



PROJECT REPORT
DATABASE MANAGEMENT
CSE 303
GROUP 27
SECTION 03

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CH-1 INTRODUCTION:

BACKGROUND OF THE ORGANIZATION:

Independent University, Bangladesh (IUB) established in 1993 is the leading private university in Bangladesh with an explicit focus on Research and Global partnerships. The Independent University, Bangladesh (IUB) has robust and versatile schools – notably consisting of following:

- School of Business & Entrepreneurship
- School of Engineering, Technology & Sciences
- School of Environment and Life Sciences
- School of Liberal Arts & Social Sciences
- School of Pharmacy and Public Health.

The institution has actively contributed to the development of the education industry in Bangladesh and has produced competent and knowledgeable scholars who have made contributions both domestically and internationally. The University Grants Commission (UGC), the Ministry of Education, and other necessary institutions for each of the schools, along with regular curriculum updates, the implementation of a system to track student performance based on a quantified approach between course curriculum and standards set by UGC and the Bangladesh government, and ongoing student performance monitoring have all helped IUB achieve this.

The objectives of IUB are to produce graduates of international standards in the local environment who have the knowledge and necessary skills to provide leadership in business, public service, and welfare; to encourage and support useful research; to create knowledge; and to offer opportunities for adults to continue their education.

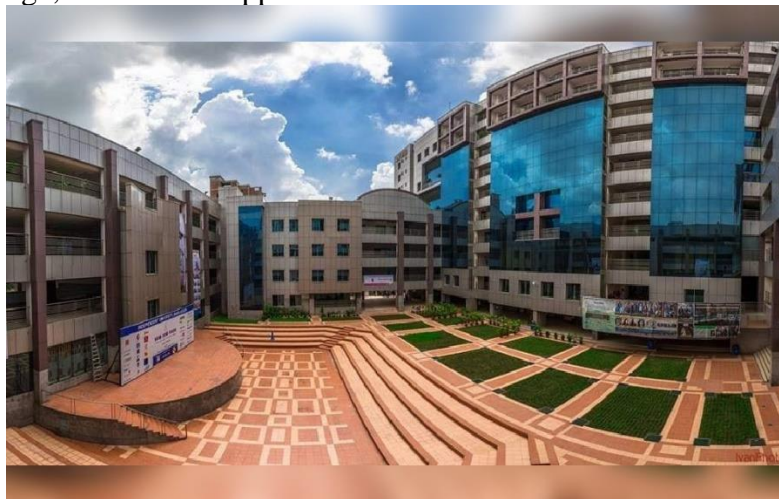


Figure 1: Independent University, Bangladesh

BACKGROUND OF THE PROJECT:

Our project's goal is to create, develop, and distribute software that, in our opinion, will assist universities worldwide in promoting a more fruitful and efficient method of student evaluation. As the central concept of our project, we've introduced the notion of Course Outcomes (COs) and Program Learning Outcomes (PLOs), where each CO is mapped to a PLO, and each PLO represents a particular valuable skill that students are expected to acquire or improve at the conclusion of that course, such as problem analysis, design, implementation of a skill and spider chart.

The details will all be present in the course outline for the students to have easy access and have all the necessary details regarding a course. The project will determine whether each student has successfully completed the PLOs that are linked to the COs requirements in order to evaluate them effectively through tools such as spider charts. IEB input is accepted by the system when establishing PLO criteria. For the system to map the COs to PLO appropriately, the faculties then input the COs for each of their students. It was discovered via the execution of this project that the efficiency not only reduced time but also increased quality. The PLOs are carefully and deliberately selected to guarantee that each student gets the most skills out of a course.

We also have the feature where faculties can input the questions in the question bank which can be accessed by the students which will help them gain knowledge on their desired topics and will provide them a vast field to practice.

Students can monitor their progress in each area and identify their areas for growth and improvement. Our program also aims to help the institutional bodies, including faculty, administrative, and departmental bodies, track student development, departmental performance, and better distribute and allocate resources.

OBJECTIVES OF THE PROJECT:

Our project aims to develop an interactive, user-friendly program that will serve as a platform for university staff, faculty, and other participants to assist in enhancing the standard of instruction and revolutionizing how we incorporate technology into our education. We are confident that the information we have gathered, assessed, and organized will open doors for significant improvements in the educational sector as well as the field of computer science. In this situation, SMPS will broaden the project's scope in order to benefit all the departments

SCOPE OF THE PROJECT

Our approach entails building a Web application called SPMS 2 that makes use of a Relational Database Management System (RDMS) to store, edit, add, and update the data required for tracking student performance as well as for producing and archiving related OBE data, reports, and documents. We created hypothetical users for the web based SPMS system and made assumptions about their usage patterns and the information and data they would require. Since issues can occur at many different points throughout all business processes, we will create unique user interfaces and login options for various stakeholders who will also be using this system. Since our data is stored using a (RDBMS), obtaining relevant files, tabular data, and page layouts is made possible and reports become exceedingly simple, enabling real-time interaction with the required data. Additionally, we develop user interfaces that allow all users to quickly access these data and use them to produce download reports, etc. We create a platform through which faculties may work together to create course outline, course reports, marksheets,

assessments, map assessments to COs and PLOs for PLO successes, and keep track of student evaluations for all their courses throughout the semester and upload questions in the question bank for the students. The systems for reaching findings are also available to students, the IUB leadership team, and governmental organizations. Each stakeholder will only see the data that is specifically relevant to them, and data will also be protected.

CH-2: REQUIREMENT ANALYSIS

EXISTING BUSINESS SYSTEM (WITH RICH PICTURE)

We are creating a platform through which faculties can work together to create course descriptions, course reports, make assessments, track assessments to COs and PLOs for the success of PLOs, and keep track of student evaluation for all of their courses throughout the semester. This platform is also available to students, the IUB admin and management, and UGC. Each stakeholder will see and monitor the data that specifically relevant to them and the data will also be protected. Students can give responses to their assessments via the platform to their faculties who then can grade the assessments and return. The system receives the assessment records, and it stores them. The system keeps a record of every report. The system offers bar graphs, pie charts and tables that display PLO achievement for all students.

The admin can use the system to update PLO requirements after managements sends them the updated PLO requirements through the system. The admin can also create new users for the system. The registrar's office also plays a role in the system. Students can ask for grade change to the faculty who in turn can ask for grade change to the registrar's office. The registrar's office then sends the change grade. The registrar's office can also use the system to get general reports and assessment reports about COs and PLOs.

The management are the body of power who updates and sends the PLO requirements. They also deal with governmental organizations like UGC to determine their curriculum and PLOs.

The system offers all users illuminating bar graphs, pie charts, and tables that display PLO achievement for all students, PLO achievement for a specific student, and PLO achievement regarding certain courses. Student responses to questions posed by the faculty are then given back to the faculty. The system receives the assessment records after it has been completed and stores them. The system keeps a record of every report.

The system offers all users illuminating bar graphs, pie charts, and tables that display PLO achievement for all students, PLO achievement for a specific student, and PLO achievement about certain courses.

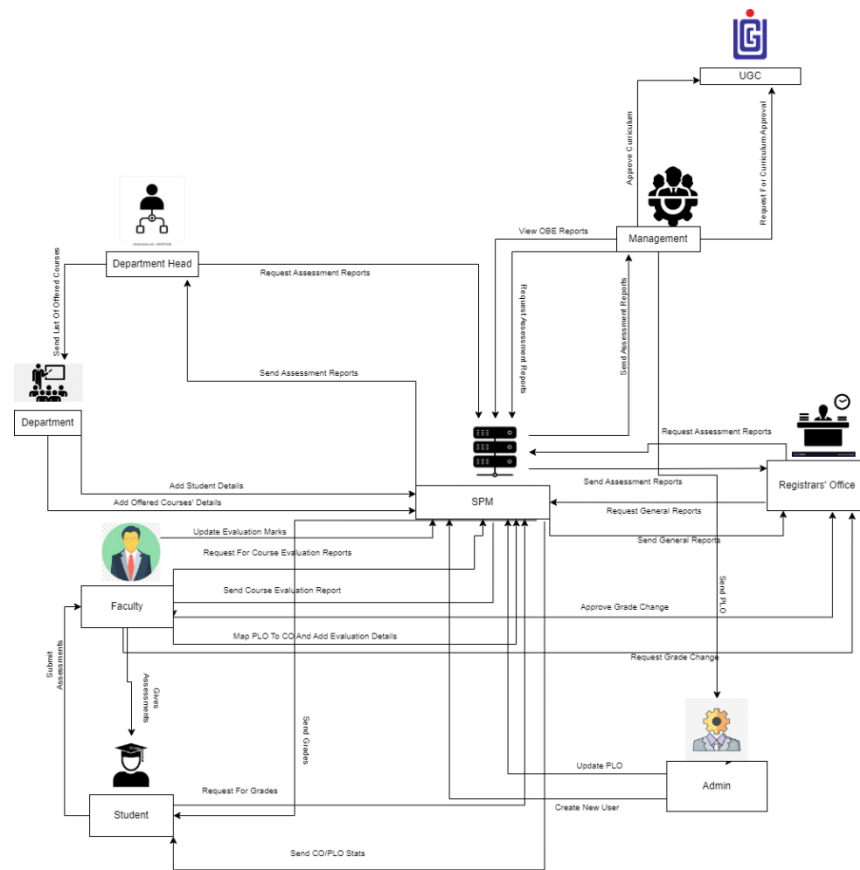


Figure 2: Rich Picture of Existing System

PROCESSES ALONG WITH SIX SYSTEM ELEMENT ANALYSIS

The Six Elements Analysis gives a thorough explanation of each element's function in each process. The table below makes it very evident that human entities predominate all important system operations, particularly the two most important ones—mapping course outcomes and examining documents associated with them. The existing approach, for instance, relies significantly on manually handled and processed hardcopy databases. As a result, there is a considerable amount of waiting involved in the interdependent processes before the Human components may perform their obligations.

Process	System Roles					
	Human	Non-Computing Hardware	Computing Hardware	Software	Database	Network and Communication

Student Registrati on	<p>Student: a) Search for the website b) Goes to the website. c) Clicks on the form option. d) Fill up the form with required Information.</p> <p>Registrar's Office: a) Checks and verifies student enrollment information from the forms from the website or hardcopy forms. b) Registrar Office's Admin logs into the system using Admin-ID and password. c) Sends verified student information as an attachment to Admin/Team.</p> <p>Admin: a) Admin logs into the system using SPMS User-ID and password. b) Receives the student enrollment information in the</p>	<p>Paper and Stationery: a) Used to collect information about students through enrollment forms.</p>	<p>Computer/ Laptop a) SPMS admin will use Computers to access and update data. b) Users will use the computer to view the data.</p> <p>Database Server a) Used by SPMS Developers to collect data and maintain the software.</p> <p>Networking Devices (Router, Switch, Bridge, Hub): a) Used to access SPMS</p>	<p>Operating Software a) Utilized by Registrar Office and SPMS.</p> <p>Student a) Uses to fill up the form from the website.</p> <p>SPMS a) The software for which the administrator will set up user accounts.</p>	<p>Register Office Database a) Used by the registrar's office to compile student data into an excel file for sending to SPMS.</p> <p>SPMS a) For any upgrades or new user accounts , information is kept in the database .</p> <p>Excel a) Data from student accounts may be kept in an excel file and used later in SPMS.</p>	<p>Internet a) To access and store data to SPMS it is used. b) It is used to collect the student form from the student to registrar office. c)The Registrar office sends all the student information to SPM admin by using it.</p>
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	<p>attached files.</p> <p>c) Admin updates the student enrollment information in Database.</p> <p>d) Notifies respected Stakeholders</p> <p>Department Head:</p> <p>a) Logs into the system using them User-ID and password.</p> <p>b) Inputs the desired time period for number of students enrolled.</p> <p>Higher Authority (VC/ Dean):</p> <p>a) Logs into the system using their User-ID and password.</p> <p>b) Inputs the desired time period and compare School/Department for the number of students enrolled accordingly.</p> <p>Faculty:</p> <p>a) logs into the system using Faculty ID and password</p>					
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	b) Inputs the ID of the section the faculty is taking to view the students enrolled.					
Student Performance Based on CGPA	<p>Student: a) Logs into the System using Student-ID and password. b) Inputs the desired time period to view self CGPA Progress.</p> <p>Registrar's Office: a) Logs into the System using User-ID and password. b) Inputs the desired time period and School, Department or program to view Statistically and analyzed CGPA trend of students.</p> <p>Department Head: a) Logs into the System using User-ID and password. b) Inputs the desired time period and school,</p>		<p>Computer/ Laptop a) User will need a computer to access SPMS</p> <p>Printer a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet .</p>	<p>Operating Software a) The user uses it to execute SPMS</p> <p>SPMS a) A performance trend will be generated by the software.</p>	<p>SPMS Database a) Obtain performance using the database .</p>	<p>Internet a) To login into and access the SPMS it is used.</p>

	<p>Department or program. c) View statistically analyzed CGPA trend of students or any individual student.</p> <p>Faculty: a) Logs into the system using Faculty-ID and password. b) Inputs the desired time period and program to view statistically and analyzed CGPA trend of students or any individual student those who attended the faculty's Section.</p> <p>Higher Authority: a) Logs into the system using their User-ID and password. b) Inputs the desired time period, School and Department c) View statistically analyzed CGPA trend of students.</p>					
Course-wise student	<p>Student: a) Logs into the system using</p>		Computer/ Laptop	SPMS a) A performance	SPMS Database	Internet a) To login into and

performance based on CGPA	<p>Student-ID and password. b) Inputs the course c) View self GPA for the course.</p> <p>Department Head: a) Logs into the System using User-ID and password. b) Inputs the desired time-period Course-ID c) View statistically analyzed GPA trend of Students.</p> <p>Registrar's office: a) Logs into the System using Admin-ID and password. b) Inputs the desired time-period and course c) view statistically analyzed GPA trend of students.</p> <p>Faculty: a) Logs into the System using Faculty-ID and password. b) Inputs the</p>		<p>a) User will need a computer to access SPMS</p> <p>Printer a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet .</p>	trend based on GPA will be generated by the software.	a) Here, the performance will be stored and updated.	access the SPMS it is used.
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	<p>desired time period Course-ID under the faculty c)view statistically analyzed GPA trend of students who faculty's section.</p> <p>Higher Authority: a) Logs into the system using their User-ID and password. b) Inputs the desired time-period and Course-ID c)View statistically analyzed GPA trend of students for that specific course.</p>					
<p>Selective Number of Instructor-wise student performance based on the GPA</p>	<p>Department Head: a) Logs into the system using User-ID and password. b) Inputs the desired time-period Course-ID c)View statistically analyzed GPA trend of students for a selective number of</p>		<p>Computer/ Laptop a) User will need a computer to access SPMS</p> <p>Printer a) Used to print out the report if</p>	<p>SPMS a) The software will produce a performance trend for a specified instructor.</p>	<p>SPMS Database a) Here, the performance will be stored and updated.</p>	<p>Internet a) To login into and access the SPMS it is used.</p>

	<p>Instructors.</p> <p>Registrar's office: a) Logs into the system using Admin-ID and password. b) Inputs the desired time-period Course-ID c) View statistically analyzed GPA trend of students for a selective number of Instructors</p> <p>Faculty: a) Logs into the system using Faculty-ID and password. b) Inputs the desired time - period & Course-ID c)View statistically analyzed GPA trend of students for a selective number of Instructors.</p> <p>Higher Authority: a) Logs into the System using User-ID and password.</p>		<p>need be.</p> <p>Network king Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet .</p>			
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	b) Inputs the desired time-period Course-ID c) View statistically analyzed GPA trend of students for a selective number of Instructors.					
VC-wise, dean-wise, or department head-wise student performance	Department Head: a) Logs into the system using User-ID and password. b) Select Input from VC/Dean/Department Head c) View the student performance trend as per choice. Registrar's office: a) Logs into the system using User-ID and password. b) Select Input from VC/Dean/Department Head c) View the student performance trend as per choice. Dean or VC a) Logs into		Computer/ Laptop a) User will need a computer to access SPMS Printer a) Used to print out the report if need be. Networking Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet .	SPMS a) The software will produce a performance trend	SPMS Database a) Here, the performance will be stored.	Internet a) To login into and access the SPMS it is used.

	<p>the system using User-ID and password.</p> <p>b) Select Input from VC/Dean/Department Head</p> <p>c) View the student performance trend as per choice.</p>					
<p>Instructor-wise student performance based on the GPA of the students</p>	<p>Department Head:</p> <p>a) Logs into the system using Department-ID and Password.</p> <p>b) Inputs a particular instructor Name/ID</p> <p>c)View the student performance trend of selected Instructor.</p> <p>Registrar's office:</p> <p>a) Logs into the system using User-ID and password.</p> <p>b) Inputs a particular instructor</p> <p>c) View the student performance trend of selected Instructor.</p> <p>Faculty:</p>		<p>Computer/ Laptop</p> <p>a) User will need a computer to access SPMS</p> <p>Printer</p> <p>a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub):</p> <p>a) Used to access the Internet .</p>	<p>SPMS</p> <p>a) The software will produce a performance trend</p>	<p>SPMS Database</p> <p>a) The performance will be stored and updated in the database .</p>	<p>Internet</p> <p>a) To login into and access the SPMS it is used.</p>

	<p>a) Logs into the system using User-ID and password. b) Input their Name/ID. c) View the student performance trend.</p> <p>Dean: a) Logs into the system using User-ID and password. b) Inputs a particular instructor c)View the student performance trend of selected instructor</p> <p>VC a) Logs into the system using User-ID and password. b) Inputs a particular instructor c)View the student performance trend of selected instructor.</p>					
Total PLO percentage achieved and attempte	<p>Student: a) Logs into the system using Student-ID and Password b) Inputs the</p>		Computer/ Laptop a) User will need a	Operating system a) Used by the SPMS	SPMS Database a) Here, the performance will	Internet a) To login into and access the SPM it is used.

<p>d by the student along with the departmental average</p>	<p>time- period c)Views their comparison of attempted vs achieved PLO percentage along with the departmental Average.</p> <p>Department Head: a) Logs into the system using User-ID and Password b) Inputs the time- period c) Views the comparison of students attempted PLO vs achieved PLO percentage along with the departmental average.</p> <p>Registrar's office: a) Logs into the system using User-ID and Password b) Inputs the time- period c) Views the comparison of students Attempted PLO vs Achieved PLO percentage along with the departmental</p>		<p>computer to access SPMS</p> <p>Printer a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet .</p>	<p>SPMS a) A comparison of the attempted vs. achieved PLO as well as the departmental average will be produced by the software.</p>	<p>be stored.</p>	
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	<p>average.</p> <p>Faculty:</p> <p>a) Logs into the system using User-ID and Password.</p> <p>b) Inputs the time period.</p> <p>c) Views the comparison of students attempted PLO vs Achieved PLO percentage along with the departmental Average.</p> <p>Dean</p> <p>a) Logs into the system using User ID and Password</p> <p>b) Inputs the time period</p> <p>c) Views the comparison of students Attempted PLO vs achieved PLO percentage along with the departmental average.</p> <p>VC</p> <p>a) Logs into the system using User-ID and Password.</p>					
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	<p>b) Inputs the time- period.</p> <p>c) Views the comparison of students attempted PLO vs Achieved PLO percentage along with the departmental average.</p>					
PLO achievement	<p>Student:</p> <p>a) Logs into the system using Student-ID And password.</p> <p>b) Selects PLO achievement</p> <p>c) View PLO Achievement.</p> <p>Department Head:</p> <p>a) Logs into the System using user-ID and password.</p> <p>b) Selects PLO achievement</p> <p>c) View PLO Achievement.</p> <p>Registrar's office:</p> <p>a) Logs into the system using user-ID and password.</p> <p>b) Selects PLO achievement.</p> <p>c) View PLO Achievement.</p> <p>Faculty:</p> <p>a) Logs into the System using Faculty-ID and password.</p>		<p>Computer/ Laptop</p> <p>a) User will need a computer to access SPMS</p> <p>Printer</p> <p>a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub):</p> <p>a) Used to access the Internet .</p>	<p>SPMS</p> <p>a) A PLO achievement will be generated by the software.</p>	<p>SPMS Database</p> <p>a) Here, the performance will be stored and updated.</p>	<p>Internet</p> <p>a) To login into and access the SPM it is used.</p>

	<p>b) Selects PLO Achievement. c) View PLO Achievement.</p> <p>Dean a) Logs into the System using user-ID and password. b) Selects PLO achievement. c) View PLO Achievement.</p> <p>VC a) Logs into the system using user-ID and password. b) Selects PLO achievement. c) View PLO achievement</p>					
Expected PLO-achievement versus actual score (for course's, student's, Department's, program's or school's)	<p>Student: a) Logs into the system using Student-ID and password. b) Selects PLO achievement comparison c) View PLO achievement Comparison.</p> <p>Department Head: a) Logs into the system using user-ID and password. b) Selects PLO</p>		<p>Computer/ Laptop a) User will need a computer to access SPMS</p> <p>Printer a) Used to print out the report if need be.</p>	<p>SPMS a) A) The software will calculate the expected vs. achieved PLO.</p>	<p>SPMS Database a) The performance will be stored and updated in the database .</p>	<p>Internet a) To login into and access the SPMS it is used.</p>

	<p>achievement comparison c) View PLO achievement Comparison.</p> <p>Registrar's office: a) Logs into the system using user-ID and password. b) Selects PLO achievement comparison. c) View PLO achievement comparison.</p> <p>Faculty: a) Logs into the System using Faculty-ID and password. b) Selects PLO achievement comparison. c) view PLO Achievement comparison.</p> <p>Dean a) Logs into the system using user-ID and password. b) Selects PLO achievement comparison. c) View PLO achievement Comparison.</p> <p>VC a) Logs into the system using user-ID and</p>		<p>Network king Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet .</p>			
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	<p>password.</p> <p>b) Selects PLO achievement comparison</p> <p>c) View PLO achievement Comparison.</p>					
CO-PLO achievement summary	<p>Student:</p> <p>a) Logs into the system using Student-ID and password.</p> <p>b) Selects CO - PLO achievement summary.</p> <p>c) View CO- PLO achievement summary.</p> <p>Department Head:</p> <p>a) Logs into the system using user-ID and password.</p> <p>b) Selects CO -PLO achievement summary.</p> <p>c) View CO - PLO achievement Summary.</p> <p>Registrar's office:</p> <p>a) Logs into the system using user-ID and password.</p> <p>b) Selects CO -PLO achievement summary.</p> <p>c) View CO -PLO</p>		<p>Computer/ Laptop</p> <p>a) User will need a computer to access SPMS</p> <p>Printer</p> <p>a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub):</p> <p>a) Used to access the Internet .</p>	<p>SPMS</p> <p>a) The software will produce a summary of CO-PLO accomplishments.</p>	<p>SPMS Database</p> <p>a) The Summary will be stored and updated in the database .</p>	<p>Internet</p> <p>a) To login into and access the SPMS it is used.</p>

	<p>achievement Summary.</p> <p>Faculty: a) Logs into the system using Faculty-ID and password. b) Selects CO -PLO achievement summary. c) View CO - PLO achievement Summary.</p> <p>Dean a) Logs into the system using user-ID and password. b) Selects CO -PLO achievement summary. c) View CO - PLO achievement Summary.</p> <p>VC a) Logs into the system using user-ID and password. b) Selects CO -PLO achievement summary. c) view CO - PLO achievement summary.</p>					
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EXISTING PROBLEMS & ANALYSIS OF THE PROBLEM

Process Name	Stakeholders	Concerns (Problems)	Analysis (Reason of the Problem)	Proposed Solution
Student Enrollment	<ol style="list-style-type: none"> 1. Student 2. Department Head 3. Registrar's Office 4. Faculty 5. Admin 	Comparison of Student who have Enrolled in each Department with respect to a given Time Period/Semester	Student enrolled stat is recorded school-wise, department-wise, and program-wise but was not compared with respect to time period or semesters.	We want to keep the record in the count of students enrolled along with a visual comparison of the student stats as per school-wise, department-wise, program-wise and semester-wise.
Assessments and Grading	<ol style="list-style-type: none"> 1. Faculty 2. Students 	<ol style="list-style-type: none"> 1) Condition of Question paper and Answer Script 2) Giving and Receiving Process 3) Unreliable Storage 4) Lack of Visibility of Learning and Question Difficulty 	<ol style="list-style-type: none"> 1) The question papers and answer script which are being stored physically can get damaged or may get lost. 2) The Process of completing the assessment and giving it to the teacher in person is slow. 3) There may be a shortage of physical space due to increase number of papers. 4) Need to find the domain of learning and difficulty of the question manually and that also takes a lot of time. 	The question papers and answer scripts can be stored into the database so there is no problem of storage. Once a question is placed inside the question bank, the question gets its difficulty level and domain of learning automatically assigned. Online submission of assessment saves time as it negates the necessity to submit a physical copy in person.
Course Outline	<ol style="list-style-type: none"> 1. Department 2. Faculty 3. Student 	<ol style="list-style-type: none"> 1) Waiting Delay for receiving Necessary Resources 2) Creating a Course Outline 	<ol style="list-style-type: none"> 1) The faculty needs to send requests to department and wait for them to send back the necessary materials. 2) It requires a lot of time to create a course 	A feature can be installed to generate the course outline automatically according to the things the faculty wants to add. It is stored in the database, and it can be

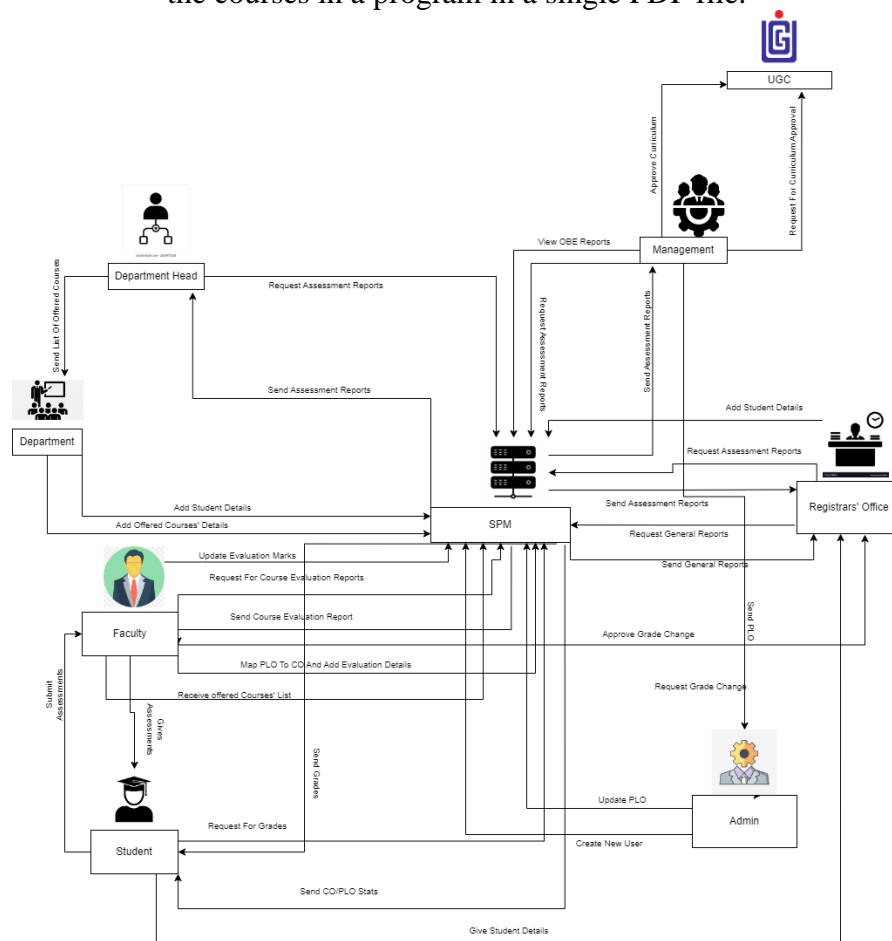
			outline manually.	downloaded by the stakeholders in a pdf file.
Student Performance based on CGPA	<ol style="list-style-type: none"> 1. Student 2. Department Head 3. Registrar's Office 4. Faculty 	Comparison of Student CGPA between Schools, Departments, Programs and Courses	The CGPA of students can only be observed individually but can be compared between different schools, departments, programs, and courses.	A system should be in place which will allow the stakeholders to analyze the CGPA not only individually but also based on different schools, departments, programs, and courses for a given time or semester.
CO-PLO Achievement	<ol style="list-style-type: none"> 1. Student 2. Department Head 3. Registrar's Office 4. Faculty 5. Admin 	<ol style="list-style-type: none"> 1) PLO Achievement of a Student for each Courses 2) Comparison of PLO Achievement within a Department 3) PLO Achievement Rate and Score 4) Reports based on CO-PLO 	<ol style="list-style-type: none"> 1) Students are unable to monitor progress of their PLO achievement for respective courses as it is only available to higher authorities and is done manually 2) The PLO and corresponding CO of all courses a student does is never compared with cumulatively along with the departmental average performance. 3) PLO achieved versus attempted, and the actual score is done manually which can be extremely time consuming. 4) Reports based on PLO and CO may not be enough to give a clear picture. 	A system should be implemented which will record the PLO' and COs in the database which will give easier access to the stakeholders. Comparisons regarding PLO achievements can then be made automatically which will save time. Charts can then be generated for better analysis.

PROPOSED BUSINESS SYSTEM (WITH RICH PICTURE)

The new system will allow the Faculty User to insert CO percentage of a student into the Database by manually or by importing a csv file. The user will be given a text box to type the question. After the Faculty User adds the question, the applications will create an option to view the question. In the question view interface, the user will be able to see the domain of learning along with its level.

The faculty user will also be able to assign marks to each of the questions separately, from which the percentage of CO's and POs achieved can be calculated. All the users will be able to see a spider chart of the CO's and POs achieved by the students.

OBE based course outline of a single course will be added by the faculty user and will be available to all users. User will be able to download course outline of a course in a program separately and the user will also be able to download all the course outline of all the courses in a program in a single PDF file.



PROPOSED PROCESSES ALONG WITH SIX SYSTEM ELEMENT ANALYSIS

The six elements analysis of the proposed system is a continuation of an analysis process where each analysis is based on the one that comes before it. Based on the rich picture, the role of each element in the new system is further understood in the table below.

Process	System Roles
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	Human	Non-Computing Hardware	Computing Hardware	Software	Database	Network and Communication
Student Registration	<p>Student:</p> <p>a) Search for the website</p> <p>b) Goes to the website.</p> <p>c) Clicks on the form option.</p> <p>c) Fill up the form with required Information.</p> <p>Admin:</p> <p>a) Admin logs into the system using SPMS User-ID and password.</p> <p>b) Receives the student enrollment information in the attached files.</p> <p>c) Admin updates the student enrollment information in Database.</p> <p>d) Inputs the desired time period for</p>	<p>Paper and Stationery:</p> <p>a) Used to collect information about students through enrollment forms.</p>	<p>Computer/ Laptop</p> <p>a) SPMS admin will use Computers to access and update data.</p> <p>b) Users will use the computer to view the data.</p> <p>Database Server</p> <p>a) Used by SPMS Developers to collect data and maintain the software.</p> <p>Networking Devices (Router, Switch, Bridge, Hub):</p> <p>a) Used to access SPMS</p>	<p>Operating Software</p> <p>a) Utilized by Registrar Office and SPMS</p> <p>Student</p> <p>a) Uses to fill up the form from the website.</p> <p>SPMS</p> <p>a) The software for which the administrator will set up user accounts.</p>	<p>Register Office Database</p> <p>a) Used by the registrar's office to compile student data into an excel file for sending to SPMS.</p> <p>SPMS</p> <p>a) For any upgrades or new user accounts, information is kept in the database.</p> <p>Excel</p> <p>a) Data from student accounts may be kept in an excel file and used later in SPMS.</p>	<p>Internet</p> <p>a) To access and store data to SPMS it is used.</p> <p>b) It is used to collect the student form from the student to registrar office.</p> <p>c) The Registrar office sends all the student information to SPMS admin by using it.</p>

	number of students enrolled.					
Student Performance Based on CGPA	<p>Student:</p> <p>a) Logs into the System using Student-ID and password.</p> <p>b) Inputs the desired time - period to view self CGPA Progress.</p> <p>Admin:</p> <p>a) Logs into the System using User-ID and password.</p> <p>b) Inputs the desired time period and School, Department or program to view. Statistically and analyzed. CGPA trend of students.</p> <p>Faculty:</p> <p>a) Logs into the system using Faculty-ID and password.</p>		<p>Computer/ Laptop</p> <p>a) User will need a computer to access SPMS</p> <p>Printer</p> <p>a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub):</p> <p>a) Used to access the Internet.</p>	<p>Operating Software</p> <p>a) The user uses it to execute SPMS 2.0</p> <p>SPMS</p> <p>a) A performance trend will be generated by the software.</p>	<p>SPMS Database</p> <p>a) Obtain performance using the database.</p>	<p>Internet</p> <p>a) To login into and access the SPMS it is used.</p>

	b) Inputs the desired time-period and program to view. statistically and analyzed CGPA trend of students or any individual's student those who attended. the faculty's Section.					
Course-wise student performance based on CGPA	<p>Student:</p> a) Logs into the system using Student-ID and password. b) Inputs the course c) View self GPA for the course. Admin: a) Logs into the System using User-ID and password. b) Inputs the desired time-period Course-ID c) View statistically analyzed GPA trend of		<p>Computer/ Laptop</p> a) User will need a computer to access SPMS Printer a) Used to print out the report if need be. Networking Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet.	SPMS a) A performance trend based on GPA will be generated by the software.	SPMS Database a) Here, the performance will be stored and updated.	Internet a) To login into and access the SPMS it is used.

	<p>Students.</p> <p>Faculty:</p> <p>a) Logs into the System using Faculty-ID and password.</p> <p>b) Inputs the desired time - period</p> <p>Course-ID under the faculty</p> <p>c) view statistically analyzed. GPA trend of students who faculty's section.</p>					
<p>Selective Number of Instructor-wise student performance based on the GPA</p>	<p>Admin:</p> <p>a) Logs into the system using User-ID and password.</p> <p>b) Inputs the desired time-period</p> <p>Course-ID</p> <p>c) View statistically analyzed GPA trend of students for a selective number of Instructors.</p>		<p>Computer/ Laptop</p> <p>a) User will need a computer to access SPMS</p> <p>Printer</p> <p>a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub):</p> <p>a) Used to access the Internet.</p>	<p>SPMS</p> <p>a) a) The software will produce a performance trend for a specified instructor.</p>	<p>SPMS Database</p> <p>a) Here, the performance will be stored and updated.</p>	<p>Internet</p> <p>a) To login into and access the SPMS it is used.</p>

	<p>Faculty:</p> <p>a) Logs into the system using Faculty-ID and password.</p> <p>b) Inputs the desired time - period & Course-ID</p> <p>c)View statistically analyzed GPA trend of students for a selective number of Instructors. GPA trend of students for a selective number of Instructors.</p>					
Admin wise student performance	<p>Admin:</p> <p>a) Logs into the system using User-ID and password.</p> <p>b) Select Input from from VC/Dean/D eapartment Head</p> <p>c) View the student performance trend as per</p>		<p>Computer/ Laptop</p> <p>a) User will need a computer to access SPMS</p> <p>Printer</p> <p>a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch,</p>	<p>SPMS</p> <p>a) The software will produce a performance trend</p>	<p>SPMS Database</p> <p>a) Here, the performance will be stored.</p>	<p>Internet</p> <p>a) To login into and access the SPM it is used.</p>

	choice.		Bridge, Hub): a) Used to access the Internet.			
Instructor-wise student performance based on the GPA of the students	Admin: a) Logs into the system using Department-I and Password. b) Inputs a particular instructor Name/ID c) View the student performance trend of selected Instructor. Faculty: a) Logs into the system using User-ID and password. b) Input them Name/ID. c) View the student performance trend.		Computer/Laptop a) User will need a computer to access SPMS Printer a) Used to print out the report if need be. Networking Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet.	SPMS a) The software will produce a performance trend	SPMS Database a) The performance will be stored. and updated. in the database.	Internet a) To login into and access the SPM it is used.
Total PLO percentage achieved and attempted by the student along with the	Student: a) Logs into the system using Student-ID and Password b) Inputs the		Computer/Laptop a) User will need a computer to access SPMS Printer	Operating system a) Used by the SPMS SPMS a) A comparison of the	SPMS Database a) Here, the performance will be stored.	Internet a) To login into and access the SPM it is used.

departmental average	<p>time-period</p> <p>c) Views their comparison of attempted vs achieved PLO. percentage along with the departmental Average.</p> <p>Admin:</p> <p>a) Logs into the system using User-ID and Password</p> <p>b) Inputs the time-period</p> <p>c) Views the comparison of students attempted PLO vs achieved PLO percentage along with the departmental average.</p> <p>Faculty:</p> <p>a) Logs into the system using User-ID and Password.</p> <p>b) Inputs the</p>		<p>a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub):</p> <p>a) Used to access the Internet.</p>	<p>attempted vs. achieved PLO as well as the departmental average will be produced by the software.</p>		
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	time period. c) Views the comparison of students attempted PLO vs achieved PLO percentage along with the departmental Average.					
PLO achievement	<p>Student:</p> <p>a) Logs into the system using Student-ID and password.</p> <p>b) Selects PLO achievement</p> <p>c) View PLO Achievement.</p> <p>Admin:</p> <p>a) Logs into the System using user-ID and password.</p> <p>b) Selects PLO achievement</p> <p>c) View PLO Achievement.</p> <p>Faculty:</p>		<p>Computer/Laptop</p> <p>a) User will need a computer to access SPMS</p> <p>Printer</p> <p>a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub):</p> <p>a) Used to access the Internet.</p>	SPMS	SPMS Database	Internet
				a) A PLO achievement will be generated by the software.	a) Here, the performance will be stored and updated.	a) To login into and access the SPMS it is used.

	a) Logs into the System using Faculty-ID and password. b) Selects PLO Achievement. c) View PLO Achievement.					
Expected PLO-achievement versus actual score (for course's, student's, Department's, program's or school's)	Student: a) Logs into the system using Student-ID and password. b) Selects PLO achievement comparison c) View PLO achievement Comparison. Admin: a) Logs into the system using user-ID and password. b) Selects PLO achievement comparison c) View PLO achievement		Computer/Laptop a) User will need a computer to access SPMS Printer a) Used to print out the report if need be. Networking Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet.	SPMS a) A) The software will calculate the expected vs. achieved PLO.	SPMS Database a) The performance will be stored and updated in the database.	Internet a) To login into and access the SPMS it is used.

	<p>Comparison.</p> <p>Faculty:</p> <p>a) Logs into the System using Faculty-ID and password.</p> <p>b) Selects PLO achievement comparison.</p> <p>c) view PLO Achievement comparison.</p>					
CO-PLO achievement summary	<p>Student:</p> <p>a) Logs into the system using Student-ID and password.</p> <p>b) Selects CO -PLO achievement summary.</p> <p>c) View CO-PLO achievement summary.</p> <p>Admin:</p> <p>a) Logs into the system using user-ID and password.</p> <p>b) Selects CO -PLO achievement</p>		<p>Computer/ Laptop</p> <p>a) User will need a computer to access SPMS</p> <p>Printer</p> <p>a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub):</p> <p>a) Used to access the Internet.</p>	<p>SPMS</p> <p>a) The software will produce a summary of CO-PLO accomplishments.</p>	<p>SPMS Database</p> <p>a) The Summary will be stored and updated in the database.</p>	<p>Internet</p> <p>a) To login into and access the SPMS it is used.</p>

	<p>summary. c) View CO - PLO achievement Summary.</p> <p>Faculty: a) Logs into the system using Faculty-ID and password. b) Selects CO - PLO achievement summary. c) View CO - PLO achievement Summary.</p>					
CO percentage based on the obtained grades for each course summary	<p>Student: a) Logs into the system using Student-ID and password. b) Selects CO percentage based on the obtained grades for each course summary. c) View CO percentage based on the obtained grades for each</p>		<p>Computer/ Laptop a) User will need a computer to access SPMS</p> <p>Printer a) Used to print out the report if need be.</p> <p>Networking Devices (Router, Switch, Bridge, Hub): a) Used to access the Internet.</p>	<p>SPMS a) The software will produce a summary of CO percentage based on the obtained grades for each course accomplishments.</p>	<p>SPMS Database a) The Summary will be stored and updated in the database.</p>	<p>Internet a) To login into and access the SPMS it is used.</p>

	<p>course summary.</p> <p>Admin: a) Logs into the system using user-ID and password. b) Selects CO percentage based on the obtained grades for each course summary. c) View CO percentage based on the obtained grades for each course summary.</p> <p>Faculty: a) Logs into the system using Faculty-ID and password. b) Selects CO percentage based on the obtained grades for each course summary. c) View CO percentage based on the obtained</p>					
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	grades for each course summary. d) Insert CO percentage for each student					
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CH-3 LOGICAL SYSTEM DESIGN

BUSINESS RULES

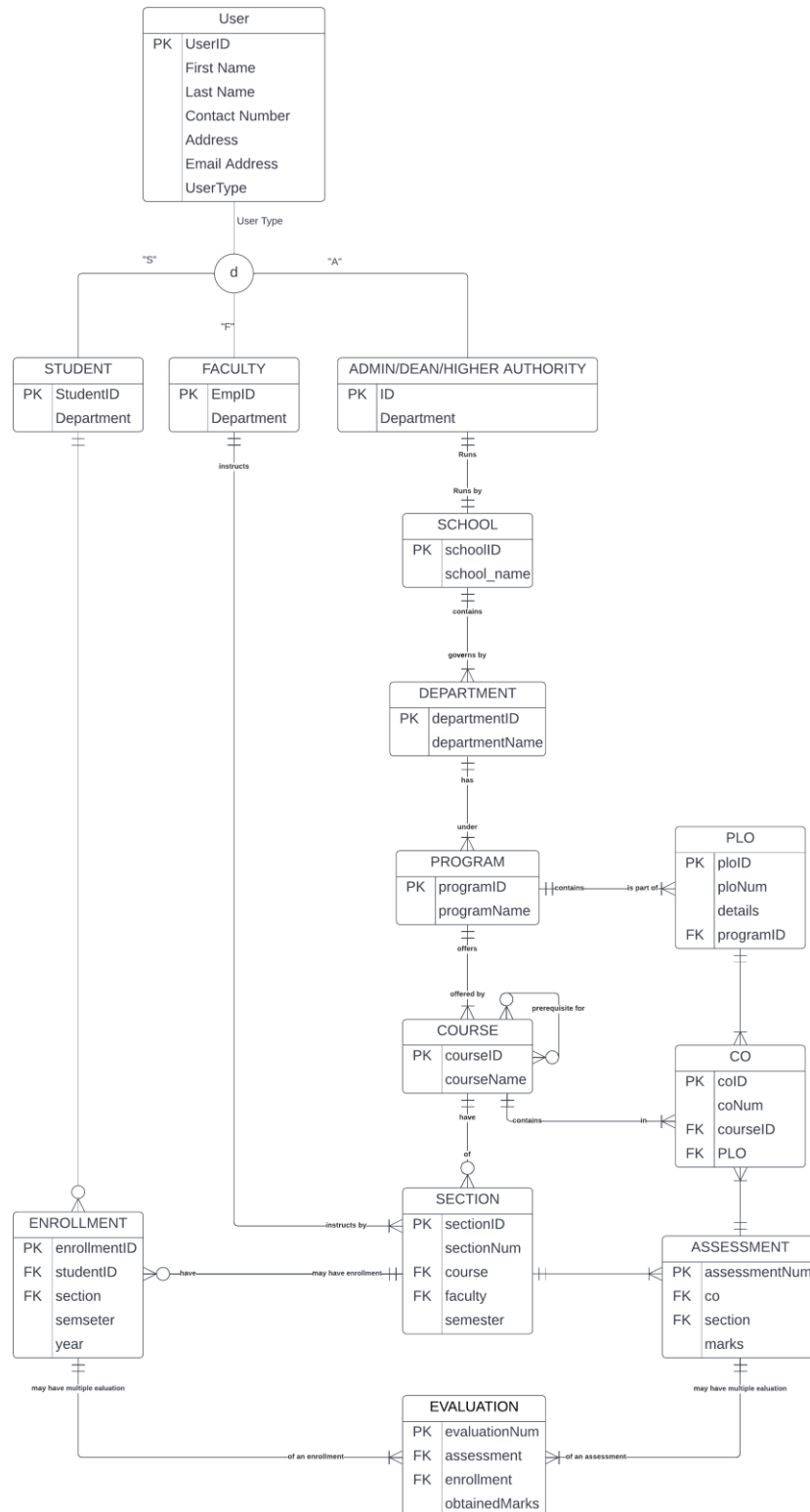
Business rules describe the operations, definitions and constraints that govern the data model. As opposed to the ERD, they are made using regular English sentences so that a non-technical stakeholder can decipher information about the data model without notation knowledge.

The business rules that govern our data model are as follows:

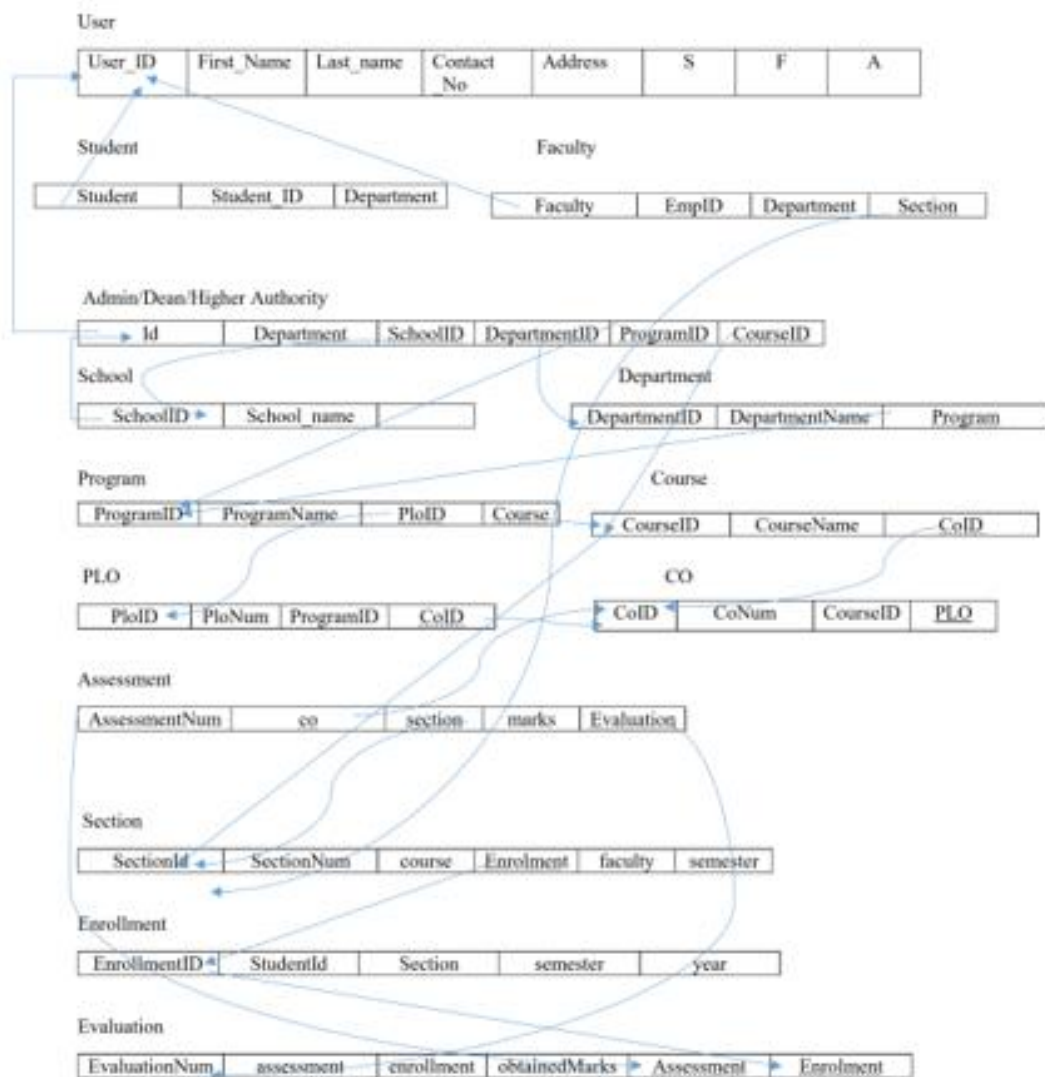
1. A student must have one department. A STUDENT has StudentID, FirstName, LastName, DateofBirth, Gender, Email, Phone, Address, EnrollmentDate. A department must have many students.
2. Student may perform many registrations. A REGISTRATION includes RegistrationID, Semester, Year, Section Id, StutendID. A registration must be performed by at least one student.
3. A section mandatorily have many registrations. A registration has at least one section. A section includes SectionID, SectionNum, CourseId, FacultyID, Semester, Year.
4. A registration may belong to many EVALUATIONS. An evaluation mandatorily belongs to one registration. An evaluation contains EvaluationID, ObtainedMarks, AssessmentID, RegistrationID.
5. An evaluation must have one question. A question must have many evaluations. Question contains QuestionID, AssessmentName, TotalMarks. An question will have one section. A section contains one or many question.
6. Question must map with one CO's. A CO maps with one or many question. A CO's includes COID, CourseID, PLOID. A CO must contain one Course. A Course contain one or many CO's. A course may have many prerequisites. A course must affiliate one mark distribution. A mark distribution may affiliate many courses. A Mark Distribution includes DistID, A, A-, B+, B, B-, C+, C, C-, D+, D, ThresoldMarks.

7. A CO's must map with one PLO's. A PLO's must map with one or many CO's. PLO includes PLOID, PLONum, Details, ProgramID.
8. A PLO must contain one program. A program contains one or many PLO's. A program has ProgramID, ProgramName, DepartmentID. A program must contain one or many courses. A Course must contain one course.
9. A program must belong to one department. A department must belong to one or many programs. A department contain DepartmentID, DepartmentName, SchoolID.
10. A department must contain one school. A School must contain one or many departments. A school includes SchoolID, SchoolName.
11. An employee has two sub-type (Admin and Faculty). An employee includes EmployeeID, FirstName, LastName, DateofBirth, Gender, Email, Phone, Address, EmployeeType. An admin has EmployeeID, Rank, Join_Date , End_Date, Admin_Type.
12. A school must be run by one admin (Admin Type-Dean). A dean must run one school. A school has SchoolID, StartDate, EndDate.
13. A Department must manage one or many admin (Admin Type- Department head). A department head must manage one department.
14. A Faculty must have one Department. A department must have one or many Faculties. A Faculty includes DepartmentID, Rank, JoinDate. A faculty may teach many sections. A section must be taught by one faculty.
15. One or many sections must have a course outline. A course outline contains CourseOutlineID, Section_Num, Course_Description, multiple course objectives which includes Domain_and_level and PLOs. It has multiple PLOs which includes PLO_number, PLO_description. It also contains Grade_Conversion_Scheme, Required_Textbook, Course_Policy, University_Regulation_And_Code_Of_Conduct and multiple values of Class_and_Schedule, Topics_and_Reading.

ENTITY RELATIONSHIP DIAGRAM (ERD)



ERD TO RELATIONS



NORMALIZATION

NORMALIZATION

	User_ID	u1		Program_ID	p1
	First_Name	u2		Program_Name	p2

User	Last_Name	u3	Program		
	Contact_No	u4			
	Address	u5		Course_ID	c1
	Student_ID	s1			
	Faculty_ID	f1		Plo_ID	o1
	Admin_ID	a1			
Student	Student_ID	s1	PLO	Plo_ID	o1
	Department_ID	d1		Plo_Num	o2
Faculty	Faculty_ID	f1		Program_ID	p1
	Department	d1		Course_ID	c1
	Section_ID	w1			
Admin	Admin_ID	a1	CO	Co_ID	i1
				Co_Num	i2
	School_ID	l1		Couse_ID	c1
	Department_ID	d1		Plo_ID	o1
	Program_ID	p1	Assessment	Assessment_Num	m1
	Course_ID	c1		Course_ID	c1
School	School_ID	l1		Section_ID	w1
	School_Name	l2		Marks	m2
				Evaluation	n1
Department	Department_ID	d1	Section	Section_ID	w1
	Department_Name	d2		Section_Num	w2
	Program	p1		Course_ID	c1
Course	Course_ID	c1		Enrolment_ID	r1
	Course_Name	c2		Faculty_ID	f1
	CO_ID	i1		Semester	w3
	Enrollment_ID	r1		Evaluation_Num	n1

Enrollment	Student_ID	s1	Evaluation	Assessment	m1
	Section_ID	w1			
	Semester	w3		Enrollment_ID	r1
	Year	r2		Obtain_Marks	n2

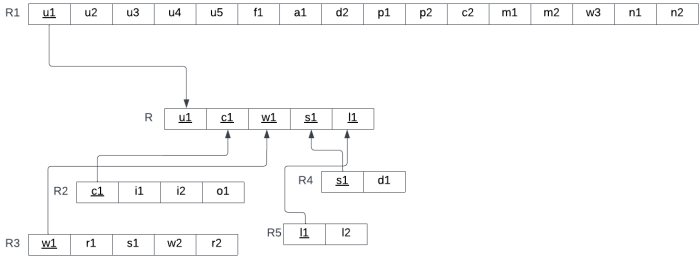
u1	u2,u3,u4,u5,s1,a1,f1	p1	p2,o1,c1
s1	d1	o1	o2,p1,c1
f1	d1,w1	i1	i2,c1,o1
a1	l1,d1,p1,c1	m1	c1,m2,w1,n1
l1	l2	w1	w2,c1,r1,f1,w3
d1	d2,p1	r1	s1,w1,w2,r2
c1	c2,i1	n1	r1,n2

Normalization

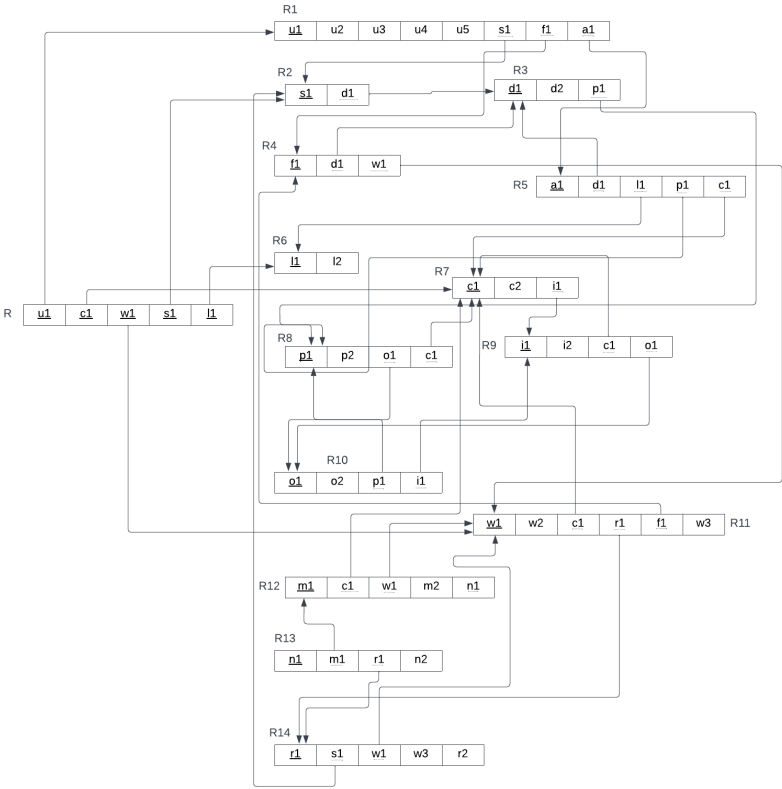
1NF:

R	<u>u1</u>	u2	u3	u4	u5	s1	f1	a1	l1	l2	d1	d2	<u>c1</u>	c2	p1	p2	o1	o2	i1	i2	m1	m2	<u>w1</u>	w2	w3	r1	r2	n1	n2
---	-----------	----	----	----	----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

2NF:



3NF:



BCNF

BCNF: All determinants are candidate keys. There is no determinant that is not unique identifier. Here, all the relations already are in BCNF.

Name	Data Type	Size	Remarks
cSchoolID	VARCHAR	10	This is the primary key of School. E.g.: “SETS”
cSchoolName	VARCHAR	255	This is the name of the school. E.g.: “School of Engineering, Technology & Science”.

Program_T

Name	Data Type	Size	Remarks
cProgramID	VARCHAR	5	This is the primary key for a program. E.g.: “BSC1”
cProgramName	VARCHAR	255	This is the name of the program. E.g.: “Bachelor of Science”
cDepartmentID	VARCHAR	10	This is the foreign key from the Department table. E.g.: “CSE”

Department_T

Name	Data Type	Size	Remarks
cDepartmentID	VARCHAR	10	This is the primary key for the Department table. E.g.: “CSE”
cDepartmentName	VARCHAR	255	This is the name of the department. E.g.: “Computer Science and Engineering”.
cSchoolID	VARCHAR	10	This is a foreign key from the school table. E.g.: “SETS”.

CLO_T

Name	Data Type	Size	Remarks
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nCLOID	INTEGER		This is the primary key for the CLO table. E.g.: "1".
cCLONum	TEXT		E.g.: "CLO1".
cPLOID	INT		This is the foreign key from the Program Learning Outcome table. E.g.: "PLO1"
cCourseID	VARCHAR	6	This is the Foreign Key from the Course_T. E.g.: "CSE203"

PLO_T

Name	Datatype	Size	Remarks
nPLOID	INTEGER		This is the primary key for Program Learning Outcome. E.g.: "1"
nPLONum	INTEGER		This is the PLO number. E.g.: "1"
cDetails	VARCHAR	255	This is the details for Program Learning Outcome. E.g.: "An ability to select and apply the knowledge, technique, skills and modern tools of the computer science and engineering discipline"
cProgramID	VARCHAR	5	This is the foreign key from the pPogram_T. E.g.: "BSC1"

Assessment_T

NAME	Data Type	Size	Remarks
nAssessmentNo	INTEGER		This is the Primary Key of an assessments Eg: "124"
cMarks	NUMBER		This is the Marks of each assessments Eg: "65.6"
nCLOID	INTEGER		This is the Foreign Key From the CLO_T. E.g.: "1".
cSectionID	VARCHAR	255	This is the Foreign Key from Section_T. E.g.: "summer23csc10101"

Evaluation_T

Name	Datatype	Size	Remarks
nEvaluationID	INTEGER		This is the Primary Key for Evaluation Table.
cObtainedMarks	NUMBER		This is the obtained marks of the student. E.g.: "24.5"
nAssessmentNo	INTEGER		This is the Foreign Key from Assessment_T Eg: "124"
nEnrollmentID	INTEGER		This is the Foreign Key from Enrollment_T.

Student_T

Name	Data Type	Size	Remarks
nStudentID	INTEGER		This is the primary key for the student table. E.g.: "1921834".
cFirstName	VARCHAR	30	This is the first name of the student. E.g.: "Rakibul".
cLastName	VARCHAR	30	This is the last name of the student. E.g.: "Hasan".
dDateOfBirth	DATE	DD MM YYYY	This is the birth date of the student. E.g.: "21-12-1996".
cGender	VARCHAR	6	This is the gender of the student. E.g.: "Female".
cEmail	VARCHAR	30	This is the email of the student. E.g.: "1921834@iub.edu.bd"
nPhone	NUMERIC	11	This is the phone of the student. E.g.: "01XXXXXXXXXX".
cAddress	VARCHAR	50	This is the address of the student. E.g.: "House 1, Road 4, Block D, Bashundhara RA".

dEnrollmentDate	DATE	DD MM YYYY	This is enrollment date of the student. E.g.: “1-1-2019”
cProgramID	INTEGER		This is the foreign key from the program table. E.g.: “1”
cDepartmentID	VARCHAR	3	This is the foreign key from the Department table. E.g.: “CSE”

Employee_T

Name	Datatype	Size	Remarks
nEmployeeID	INTEGER		This is the primary key for Employee table. E.g.: “1801”
cFirstName	VARCHAR	30	This is the first name of the faculty. E.g.: “Sadita”
cLastName	VARCHAR	30	This is the last name of the faculty. E.g.: “Ahmed”
dDateofbirth	DATE	DD-MM YYYY	This is the date of Birth of the faculty. E.g.:01-01-1992
cGender	VARCHAR	6	This is the gender of the faculty. E.g.: “Female”
cEmail	VARCHAR	30	This is the email address of the student. E.g.: “1675231@iub.edu.bd”
nPhone	NUMERIC	11	This is the phone number of the faculty. E.g.: “01292383111”
cAddress	VARCHAR	30	This is the address of the faculty. E.g.: “House 14, Road 21, Sector 11, Baridara,Dhaka, Bangladesh”
cEmployeeType	CHAR	1	This is the type of the employee. E.g.: “F”

Course_T

Name	Datatype	Size	Remarks
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cCourseID	VARCHAR	6	This is the Primary Key for the Course. E.g.: "CSE203"
cCourseName	VARCHAR	255	This is the name of the Course. E.g.: "Discreet Mathematics"
nCreditNo	INTEGER		This is the number of credits for the Course. E.g.: "3"
cProgramID	VARCHAR	5	This is the Program nme related to the Course. E.g.: "BSC1"
cPrerequisiteCourse	VARCHAR	6	This is the Primary Key for the Course. E.g.: "CSE101"

Section_T

Name	Datatype	Size	Remarks
cSectionID	VARCHAR	255	This is the Primary Key for Section. E.g.: "summer23csc10101"
nSectionNum	INTEGER		This is the section number. E.g.: "1"
cCourseID	VARCHAR	6	This is the foreign key from the Course table. E.g.: "CSE101"
cSemester	VARCHAR	10	This is the semester of the section. E.g.: "Summer"
cFacultyID	NUMERIC	4	This is the foreign key from Faculty table. E.g.: "1801"
dYear	YEAR	yyyy	This is the year of registration. E.g.: "2019"

Enrollment_T

Name	Datatype	Size	Remarks
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nEnrollmentID	INTEGER		This is the Primary Key for Registration. E.g.: "0101010101"
cStudentID	NUMERIC	7	This is the foreign key from Student Table extended from User_T. E.g.: "1830398"
cSemester	VARCHAR	10	This is the semester of registration. E.g.: "Spring"
dYear	YEAR	yyyy	This is the year of registration. E.g.: "2019"
nSectionID	VARCHAR	255	This is the Foreign Key from Section_T. E.g.: "summer23csc10101"

Faculty_T

Name	Datatype	Size	Remarks
nFacultyID	INTEGER		This is the primary key for the faculty table. E.g.: "4250"
dJoinDate	DATE	dd-mm yyyy	This is starting date. E.g.: "01-03-2020"
cRank	VARCHAR	30	This is the rank of the faculty. E.g.: "Assistant Professor"
cDepartmentID	VARCHAR	3	This is the foreign key from the Department table. E.g.: "CSE"

Admin_T

Name	Datatype	Size	Remarks
nAdminID	INTEGER		This is the primary key for the admin table. E.g.: "4250"
cAdminType	VARCHAR	30	This is the type of user logging in E.g.: "VC"
dJoinDate	DATE	dd-mm yyyy	This is starting date. E.g.: "01-03-2020"
cRank	VARCHAR	30	This is the rank of the admin. E.g.: "Assistant Professor"

dEndDate	DATE	dd-mm yyyy	This is the date the admin retires from his post. E.g.: “01-03-2024”
cDepartmentID	VARCHAR	3	This is the foreign key from the Department table. E.g.: “CSE”
cSchoolID	VARCHAR	5	This is a foreign key from the school table. E.g.: “SETS”.

CH-4 PHYSICAL SYSTEM DESIGN

INPUT FORMS



Figure: Sign in Form for all user

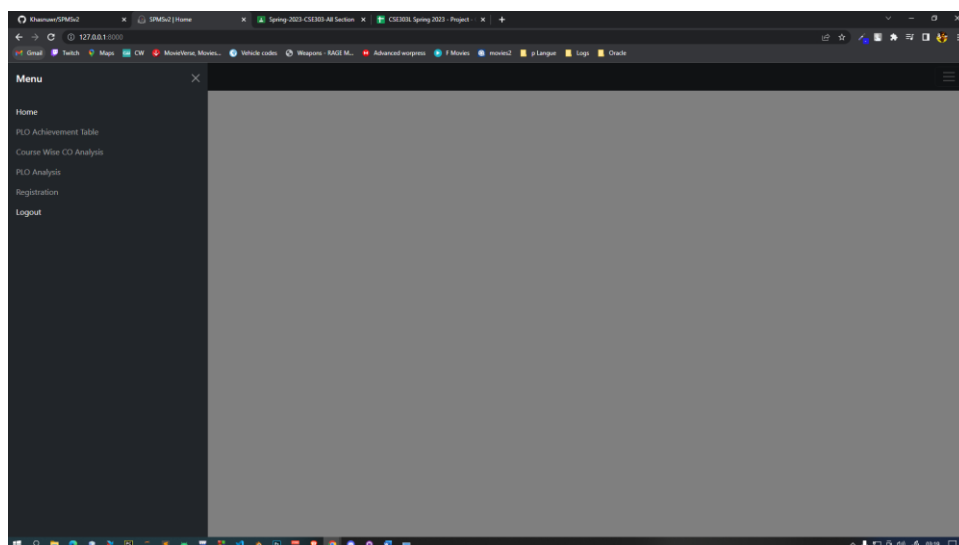
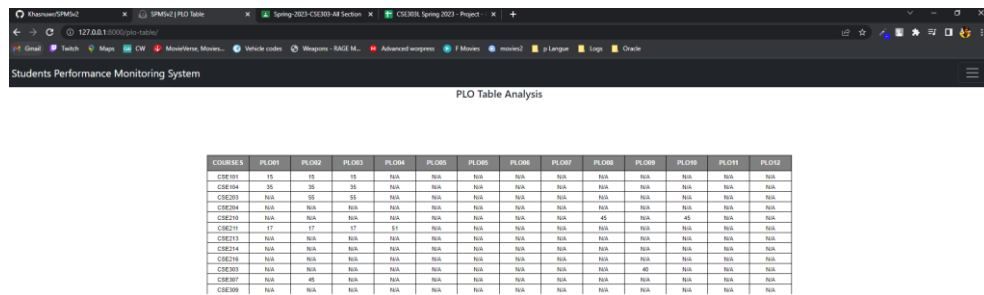


Figure: Student Dashboard and Navbar



The screenshot shows a web browser window with the URL 127.0.0.1:5000/plo-table. The page title is "Students Performance Monitoring System". Below the title is a section labeled "PLO Table Analysis". The table displays performance data for various courses across 12 PLOs (PLO01 to PLO12). The data is organized into columns for each PLO and rows for each course. The values are either "N/A" or numerical scores.

COURSES	PLO01	PLO02	PLO03	PLO04	PLO05	PLO06	PLO07	PLO08	PLO09	PLO10	PLO11	PLO12
CSE101	15	15	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSE104	35	35	35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSE203	N/A	55	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSE204	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSE210	N/A	N/A	N/A	N/A	N/A	N/A	N/A	45	N/A	45	N/A	N/A
CSE211	17	17	17	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSE212	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSE214	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSE215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSE205	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40	N/A	N/A	N/A	N/A
CSE307	N/A	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSE309	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Figure: PLO table Analysis Student Wise

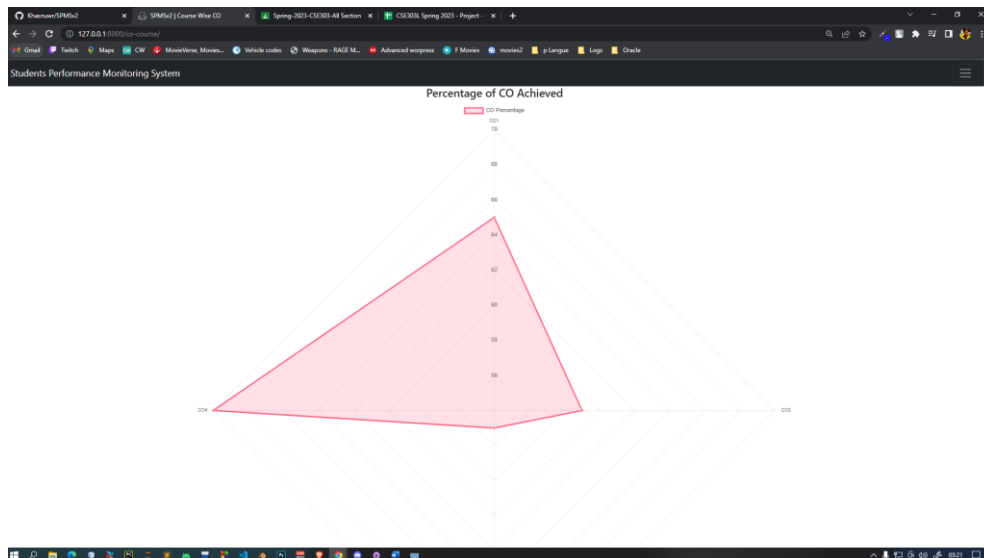


Figure: Achieved CO Analysis Student Wise

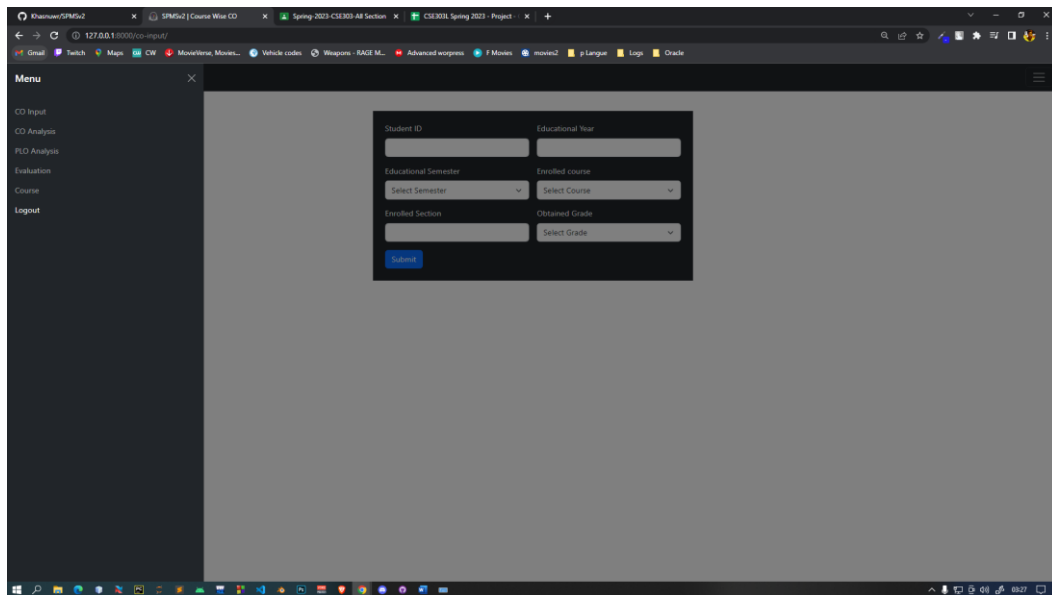


Figure: Faculty dashboard and Navbar

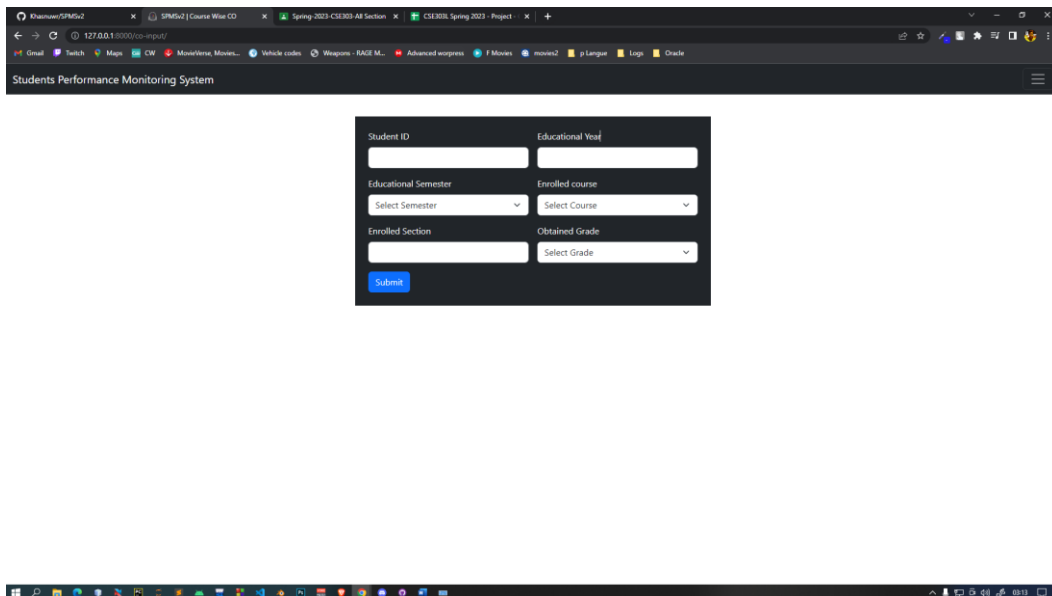


Figure: CO percentage insertion Form for Faculty User

CH-5 CONCLUSION

PROBLEM & SOLUTION

1. Our ability to utilize this program to its full potential has been hampered by the limited period of the semester. We intend to make enhancements with greater analysis when given more time, but we believe we have produced the best program we could give the time and resources available.
2. We might think that we could have produced far more trustworthy and accurate outcomes, representations, and predictions if given more tools and information to work with.

ADDITIONAL FEATURE & FUTURE DEVELOPMENT

Future Development scope:

1. The number of users will be increased to include advisers, who will receive pertinent data on the students they are advising for better and more advantageous interactions between students and advisers.
2. Project goals include adding a component that predicts a candidate's grade based on prior grades and performances.

CONCLUSION & RECOMMENDATIONS

We think the idea we had for our SPM software has been created, built, and implemented in the greatest way possible. With the appropriate application of this software, we intend to significantly raise the standard of education offered by institutions. This program can be used by students who want to become better and more capable scholars, by faculties to keep better track of their students and adjust their teaching strategies accordingly, and by institution members to more effectively manage their resources.