number of persons. The use of the standardized question format can produce mare reliable data than other fact finding techniques.

3. Record Review-> Many kinds of records & reports can provide valuable information about organization and its operation. In record reviews, analyst examines the information that has been recorded about the system and about the users. Also much of the information is gathered by reviewing the past & original documents, which give clear format style & recording.

4. Observation-> Through the observation, analyst can obtain the first hand information about how activities are carried out. This method is most useful when the analyst need to be actually observe how documents are handled, how processes are carried out, whether specified steps are actually followed or not. When I went to company I observed the each & every process which is going on there. I got very important information

as well as I understand the current system very well. I observed that the flow of registration at the system very well. We observed that

- ✓ What kind of system?
- ✓ What does it do?
- ✓ Who run the system?
- ✓ Who are the important people in it?
- ✓ What is the history of the system?

Feasibility Study

i. **Technical Feasibility**
ii. **Economical Feasibility**
iii. **Operational Feasibility**

i. Technical Feasibility :-

Proposed system is very much technically feasible because it can be developed using existing software and hardware. This evaluation determines whether the technology needed for the proposed system is available or not.

The software's required to build, maintain and upgrade the system are available for free. Open source package such as PHP and PostgresDB can be combined to make the system more cost effective. In addition, due to the easy availability of such software's the system is Technically Feasible.

ii. Economic Feasibility :-

The cost overhead include software and hardware maintenance cost, operating cost and includes cost required for man power, electricity etc. The proposed system will provide the right type of the information at right time, and in the required format.

This feasibility checks whether the system can be developed with the available funds. With the use of open source software the maintenance cost

can be brought down to zero. Hence a lot of money is saved to provide economical feasibility. The total cost of developing, maintaining and using this system is meager. Hence this system is economically feasible.

This will save time required for accessing information and routine operation, which will result in business growth. Consisting all these advantage, the cost overheads of the system are negligible.

iii. Operational Feasibility :-

The proposed system is easy to use, so the user will operate this application. This application is user friendly. It will work on Personal Computer, Laptops, Android mobile and Android tab also. It will work on internet therefore it can easily access the data. Therefore, the system is operationally feasible as it is very easy for end users to operate it.

User Requirement

HARDWARE REQUIREMENT

- i3 processor.
- 4GB RAM
- 256 GB Hard-Disk.

SOFTWARE REQUIREMENT

- Linux, Ubuntu 22.04.1
- Front End – HTML, CSS, Bootstrap, JavaScript & JQuery
- Back End – PHP, PostgreSQL
- Server – Apache Server 2.4
- Design Tool – Visual Studio Code
- Documentation Tools – Microsoft Word

Web Requirements

- Bandwidth – 1mbps(minimum)
- Internet – 512 kbps(minimum)
- Internet Explorer 8.0 or any browser

Data Dictionary

1. Users

Field Name	Data type	Size	Constraints	Description
uid	Integer	8	PRIMARY KEY (Auto Increment)	User's id
uname	varchar	50	NOT NULL	User's name
email	varchar	30	NOT NULL	User's email address
password	char	256	NOT NULL	User's password in md5 encryption
role	varchar	10	NOT NULL	User's role in system
library_no	varchar	15	NOT NULL	User's library number

2. Book_publication

Field Name	Data type and size		Constraints	Description
id	integer	8	PRIMARY KEY (Auto Increment	Book's Id
title	varchar	100	NOT NULL	Book's Name
publication	varchar	50	NOT NULL	Book's Publication
Isbn/issn	varchar	50	NOT NULL	ISBN No
level	varchar	50	NOT NULL	Level
date	date		NOT NULL	Date

3. Research_paper

Field Name	Data type	Size	Constraints	Description
id	integer	8	PRIMARY KEY (Auto Increment	Research ID
tname	varchar	100	NOT NULL	Teachers name
title	varchar	100	NOT NULL	Research title
conference	varchar	100	NOT NULL	Conference
place	varchar	50	NOT NULL	Place
level	varchar	20	NOT NULL	Level
date	date		NOT NULL	Date

4. Sports_activity

Field Name	Data type and size	size	Constraints	Description
id	integer	8	PRIMARY KEY (Auto Increment)	Sports Id
cname	varchar	50	NOT NULL	Competition Name
prize	varchar	50		Prize
duration	varchar	20		Duration
level	varchar	20	FORGIEN KEY	Level
class	varchar	10	NOT NULL	Class
place	varchar	25	NOT NULL	Place
date	date		NOT NULL	Date

5. **Staff_activity**

Field Name	Data type	Size	Constraints	Description
id	integer	8	PRIMARY KEY (Auto Increment	Activity ID
department	varchar	50	NOT NULL	Department Name
activity	varchar	100	NOT NULL	Department
date	date		NOT NULL	Date

6. **Student_activity**

Field Name	Data type and size	Size	Constraints	Description
id	integer	8	PRIMARY KEY (Auto Increment)	Activity ID
cname	varchar	50	NOT NULL	Competition Name
sname	varchar	50	NOT NULL	Student Name
department	varchar	50	NOT NULL	Department
total_group	integer	4		Groups
type	varchar	25	NOT NULL	Type
date	date			Date

7. Extra_activity

Field Name	Data type and size	size	Constraints	Description
id	integer	8	PRIMARY KEY (Auto Increment)	Activity Id
department	varchar	50	NOT NULL	Department
Total_student	integer	4	NOT NULL	Group
activity	varchar	50	NOT NULL	Activity Name
duration	varchar	20	NOT NULL	Duration
date	date		NOT NULL	Date

8. Placements

Field Name	Data type and size	size	Constraints	Description
id	integer	8	PRIMARY KEY (Auto Increment)	Placement Id
department	varchar	50	NOT NULL	Department
total_registered	integer	4	NOT NULL	Group
activity	varchar	50	NOT NULL	
description	varchar	100	NOT NULL	Description
date	date		NOT NULL	Date

9. Extensions

Field Name	Data type and size	size	Constraints	Description Activity
id	integer	8	PRIMARY KEY (Auto Increment)	Extension Id
department	varchar	50	NOT NULL	Department
activity	varchar	50	NOT NULL	Activity
Total_registered	integer	4	NOT NULL	Group
date	date		NOT NULL	Date

10. Staff_committee

Field Name	Data type and size	size	Constraints	Description
id	integer	8	PRIMARY KEY (Auto Increment)	Committee Id
department	varchar	50	NOT NULL	Department
committee	varchar	50	NOT NULL	Committee Members
nature	varchar	100	NOT NULL	Nature of work
date	date		NOT NULL	Date

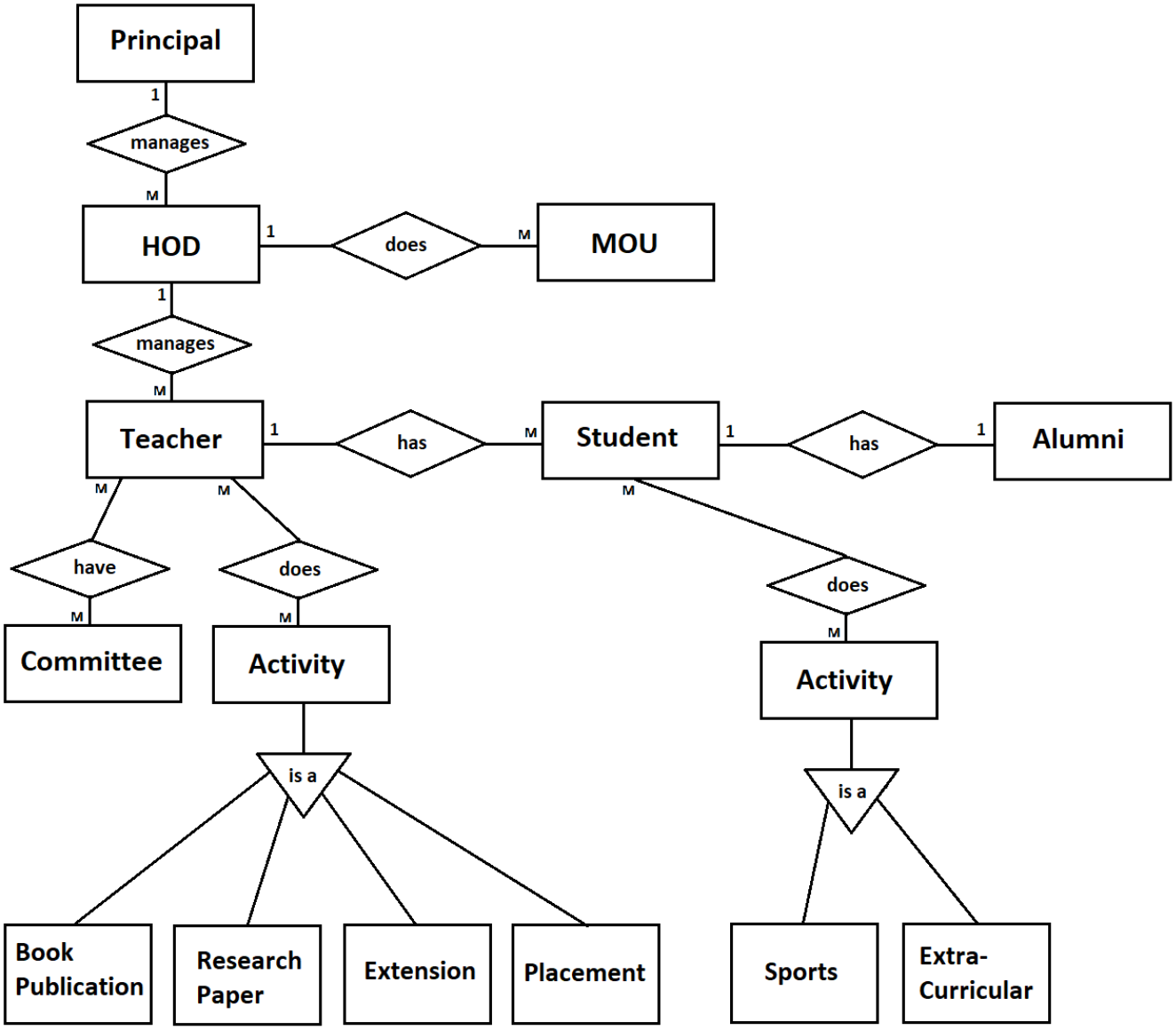
11.Mou_info

Field Name	Data type and size	size	Constraints	Description
id	integer	8	PRIMARY KEY (Auto Increment)	Mou Id
department	varchar	50	NOT NULL	Department
company	varchar	50	NOT NULL	Company Name
activity	varchar	100	NOT NULL	Activity
purpose	varchar	50	NOT NULL	Purpose
date	date		NOT NULL	Date

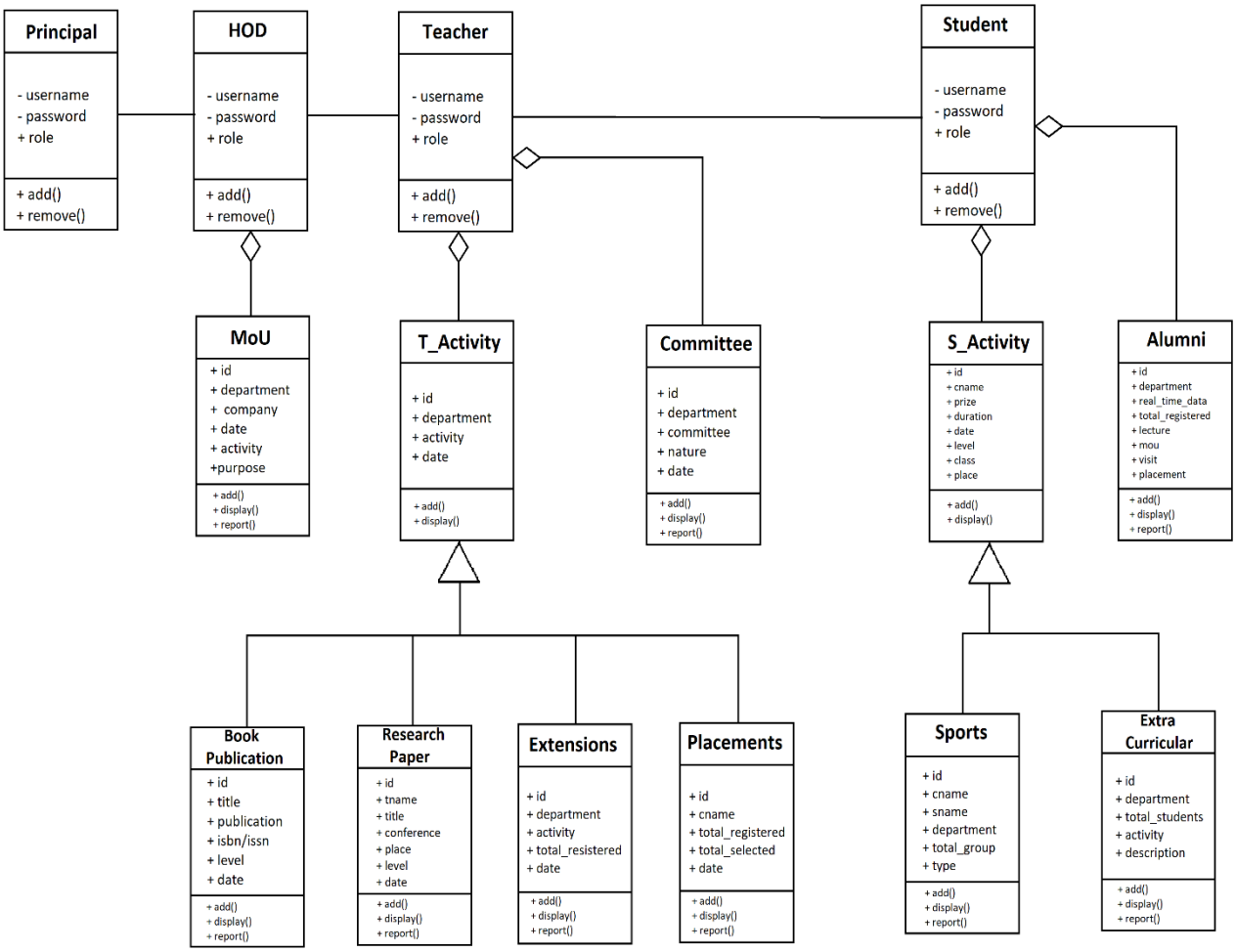
12. Alumni

Field Name	Data type and size	size	Constraints	Description
aid	integer	8	PRIMARY KEY (Auto Increment)	Alumni Id
department	varchar	50	NOT NULL	Department
real_time_data	integer	4	NOT NULL	Group
total_registered	integer	4	NOT NULL	Group
lecture	integer	4	NOT NULL	Number of lectures
mou	integer	4	NOT NULL	Mou
visit	integer	4	NOT NULL	Number of visits
placement	integer	4	NOT NULL	Number of placements

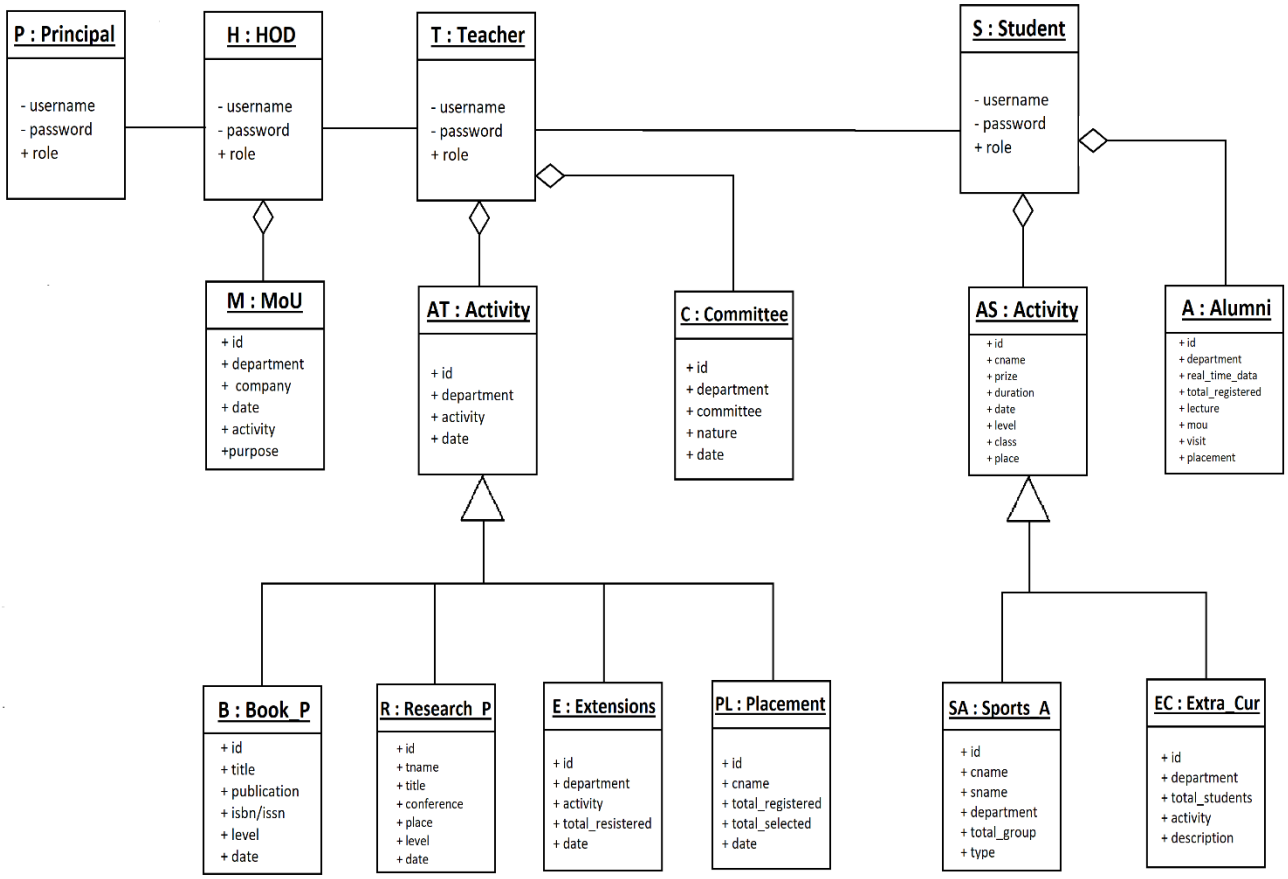
ER Diagram:-


Principal
1
manages
M
HOD
1
does
M
MOU
1
manages
M
Teacher
1
has
M
Student
1
has
1
Alumni
M
M
M
have
does
does
M
M
M
Committee
Activity
Activity
is a
is a
Book Publication
Research Paper
Extension
Placement
Sports
Extra-Curricular

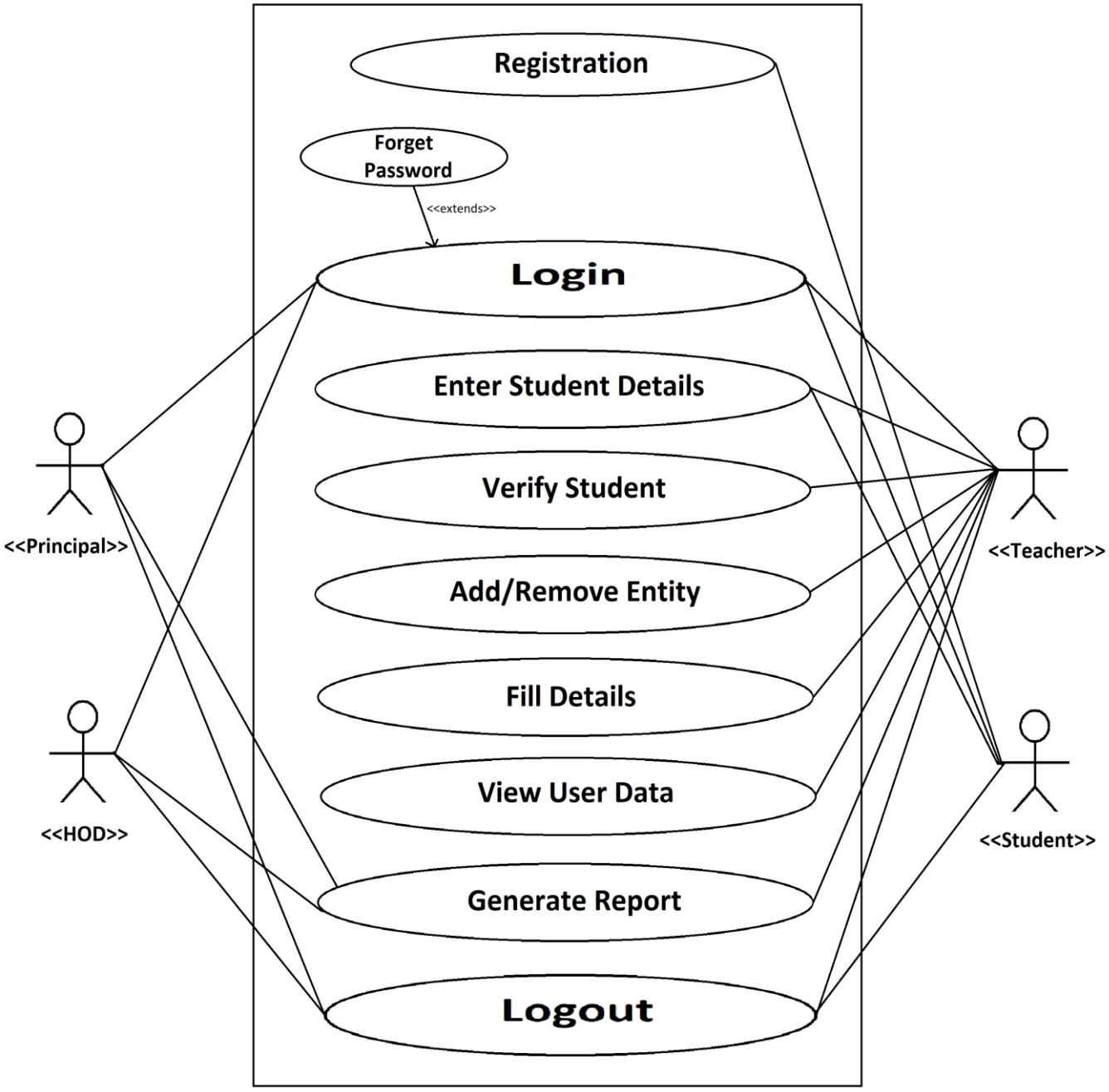
Class Diagram:-



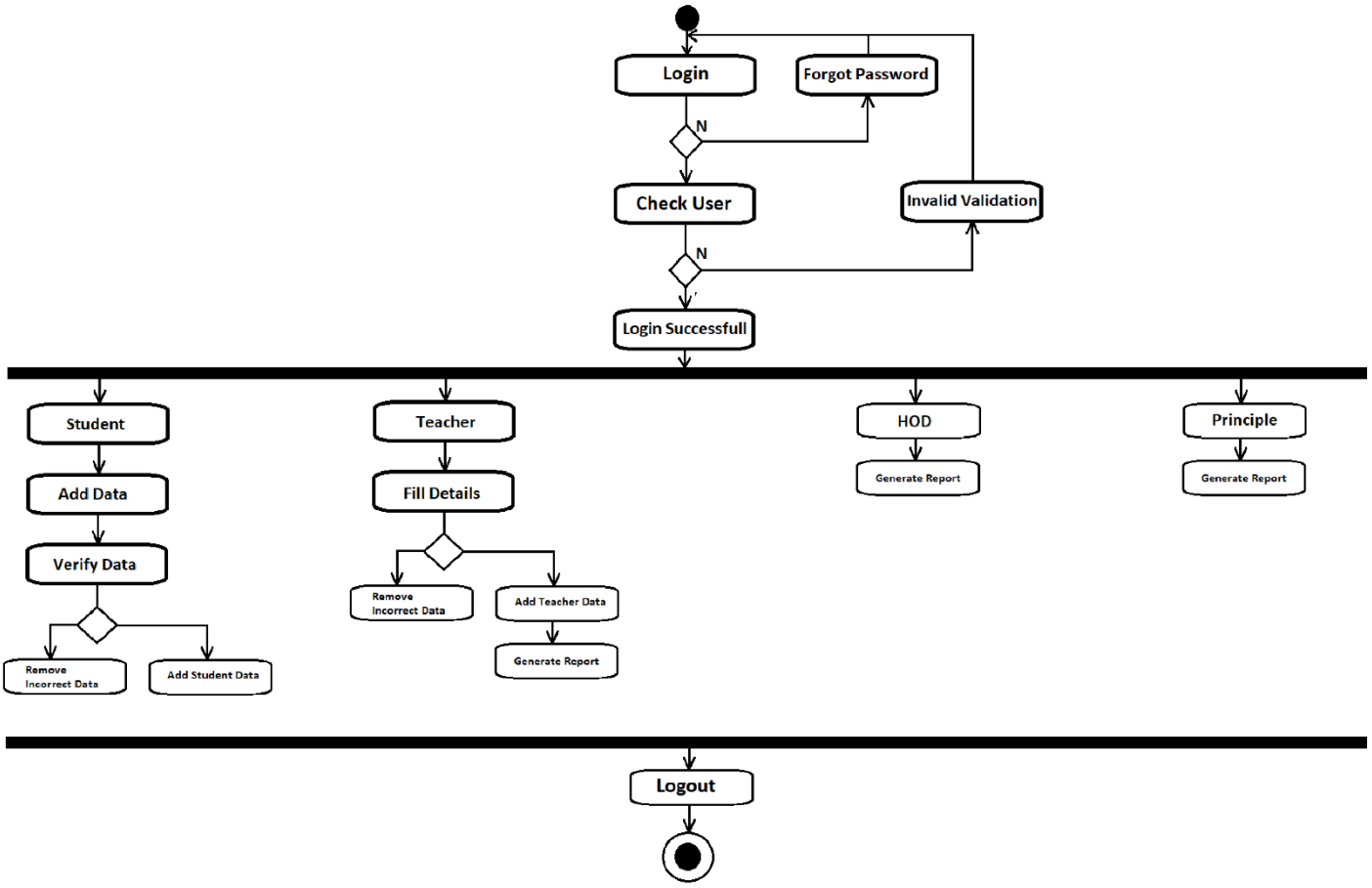
Object Diagram:-



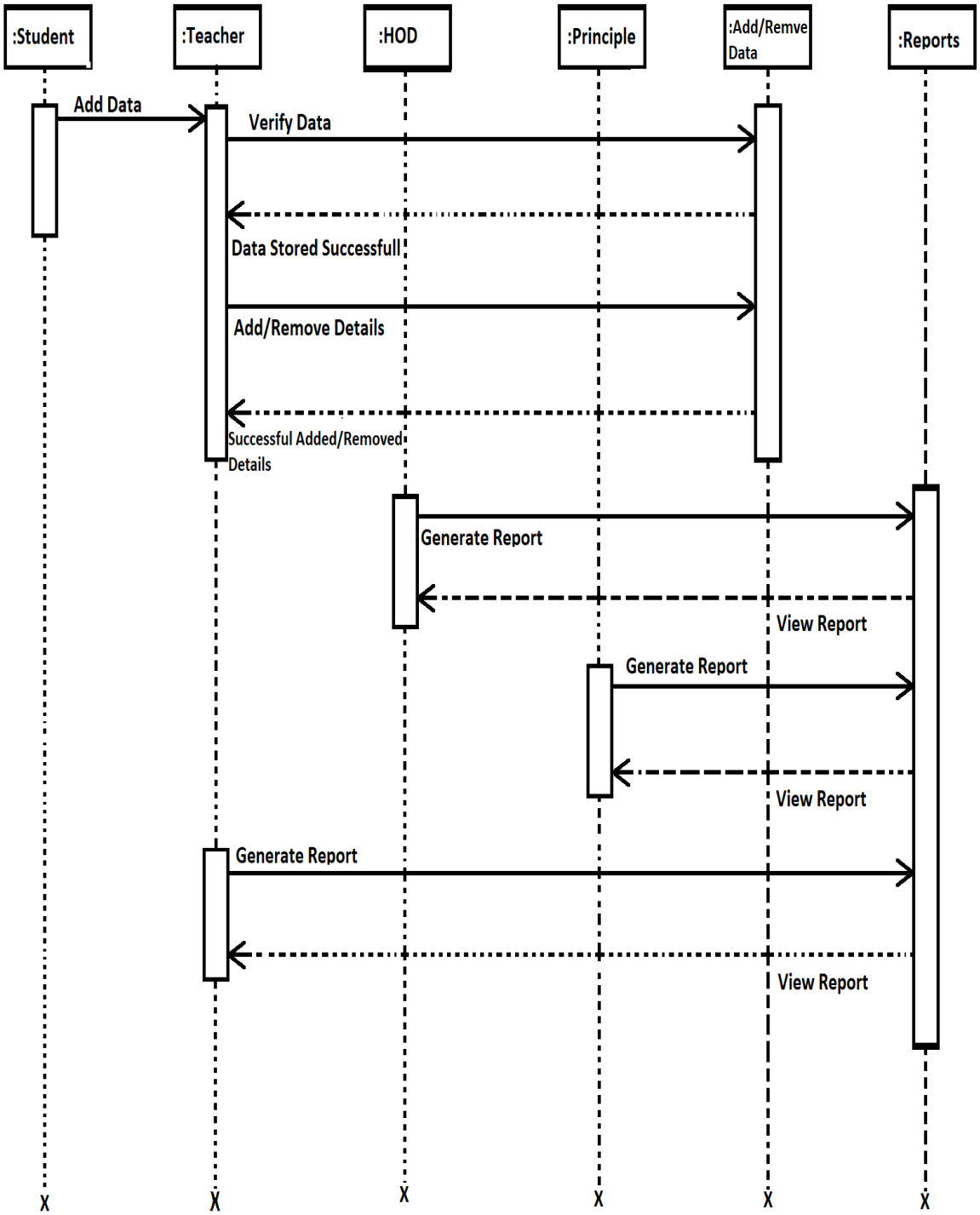
Use case Diagram:-



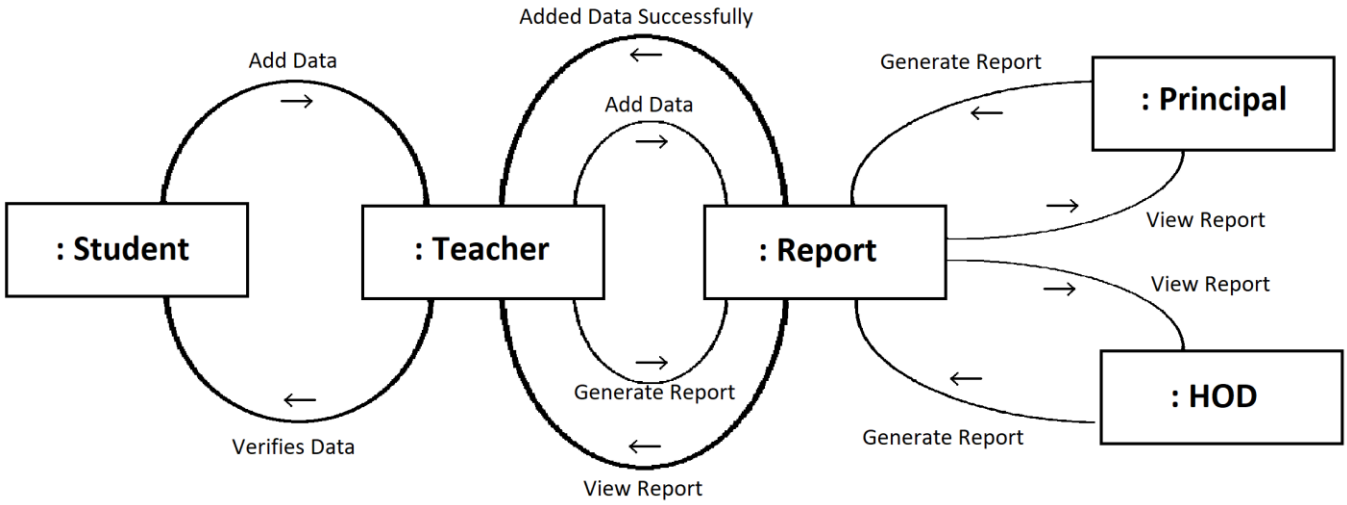
Activity Diagram:-



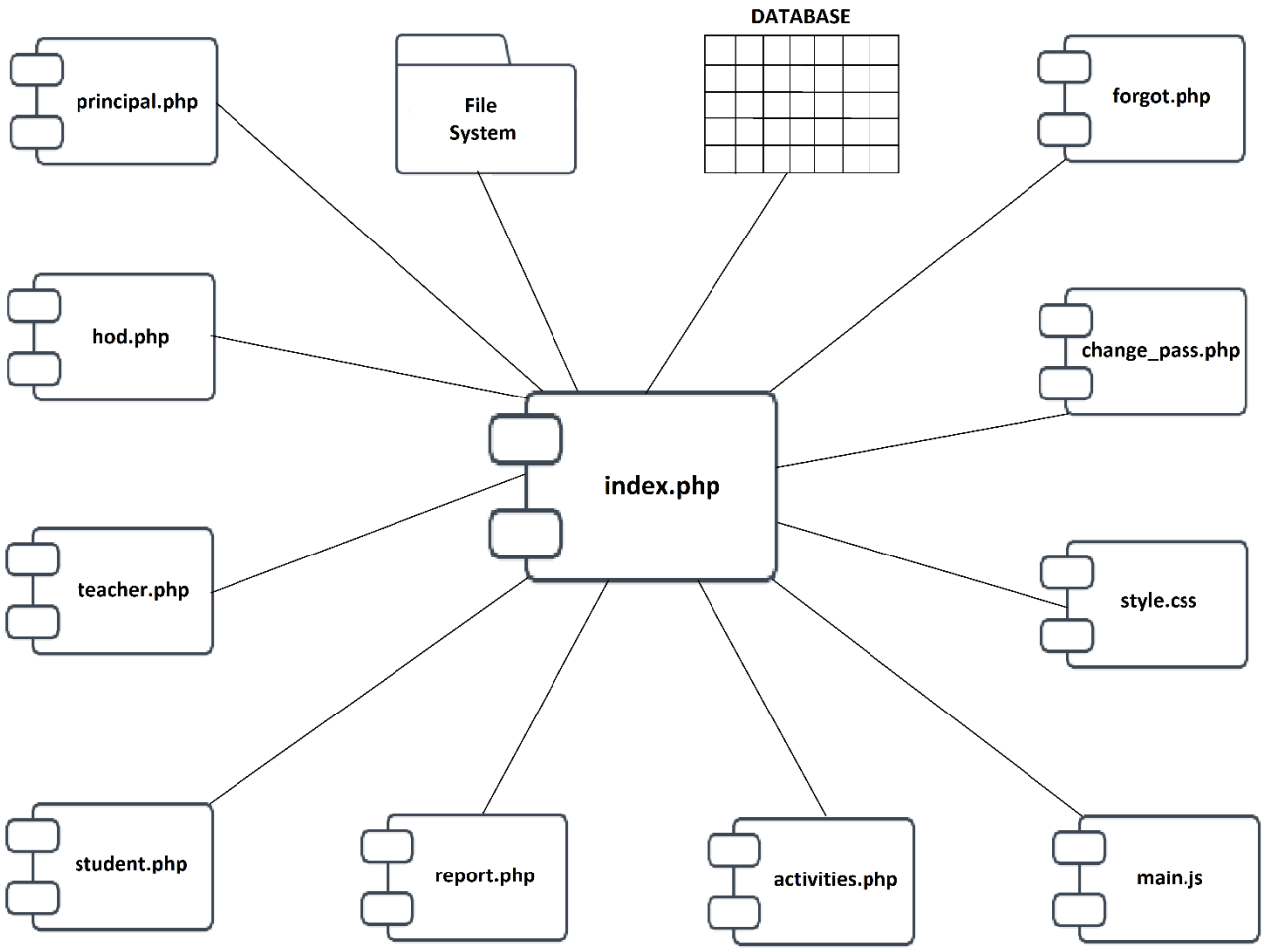
Sequence Diagram:-



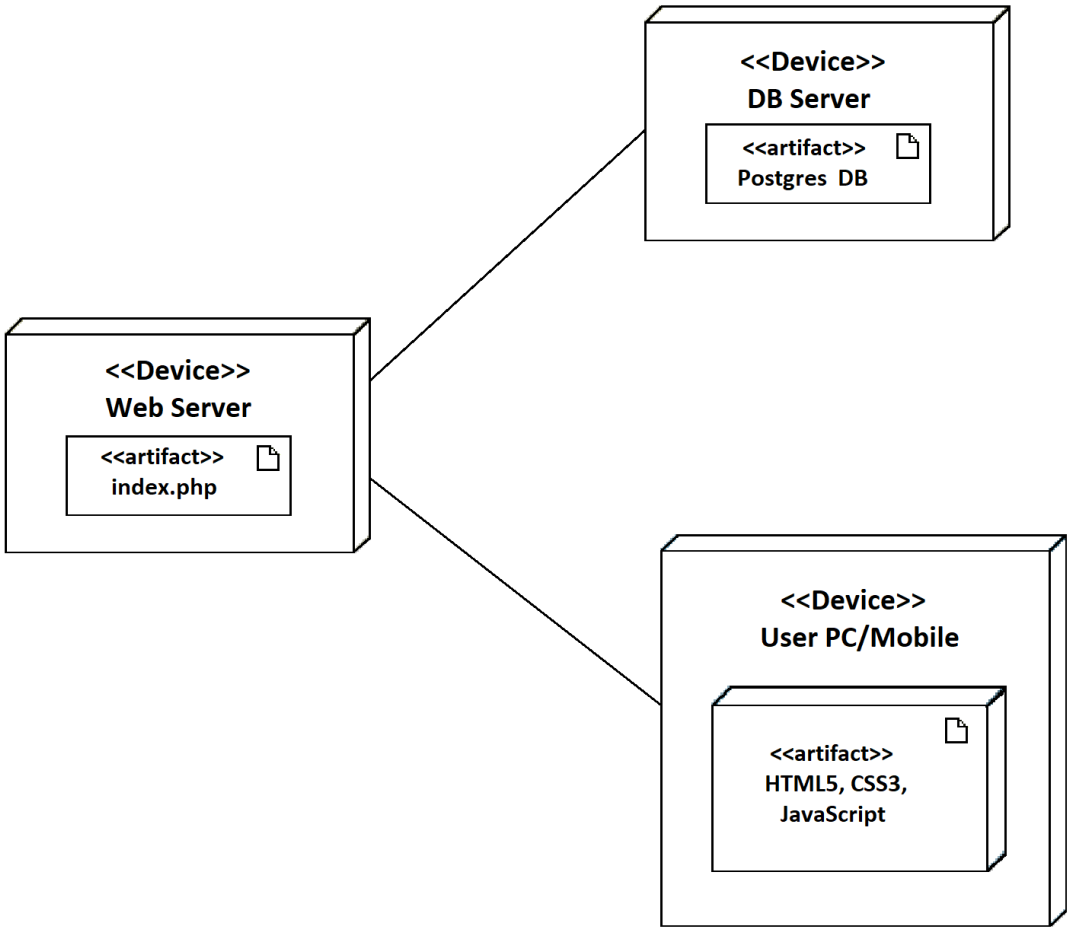
Collabration Diagram:-



Component Diagram:-

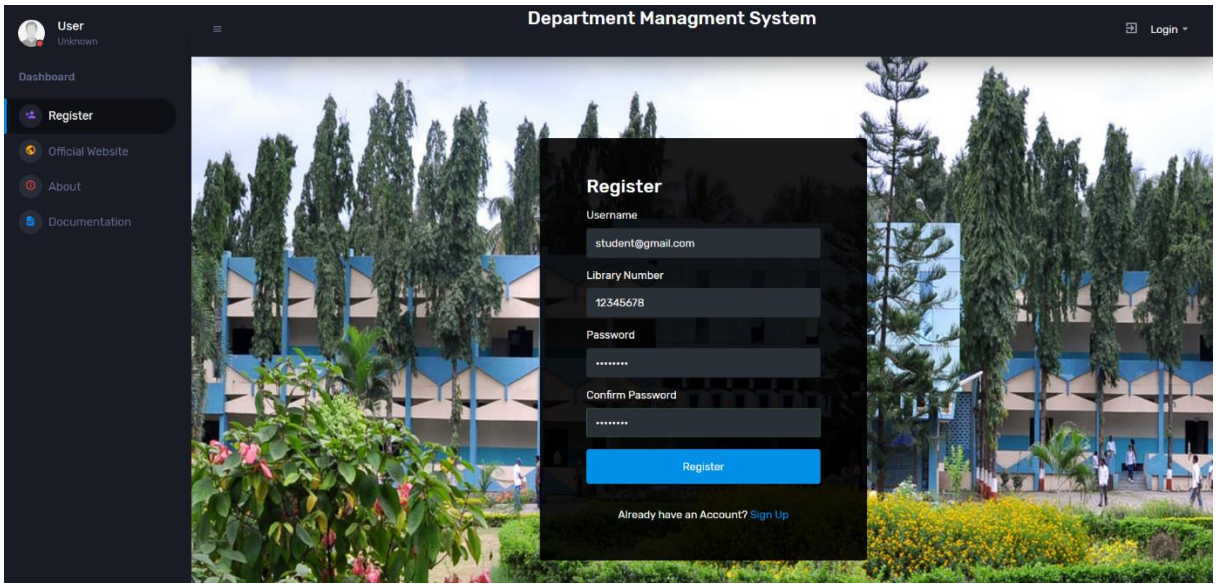


Deployment Diagram:-

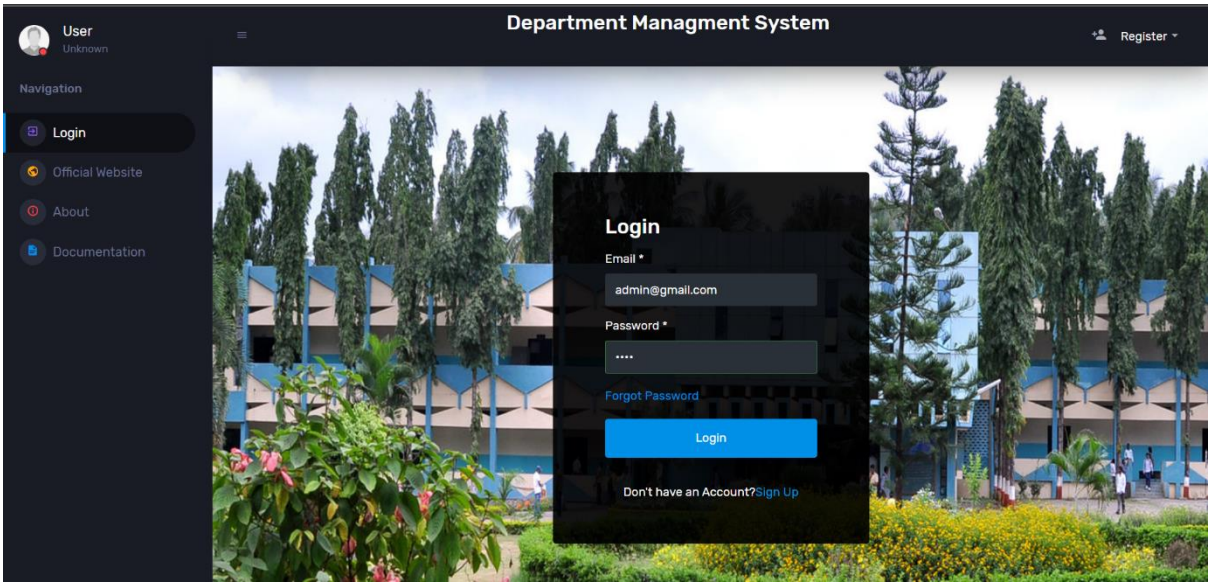


Screen Shots

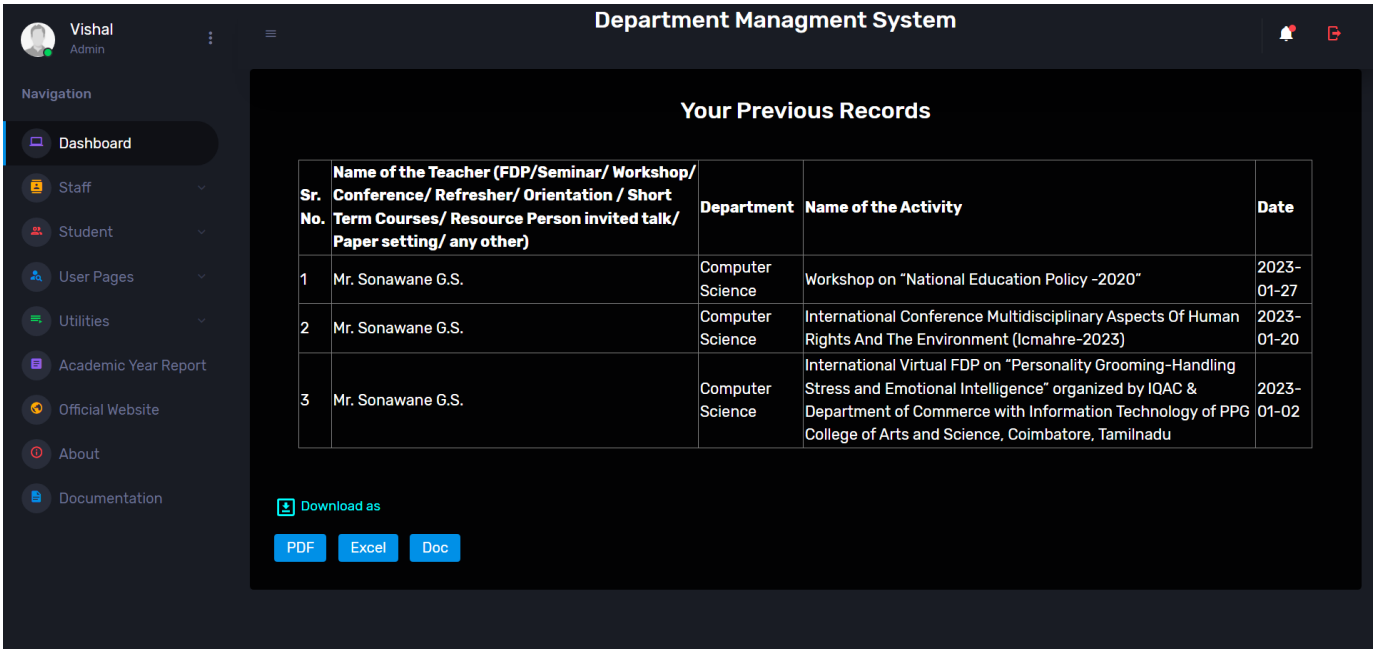
Register :



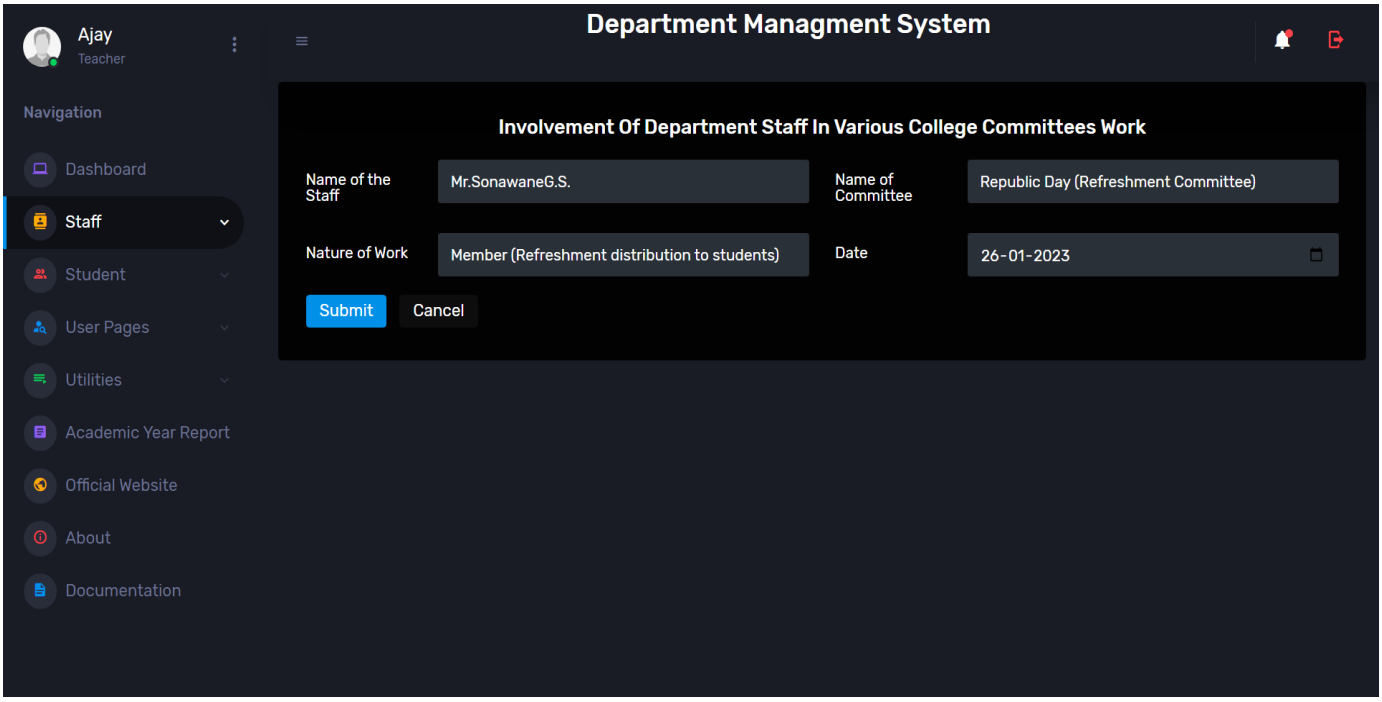
Login :



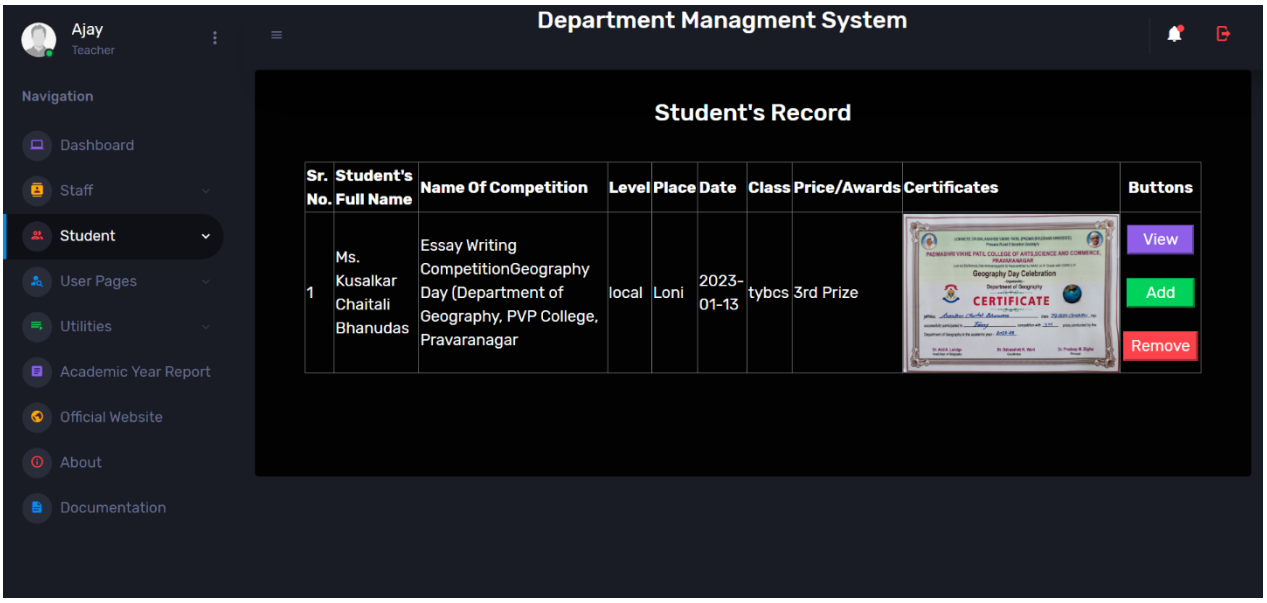
Admin’s Dashboard :



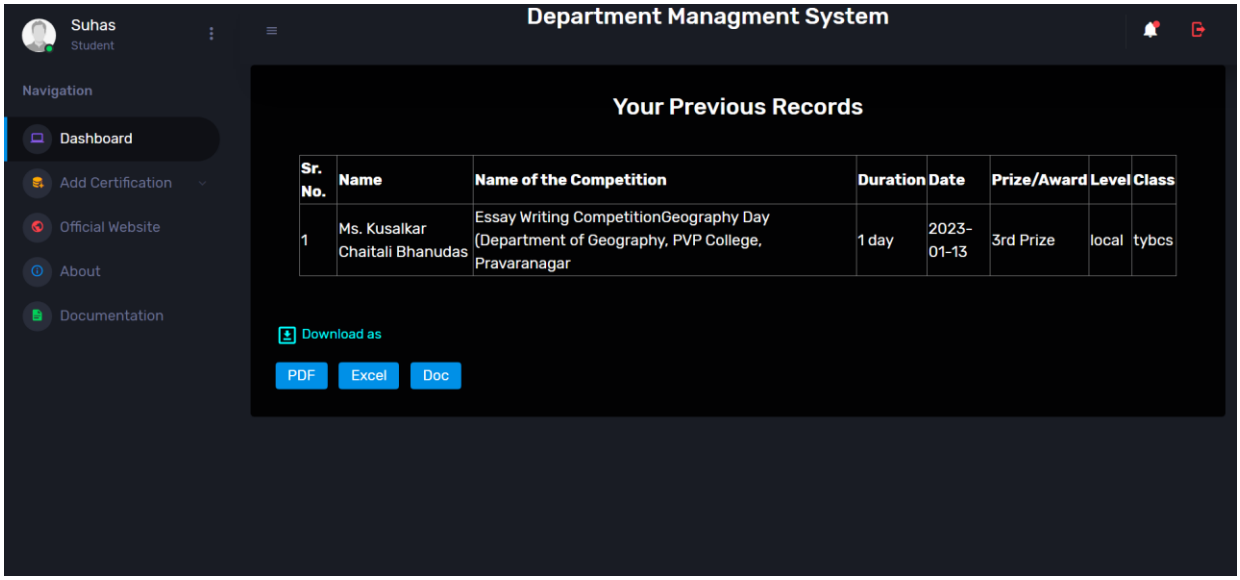
Form Filling :



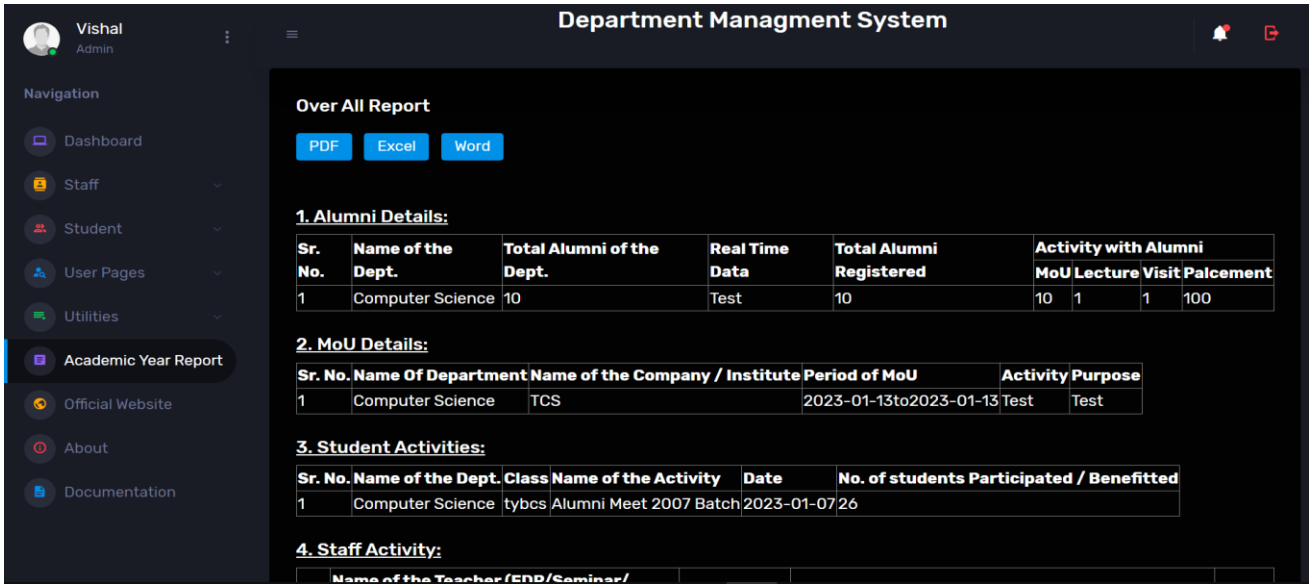
Verification :



Student's Dashboard :



Annual Report:



Generated Report:

Loknete Dr.Balasaheb Vikhe Patil (Padma Bhushan Awardee)
Pravara Rural Education Society's
Padmashri Vikhe Patil College, Pravaranagar,
Tal:Rahata, Dist:Ahmednagar.
Academic Year – 2022-23

Name of the Department : Computer- Science

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1. Alumni Details:

Sr. No.	Name of the Dept.	Total Alumni of the Dept.	Real Time Data	Total Alumni Registered	Activity with Alumni			
					MoU	Lecture	Visit	Palcement
1	Computer Science	10	Test	10	10	1	1	100

2. MoU Details:

Sr. No.	Name Of Department	Name of the Company / Institute	Period of MoU	Activity	Purpose
1	Computer Science	TCS	2023-01-13to2023-01-13	Test	Test

3. Student Activities:

Sr. No.	Name of the Dept.	Class	Name of the Activity	Date	No. of students Participated / Benefitted
1	Computer Science	tybcs	Alumni Meet 2007 Batch	2023-01-07	26

4. Staff Activity:

Sr. No.	Name of the Teacher (FDP/Seminar/ Workshop/ Conference/ Refresher/ Orientation / Short Term Courses/ Resource Person invited talk/ Paper setting/ any other)	Department	Name of the Activity	Date
1	Mr. Sonawane G.S.	Computer Science	Workshop on “National Education Policy -2020”	2023-01-27
2	Mr. Sonawane G.S.	Computer Science	International Conference Multidisciplinary Aspects Of Human Rights And The Environment (Icmahre-2023)	2023-01-20
3	Mr. Sonawane G.S.	Computer Science	International Virtual FDP on “Personality Grooming-Handling Stress and Emotional Intelligence” organized by IQAC & Department of Commerce with Information Technology of PPG College of Arts and Science, Coimbatore, Tamilnadu	2023-01-02

5. Research Paper :

Sr. No.	Name of the teacher	Title of the paper	Title Of Seminar/Conference	Organized By	Period	place	level
1	Test	Test	Test	Test	2023-02-26to2023-02-28	Test	International
2	Test1	Test1	Test1	Test1	2023-02-17to2023-03-15	Test1	University

Sr. No.	Name Of The Teacher / Author	Title Of The Book Published	Title Of The Proceedings Of The Conference	Name Of The Publisher	Date	ISBN/ISSN	Level
1	Test	Test	Test	Test	2023-02-26	Test	International
2	Test1	Test1	Test1	Test1	2023-02-28	Test1	Univesit

6. Sports Activity:

Sr. No.	Student's Full Name	Name Of Competition	Level	Place	Date	Class	Price/Awards
1	Ms. Kusalkar Chaitali Bhanudas	Essay Writing CompetitionGeography Day (Department of Geography, PVP College, Pravaranagar	local	Loni	2023-01-13	tybcs	3rd Prize

7. Extra curricular Activity :

Sr. No.	Name Of Department	Name of Activity	No. of Students Benefited	Date
1	Test	Test	1	2023-02-26
2	Test1	Test1	2	2023-03-29

8. Training & Placement :

Sr. No.	Name Of the Company Visited	No. of Students Registerd	No. of Students Selected

1	Capgemini Technology Services India Limited	3	3
2	Software Gen Technology	1	1
3	TATA MOTORS	6	1
4	HDFC Bank	8	3

9. Consultancy / Extension :

Sr. No.	Name Of Department	Name of Activity (Consultancy / Extension)	No. of Students Benefited	Date
1	Computer Science	Girl's Hostel Issue	8	2023-01-07
2	Test	Test	0	2023-02-26

10. Involvement of Department Staff in various College Committees Work:

Sr. No.	Name of the Staff	Name of Committee	Nature of Work	Date
1	Mr.SonawaneG.S.	ICT Committee - Website	Member To update college website (Departments-Sc ience Web Pages) per week basis.	2023-02-26
2	Mr.SonawaneG.S.	ICT Committee - Publicity	Upload Innovative Activities in College on Social Media Account of the College.	2023-02-26
3	Mr.SonawaneG.S.	WCS Committee	Co-Ordinator ASC, Rahata Pravara College of Physical Education,Loni	2023-02-08

Testing

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. Test techniques include, but are not limited to, the process of executing a program or application with the intent of finding software bugs (errors or other defects).

It involves the execution of a software component or system component to evaluate one or more properties of interest. In general, these properties indicate the extent to which the component or system under test:

- meets the requirements that guided its design and development,
- responds correctly to all kinds of inputs,
- performs its functions within an acceptable time, is sufficiently usable,
- can be installed and run in its intended environments, and achieves the general result its stakeholder's desire.

As the number of possible tests for even simple software components is practically infinite, all software testing uses some strategy to select tests that are feasible for the available time and resources. As a result, software testing typically (but not exclusively) attempts to execute a program or application with the intent of finding software bugs (errors or other defects).

Software testing can provide objective, independent information about the quality of software and risk of its failure to users and/or sponsors.

Software testing can be conducted as soon as executable software (even if partially complete) exists. The overall approach to software development often determines when and how testing is conducted. For example, in a phased process, most testing occurs after system requirements have been defined and then implemented in testable programs. In contrast, under an Agile approach, requirements, programming, and testing are often done concurrently

❖ Black Box Testing :

Black-box testing focuses on the functional requirement of the software, i.e.Black- box testing enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.

Black-box testing attempts to find errors in the following categories.

Incorrect or missing functions o Interface errors o Errors in data structures or external database access o Performance errors o Initialization and termination errors.

❖ White Box Testing

White-box testing sometimes called glass-box testing is a test case design method that uses the control structure of the procedural design to derive test cases. Using white-box testing methods, the software engineer can derive test cases that guarantee that all independent paths within a module have been exercised at least once.

Exercise all logical decisions on their true and false sides. Exercise all loops at their boundaries and within their operational bounds Exercise internal data structures to assure their validity. In this process we analyze sets of inputs needed to satisfy each and every function.

Unit Testing :

Unit testing focuses verification effort on the smallest unit of software design that is the module. Using procedural design description as a guide, important control paths are tested to uncover errors within the boundaries of the module. The unit test is normally white box testing oriented and the step can be conducted in parallel for multiple modules. In this we checked whether a specific function is doing its intended task or not.

Validation Testing :

At the end of testing software is completely assembled as a package. Validation testing is the next stage, which can be defined as successful when the software functions in the manner reasonably expected by the customer. Reasonable expectations are those defined in the software requirements specifications. Information contained in those sections form a basis for validation testing approach.

System Testing :

System testing is actually a series of different tests whose primary purpose is to fully exercise the computer-based system. Although each test has a different purpose, all work to verify that all system elements have been

properly integrated to perform allocated functions.

In this we tested weather a different software and hardware elements of a system working properly or not, such as mouse is giving right input to input module or not.

User Manual

Step 1: Open the link in browser.

Step 2: Fill Login Details And click sign in it will redirect to dashboard. In case of forget password click on forget pass on login screen. Enter email id and click submit one OTP will sent on that mail. Enter the OTP then proceed to enter new password & click on submit.

Step 3: After Successful Login, Dashboard will show the short reports about your data. After that It will show current active records.

Step 4: Then Next Step to add data. Click on add data menu on left side. I will show various tab on screen. In order to add student data, click on student tab. Then click on add student to get form. Fill the all details and click on ‘Add’.

Step 5: For adding book publication, research paper and other follow the above procedure by selecting ‘staff section’.

Step 6: In order to generate reports click on ‘download’ button shown below the tables by selection one of the formats like PDF, DOC, Excel, etc.

Step 7: Refer above screenshot for more details.

Drawbacks

Drawbacks:

- Lots of data entry required for first time.
- Hard to take backup of system.
- Only admin can create members with limited access & functionality.
- Less functionality available for student.
- Limited reports functionality.
- Limited Function to search records.

Conclusion

- From a proper analysis of positive points and constraints on the component, it can be safely concluded that the product is highly efficient GUI based component. This component can be easily plugged in many other systems.

- This Application allows the department of the Institutes to System to collect accurate information about student records.

- This application enables you to enter the details of new students, book publication, research papers and many more data of the system.

- This application also enables you to add records and generate their reports.

Bibliography

Before, during and after the development of the computerized system we refer some books which guide me for program development, coding, drawing graphic representation etc. List of such books is specified below:

Reference books :-

- ✓ Learning PHP, PostgreSQL, JavaScript and CSS: A step-by-Step Guide to creating Dynamic Website - By Robin Nixon
- ✓ PHP: A Beginner's Guide - By VikramVaswani
- ✓ Systems Analysis and Design An Object-Oriented Approach with UML - By Alan Dennis, Barbara Wixom, David Tegarden
- ✓ Object-Oriented Software Engineering Using UML-By Allen H. Dutoit Bernd Bruegg

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