



# Database Management Project

## Final Report

Group No. 34

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## CHAPTER 1 -INTRODUCTION:

### A. BACKGROUND OF THE ORGANIZATION - IUB:

The Independent University, Bangladesh (IUB) has a number of strong and adaptable institutions, including the following:

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

The university has been an active participant in the growth of the education sector in Bangladesh and produced capable and knowledgeable scholars contributing both here and abroad.

IUB achieved this by working closely with the Ministry of Education, the University Grants Commission (UGC), and other necessary institutions for each of the schools, regularly updating the curriculum, implementing a system to track student performance based on a quantified approach between course curricula and standards set by UGC and the Bangladesh government, and continuously monitoring student performance.

The goal of this report is to review the student performance monitoring system that IUB currently employs, perform the necessary process analysis, and suggest a new and better system that reduces error, makes data analysis and report generation easier for all interested parties, and improves overall system performance produce/display important data that IUB and its partners will need to enhance academia and turn out better scholars. The first section explains the organization of the issue and the project we undertook for it in detail.

Our research into the current student performance monitoring system revealed many areas where beneficial changes could be made to speed up each step of the process, facilitate communication between important parties, reduce opportunities for mistakes and data duplication, and, most importantly, make it simpler for all stakeholders to sort through large datasets and find information that is relevant to their needs.

As we read through this report, we will go deeper into the inner workings of the current student performance monitoring system, the business processes entailed, the data management concerns and issues, and how we can create a better system to address these concerns and address them for fixing and improvement.

## **B. BACKGROUND OF THE PROJECT - SPMS 4.0:**

Student Performance Monitoring System (SPMS 4.0) is an Outcome-Based Education (OBE) framework designed to assess the performance of students, instructors, schools, departments, and programs. It provides a comprehensive monitoring system that enables higher education authorities to identify areas for improvement and develop effective strategies accordingly. With SPMS 4.0, IUB can track student progress and evaluate the effectiveness of their curriculum, faculty, and overall performance, thus ensuring the continuous improvement of their educational programs.

## **C. OBJECTIVE OF THE PROJECT - SPMS 4.0:**

SPMS 4.0 is an effective monitoring and analysis system that evaluates the performance of various stakeholders within an educational institution, including students, course instructors, departments, schools, and programs. This is achieved by utilizing a database of assessments, such as quizzes, midterm exams, and final term exams, to gather necessary data and documents, including exam question papers, answer scripts, course outlines, and marks achieved by students.

With this data, SPMS 4.0 assesses stakeholder performance based on their Course Outcomes (CO), Program Learning Outcomes (PLO), and Program Outcomes (PO), enabling students to monitor their own performance through statistical analysis. Additionally, Higher Authorities can take advantage of a wide range of analytical reports provided by SPMS 4.0 to draw valuable conclusions and make necessary improvements to the educational programs, departments, schools, and programs. This ensures continuous growth and development within the institution, enhancing the performance of all stakeholders involved.

## **D. SCOPE OF THE PROJECT:**

After conducting a thorough analysis of the existing SPMS 3.0 system, we have identified several areas where the system is lacking. To address these shortcomings, we have redesigned the system to incorporate additional functionalities. The new system can accept, and store data related to Student ID, Educational year, semester, course, Enrolled section, and Obtained grade.

Students can now enter their data manually or upload a CSV file. If a CSV file is uploaded, the system will automatically extract the relevant data and insert it into the database. This feature greatly streamlines the data entry process, saving time and effort for both students and administrators.

In addition to these enhancements, students can now view their individual course outcomes (CO) in graphical form, based on their results. This feature provides students with a clear and easy-to-understand representation of their progress in each course, allowing them to identify areas for improvement and track their academic achievements more effectively.

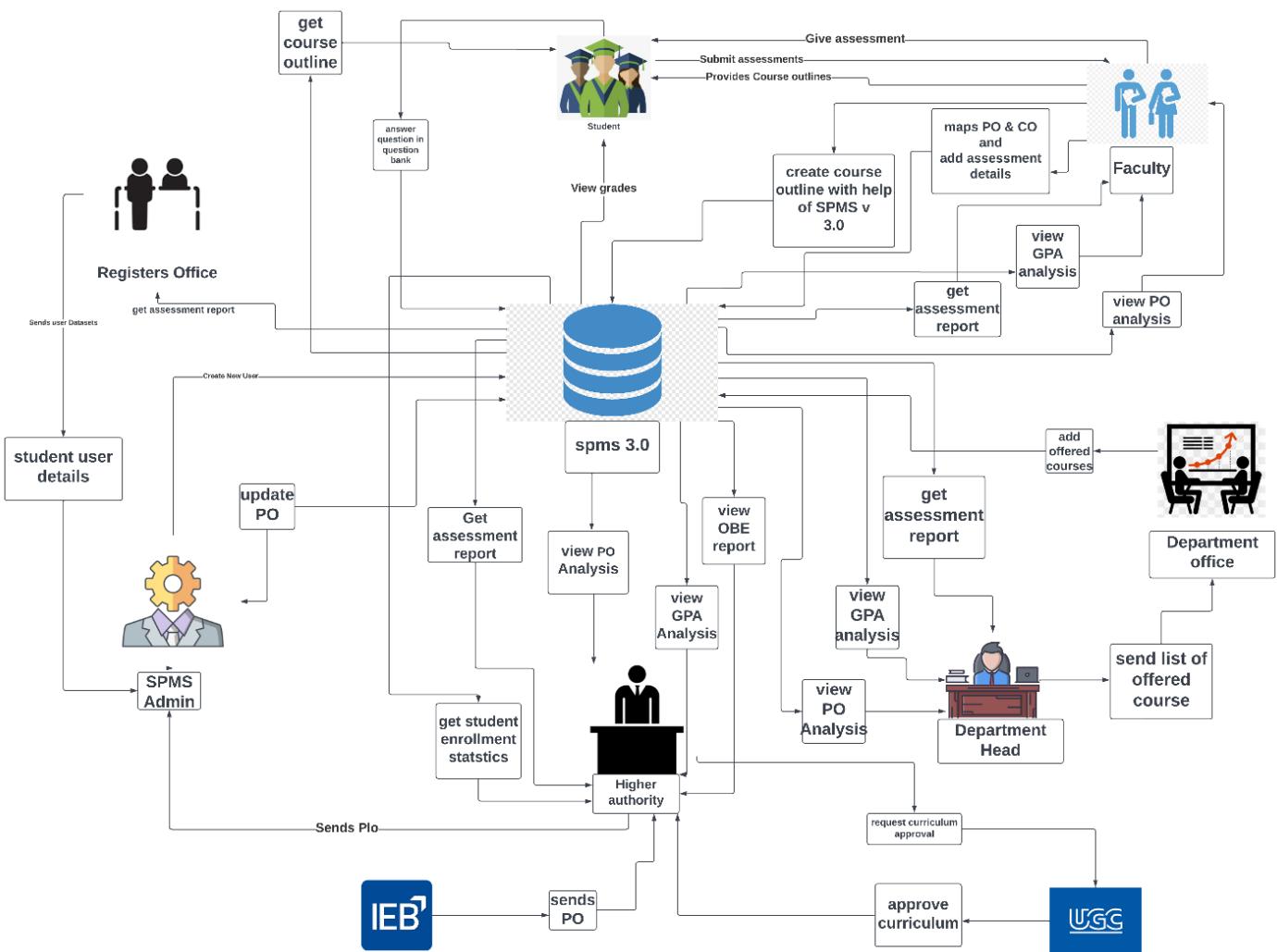
Overall, the revamped SPMS 3.0 system provides an improved user experience and greater functionality, making it easier and more efficient for students to manage their academic records and track their progress towards their educational goals.

## CHAPTER-2 REQUIREMENT ANALYSIS

### A. RICH PICTURE – EXISTING SYSTEM (SPMS 3.0):

Using a rich picture makes it simpler for everyone to comprehend how a system's processes work. It is composed of images, text, symbols, and icons that are all utilized to visually represent the scenario. [3] We can see connections and interconnections that we might otherwise miss if the picture is rich [3]. It aids

in identifying one or more themes that participants might want to investigate further and address. Rich images are thus always utilized in the pre-analysis stage [3].



**In this rich picture the stakeholders are:**

- 1) UGC
  - 2) IEB
  - 3) Higher Authority (VC, Dean etc)
  - 4) Department Head
  - 5) Department Office
  - 6) SPMSV2.0 Admin (SPMS Manager)

7) Registers Office

8) Faculty

9) Student

**The Main Storages are**

1) SPMS V3.0

## **B.SIX ELEMENT ANALYSIS – EXISTING SYSTEM (SPMS 3.0)**

From the rich picture we can see that there are 10 key processes:

- 1) Creating storing and giving Course Outline
- 2) Add Questions to the question bank and grading the answer script
- 3) Course based student performance trend according to GPA
- 4) Faculty based student performance according to GPA
- 5) Course wise PLO achievement of a student
- 6) Student performance trend under VC/Dean/Head of Department
- 7) Course, Program, department, school CLO-PLO statistics
- 8) Course, student, department school wise expected vs achieved PLO
- 9) Department average of total PLO achieved and attempted students
- 10) Student Enrollment Statistics VC-wise, Dean-wise, Department

Head-wise.

**We can use six element analysis to analyze the impact of six elements in a process here the six elements are**

1. Human
2. Non computing Hardware
3. Computing Hardware
4. Software.

5. Database.

6. Network and Communication.

Process	Human	Non computing Hardware	Computing Hardware	Software	Database	Network Group-34 and Communication
<b>Preparing storing and giving Course Outline</b>	<p><b>Faculty:</b></p> <p>1) Signs into System using their ID and Password.</p> <p>2) Select Create Course Outline Tab.</p> <p>3) Select From the options that they wish to add in their course outline.</p> <p>4) Press the Create button.</p> <p>5) Store course outline into system.</p> <p><b>Students:</b></p> <p>1) Signs into System using their ID and Password.</p> <p>2) Select Course</p> <p>3) View/Download Course Outline from System.</p>		<p><b>Computer/ Laptop</b></p> <p>1) Used to Sign into SPMS3.0</p> <p><b>Printer</b></p> <p>1) Used to print hard copy of course outlines if required.</p>	<p><b>SPMS 3.0</b></p> <p>1)Used to store Data into the database</p>	<p><b>SPMS 3.0</b></p> <p>Data base</p> <p>1) All valid data are stored here which can be updated by SPMS 3.0 admins.</p>	1)Used to Sign into SPMS3.0
<b>Add Questions to the question bank and grading the answer script</b>	<p><b>Faculty:</b></p> <p>1) Signs into System using their ID and Password.</p> <p>2) Select course and choose section's that has to solve the question.</p> <p>3) Input the question in the question bank.</p> <p>4) Press the Assign Button.</p> <p>5) Grade the answers submitted by the students</p> <p><b>Student:</b></p> <p>1) Signs into System using their ID and Password.</p> <p>2) Answer the question assigned</p>		<p><b>Computer/ Laptop</b></p> <p>1) Used to Sign into SPMS3.0</p> <p><b>Printer</b></p> <p>1) Used to print the grades gotten by the whole section</p>	<p><b>SPMS3.0</b></p> <p>1) Used to store Data into the database or generate e result graph using data from the database.</p>	<p><b>SPMS 3.0</b></p> <p>Database</p> <p>1) All valid data are stored here which can be updated by SPMS 3.0 admins.</p>	<p><b>Internet</b></p> <p>1) Used to Sign into SPMS3.0</p>

	by the faculty in the answer bank 3) Press the Submit button 4) Check grade in SPMS4.0 after faculty is done checking					
<b>Course based student performance trend according to GPA</b>	<p><b>Department Head:</b> 1) Signs into System using their ID and Password. 2) Input the time period and course ID to be viewed. 3) View student progress through a graph made after analysis and the GPA earned by maximum/minimum /Average students.</p> <p><b>Faculty:</b> 1) Signs into system using their ID and Password. 2) Search for the course that they are teaching using course ID and time period and view the progress of that students of that course.</p> <p><b>Student:</b> 1) Signs into System using their ID and Password. 2) Search for the course using course ID and View their progress of that course and the GPA they earned.</p> <p><b>Dean/VC:</b> 1) Signs into system using their ID and Password.</p>		<p><b>Computer/ Laptop</b> 1) Used to Sign into SPMS3.0.</p> <p><b>Printer</b> 1) Used to print hard copy of the progress of current semester's students and compare with the progress of the previous semester's students who did that course.</p>	<b>SPMS3. 0</b> 1)Used to store student Data into the database or generate perform -- once analysis graph using data from the database.	<b>SPMS 3.0 Database</b> 1) All valid data are stored here which can be updated by SPMS 3.0 admins.	<b>Internet</b> 1) Used to Sign into SPMS3.0

	2) Search for the course using course ID and time period and View the progress of the students of that course					
<b>Faculty based student performance according to GPA</b>	<p><b>Faculty:</b> 1) Signs into system using their ID and Password. 2) View the Progress of the students who are being taught by them.</p> <p><b>Department Head:</b> 1) Signs into system using their ID and Password. 2) Search for a faculty to be assessed using the faculty's name. 3) View the Progress of the students who are being taught under that faculty basing on the GPA earned by the students.</p> <p><b>Dean/VC:</b> 1) Signs into system using their ID and Password. 2) Search for a faculty to be assessed using the faculty's name and Department ID. 3) View the Progress of the students who are being taught under that faculty basing on the GPA earned by the students.</p>		<p><b>Computer/ Laptop</b> 1) Used to Sign into SPMS3.0</p> <p><b>Printer</b> 1) Used to print hard copy of the progress of students taught by a faculty</p>	<p><b>SPMS3. 0</b> 1) Used to store student Data into the database or generate perform - ance analysis graph using data from the database.</p>	<p><b>SPMS 3.0 Database</b> 1) All valid data are stored here which can be updated by SPMS 3.0 admins.</p>	<p><b>Internet</b> 1) Used to Sign into SPMS3.0</p>

<b>Course wise PLO achievement of a student</b>	<p><b>VC/ Dean:</b> 1) Signs into system using their ID and Password. 2) Select PLO achievement Tab and search using Course ID 3) View PLOs achieved by the student.</p> <p><b>Department Head:</b> 1) Signs into system using their ID and Password. 2) Select PLO achievement Tab and search using Course ID 3) View PLOs achieved by the students.</p> <p><b>Faculty:</b> 1) Signs into system using their ID and Password. 2) Select PLO achievement Tab and search using Course ID 3) View PLOs achieved by the students in a course.</p> <p><b>Student:</b> 1) Signs into system using their ID and Password. 2) View PLOs they have achieved so far and how many they need to achieve to complete the course.</p>		<p><b>Computer/ Laptop</b> 1) Used to Sign into SPMS3.0</p> <p><b>Printer</b> 1) Used to print hard copy of a report of students who completed most the PLO achievements If needed.</p>	<p><b>SPMS3. 0</b> 1) Used to store Data and generate PLO automatically based on the CO provide d.</p>	<p><b>SPMS 3.0 Database</b> 1) All valid data are stored here which can be updated by SPMS 3.0 admins.</p>	<p><b>Internet</b> 1) Used to Sign into SPMS3.0</p>
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<b>Student performance trend Under VC/Dean/ Head of Department</b>	<b>Dean:</b> 1) Signs into system using their ID and Password. 2) Search for Department Head to be checked using their Name and Department ID. 3) View student progress under them or them.  <b>VC:</b> 1) Signs into system using their ID and Password. 2) Search for a Dean or Department Head to be checked using their Name and either School ID or Department ID. 3) View student progress under them.  <b>Department Head:</b> 1) Signs into system using their ID and Password. 2) View student progress under them	<b>Computer/ Laptop</b> 1) Used to Sign into SPMS3.0  <b>Printer</b> 1) Used to print the hard copy of the progress report if needed	<b>SPMS3. 0</b> 1) Used to store Data into the database or generate performance analysis graph using data from the database.	<b>SPMS 2.0</b> Database 1) All valid data are stored here which can be updated by SPMS 3.0 admins.	<b>Internet</b> 1) Used to Sign into SPMS3.0
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<b>Course, Program, department, school CLO-PLO statistics</b>	<p><b>Dean/VC:</b></p> <p>1) Signs into system using their ID and Password.</p> <p>2) View CLO-PLO mapped statistics achieved by students.</p> <p><b>Department Head:</b></p> <p>1) Signs into system using their ID and Password.</p> <p>2) View CLO-PLO mapped statistics achieved by students.</p> <p><b>Faculty:</b></p> <p>1) Signs into system using their ID and Password.</p> <p>2) View CLO-PLO mapped statistics achieved by students.</p> <p><b>Student:</b></p> <p>1) Signs into system using their ID and Password.</p> <p>2) View CLO-PLO mapped statistics achieved by them and other students.</p>		<p><b>Computer/ Laptop</b></p> <p>1) Used to Sign into SPMS3.0</p> <p><b>Printer</b></p> <p>1) Used to print the hard copy of the progress report if needed</p>	<p><b>SPMS3. 0</b></p> <p>1) Used to store Data into the database and generate CLO-PLO statistical data or graphs.</p>	<p><b>SPMS 3.0 Database</b></p> <p>1) All valid data are stored here which can be updated by SPMS 3.0 admins.</p>	<p><b>Internet</b></p> <p>1) Used to Sign into SPMS3.0</p>
<b>Course, student, department school wise expected vs achieved PLO</b>	<p><b>Dean/VC:</b></p> <p>1) Sign into the system using ID and Password.</p> <p>2) View the achieved PLO of the students during time entered that has been inputted and comparison</p>		<p><b>Computer/ Laptop</b></p> <p>1) Used to Sign into SPMS3.0</p> <p><b>Printer</b></p>	<p><b>SPMS3. 0</b></p> <p>1) Used to store Data into the database or generate performance analysis</p>	<p><b>SPMS 3.0 Database</b></p> <p>1) All valid data are stored here which can be updated by SPMS</p>	<p><b>Internet</b></p> <p>1) Used to Sign into SPMS3.0</p>

	<p>between expected and achieved.</p> <p><b>Department Head:</b> 1) Sign into the system using ID and Password. 2) View the achieved PLO of the students during time entered that has been inputted and comparison between expected and achieved.</p> <p><b>Faculty:</b> 1) Sign into the system using ID and Password. 2) View the achieved PLO of the students during time entered that has been inputted and comparison between expected and achieved.</p> <p><b>Student:</b> 1) Sign into the system using ID and Password. 2) View the achieved PLO of the students during time entered that has been inputted and comparison between expected and achieved.</p>		<p>1) Used to print the hard copy of both the previous and current semester's achieved PLO to compare.</p>	<p>graph using data from the database</p>	<p>3.0 admins</p>	
<b>Department average of total PLO achieved and attempted students</b>	<p><b>Dean/VC:</b> 1) Sign into the system using ID and Password. 2) Enter the time period of the semester wished to be viewed. 3) View the departmental average of total PLO achieved along with the number of students who attempted.</p>		<p><b>Computer/ Laptop</b> 1) Used to Sign into SPMS3.0</p> <p><b>Printer</b> 1) Used to print the hard copy of PLO reports</p>	<p><b>SPMS3. 0</b> 1) Used to store Data into the database or generate performance analysis graph using data from the database.</p>	<p><b>SPMS 3.0 Database</b> 1) All valid data are stored here which can be updated by SPMS 3.0 admins</p>	<p><b>Internet</b> 1) Used to Sign into SPMS3.0</p>

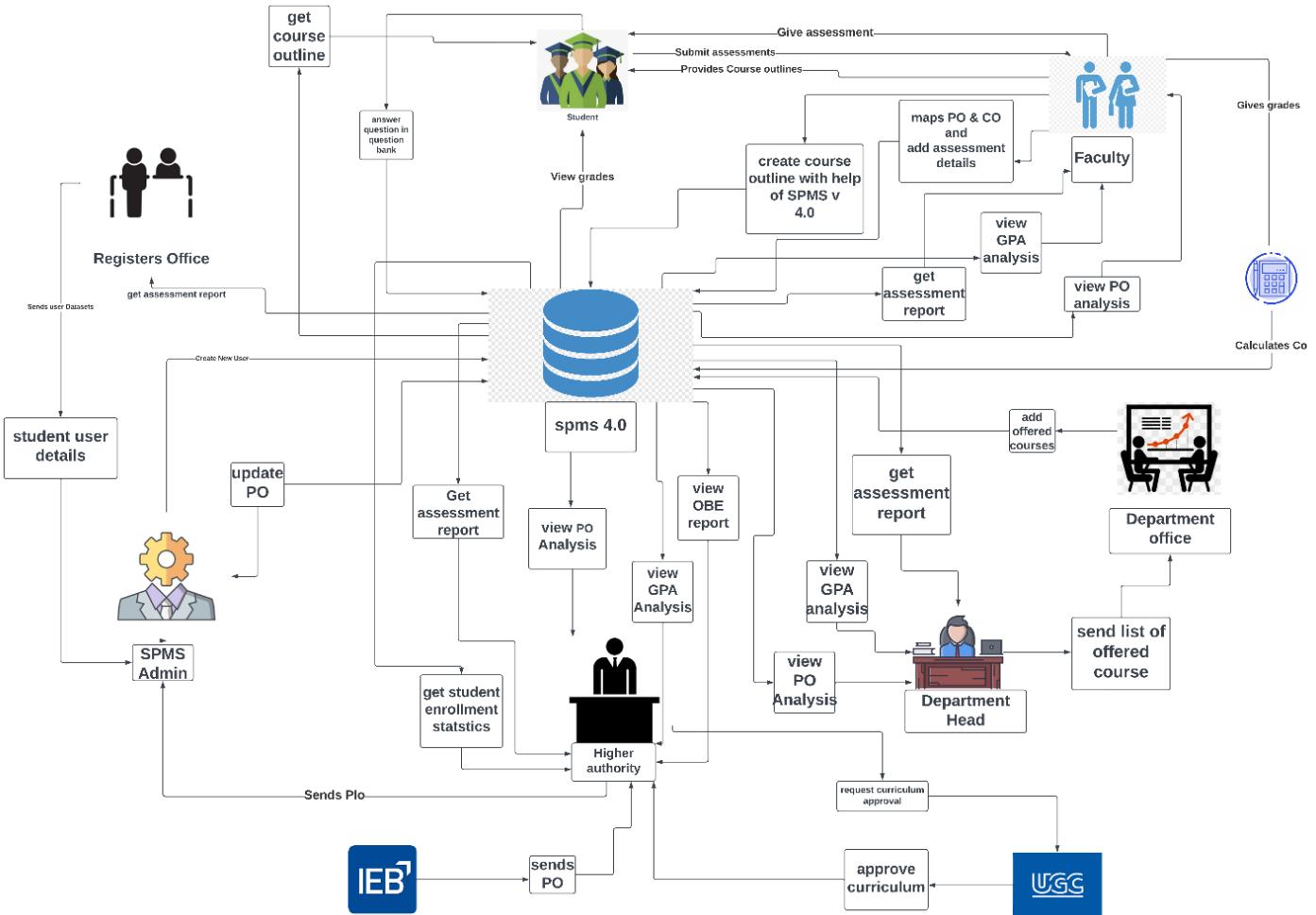
	<p><b>Department Head:</b>            1) Sign into the system using ID and Password.            2) Enter the time period of the semester wished to be viewed.            3) View the departmental average of total PLO achieved along with the number of students who attempted.</p> <p><b>Faculty:</b>            1) Sign into the system using ID and Password.            2) View the total departmental average of the PLO achieved by the students.</p> <p><b>Student:</b>            1) Sign into the system using ID and Password.            2) View the total departmental average of the PLO achieved by the students</p>					
<b>Student Enrollment Statistics VC-wise, Dean-wise, Department Head-wise.</b>	<p><b>VC</b>            1) Sign into the system using ID and Password.            2) Select Student Enrollment Statistics tab and select Year and Semester under that tab            3) View Student Enrollment Statistics of That Year and Semester.</p> <p><b>Dean</b>            1) Sign into the system using ID and Password.</p>		<p><b>Computer/ Laptop</b>            1) Used to Sign into SPMS3.0</p> <p><b>Printer</b>            1) Used to print the hard copy of Student Enrollment Statistics If Needed.</p>	<p><b>SPMS3. 0</b>            1) Used to store Data into the database and generate Student Enrollment Statistics graphs</p>	<p><b>SPMS 3.0 Database</b>            1) All valid data are stored here which can be updated by SPMS 3.0 admins</p>	<p><b>Internet</b>            1) Used to Sign into SPMS3.0</p>

	<p>2) Select Student Enrollment Statistics tab and select Year and Semester under that tab 3) View Student Enrollment Statistics of That Year and Semester.</p> <p><b>Department Head</b></p> <p>1) Sign into the system using ID and Password. 2) Select Student Enrollment Statistics tab and select Year and Semester under that tab 3) View Student Enrollment Statistics of That Year and Semester</p>				
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### C. PROBLEM ANALYSIS – EXISTING SYSTEM (SPMS 3.0):

<b>Process Name</b>	<b>Stake Holders</b>	<b>Concerns (Problems)</b>	<b>Analysis (Reason of the Problem)</b>	<b>Proposed Solution</b>
Assessments and Grading	Faculty and Student	CLO calculation for any student was done manually.	No implemented system was present to calculate and show the CLO in graph or any kind of chart.	Building a system which can take the required data and return a calculated CLO of the given grade
Data entry in a bulk	Faculty and Student	Entry for the calculation of the CLO cannot be given in a bulk. Like the csv file can't be uploaded wholly.	There is no such system where the csv file can be uploaded and processed.	An option in the CLO calculation system should be kept where the csv file can be uploaded.
Storing backup data	Faculty	1)There is no backup data system where it can be seen that which data was inserted by which faculty. 2)There is no time column where the time of data entry should be recorded during the entry.	No such table was created for the backup of the entry record.	A new table should be created where all the records are present which can be viewed by the admin in case of any requirement.

## D. RICH PICTURE – PROPOSED SYSTEM (SPMS 4.0)



In this rich picture the stakeholders are:

- 1) UGC
- 2) IEB
- 3) Higher Authority (VC, Dean etc)
- 4) Department Head
- 5) Department Office
- 6) SPMSV2.0 Admin (SPMS Manager)
- 7) Registers Office

8) Faculty

9) Student

**The Main Storage is**

- 1) SPMS V4.0

## **E. SIX ELEMENT ANALYSIS – PROPOSED SYSTEM (SPMS 4.0):**

**From the rich picture we can see that there are 9 key processes:**

- 1) Creating storing and giving Course Outline
- 2) Add Questions to the question bank and grading the answer script
- 3) Course based student performance trend according to GPA
- 4) Faculty based student performance according to GPA
- 5) Course wise PLO achievement of a student
- 6) Student performance trend under VC/Dean/Head of Department
- 7) Course, Program, department, school CLO-PLO statistics
- 8) Course, student, department school wise expected vs achieved PLO
- 9) Department average of total PLO achieved and attempted students
- 10) Student Enrollment Statistics VC-wise, Dean-wise, Department Head-wise.

**We can use six element analysis to analyze the impact of six elements in a process here**

**the six elements are.**

1. Human
2. Non computing Hardware
3. Computing Hardware

4. Software.
5. Database.
6. Network and Communication.

Process SPMS 4.0	Human	Non computing Hardware	Computing Hardware	Software	Database	Network Group-34 and Communication
<b>Preparing storing and giving Course Outline</b>	<p><b>Faculty:</b></p> <p>1) Signs into System using their ID and Password.</p> <p>2) Select Create Course Outline Tab.</p> <p>3) Select From the options that they wish to add in their course outline.</p> <p>4) Press the Create button.</p> <p>5) Store course outline into system.</p> <p><b>Students:</b></p> <p>1) Signs into System using their ID and Password.</p> <p>2) Select Course</p> <p>3) View/Download Course Outline from System.</p>		<p><b>Computer/ Laptop</b></p> <p>1) Used to Sign into SPMS 4.0</p> <p><b>Printer</b></p> <p>1) Used to print hard copy of course outlines if required.</p>	<p><b>SPMS 4.0</b></p> <p>1)Used to store Data into the database</p>	<p><b>SPMS 4.0</b></p> <p>Data base</p> <p>1) All valid data are stored here which can be updated by SPMS 4.0 admins.</p>	1)Used to Sign into SPMS 4.0
<b>Add Questions to the question bank and grading the answer script</b>	<p><b>Faculty:</b></p> <p>1) Signs into System using their ID and Password.</p> <p>2) Select course and choose section's that has to solve the question.</p> <p>3) Input the question in the question bank.</p> <p>4) Press the Assign Button.</p> <p>5) Grade the answers submitted by the students</p> <p><b>Student:</b></p> <p>1) Signs into System using their ID and Password.</p> <p>2) Answer the question assigned by the faculty in the answer bank</p>		<p><b>Computer/ Laptop</b></p> <p>1) Used to Sign into SPMS 4.0</p> <p><b>Printer</b></p> <p>1) Used to print the grades gotten by the whole section</p>	<p><b>SPMS 4.0</b></p> <p>1) Used to store Data into the database or generate result graph using data from the database.</p>	<p><b>SPMS 4.0</b></p> <p>Database</p> <p>1) All valid data are stored here which can be updated by SPMS 4.0 admins.</p>	<b>Internet</b> <p>1) Used to Sign into SPMS 4.0</p>

	3) Press the Submit button 4) Check grade in SPMS4.0 after faculty is done checking				
<b>Course based student performance trend according to GPA</b>	<p><b>Department Head:</b> 1) Signs into System using their ID and Password. 2) Input the time period and course ID to be viewed. 3) View student progress through a graph made after analysis and the GPA earned by maximum/minimum /Average students.</p> <p><b>Faculty:</b> 1) Signs into system using their ID and Password. 2) Search for the course that they are teaching using course ID and time period and view the progress of that students of that course.</p> <p><b>Student:</b> 1) Signs into System using their ID and Password. 2) Search for the course using course ID and View their progress of that course and the GPA they earned.</p> <p><b>Dean/VC:</b> 1) Signs into system using their ID and Password.</p>	<p><b>Computer/ Laptop</b> 1) Used to Sign into SPMS 4.0.</p> <p><b>Printer</b> 1) Used to print hard copy of the progress of current semester's students and compare with the progress of the previous semester's students who did that course.</p>	<p><b>SPMS 4. 0</b></p> <p>1)Used to store student Data into the database or generate perform -- once analysis graph using data from the database.</p>	<p><b>SPMS 4.0 Database</b></p> <p>1) All valid data are stored here which can be updated by SPMS 4.0 admins.</p>	<p><b>Internet</b> 1) Used to Sign into SPMS 4.0</p>

	2) Search for the course using course ID and time period and View the progress of the students of that course				
<b>Faculty based student performance according to GPA</b>	<p><b>Faculty:</b> 1) Signs into system using their ID and Password. 2) View the Progress of the students who are being taught by them.</p> <p><b>Department Head:</b> 1) Signs into system using their ID and Password. 2) Search for a faculty to be assessed using the faculty's name. 3) View the Progress of the students who are being taught under that faculty basing on the GPA earned by the students.</p> <p><b>Dean/VC:</b> 1) Signs into system using their ID and Password. 2) Search for a faculty to be assessed using the faculty's name and Department ID. 3) View the Progress of the students who are being taught under that faculty basing on the GPA earned by the students.</p>	<p><b>Computer/ Laptop</b> 1) Used to Sign into SPMS 4.0</p> <p><b>Printer</b> 1) Used to print hard copy of the progress of students taught by a faculty</p>	<p><b>SPMS 4. 0</b> 1) Used to store student Data into the database or generate perform - ance analysis graph using data from the database.</p>	<p><b>SPMS 4.0 Database</b> 1) All valid data are stored here which can be updated by SPMS 4.0 admins.</p>	<p><b>Internet</b> 1) Used to Sign into SPMS 4.0</p>

<b>Course wise PLO achievement of a student</b>	<p><b>VC/ Dean:</b> 1) Signs into system using their ID and Password. 2) Select PLO achievement Tab and search using Course ID 3) View PLOs achieved by the student.</p> <p><b>Department Head:</b> 1) Signs into system using their ID and Password. 2) Select PLO achievement Tab and search using Course ID 3) View PLOs achieved by the students.</p> <p><b>Faculty:</b> 1) Signs into system using their ID and Password. 2) Select PLO achievement Tab and search using Course ID 3) View PLOs achieved by the students in a course.</p> <p><b>Student:</b> 1) Signs into system using their ID and Password. 2) View PLOs they have achieved so far and how many they need to achieve to complete the course.</p>	<b>Computer/ Laptop</b> 1) Used to Sign into SPMS 4.0	<b>SPMS 4. 0</b> 1) Used to store Data and generate PLO automatically based on the CO provide d.	<b>SPMS 4.0 Database</b> 1) All valid data are stored here which can be updated by SPMS 4.0 admins.	Internet 1) Used to Sign into SPMS 4.0
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<b>Student performance trend Under VC/Dean/ Head of Department</b>	<b>Dean:</b> 1) Signs into system using their ID and Password. 2) Search for Department Head to be checked using their Name and Department ID. 3) View student progress under them or them.  <b>VC:</b> 1) Signs into system using their ID and Password. 2) Search for a Dean or Department Head to be checked using their Name and either School ID or Department ID. 3) View student progress under them.  <b>Department Head:</b> 1) Signs into system using their ID and Password. 2) View student progress under them	<b>Computer/ Laptop</b> 1) Used to Sign into SPMS 4.0  <b>Printer</b> 1) Used to print the hard copy of the progress report if needed	<b>SPMS 4. 0</b> 1) Used to store Data into the database or generate performance analysis graph using data from the database.	<b>SPMS 4.0</b> Database 1) All valid data are stored here which can be updated by SPMS 4.0 admins.	<b>Internet</b> 1) Used to Sign into SPMS 4.0
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<b>Course, Program, department, school CLO-PLO statistics</b>	<p><b>Dean/VC:</b></p> <p>1) Signs into system using their ID and Password.</p> <p>2) View CLO-PLO mapped statistics achieved by students.</p> <p><b>Department Head:</b></p> <p>1) Signs into system using their ID and Password.</p> <p>2) View CLO-PLO mapped statistics achieved by students.</p> <p><b>Faculty:</b></p> <p>1) Signs into system using their ID and Password.</p> <p>2) View CLO-PLO mapped statistics achieved by students.</p> <p><b>Student:</b></p> <p>1) Signs into system using their ID and Password.</p> <p>2) View CLO-PLO mapped statistics achieved by them and other students.</p>		<p><b>Computer/Laptop</b></p> <p>1) Used to Sign into SPMS 4.0</p> <p><b>Printer</b></p> <p>1) Used to print the hard copy of the progress report if needed</p>	<p><b>SPMS 4. 0</b></p> <p>1) Used to store Data into the database and generate CLO-PLO statistic al data or graphs.</p>	<p><b>SPMS 4.0 Database</b></p> <p>1) All valid data are stored here which can be updated by SPMS 4.0 admins.</p>	<p><b>Internet</b></p> <p>1) Used to Sign into SPMS 4.0</p>
<b>Course, student, department school wise expected vs achieved PLO</b>	<p><b>Dean/VC:</b></p> <p>1) Sign into the system using ID and Password.</p> <p>2) View the achieved PLO of the students during time entered that has been inputted and comparison</p>		<p><b>Computer/Laptop</b></p> <p>1) Used to Sign into SPMS 4.0</p> <p><b>Printer</b></p>	<p><b>SPMS 4. 0</b></p> <p>1) Used to store Data into the database or generate performance analysis</p>	<p><b>SPMS 4.0 Database</b></p> <p>1) All valid data are stored here which can be updated by SPMS 4.0</p>	<p><b>Internet</b></p> <p>1) Used to Sign into SPMS 4.0</p>

	<p>between expected and achieved.</p> <p><b>Department Head:</b> 1) Sign into the system using ID and Password. 2) View the achieved PLO of the students during time entered that has been inputted and comparison between expected and achieved.</p> <p><b>Faculty:</b> 1) Sign into the system using ID and Password. 2) View the achieved PLO of the students during time entered that has been inputted and comparison between expected and achieved.</p> <p><b>Student:</b> 1) Sign into the system using ID and Password. 2) View the achieved PLO of the students during time entered that has been inputted and comparison between expected and achieved.</p>		<p>1) Used to print the hard copy of both the previous and current semester's achieved PLO to compare.</p>	<p>graph using data from the database</p>	<p>4.0 admins</p>	
<b>Department average of total PLO achieved and attempted students</b>	<p><b>Dean/VC:</b> 1) Sign into the system using ID and Password. 2) Enter the time period of the semester wished to be viewed. 3) View the departmental average of total PLO achieved along with the number of students who attempted.</p>		<p><b>Computer/ Laptop</b> 1) Used to Sign into SPMS 4.0</p> <p><b>Printer</b> 1) Used to print the hard copy of PLO reports</p>	<p><b>SPMS 4.0 Database</b> 1) All valid data are stored here which can be updated by SPMS 4.0 admins</p>	<p><b>SPMS 4.0</b> 1) Used to store Data into the database or generate performance analysis graph using data from the database.</p>	<p><b>Internet</b> 1) Used to Sign into SPMS 4.0</p>

	<p><b>Department Head:</b>            1) Sign into the system using ID and Password.            2) Enter the time period of the semester wished to be viewed.            3) View the departmental average of total PLO achieved along with the number of students who attempted.</p> <p><b>Faculty:</b>            1) Sign into the system using ID and Password.            2) View the total departmental average of the PLO achieved by the students.</p> <p><b>Student:</b>            1) Sign into the system using ID and Password.            2) View the total departmental average of the PLO achieved by the students</p>					
<b>Student Enrollment Statistics VC-wise, Dean-wise, Department Head-wise.</b>	<p><b>VC</b>            1) Sign into the system using ID and Password.            2) Select Student Enrollment Statistics tab and select Year and Semester under that tab            3) View Student Enrollment Statistics of That Year and Semester.</p> <p><b>Dean</b>            1) Sign into the system using ID and Password.</p>		<p><b>Computer/ Laptop</b>            1) Used to Sign into SPMS 4.0</p> <p><b>Printer</b>            1) Used to print the hard copy of Student Enrollment Statistics If Needed.</p>	<p><b>SPMS 4. 0</b>            1) Used to store Data into the database and generate Student Enrollment Statistics graphs</p>	<p><b>SPMS 4.0 Database</b>            1) All valid data are stored here which can be updated by SPMS 4.0 admins</p>	<p><b>Internet</b>            1) Used to Sign into SPMS 4.0</p>

	<p>2) Select Student Enrollment Statistics tab and select Year and Semester under that tab      3) View Student Enrollment Statistics of That Year and Semester.</p> <p><b>Department Head</b></p> <p>1) Sign into the system using ID and Password.      2) Select Student Enrollment Statistics tab and select Year and Semester under that tab      3) View Student Enrollment Statistics of That Year and Semester</p>					
	<p><b>Student:</b>      Enters      1) ID      2) Course ID      3) Section      4) Semester      5) Year</p>		<p><b>Computer/ Laptop</b>      Used to Sign into SPMS 4.0</p> <p><b>Printer</b>      Used to print the hard copy of Student Enrollment Statistics If Needed.</p>	<p><b>SPMS 4.0</b>      Used to store Data into the database and generate Student Enrollment Statistics graphs</p>	<p><b>SPMS 4.0 Database</b>      All valid data are stored here which can be updated by SPMS 4.0 admins</p>	<p><b>Internet</b>      Used to Sign into SPMS 4.0</p>

## CHAPTER 3 - LOGICAL SYSTEM DESIGN

We will go through the steps of building a data model for our suggested system in this chapter so that the data can be stored in a database. This data model is a conceptual representation of the relationships between various data objects, the rules, and the data objects themselves. Data modeling facilitates the visual representation of data and ensures that it complies with legal requirements, business regulations, and governmental directives. Data models guarantee data quality while guaranteeing uniformity in naming standards, default values, semantics, and security. Our proposed system will be created to better represent all the data.

### A. BUSINESS RULES – SPMS 4.0:

1. A Student must have one department. A STUDENT has StudentID, FirstName, LastName, dateOfBirth, gender, email, phone, address, departmentID, programID, enrollmentYear, enrollmentSemester, password. A department must have one or many Students.
2. A Student may perform many registrations. A REGISTRATION includes RegistrationID, sectionID, studentID. A Registration must be performed by at least one student.
3. A section mandatorily has many registrations. A registration has at least one section. A section includes sectionID, sectionNum, courseID, facultyID, year.
4. A registration may belong to many EVALUATIONS. An evaluation mandatorily belongs to one registration. An EVALUATION contains evaluationID, examID, registrationID, totalMarks.
5. A CO must map with one PO. A PO's must map with one or many CO's. PO includes poID, poNum, programID.
6. A PO must contain one program. A program contains one or many PO's. A PROGRAM has programID, programName, departmentID. A program must contain one or many courses. A Course must contain one course.

7. A program must belong to one department. A department must belong to one or many

programs. A DEPARTMENT contains departmentID, departmentName, schoolID.

8. A department must contain one school. A SCHOOL must contain one or many departments. A school includes schoolID, schoolName.

9. An employee has four sub-types (Dean, Department Head, Faculty). An EMPLOYEE includes employeeID, password, firstName, lastName.

10. A school must be run by exactly one. A dean must run exactly one school. A DEAN has schoolID, startDate, endDate.

11. A Department must be run by exactly one Department head. A department head must manage exactly one department. A DEPARTMENTHEAD includes departmentID, startDate, endDate.

12. A Faculty must have exactly 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 exactly one faculty.

13. A course outline belongs to exactly one section. A section must have exactly one course outline. A COURSE\_OUTLINE includes courseOutlineID, sectionID, contactHours, courseDescription, objective, content, refMaterials.

14. A Course outline must have exactly one CLO Matrix. A CLO matrix belongs to exactly one course outline. A CLO\_MATRIX includes clo\_MatID, cloNum, coDescription, ploAssessed, correlation, courseOutlineID, c, p ,a ,s.

15. A LESSON\_PLAN\_STRATEGY must have exactly one EVALUATION\_STRATEGY. An EVALUATION STRATEGY must have exactly one LESSON\_PLAN\_STRATEGY. A LESSON\_PLAN\_STRATEGY includes IPSID, week, topic, learningStrategy, assessmentStrategy, correspondingClo, courseOutlineID.

16. An EXAM has exactly one EVALUATION. An EVALUATION for an EXAM is done exactly once. An exam belongs to exactly one section. An EXAM includes examID, examName, sectionID. A section must have one or many exams.

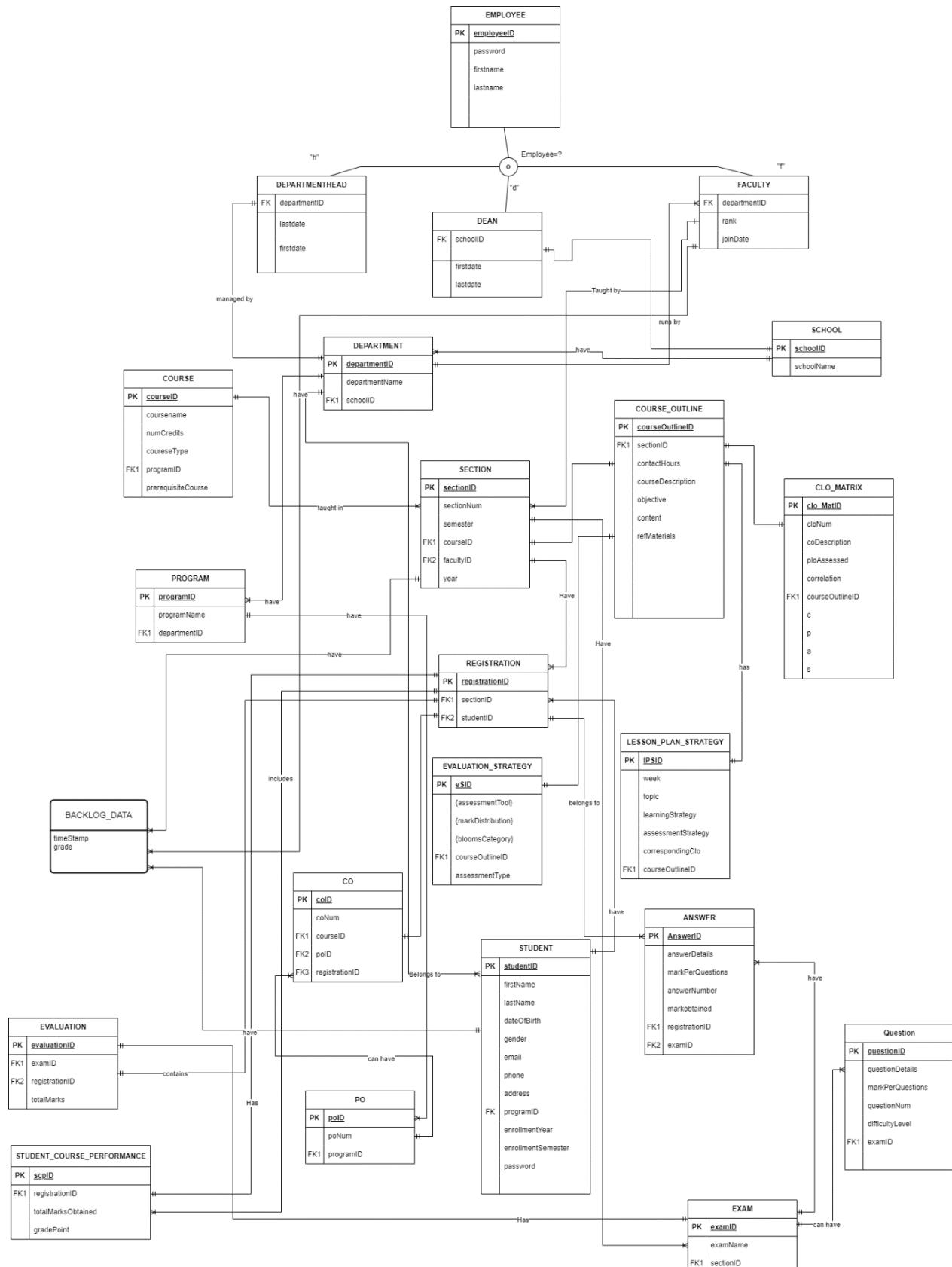
17. An EXAM must have one or many questions. Every QUESTION must belong to exactly one exam. A QUESTION includes questionID, questionDetails, marksPerQuestion, questionNum, difficultLevel, examID, coNum. A Question is answered exactly once. An ANSWER has exactly one question.

18. A Section belongs to exactly one Course. A course must have one or many Section. Course includes courseID, courseName, numCredits, courseType, programID, prerequisiteCourse.

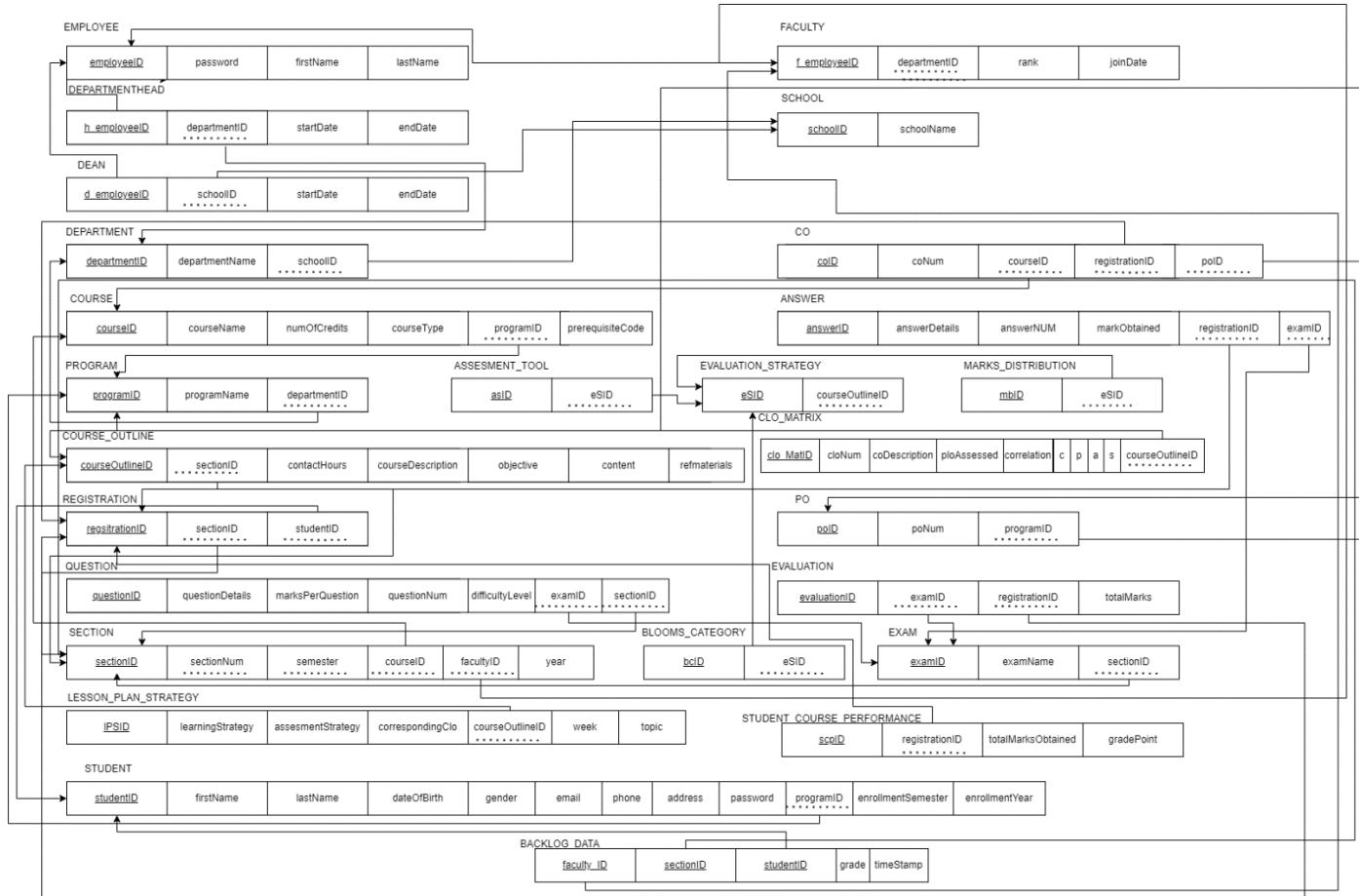
19. A Student Course Performance evaluation is done for Registration exactly once. A REGISTRATION has student course performance evaluation done exactly once. A REGISTRATION has exactly one evaluation. An Evaluation has exactly one Registration.

20. A Student must be enrolled in one or many Section, A section will have many students, A Student must be assigned many CO and CO is assigned to many Students , A Section must be assigned one or many CO and CO is must assigned of one or many Section and here CLO\_CAL is recorded in the database.

## B. ENTITY RELATIONSHIP DIAGRAM:



## C. ENTITY RELATIONSHIP DIAGRAM TO RELATIONAL SCHEMA:



## D. NORMALIZATION:

EMPLOYEE (e)	employeeID	E1
	password	E2
	firstName	E3
	lastName	E4
DEAN (d)	d_employeeID	D1
	startDate	D2
	endDate	D3
	schoolID	A1
DEPARTMENT_HEAD (h)	h_employeeID	H1
	departmentID	X1
	startDate	H2
	endDate	H3
FACULTY (f)	f_employeeID	F1
	departmentID	X1
	rank	F2
	joinDate	F3
SCHOOL (a)	schoolID	A1
	schoolName	A2
DEPARTMENT (x)	departmentID	X1
	departmentName	X2
	schoolID	A1
PROGRAM (p)	programID	P1
	programName	P2
	departmentID	X1
COURSE (c)	courseID	C1
	courseName	C2
	numOfCredits	C3
	courseType	C4
	programID	P1
	prerequisitecode	C5
SECTION (b)	sectionID	B1
	sectionNum	B2
	semester	B3
	courseID	C1
	f_employeeID	F1
	year	B4
STUDENT (s)	studentID	S1
	firstName	S2
	lastName	S3
	dateOfBirth	S4
	gender	S5
	address	S6
	email	S7

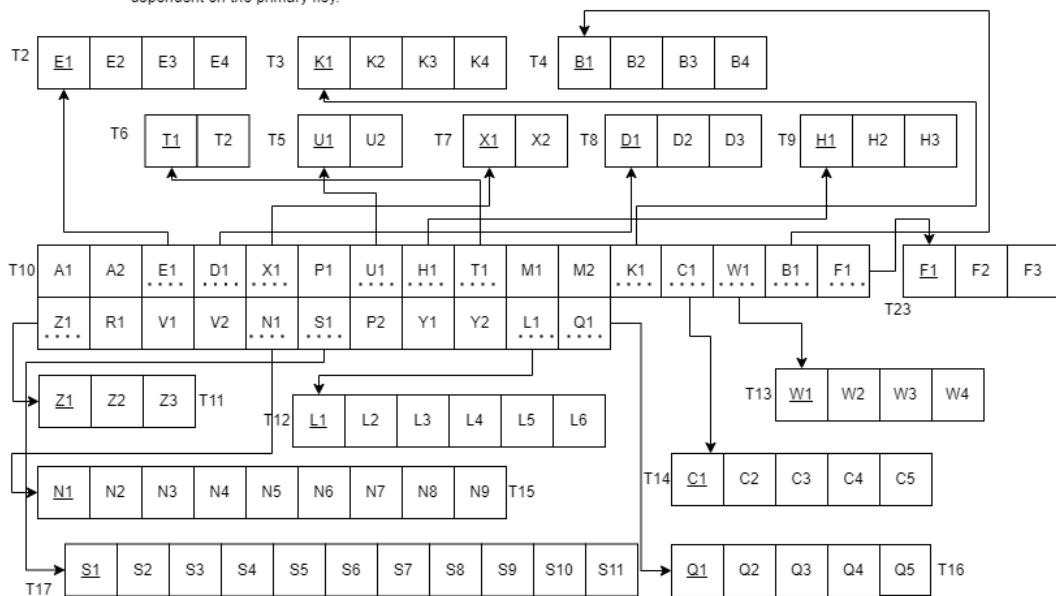
	phone	S8
	programID	P1
	enrollmentSemester	S9
	enrollmentYear	S10
	password	S11
COURSE_OUTLINE (o)	courseOutlineID	O1
	sectionID	B1
	contactHours	O2
	courseDescription	O3
	objective	O4
	content	O5
	refMaterials	O6
REGISTRATION (r)	registrationID	R1
	sectionID	B1
	studentID	S1
PO (v)	pOID	V1
	poNum	V2
	programID	P1
CO (t)	cOID	T1
	coNum	T2
	pOID	V1
	courseID	C1
	registrationID	R1
BACKLOG_DATA (m)	facultyID	F1
	studentID	S1
	sectionID	B1
	grade	M1
	timeStamp	M2
QUESTION (q)	questionID	Q1
	questionDetails	Q2
	marksOerQuestion	Q3
	questionNum	Q4
	difficultyLevel	Q5
	examID	Y1
	courseID	C1
CLO_MATRIX (n)	Clo_MatID	N1
	cloNum	N2
	coDescription	N3
	ploAssessed	N4
	correlation	N5
	c	N6
	p	N7
	a	N8
	s	N9
	courseOutlineID	O1
ANSWER (w)	answerID	W1
	answerDetails	W2
	answerNum	W3

	marksObtained	W4
	registrationID	R1
	examID	Y1
EVALUATION_STRATEGY (k)	eSID	K1
	assessmentTool	K2
	marksDistribution	K3
	bloomsCategory	K4
	courseOutlineID	O1
EVALUATION (u)	evaluationID	U1
	examID	Y1
	registrationID	R1
	totalMarks	U2
STUDENT_COURSE_PERFORMANCE (z)	scpID	Z1
	registrationID	R1
	totalMarksObtained	Z2
	gradePoint	Z3
LESSON_PLAN_STRATEGY (l)	IPSID	L1
	week	L2
	topic	L3
	learningStrategy	L4
	assessmentStrategy	L5
	correspondingClo	L6
	courseOutlineID	O1
EXAM (y)	examID	Y1
	examName	Y2
	sectionID	B1

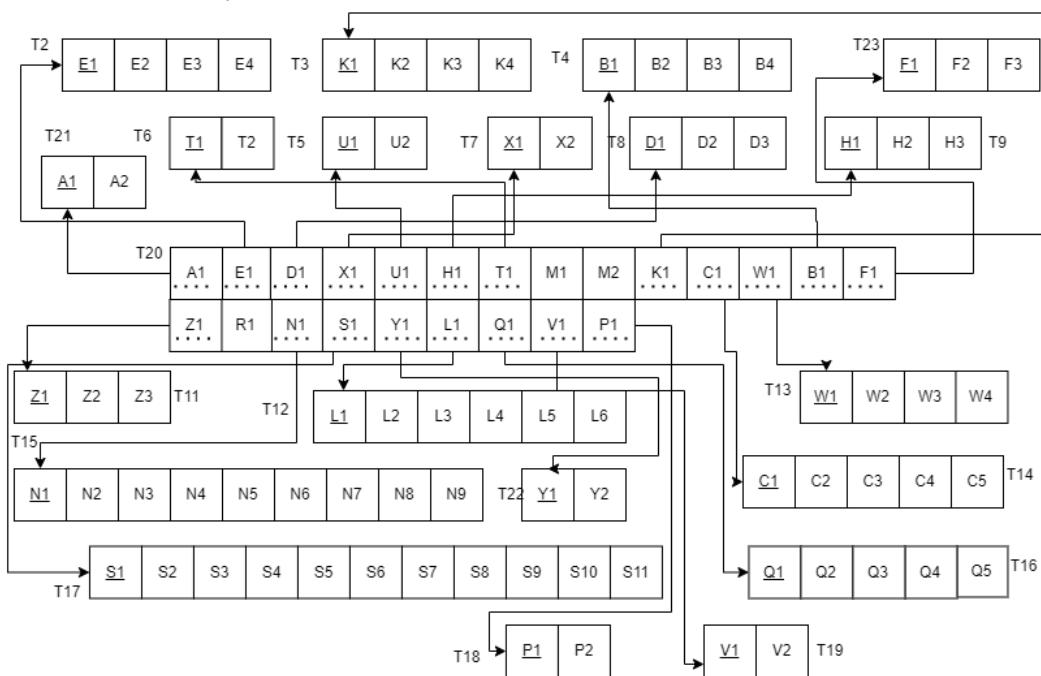
**1NF:**  
There are no repeating groups and  
there is atleast one primary key .

A1	A2	E1	E2	E3	E4	D1	D2	D3	F1	F2	F3	H1	H2	H3	X1	X2	P1
P2	O1	O2	O3	O4	O5	O6	R1	V1	V2	N1	N2	N3	N4	N5	N6	N7	N8
N9	W1	W2	W3	W4	K1	K2	K3	K4	U1	U2	C1	C2	C3	C4	C5	B1	B2
B3	B4	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	T1	T2	M1	M2	
Z1	Z2	Z3	L1	L2	L3	L4	L5	L6	Y1	Y2	Q1	Q2	Q3	Q4	Q5		

**2NF:** A relation in first normal form in which every non-key attribute is fully functionally dependent on the primary key.



**3NF:** Removes Transitive dependencies



## E.DATA DICTIONARY:

VC\_T

Name		Data Type	Size	Remark
v_employeeID		INTEGER	11	This is the foreign key from the Employee table. E.g: “4250”
startDate		DATE		This is starting date for the VC. E.g: “01-03-2020”
endDate		DATE		This is the date VC retire from his post. E.g: “01-03-2024”

STUDENT\_T

Name	Data Type	Size	Remark
studentID	INTEGER	11	This is the primary key for the Student table. E.g: “1921834”.
firstName	VARCHAR	30	This is the first name of the student. E.g: “Rakibul”.
lastName	VARCHAR	30	This is the last name of the student. E.g: “Hasan”.

dateOfBirth	DATE		This is the birth date of the student. E.g: "2112-1996".
gender	VARCHAR	6	This is the gender of the student. E.g: "Female".
email	VARCHAR	30	This is the email of the student. E.g: "1921834@iub.edu.bd"
phone	VARCHAR	11	This is the phone of the student. E.g: "01XXXXXXXXX".
address	VARCHAR	50	This is the address of the student. E.g: "House 1,Road 4,Block D, Bashundhara RA
departmentID	VARCHAR	3	This is the foreign key from the Department table. E.g: "CSE"
programID	INTEGER	11	This is the foreign key from the Program table. E.g: "1"
enrollmentSemester	VARCHAR	10	This is the enrollment semester of the student.
enrollmentYear	VARCHAR	4	This is enrollment year of the student.

**STUDENT\_COURSE\_PERFORMANCE\_T**

Name	Data Type	Size	Remark
scpID	INTEGER	11	This is the primary key for this table
registrationID	INTEGER	11	This is the foreign key from registration table
totalMarksObtained	INTEGER	11	This is the total marks obtained by the student
gradePoint	FLOAT		This is the grade point achieved by the student

**SECTION\_T**

Name	Data Type	Size	Remark
sectionID	INTEGER	11	This is the Primary Key for Section. E.g: "1"
sectionNum	INTEGER	11	This is the section number. E.g: "1"
semester	VARCHAR	6	This is the semester of the section. E.g: "Summer"
courseID	VARCHAR	6	This is the foreign key from the Course table. E.g: "CSE101"

facultyID	INTEGER	11	This is the foreign key from Faculty table. E.g: "1801"
year	YEAR	4	This is the year this section of this course was taken by this specific faculty

**SCHOOL\_T**

Name	Data Type	Size	Remark
schoolID	VARCHAR	5	This is the primary key of School. E.g: "SETS"
schoolName	VARCHAR	50	This is the name of the School. E.g: "School of Engineering,"
			Technology & Science".

**REGISTRATION\_T**

Name	Data Type	Size	Remark
registrationID	INTEGER	11	This is the Primary Key for Registration. E.g: "0101010101"
sectionID	INTEGER	11	This is the foreign key from section table
studentID	INTEGER	11	This is the foreign key from student table

QUESTION\_T

Name	Data Type	Size	Remark
questionID	INTEGER	11	This is the primary key of this table
questionDetails	MEDIUMTEXT		This is the question
markPerQuestion	INTEGER	11	This is the mark each question contains
questionNum	INTEGER	11	This is the number of the question
difficultyLevel	INTEGER	11	This is the difficulty level of the question
examID	VARCHAR	20	This is the foreign key from exam table
courseID	VARCHAR	6	This is the foreign key from course table
coNum	INTEGER	11	This is the CO number of the question

PROGRAM\_T

Name	Data Type	Size	Remark
programID	INTEGER	11	This is the primary key for a program. E.g: "1"
programName	VARCHAR	50	This is the name of the program. E.g: "Bachelor of Science"
departmentID	VARCHAR	3	This is the foreign key from the Department table. E.g: "CSE"

PO\_T

Name	Data Type	Size	Remark
poID	VARCHAR	5	This is the primary key for Program Outcome. E.g: "PO1"
poNum	INTEGER	11	This is the PO number. E.g: "1"
programID	INTEGER	11	This is a foreign key from Program table. E.g: "1"

PLO\_T

Name	Data Type	Size	Remark
ploID	INTEGER	11	This is the primary key for Program Learning Outcome. E.g: "PLO1"
ploNum	INTEGER	11	This is the PLO number. E.g: "1"
programID	INTEGER	11	This is a foreign key from Program table. E.g: "1"

LESSON\_PLAN\_STRATEGY\_T

Name	Data Type	Size	Remark
lpsID	INTEGER	11	This is the primary key of the table
week	INTEGER	11	This is the week number

topic	MEDIUMTEXT		This is the topic name
learningStrategy	MEDIUMTEXT		This is the lesson plan strategy of that topic
assessmentStrategy	VARCHAR	10	This is the assessment strategy of that topic
courseOutlineID	INTEGER	11	This is the foreign key from course outline table

**FACULTY\_T**

Name	Data Type	Size	Remark
f_employeeID	INTEGER	11	This is the foreign key from the Employee table. E.g: "4250"
departmentID	VARCHAR	3	This is the DepartmentID of the department faculty belongs to. E.g: "CSE"
rank	VARCHAR	30	This is the rank of the faculty. E.g: "Assistant Professor"
joinDate	DATE		This is starting date. E.g: "01-03-2020"

**EXAM\_T**

Name	Data Type	Size	Remark

examID	INTEGER	11	This is the primary key for this table
examName	VARCHAR	30	This is the name of the exam
sectionID	INTEGER	11	This is the foreign key from exam table

## EVALUATION\_T

Name	Data Type	Size	Remark
evaluationID	INTEGER	11	This is the primary key for this table
examID	VARCHAR	20	This is the foreign key from exam table
registrationID	INTEGER	11	This is the foreign key from registration table
totalMarks	INTEGER	11	This is the total marks achieved by the student in a specific exam

## EVALUATION\_STRATEGY\_T

Name	Data Type	Size	Remark
eSID	INTEGER	11	This is the primary key for this table
courseOutlineID	INTEGER	11	This is the foreign key from course outline table

## ASSESSMENT\_TOOL\_T

Name	Data Type	Size	Remark

asID	INTEGER	11	This is the primary key for this table
eSID	INTEGER	11	This is the foreign key from evaluation strategy table

MARK\_DISTRIBUTION\_T

Name	Data Type	Size	Remark
mdID	INTEGER	11	This is the primary key for this table
eSID	INTEGER	11	This is the foreign key from evaluation strategy table

BLOOMS\_CATEGORY\_T

Name	Data Type	Size	Remark
bclD	INTEGER	11	This is the primary key for this table
eSID	INTEGER	11	This is the foreign key from evaluation strategy table

EMPLOYEE\_T

Name	Data Type	Size	Remark
employeeID	INTEGER	11	This is the primary key for Employee table. E.g: "1801"
password	VARCHAR	10	This is the password of the employee

firstName	VARCHAR	50	This is the last name of the faculty. E.g: "Ahmed"
lastName	VARCHAR	50	This is the last name of the faculty. E.g: "Ahmed"

DEPARTMENTHEAD\_T

Name	Data Type	Size	Remark
h_employeeID	INTEGER	11	This is the foreign key from the Employee table.
			E.g: "4250"
departmentID	VARCHAR	3	This is the DepartmentID of the department HEAD manages. E.g: "CSE"
startDate	DATE		This is starting date. E.g: "01-03-2020"
endDate	DATE		This is the date HEAD retire from his post. E.g: "0103-2024"

DEPARTMENT\_T

Name	Data Type	Size	Remark
departmentID	VARCHAR	3	This is the primary key for the Department table. E.g: "CSE"

departmentName	VARCHAR	50	This is the name of the department. E.g: “Computer Science and Engineering”.
schoolID	VARCHAR	5	This is a foreign key from the School table. E.g: “SETS”.

DEAN\_T

Name	Data Type	Size	Remark
d_employeeID	INTEGER	11	This is the foreign key from the Employee table. E.g: “4250”
schoolID	VARCHAR	5	This is the SchoolID of the school DEAN manages. E.g: “SETS”
startDate	DATE		This is starting date. E.g: “01-03-2020”
endDate	DATE		This is the date DEAN retire from his post. E.g: “0103-2024”

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COURSE\_T

Name	Data Type	Size	Remark
courseID	VARCHAR	6	This is the Primary Key for the Course. E.g: "CSE203"
courseName	VARCHAR	40	This is the name of the Course. E.g: "Discrete Mathematics"
numOfCredits	INTEGER	11	This is the number of credits for the Course. E.g: "3"
courseType	VARCHAR	10	This is the type of the Course. E.g: "Core"
programID	INTEGER	11	This is the foreign key from the program table. E.g: "1"

COURSE\_OUTLINE\_T

Name	Data Type	Size	Remark
courseOutlineID	INTEGER	11	This is the primary key for this table

sectionID	INTEGER	11	This is the foreign key from the section table
courseDescription	MEDIUMTEXT		This is the description of the course
objective	MEDIUMTEXT		This is the objective of the course
content	MEDIUMTEXT		This is the content of the course
refMaterials	MEDIUMTEXT		This is the reference material
courseTitle	VARCHAR	1000	This is the title of the course
prerequisiteCode	VARCHAR	6	This is the prerequisite course code
creditValue	INTEGER	11	This is the credit value of the course

## CO\_T

Name	Data Type	Size	Remark
coID	INTEGER	11	This is the primary key for the CO table. E.g: "CO1".
coNum	INTEGER	11	This is the CO number. E.g: 1,2 etc.
courselD	VARCHAR	6	This is the foreign key from the Course table. E.g: "CSE303"
ploID	VARCHAR	5	This is the foreign key from the PLO table. E.g: "PLO1"

poID	VARCHAR	6	This is the foreign key from the PLO table. E.g: "PO1"
------	---------	---	--

CLO\_MATRIX\_T

Name	Data Type	Size	Remark
clo_MatID	INTEGER	11	This is the primary key for this table
cloNum	INTEGER	11	This is the clo number
coDescription	MEDIUMTEXT		This is the co description
ploAssessed	VARCHAR	10	This is the name of the plo assessed
correlation	INTEGER	11	This is the correlation value or number
courseOutlineID	INTEGER	11	This is the foreign key from the course outline table
c	INTEGER	11	This is the bloom's category level
p	INTEGER	11	This is the bloom's category level
a	INTEGER	11	This is the bloom's category level
s	INTEGER	11	This is the bloom's category level

ANSWER\_T

Name	Data Type	Size	Remark
answerID	INTEGER	11	This is the primary key for this table

answerDetails	MEDIUMTEXT		This is the answer details
answerNum	INTEGER	11	This is the number of the answer
markObtained	INTEGER	11	This is the mark obtained by the student for each answer
registrationID	INTEGER	11	This is the foreign key from registration table
examID	INTEGER	11	This is the foreign key from the exam table

## Backlog\_data\_t

backlogID	INTEGER	11	This is the primary key of backlog_data_t, which is being auto incremented
sectionNum	VARCHAR		This is the section num where students enroll
studentID	INTEGER	11	This is the student ID and it is foreign key, which comes from student table
semester	VARCHAR	6	This is the semester like spring, summer , autumn
courseID	VARCHAR	6	This is the foreign key , comes from course table
facultyID	INTEGER	11	This is the foreign key which comes from the faculty table, it indicates the faculty

year	YEAR	4	This is the year when the students enrolled in the university
totalMarksObtained	INTEGER	11	This is the mark of student , which is being inputed by faculty in this table
time_stamp	TIME_STAMP		This is time stamp; it is being auto stored in the system. When faculty insert the data in the system, it is storing the time and date of that moment in the system

## CHAPTER-4 PHYSICAL SYSTEM DESIGN

### A. INPUT FORMS:

The image displays two screenshots of a web-based application interface for "PLO Analysis".

**Screenshot 1 (Top): PLO Analysis With Department/Program/School Average**

This screenshot shows a top navigation bar with tabs: "Dashboard", "PLO Analysis With Department/Program/School Average" (which is active), "PLO Analysis (Overall, CO Wise, Course Wise)", and "Logout". Below the navigation bar are three buttons: "ENTER STUDENT ID" (blue), "SUBMIT" (blue), and three colored buttons: "PLO ANALYSIS WITH DEPARTMENT AVERAGE" (pink), "PLO ANALYSIS WITH PROGRAM AVERAGE" (green), and "PLO ANALYSIS WITH SCHOOL AVERAGE" (light green). The main content area is dark grey.

**Screenshot 2 (Bottom): PLO Analysis (Overall, CO Wise, Course Wise)**

This screenshot shows a similar top navigation bar with the same tabs. Below the navigation bar are three buttons: "OVERALL PLO" (pink), "CO WISE PLO" (green), and "COURSE WISE PLO" (light green). The main content area is dark grey.

Both screenshots include a standard Windows taskbar at the bottom showing various open applications like File Explorer, Microsoft Word, and a browser window for "Employee Dashboard". The date and time are also visible on the taskbar.

The image displays two screenshots of the SPMS 4.0 application interface, likely from a Microsoft Edge browser on a Windows operating system.

**Screenshot 1: Spider Chart Analysis Page**

- Header:** Employee Dashboard, localhost:3000/spiderChart.php
- Top Navigation:** Dashboard, PLO Analysis, PLO Achievement Stats, Spider Chart Analysis, Data Entry, Enrollment Stats, GPA Analysis, Logout.
- Form:** ENTER STUDENT ID (text input), ENTER (button), VIEW PO ANALYSIS, VIEW CO ANALYSIS.

**Screenshot 2: School/Department/Program-wise stats Page**

- Header:** Employee Dashboard, localhost:3000/school\_department\_program\_stats.php
- Top Navigation:** Dashboard, School/Department/Program-wise, Course-wise, Instructor-wise, Instructor-wise(Chosen Course), Dean/Head-wise, Logout.
- Form:** YEAR (dropdown), SUBMIT, SCHOOL-WISE GPA TREND, DEPARTMENT-WISE GPA TREND, PROGRAM-WISE GPA TREND.

**System Status:** 88°F Haze, 11:36 AM 4/26/2023

The image displays two side-by-side screenshots of a web-based application interface, likely a dashboard for managing student performance data.

**Top Screenshot (localhost:3000/courseWisePerformance.php):**

- Header:** The top navigation bar includes links for "Employee Dashboard", "phpmyadmin/localhost - S", "Problem Analysis.pdf", "pdf to png converter - Search", "PDF to PNG – Convert PDF", and "New tab".
- Left Sidebar:** A vertical sidebar on the left contains icons for Home, User, Database, and Help.
- Top Bar Buttons:** A horizontal bar at the top features buttons for "Dashboard", "School/Department/Program-wise", "Course-wise", "Instructor-wise", "Instructor-wise(Chosen Course)", "Dean/Head-wise", and "Logout".
- Form Area:** The main area contains a form with fields for "YEAR" (dropdown), "SUBMIT", and three "ENTER COURSE CODE" input fields. Below these is a large blue "VIEW" button.
- Bottom Status Bar:** The taskbar shows system status (88°F Haze), system icons, and the date/time (11:37 AM 4/26/2023).

**Bottom Screenshot (localhost:3000/instructorWisePerformance.php):**

- Header:** The top navigation bar includes links for "Employee Dashboard", "phpmyadmin/localhost - S", "Problem Analysis.pdf", "pdf to png converter - Search", "PDF to PNG – Convert PDF", and "New tab".
- Left Sidebar:** A vertical sidebar on the left contains icons for Home, User, Database, and Help.
- Top Bar Buttons:** A horizontal bar at the top features buttons for "Dashboard", "School/Department/Program-wise", "Course-wise", "Instructor-wise", "Instructor-wise(Chosen Course)", "Dean/Head-wise", and "Logout".
- Form Area:** The main area contains three dropdown menus labeled "COURSE INSTRUCTOR" and a large blue "VIEW" button.
- Bottom Status Bar:** The taskbar shows system status (88°F Haze), system icons, and the date/time (11:37 AM 4/26/2023).

The image displays two screenshots of a web application interface, likely a student management system (SPMS) version 4.0, showing different sections of the application.

**Screenshot 1: Instructor-wise Chosen Course Section**

- Navigation Bar:** Includes links for Dashboard, School/Department/Program-wise, Course-wise, Instructor-wise, Instructor-wise(Chosen Course), Dean/Head-wise, and Logout.
- Form Elements:** COURSE CODE dropdown, YEAR dropdown, and SUBMIT button.
- Central Action:** A large blue 'VIEW' button.

**Screenshot 2: PLO Comparison Section**

- Navigation Bar:** Includes links for Dashboard, PLO Comparison(Student), PLO Comparison(Course), PLO Comparison(Program), PLO Comparison(School), PLO Comparison(Department), and Logout.
- Form Elements:** ENTER STUDENT ID input field, YEAR dropdown, and SUBMIT button.
- Central Action:** A large blue 'VIEW' button.

**System Status:** The taskbar at the bottom shows the date as 4/26/2023 and the time as 11:37 AM. The weather icon indicates 88°F and Haze.

The screenshot displays the SPMS 4.0 application interface and its corresponding source code in Visual Studio Code.

**Visual Studio Code (Bottom):**

- File:** File, Edit, Selection, View, Go, ...
- Explorer:** OPEN EDITORS 2 unsaved, GROUP-PROJECT-REPOSITORY, logOut.php, performanceStats.php, ploAchieveStats.php, ploAnalysis.php (active), ploAnalysisDepartment.php, ploAnalysisOverall.php, ploComparisonCourse..., ploComparisonDepart..., ploComparisonProgra..., ploComparisonSchool..., ploComparisonStuden..., questionform.css, README.md, school\_department\_pr..., signup.php, spiderChart.php, spms.sql, studentcloconfigure.p..., studentcloinfo.php
- Code:**

```

<body>
    <div class="nav">
        <div class="nav-header">
            <div class="nav-title">
                SPMS 4.0
            </div>
        </div>
        <div class="nav-links">
            <ul>
                <li><a href="employee_dashboard.php" target="_self">Dashboard</a></li>
                <li><a href="ploAnalysisDepartmentProgramSchoolAverage.php" target="_self">PLO A</a></li>
                <li><a href="ploAnalysisOverall.php" target="_self">PLO Analysis (Overall, CO Wi</a></li>
                <li><a href="logOut.php" target="_self">Logout</a></li>
            </ul>
        </div>
    </div>
    <div id="title">
        <div>SPMS</div>
        <div>4.0</div>
    </div>

```
- Status Bar:** Ln 53, Col 11, Spaces: 2, UFT-8, CRLF, PHP, Go Live, Prettier
- System Icons:** Weather (92°F, Sunny), Taskbar icons (Search, Mail, etc.)

The screenshot shows two instances of Visual Studio Code side-by-side, both displaying PHP code related to school analysis.

**Top Window:**

- Explorer:** Shows 2 unsaved changes.
- Open Editors:** Shows files like `ploAnalysis.php`, `ploAnalysisDepartmentProgramSchoolAverage.php`, `loginconfigure.php`, and `spms`.
- Code:**

```
106 if(isset($_POST['submit'])){  
107     $studentID=$_POST['studentID'];  
108 }  
109 ?>  
110 <!-- Analysis with Department Average -->  
111 <script>  
112     function ploAnalysisWithDepartmentAverage(){  
113         <?php  
114             $sql="SELECT plo.ploNum AS ploNum,  
115                 AVG((ans.markObtained/q.markPerQuestion)*100) AS percent  
116                 FROM registration_t AS r, answer_t AS ans, question_t AS q,  
117                 co_t AS co, plo_t AS plo  
118                 WHERE r.registrationID=ans.registrationID  
119                 AND ans.examID=q.examID AND ans.answerNum=q.questionNum AND q.coNum=co.coNum  
120                 AND q.courseID=co.courseID AND co.ploID=plo.ploID  
121                 AND r.studentID='$studentID'  
122                 GROUP BY plo.ploNum,r.studentID";  
123  
124             $result=mysqli_query($con,$sql);  
125  
126             $sql2="SELECT plo.ploNum AS ploNum, AVG((ans.markObtained/q.markPerQuestion)*100)  
127             AS percent  
128             FROM registration_t AS r, answer_t AS ans, question_t AS q,  
129             co_t AS co, plo_t AS plo, student_t AS s WHERE r.studentID=s.studentID  
130             AND r.registrationID=ans.registrationID AND ans.examID=q.examID  
131             AND ans.answerNum=q.questionNum  
132             AND q.coNum=co.coNum AND q.courseID=co.courseID AND co.ploID=plo.ploID  
133             AND s.departmentID=(SELECT s.departmentID FROM student_t AS s  
134             WHERE s.studentID='$studentID')  
135             GROUP BY plo.ploNum";  
136  
137             $result2=mysqli_query($con,$sql2);  
138  
139             ?>  
140  
141             google.charts.load('current', { 'packages':['bar']});  
142             google.charts.setOnLoadCallback(drawAutumnChart);  
143  
144             function drawAutumnChart() {  
145                 var data = google.visualization.arrayToDataTable([  
146                     ['ploNum', 'Individual', 'Dept Average'],  
147  
148                     <?php  
149                         while($data=mysqli_fetch_array($result)){  
150                             $data2=mysqli_fetch_array($result2);  
151  
152                         ?>
```
- Status Bar:** Shows line 259, column 27, 11 selected, spaces: 2, UTF-8, CRLF, PHP, Go Live, Prettier.

**Bottom Window:**

- Explorer:** Shows 2 unsaved changes.
- Open Editors:** Shows files like `ploAnalysis.php`, `ploAnalysisDepartmentProgramSchoolAverage.php`, `loginconfigure.php`, and `spms`.
- Code:**

```
129             AS percent  
130             FROM registration_t AS r, answer_t AS ans, question_t AS q,  
131             co_t AS co, plo_t AS plo, student_t AS s WHERE r.studentID=s.studentID  
132             AND r.registrationID=ans.registrationID AND ans.examID=q.examID  
133             AND ans.answerNum=q.questionNum  
134             AND q.coNum=co.coNum AND q.courseID=co.courseID AND co.ploID=plo.ploID  
135             AND s.departmentID=(SELECT s.departmentID FROM student_t AS s  
136             WHERE s.studentID='$studentID')  
137             GROUP BY plo.ploNum";  
138  
139             $result2=mysqli_query($con,$sql2);  
140  
141             ?>  
142             google.charts.load('current', { 'packages':['bar']});  
143             google.charts.setOnLoadCallback(drawAutumnChart);  
144  
145             function drawAutumnChart() {  
146                 var data = google.visualization.arrayToDataTable([  
147                     ['ploNum', 'Individual', 'Dept Average'],  
148  
149                     <?php  
150                         while($data=mysqli_fetch_array($result)){  
151                             $data2=mysqli_fetch_array($result2);  
152                         ?>
```
- Status Bar:** Shows line 259, column 27, 11 selected, spaces: 2, UTF-8, CRLF, PHP, Go Live, Prettier.

**ploAnalysisDepartmentProgramSchoolAverage.php - Group-Project-Repository - Visual Studio Code**

```

File Edit Selection View Go ploAnalysisDepartmentProgramSchoolAverage.php - Group-Project-Repository - Visual Studio Code
EXPLORER ... ploAnalysis.php ploAnalysisDepartmentProgramSchoolAverage.php x loginconfigure.php spms ...
OPEN EDITORS 2 unsaved
GROUP... logout.php performanceStats.php ploAchieveStats.php ploAnalysis.php
ploAnalysisDepartment... ploAnalysisOverall.php ploComparisonCourse... ploComparisonDepart... ploComparisonProgra...
ploComparisonSchool... ploComparisonStuden... # questionform.css README.md school_department_pr...
signup.php spiderChart.php spms.sql studentconfigure.p... studentcloinfo.php
OUTLINE
152 $data2=mysqli_fetch_array($result2);
153 $ploNum=$PLO['$data2['ploNum']];
154 $percent=$data['percent'];
155 $percent2=$data2['percent'];
156 ?>
157 ['<?php echo $ploNum;?>','<?php echo $percent;?>','<?php echo $percent2;?>'],
158 <?php
159 ?
160 ?>
161 ];
162 var options = {
163   chart: {
164     title: 'PLO Analysis with Department Average',
165   },
166   bars: 'vertical' // Required for Material Bar Charts.
167 };
168
169 var chart = new google.charts.Bar(document.getElementById('Autumn'));
170 chart.draw(data, google.charts.Bar.convertOptions(options));
171
172 }
173
174 }
175 </script>

```

Ln 259, Col 27 (11 selected) Spaces: 2 UTF-8 CRLF PHP Go Live Prettier 12:27 PM 4/26/2023

**ploAnalysisOverall.php - Group-Project-Repository - Visual Studio Code**

```

File Edit Selection View Go ...
ploAnalysis.php ploAnalysisOverall.php x loginconfigure.php spms.sql ...
OPEN EDITORS 2 unsaved
GROUP... logout.php performanceStats.php ploAchieveStats.php ploAnalysis.php
ploAnalysisOverall... ploAnalysisDepartment... ploComparisonCourse... ploComparisonDepart... ploComparisonProgra...
ploComparisonSchool... ploComparisonStuden... # questionform.css README.md school_department_pr...
signup.php spiderChart.php spms.sql studentconfigure.p... studentcloinfo.php
OUTLINE
80 <div style="height:80px;" class="row1">
81   <form method="POST">
82     <input style="background-color:#6699FF;height:50px;border: 1px solid;cursor: pointer;font-weight: bold;text-transform:uppercase; border: none;outline: none;color:white;margin-left:43%;margin-top:13px;" type="text" placeholder="Search..." name="search" value="Search..." />
83
84   <input style="background:#00BFFF;border-radius:10px; border:none;outline:none;color:white;letter-spacing:2px;text-transform:uppercase;cursor:pointer;font-weight:bold;" type="submit" name="submit" value="Submit"/>
85 </div>
86
87 <div style="display:flex;justify-content:space-around" class="row2">
88   <button onclick="overallPlo()" style="width:300px; margin-left:0px;" class="School-wise">Overall-wise</button>
89   <button onclick="coWisePlo()" style="width:300px;" class="Department-wise">CO Wise</button>
90   <button onclick="courseWisePlo()" style="width:300px;" class="Program-wise">Course-wise</button>
91 </div>
92
93 <div style="display:flex;justify-content:center;" class="row3" style="margin-top:20px;">
94   <div id="Autumn" style="width: 65%; height: 500px; display:inline-block; margin-top:20px;"></div>
95 </div>
96
97 <div style="display:flex;justify-content:center;" class="row4" style="margin-top:20px;">
98   <div id="Summer" style="width: 65%; height: 500px; display:inline-block; margin-top:20px;"></div>
99 </div>
100
101 <div style="display:flex;justify-content:center;" class="row5" style="margin-top:20px;">
102   <div id="Winter" style="width: 65%; height: 500px; display:inline-block; margin-top:20px;"></div>
103 </div>

```

Ln 1, Col 1 Spaces: 2 UTF-8 CRLF PHP Go Live Prettier 12:27 PM 4/26/2023

**ploAnalysisOverall.php - Group-Project-Repository - Visual Studio Code**

```

File Edit Selection View Go ...
ploAnalysis.php ploAnalysisOverall.php X loginconfigure.php spms.sql studentcloinfo.php ...
EXPLORER ... OPEN EDITORS 2 unsaved
GROUP... logout.php performanceStats.php ploAchieveStats.php ploAnalysis.php ploAnalysisDepartmen...
ploAnalysisOverall.php ploComparisonCourse... ploComparisonDepart... ploComparisonProgra... ploComparisonSchool... ploComparisonStuden... # questionform.css README.md school_department_pr... signup.php spiderChart.php spms.sql studentcloconfigure.p... studentcloinfo.php ...
OUTLINE
115
116 $sql="SELECT plo.ploNum AS ploNum,
117 AVG((ans.markObtained/q.markPerQuestion)*100) AS percent
118 FROM registration_t AS r, answer_t AS ans, question_t AS q,
119 co_t AS co, plo_t AS plo
120 WHERE r.registrationID=ans.registrationID
121 AND ans.examID=q.examID
122 AND ans.answerNum=q.questionNum AND q.coNum=co.coNum
123 AND q.courseID=co.courseID AND co.ploID=plo.ploID
124 AND r.studentID='$studentID'
125 GROUP BY plo.ploNum,r.studentID";
126
127 $result=mysqli_query($con,$sql);
128 ?>
129
130 google.charts.load('current', {'packages':['bar']});
131 google.charts.setOnLoadCallback(drawAutumnChart);
132
133 function drawAutumnChart() {
134     var data = google.visualization.arrayToDataTable([
135         ['ploNum', 'PLO Percentage'],
136     ]);
137
138     <?php
139         while($data=mysqli_fetch_array($result)) {
140             $ploNum = $data['ploNum'];
141             $percentage = $data['PLO Percentage'];
142             $ploObj = new PLO($ploNum, $percentage);
143             $ploArr[] = $ploObj;
144         }
145     <?php
146     $ploArr = array();
147     $ploArr = $ploArr;
148     $ploArr = array();
149     $ploArr = $ploArr;
150     $ploArr = $ploArr;
151     $ploArr = $ploArr;
152     $ploArr = $ploArr;
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203     $ploArr = $ploArr;
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205     $ploArr = $ploArr;
206     $ploArr = $ploArr;
207     $ploArr = $ploArr;
208     $ploArr = $ploArr;
209     $ploArr = $ploArr;

```

Ln 1, Col 1 Spaces: 2 UTF-8 CRLF PHP Go Live Prettier

92°F Sunny 12:27 PM 4/26/2023

**spiderChart.php - Group-Project-Repository - Visual Studio Code**

```

File Edit Selection View Go ...
verall.php loginconfigure.php spms.sql studentcloconfigure.php ...
EXPLORER ... OPEN EDITORS 2 unsaved
GROUP-PROJECT-REPOS... ploComparisonProgra... ploComparisonSchool... ploComparisonStuden... # questionform.css README.md school_department_pr... signup.php spiderChart.php spms.sql studentcloconfigure.p... studentcloinfo.php # style.css submitAnswerScript... try.php viewCourseOutline.php viewExam.php viewExamConfig.php viewStudentAnswerScr...
spiderChart.php <html> body div.background
186     <?php
187     if(isset($_POST['submit'])){
188         $studentID=$_POST['studentID'];
189     }>
190
191     <script>
192
193         function poView(){
194             <?php
195                 $sql="SELECT po.poNum AS poNum,
196                     AVG((ans.markObtained/q.markPerQuestion)*100) AS percent
197                     FROM registration_t AS r, answer_t AS ans, question_t AS q,
198                     co_t AS co, po_t AS po
199                     WHERE r.registrationID=ans.registrationID
200                     AND ans.examID=q.examID
201                     AND ans.answerNum=q.questionNum AND q.coNum=co.coNum
202                     AND q.courseID=co.courseID AND co.poID=po.poID
203                     AND r.studentID='$studentID'
204                     GROUP BY po.poNum";
205
206             $result=mysqli_query($con,$sql);
207
208             $po=array();
209             $po=$po;

```

Ln 178, Col 40 Spaces: 2 UTF-8 CRLF PHP Go Live Prettier

92°F Sunny 12:28 PM 4/26/2023

File Edit Selection View Go ... spiderChart.php - Group-Project-Repository - Visual Studio Code

EXPLORER OPEN EDITORS 2 unsaved GROUP-PROJECT-REPOSIT... 218  
 > ploComparisonProgra... 219 ?>  
 & ploComparisonSchool... 220  
 & ploComparisonStuden... 221  
 # questionform.css 222  
 README.md 223  
 school\_department\_pr... 224  
 signup.php 225  
 spiderChart.php 226  
 spms.sql 227  
 studentcloconfigure.p... 228  
 studentcloinfo.php 229  
 style.css 230  
 submitAnswerScript.p... 231  
 try.php 232  
 viewCourseOutline.php 233  
 viewExam.php 234  
 viewExamConfig.php 235  
 viewStudentAnswerScr... 236  
 OUTLINE 237  
 238  
 239  
 240  
 241

```

    var po=<?php echo json_encode($po); ?>;
    var percent=<?php echo json_encode($percent); ?>;
    for(var i=0;i<percent.length;i++){
      percent[i]=parseFloat(percent[i]);
    }
    const ctx = document.getElementById('myChart');
    new Chart(ctx, {
      type: 'radar',
      data: {
        labels: po,
        datasets: [
          {
            label: 'PO Achieved',
            data: percent,
            fill: true,
            backgroundColor: 'rgba(54, 162, 235, 0.2)',
            borderColor: 'rgb(54, 162, 235)',
            pointBackgroundColor: 'rgb(54, 162, 235)'
          }
        ]
      }
    });
  
```

Ln 178, Col 40 Spaces: 2 UTF-8 CRLF PHP Go Live Prettier 12:28 PM 4/26/2023

File Edit Selection View Go ... spiderChart.php - Group-Project-Repository - Visual Studio Code

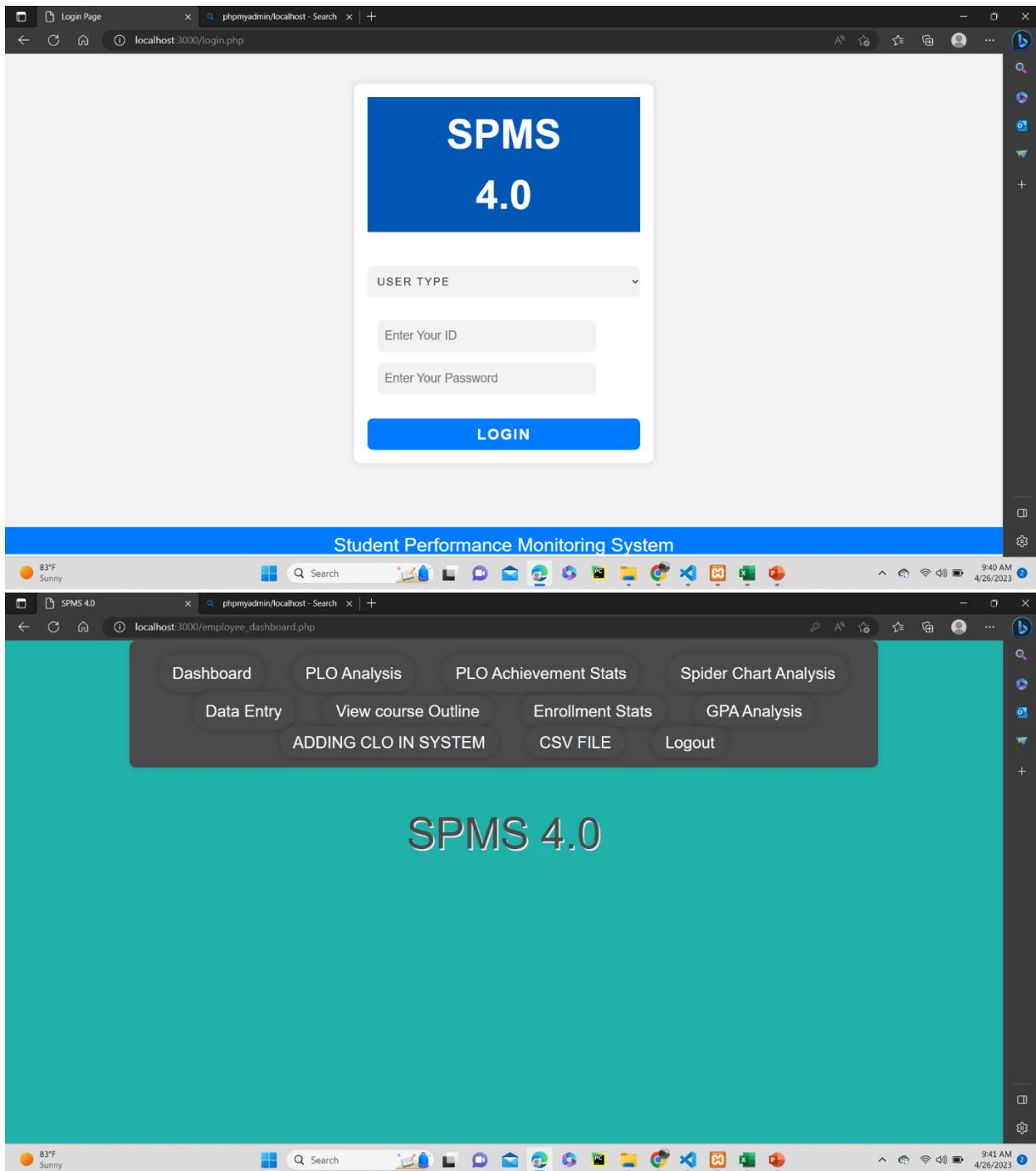
EXPLORER OPEN EDITORS 2 unsaved GROUP-PROJECT-REPOSIT... 250  
 > ploComparisonProgra... 251 }  
 & ploComparisonSchool... 252 }  
 & ploComparisonStuden... 253 };  
 # questionform.css 254  
 README.md 255 }  
 school\_department\_pr... 256  
 signup.php 257  
 spiderChart.php 258  
 spms.sql 259  
 studentcloconfigure.p... 260  
 studentcloinfo.php 261  
 style.css 262  
 submitAnswerScript.p... 263  
 try.php 264  
 viewCourseOutline.php 265  
 viewExam.php 266  
 viewExamConfig.php 267  
 viewStudentAnswerScr... 268  
 OUTLINE 269  
 270  
 271  
 272  
 273

```

    function coView(){
    <?php
    $sql="SELECT q.coNum,
    AVG(ans.markObtained/q.markPerQuestion)*100) AS percent
    FROM registration_t AS r, answer_t AS ans, question_t AS q,
    co_t AS co, po_t AS po
    WHERE r.registrationID=ans.registrationID
    AND ans.examID=q.examID
    AND ans.answerNum=q.questionNum AND q.coNum=co.coNum
    AND r.studentID='$studentID'
    GROUP BY q.coNum";
    $result=mysqli_query($con,$sql);
    $co=array();
    $percent=array();
  
```

Ln 178, Col 40 Spaces: 2 UTF-8 CRLF PHP Go Live Prettier 12:28 PM 4/26/2023

## B. OUTPUT FORMS:

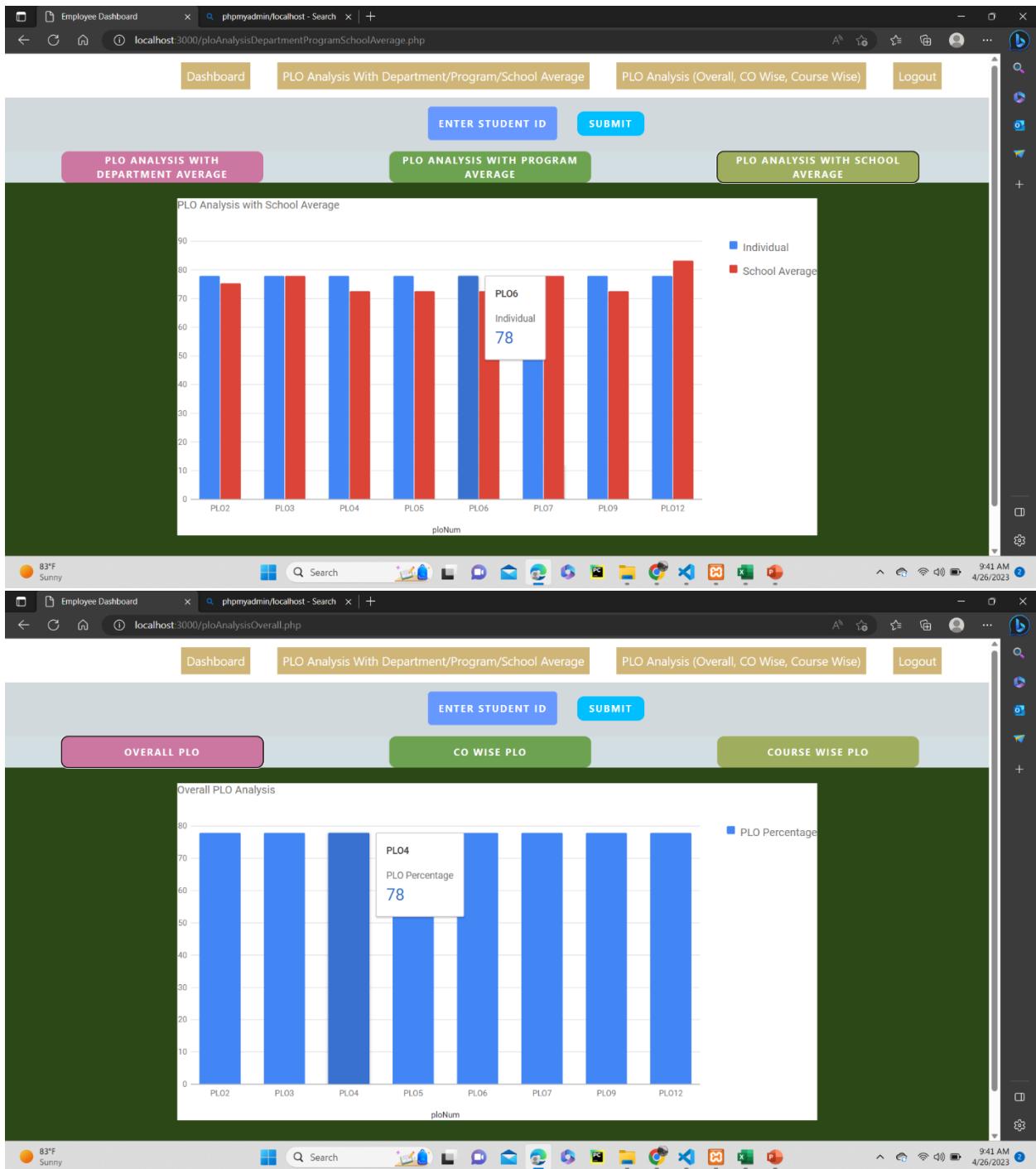


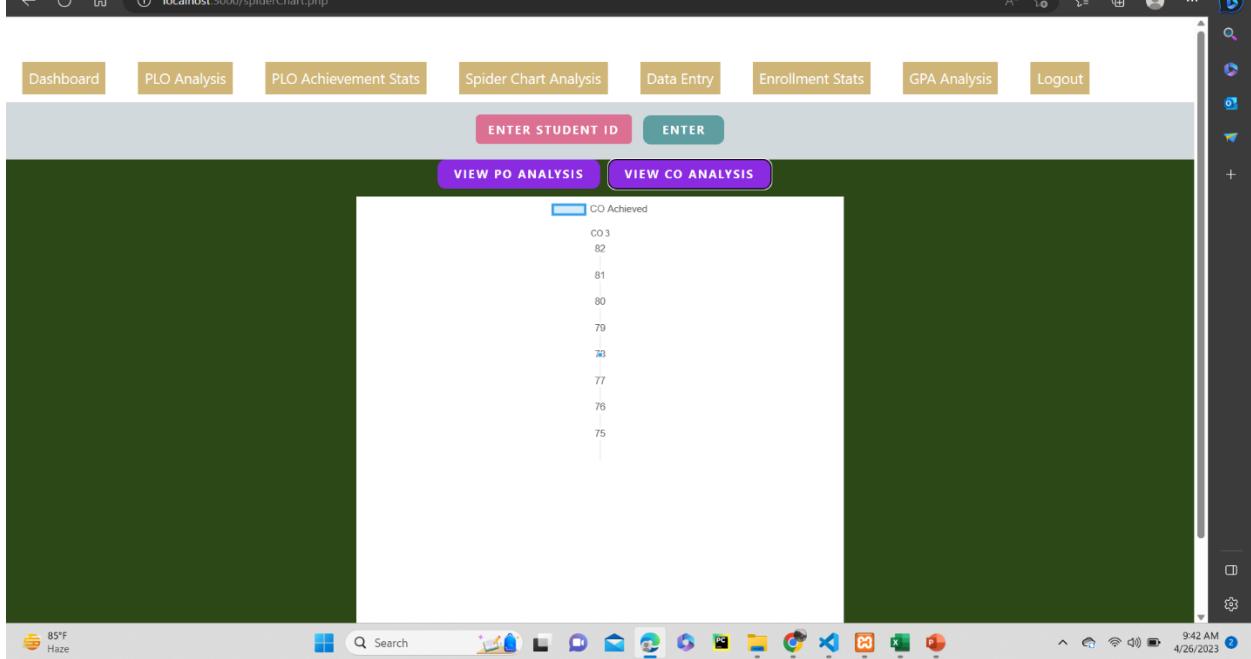
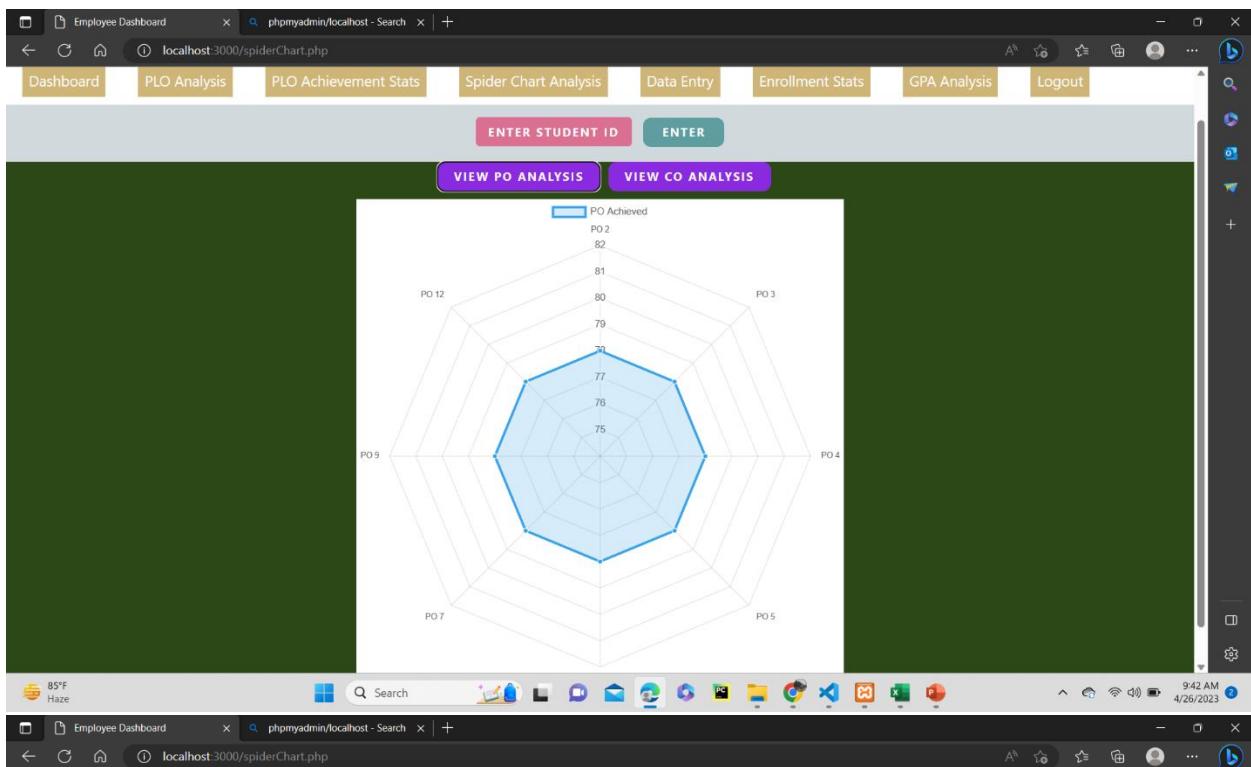
The screenshot displays two windows of the SPMS 4.0 application running on a Windows operating system.

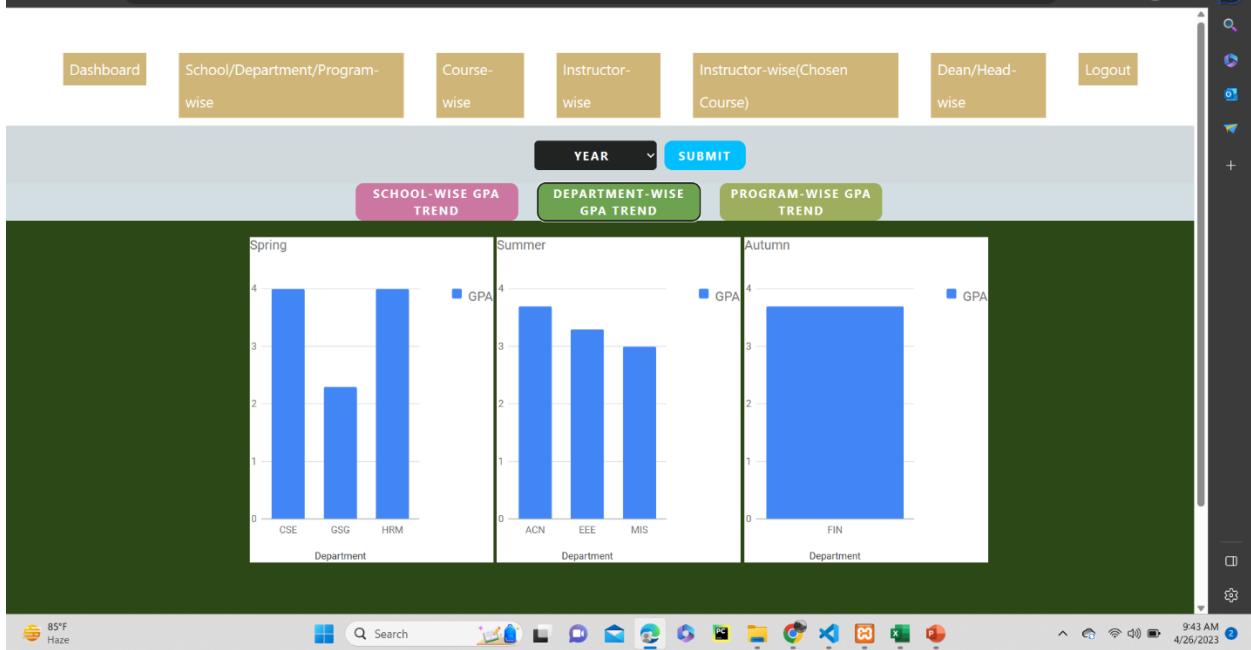
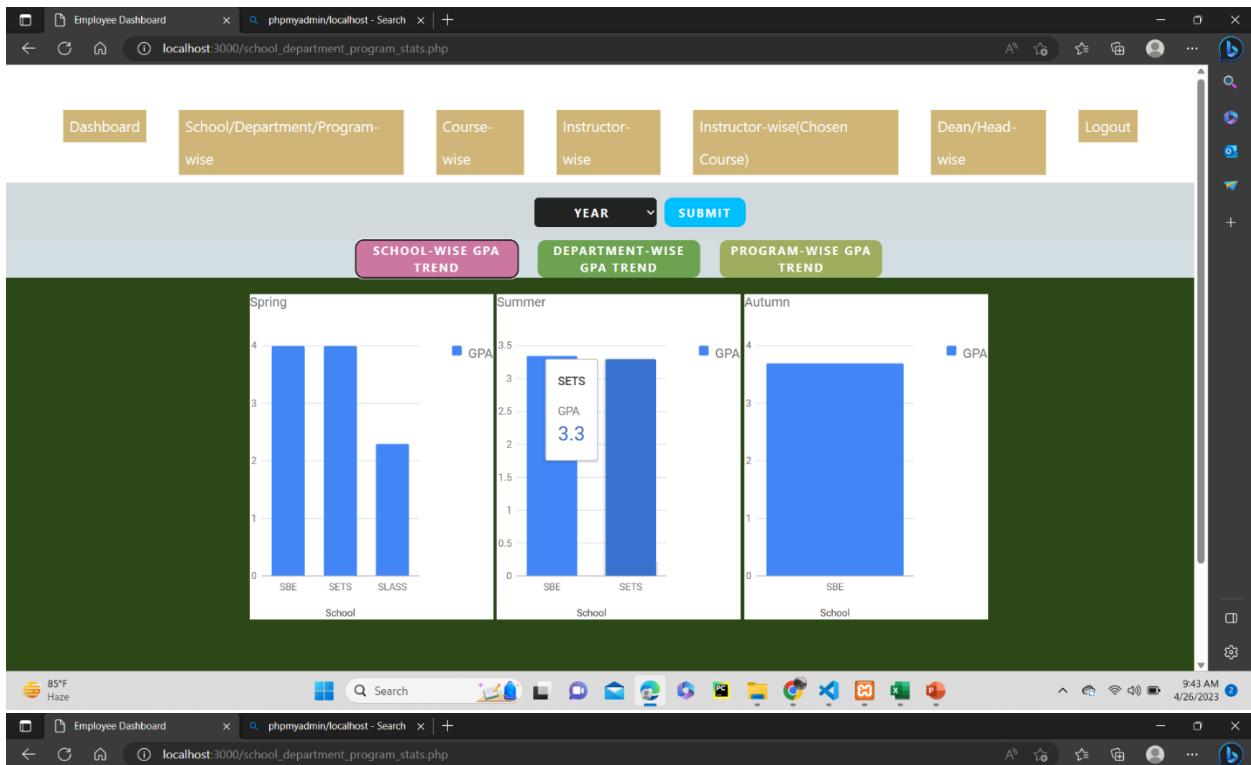
**Top Window:** The main dashboard page (`localhost:3000/ploAnalysis.php`). It features a large blue header with the text "SPMS" and "4.0". Below the header is a dark grey content area. At the top of this area are three buttons: "Dashboard", "PLO Analysis With Department/Program/School Average", and "PLO Analysis (Overall, CO Wise, Course Wise)". To the right of these buttons is a "Logout" link. The status bar at the bottom shows the date and time as "4/26/2023 9:41 AM".

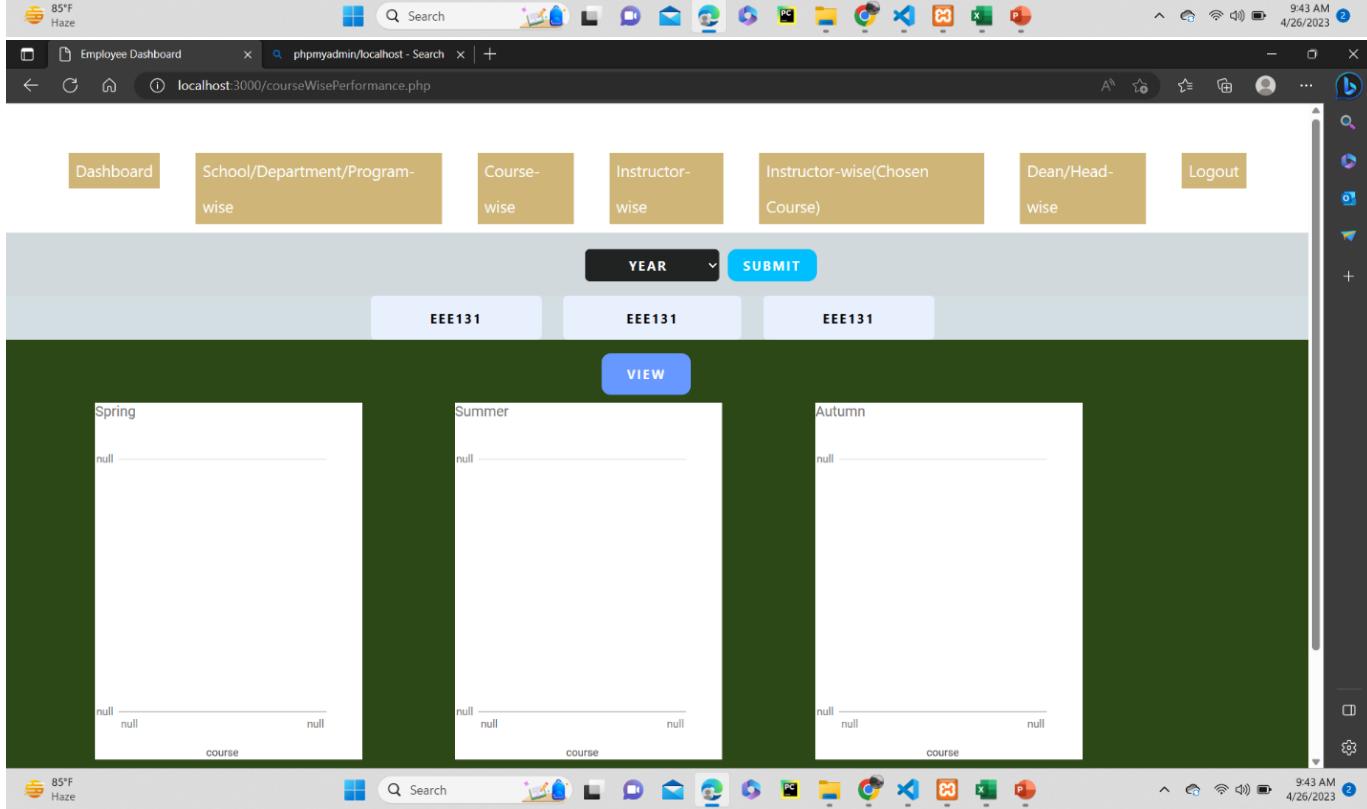
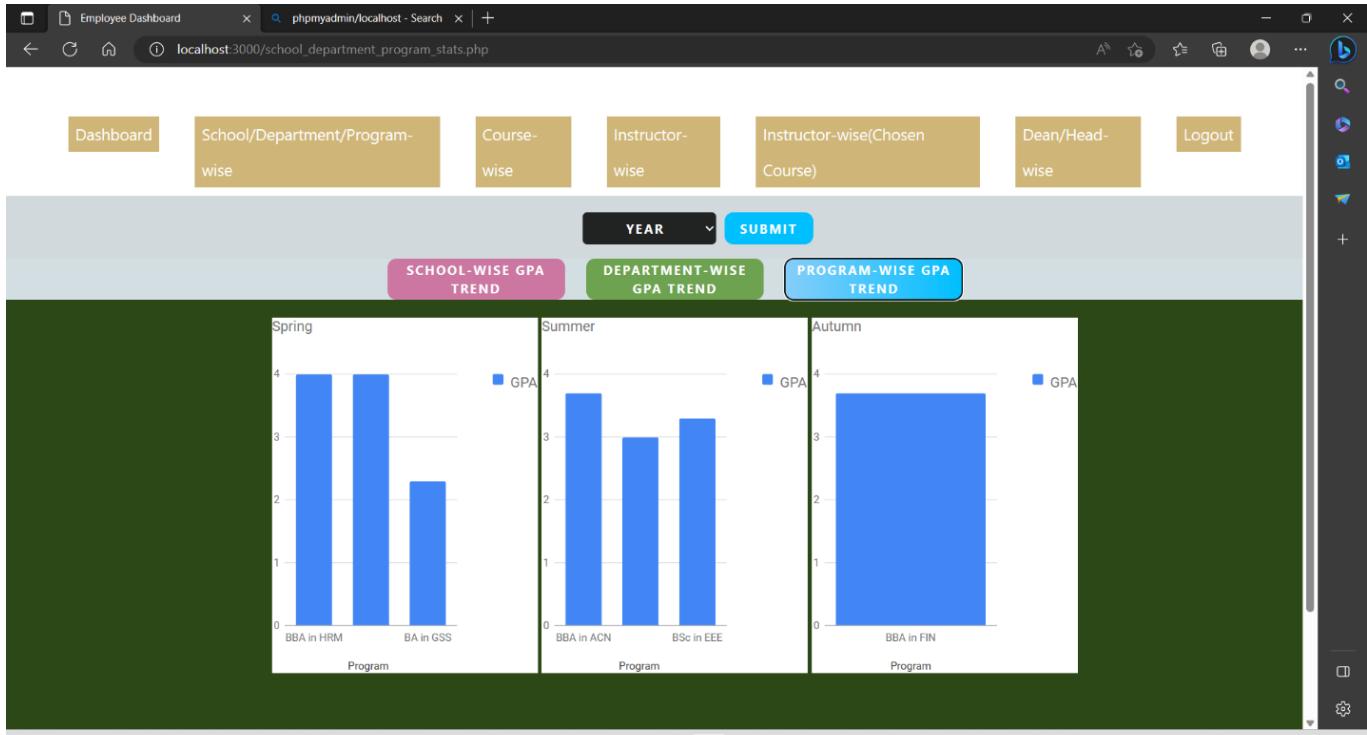
**Bottom Window:** A detailed PLO analysis page (`localhost:3000/ploAnalysisDepartmentProgramSchoolAverage.php`). This window has a similar header with the same three buttons. Below the header is a form with "ENTER STUDENT ID" and "SUBMIT" buttons. The main content area contains three tabs: "PLO ANALYSIS WITH DEPARTMENT AVERAGE" (highlighted in pink), "PLO ANALYSIS WITH PROGRAM AVERAGE" (highlighted in green), and "PLO ANALYSIS WITH SCHOOL AVERAGE" (highlighted in olive green). The "PLO ANALYSIS WITH DEPARTMENT AVERAGE" tab is active, displaying a bar chart titled "PLO Analysis with Department Average". The chart compares individual student scores (blue bars) with department averages (red bars) for PLO numbers 02 through 12. A callout box highlights the value "78" for PLO5 Individual. The chart includes a legend: "Individual" (blue square) and "Dept Average" (red square). The status bar at the bottom of this window also shows "4/26/2023 9:41 AM".











The image displays two screenshots of the SPMS 4.0 application interface.

**Top Screenshot:** This screenshot shows the "Instructor Wise Chosen Course" page. The interface includes a navigation bar with links for Dashboard, School/Department/Program-wise, Course-wise, Instructor-wise, Instructor-wise(Chosen Course), Dean/Head-wise, and Logout. Below the navigation bar is a search bar with dropdowns for "COURSE CODE" and "YEAR", and a "SUBMIT" button. The main content area is divided into three sections: Spring, Summer, and Autumn. Each section contains a bar chart for "GPA". The Spring section has three bars labeled "null", "null", and "null". The Summer section has one bar labeled "Tahsin F. Ara Nayna" with a value of approximately 3.2. The Autumn section has three bars labeled "null", "null", and "null". A "VIEW" button is located above the Summer section.

**Bottom Screenshot:** This screenshot shows the "Student Data Entry" page. The interface includes a navigation bar with links for Dashboard and Logout. The main content area features a green header with the text "SPMS 4.0". Below the header is a form with fields for "Student ID:", "Educational Year:", "Educational Semester:", "Enrolled Course:", "Enrolled Section:", and "Marks Obtained:". Each field has a corresponding input box. At the bottom of the form is a "Submit" button.

The screenshot displays two instances of the Visual Studio Code interface, both showing the file `studentcloinfo.php`.

**Top Instance (PHP Code):**

```
<?php
include 'connect.php';
error_reporting(0);
session_start();
//session_destroy();

if ($_SESSION['message']){
    $message = $_SESSION['message'];
    echo "<script type='text/javascript'>
        alert('$message');
    </script>";
}

<!DOCTYPE html>
<html>
    <head>
        <title>Student Data Entry</title>
        <style>
```

**Bottom Instance (CSS Styling):**

```
body {
    font-family: Arial, sans-serif;
    background-color: #f2f2f2;
}

form {
    background-color: mediumaquamarine;
    padding: 20px;
    border-radius: 10px;
    box-shadow: 0 0 10px rgba(0,0,0,0.3);
    width: 500px;
    margin: 0 auto;
}

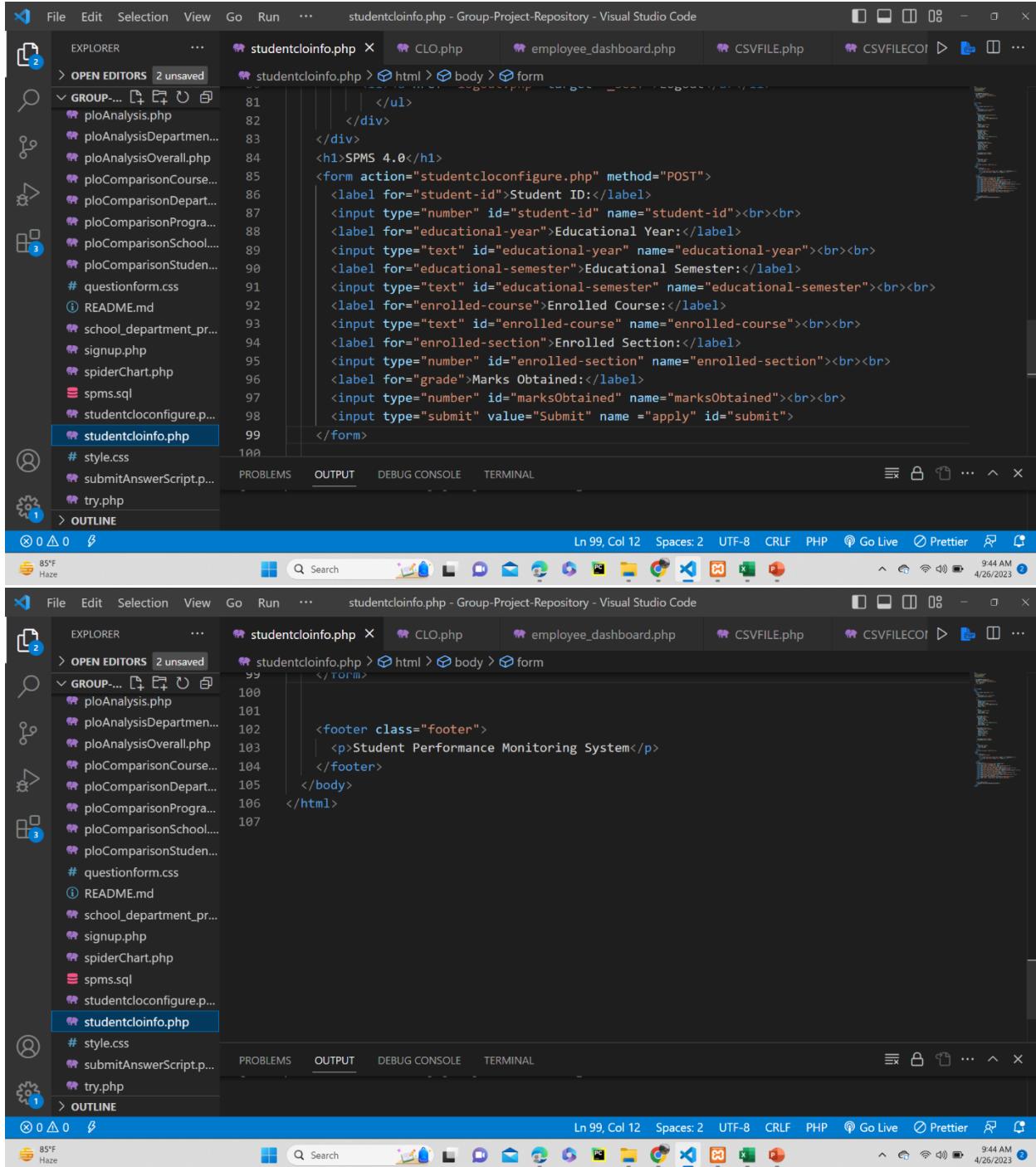
label {
    display: inline-block;
    width: 150px;
    margin-bottom: 10px;
}
```

```

studentcloinfo.php - Group-Project-Repository - Visual Studio Code
File Edit Selection View Go Run ...
studentcloinfo.php X CLO.php employee_dashboard.php CSVFILE.php CSVFILECOI ...
OPEN EDITORS 2 unsaved
GROUP... 41 input[type="text"], 41
        input[type="number"] { 42
            padding: 10px; 43
            font-size: 16px; 44
            border-radius: 5px; 45
            border: none; 46
            box-shadow: 0 0 5px rgba(0,0,0,0.2); 47
            width: 250px; 48
            margin-bottom: 20px; 49
        }
        # questionform.css 50
        # questionform.css 51
        README.md 52
        school_department_pr... 53
        signup.php 54
        spiderChart.php 55
        spms.sql 56
        studentcloconfigure.p... 57
        studentcloinfo.php 58
        # style.css 59
        submitAnswerScript.p... 60
        try.php 61
        input[type="submit"] { 61
            background-color: #4CAF50; 62
            color: #fff; 63
            padding: 10px 20px; 64
            font-size: 16px; 65
            border-radius: 5px; 66
            border: none; 67
            cursor: pointer; 68
        }
        input[type="submit"]:hover { 69
            background-color: #3e8e41; 70
        }
        h1 { 71
            text-align: center; 72
            font-size: 36px; 73
            color: #4CAF50; 74
        }
        </style>
        <link rel="stylesheet" href="style.css">
    </head>
    <body>
        <div class="nav">
            <div class="nav-links">
                <ul>
                    <li><a href="employee_dashboard.php" target="_self">Dashboard</a></li>
                    <li><a href="logout.php" target="_self">Logout</a></li>
                </ul>
            </div>
        </div>
    </body>

```

The screenshot displays two identical instances of the Visual Studio Code interface, each showing the content of the file "studentcloinfo.php". The file contains PHP code with embedded CSS. The top instance shows the CSS for input fields and a submit button. The bottom instance shows additional CSS for the submit button's hover state and the navigation bar.



```

File Edit Selection View Go Run ...
studentcloinfo.php - Group-Project-Repository - Visual Studio Code
EXPLORER ... studentcloinfo.php X CLO.php employee_dashboard.php CSVFILE.php CSVFILECOI ...
OPEN EDITORS 2 unsaved
GROUP... ploAnalysis.php ploAnalysisDepartmen... ploAnalysisOverall.php ploComparisonCourse... ploComparisonDepart... ploComparisonProgra... ploComparisonSchool... ploComparisonStuden... # questionform.css README.md school_department_pr... signup.php spiderChart.php spms.sql studentcloconfigure.p... studentcloinfo.php
# style.css submitAnswerScript.p... try.php
studentcloinfo.php
81 </ul>
82 </div>
83 <h1>SPMS 4.0</h1>
84 <form action="studentcloconfigure.php" method="POST">
85 <label for="student-id">Student ID:</label>
86 <input type="number" id="student-id" name="student-id"><br><br>
87 <label for="educational-year">Educational Year:</label>
88 <input type="text" id="educational-year" name="educational-year"><br><br>
89 <label for="educational-semester">Educational Semester:</label>
90 <input type="text" id="educational-semester" name="educational-semester"><br><br>
91 <label for="enrolled-course">Enrolled Course:</label>
92 <input type="text" id="enrolled-course" name="enrolled-course"><br><br>
93 <label for="enrolled-section">Enrolled Section:</label>
94 <input type="number" id="enrolled-section" name="enrolled-section"><br><br>
95 <label for="grade">Marks Obtained:</label>
96 <input type="number" id="marksObtained" name="marksObtained"><br><br>
97 <input type="submit" value="Submit" name="apply" id="submit">
98 </form>
99 </body>
100 <footer class="footer">
101 | <p>Student Performance Monitoring System</p>
102 </footer>
103 </body>
104 </html>
105
106
107

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Ln 99, Col 12 Spaces: 2 UTF-8 CRLF PHP Go Live Prettier

85°F Haze 9:44 AM 4/26/2023

The image shows two instances of the Visual Studio Code (VS Code) interface, both displaying the same PHP file: `studentcloconfigure.php`. The file contains logic for handling user input from a form and interacting with a MySQL database to manage student sections.

**File Explorer:** Shows the project structure with files like `ploAnalysis.php`, `spiderChart.php`, and `spms.sql`.

**Code Editor:** Displays the following code:

```
<?php
    include 'connect.php';
    session_start();

    if(isset($_SESSION['ID'])){
        $f_ID = $_SESSION['ID'];
    }else{
        // handle the case when $ID is not set in the session
        echo 'f_ID is not set';
    }

    if (isset($_POST['apply'])) {
        // Retrieve the form data
        $student_id = $_POST['student-id'];
        $educational_year = $_POST['educational-year'];

        $educational_semester = $_POST['educational-semester'];
        $enrolled_course = $_POST['enrolled-course'];
        $enrolled_section = $_POST['enrolled-section'];
        $marks = $_POST['marksObtained'];

        // SEARCHING WHETHER SECTION IS ALREADY PRESENT IN THE DATABASE OR NOT
        $sql = "SELECT sectionID FROM section_t where sectionNum ='$enrolled_section' AND
                courseID = '$enrolled_course' AND year = '$educational_year' AND
                semester = '$educational_semester'AND facultyID ='$f_ID'";
        $res = mysqli_query($con, $sql);

        // IF SECTION IS NOT PRESENT IN THE DATABASE, WE ARE ADDING THAT SECTION
        if (mysqli_num_rows($res) == 0) {
            $sql = "INSERT INTO section_t (sectionNum,semester,facultyID,year)
                    VALUES ('$enrolled_section','$educational_semester','$enrolled_course',
                            '$f_ID')";
            mysqli_query($con, $sql);
        }
    }
}
```

**Bottom Status Bar:** Shows system information including temperature (85°F Haze), battery level (80%), and system date (4/26/2023).

The image displays two identical instances of the Visual Studio Code (VS Code) interface, one stacked above the other. Both windows show the same file, `studentcloconfigure.php`, which is part of a project named "Group-Project-Repository". The code is written in PHP and performs several database operations using MySQLi.

**Code Snippet (Visible in Both Windows):**

```

$SQL = "SELECT sectionID FROM section_t WHERE sectionNum = '$enrolled_section' AND
    courseID = '$enrolled_course' AND year = '$educational_year' AND
    semester = '$educational_semester' AND facultyID = '$f_ID'";
$res = mysqli_query($con, $SQL);

// Fetching section ID of the newly inserted section
$SQL = "INSERT INTO registration_t (sectionID, studentID)
VALUES ($sectionID, $student_id)";
$res = mysqli_query($con, $SQL);

```

**Explorer View:** Shows a tree view of the project files. The `studentcloconfigure.php` file is selected. Other files listed include `ploAnalysis.php`, `ploAnalysisDepartment.php`, `ploAnalysisOverall.php`, `ploComparisonCourse.php`, `ploComparisonDepartment.php`, `ploComparisonProgram.php`, `ploComparisonSchool.php`, `ploComparisonStudent.php`, `questionform.css`, `README.md`, `school_department_program_stats.php`, `spms.sql`, `studentcloinfo.php`, `style.css`, `submitAnswerScript.php`, and `try.php`.

**Bottom Status Bar:** Shows system information like battery level (85%), temperature (Haze), and date/time (9:44 AM, 4/26/2023).

The screenshot displays two instances of the Visual Studio Code editor, both showing the same PHP file: `studentcloconfigure.php`. The file contains logic to calculate a GPA based on marks and insert data into a database table.

```

Line 82:     $gpa =4;
Line 83: }else if ($marks>=85){
Line 84:     $gpa = 3.7;
Line 85: }else if ($marks>=80){
Line 86:     $gpa= 3.3;
Line 87: }
Line 88: else if ($marks>=75){
Line 89:     $gpa = 3;
Line 90: }
Line 91: else if ($marks>=70){
Line 92:     $gpa = 2.7;
Line 93: }
Line 94: else if ($marks>=65){
Line 95:     $gpa = 2.3;
Line 96: }else if ($marks>=60){
Line 97:     $gpa = 2;
Line 98: }else if ($marks>=55){
Line 99:     $gpa =1.7;
Line 100: }else if ($marks>=50){
Line 101:     $gpa = 1.3;

```

```

Line 105:     $gpa = 0;
Line 106: }
Line 107: // inserting data into student_course_performance_t
Line 108:
Line 109: $sql = "INSERT INTO student_course_performance_t (registrationID,totalMarksObtained
Line 110:           VALUES($registrationID,$marks,$gpa)";
Line 111: $res = mysqli_query($con,$sql);
Line 112:
Line 113:
Line 114:
Line 115:
Line 116:
Line 117:
Line 118:
Line 119:
Line 120: $sql = "INSERT INTO backlog_data_t(sectionNUM,studentID,semester,courseID,facultyID,
Line 121:           year,totalMarksObtained) VALUES
Line 122:           ($enrolled_section,$student_id,'$educational_semester', '$enrolled_course',
Line 123:             $f_ID,$educational_year,$marks)";
Line 124:

```

```

studentcloconfigure.php - Group-Project-Repository - Visual Studio Code
File Edit Selection View Go Run ... studentcloconfigure.php > ...
EXPLORER OPEN EDITORS 2 unsaved
GROUP... ploAnalysis.php
ploAnalysisDepartmen...
ploAnalysisOverall.php
ploComparisonCourse...
ploComparisonDepart...
ploComparisonProgra...
ploComparisonSchool...
ploComparisonStuden...
# questionform.css
README.md
school_department_pr...
signup.php
spiderChart.php
spms.sql
studentcloconfigure.p...
studentcloinfo.php
style.css
submitAnswerScript.p...
try.php
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Ln 3, Col 20 Spaces: 4 UTF-8 CRLF PHP Go Live Prettier
85°F Haze 9:45 AM 4/26/2023
studentcloconfigure.php - Group-Project-Repository - Visual Studio Code
File Edit Selection View Go Run ... studentcloconfigure.php > ...
EXPLORER OPEN EDITORS 2 unsaved
GROUP... ploAnalysis.php
ploAnalysisDepartmen...
ploAnalysisOverall.php
ploComparisonCourse...
ploComparisonDepart...
ploComparisonProgra...
ploComparisonSchool...
ploComparisonStuden...
# questionform.css
README.md
school_department_pr...
signup.php
spiderChart.php
spms.sql
studentcloconfigure.p...
studentcloinfo.php
style.css
submitAnswerScript.p...
try.php
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Ln 3, Col 20 Spaces: 4 UTF-8 CRLF PHP Go Live Prettier
85°F Haze 9:45 AM 4/26/2023

```

**Top Instance (Line 142-144):**

```

        $result = mysqli_query($con, $sql);
        if ($result){
            // $_SESSION['message'] = "Your data submission is successful";
            header("location:studentcloinfo.php");
        } else {
            echo "Submission Failed";
        }

        // INSERTING DATA INTO EXAM TABLE

        // checking whether the examName and section is already there or not

        $sql= "INSERT INTO exam_t (examName,sectionID) VALUES
        ('CSE303FinalSummer2023Exam', $sectionID)";
        $res = mysqli_query($con,$sql);

        // fetching examID for inserting in answer table
        $sql = "SELECT examID FROM exam_t WHERE

```

**Bottom Instance (Line 146-165):**

```

        $res = mysqli_query($con,$sql);
        $row = mysqli_fetch_assoc($res);
        $examID = $row['examID'];

        // INSERTING DATA INTO QUESTION TABLE
        $sql = "INSERT INTO question_t (questionDetails,markPerQuestion,questionNum,
        difficultyLevel,examID,courseID,coNum) VALUES
        ('what is the name',100,5,3,$examID,'$enrolled_course',3)";
        $res = mysqli_query($con,$sql);

        // fetching questionID to insert in the answer table

        // $sql = "SELECT questionID FROM question_t WHERE questionDetails ='what is the na
        // AND markPerQuestion=100 AND questionNum=3 AND difficultyLevel = 3 AND
        // examID = $examID AND courseID = '$enrolled_course' AND coNum =4";
        // $res = mysqli_query($con,$sql);
        // $row = mysqli_fetch_assoc($res);
        // $questionID = $row['questionID'];

```

The screenshot shows a Windows desktop environment with two main windows open:

- Visual Studio Code (Top Window):** The title bar reads "studentcloconfigure.php - Group-Project-Repository - Visual Studio Code". The Explorer sidebar shows a file tree with several PHP files and other project files. The main editor area displays PHP code for inserting data into a database table. The status bar at the bottom of the VS Code window shows "Ln 3, Col 20" and other settings.
- Web Browser (Bottom Window):** The address bar shows "localhost:3000/CSVFILE.php". The page content includes a header "SPMS 4.0" and "Student Performance Monitoring System". It features a green button labeled "Import" with a "CSV FILE:" input field and a "Choose File" button. The status bar at the bottom of the browser window shows "9:45 AM 4/26/2023".

The taskbar at the bottom of the screen shows various pinned icons, including Microsoft Office applications like Word, Excel, and PowerPoint, as well as other system icons.

```
// INSERTING DATA INTO ANSWER TABLE
$sql = "INSERT INTO answer_t (answerDetails,answerNum,markObtained,registrationID,
| questionID,examID) VALUES ('abcde',5,$marks,$registrationID,0,$examID)";
$res = mysqli_query($con,$sql);
```

The image displays two identical instances of the CSVFILE.php file in Visual Studio Code. Both instances show the same code, which is a snippet of PHP and CSS.

```

<?php
    include 'connect.php';
    error_reporting(0);
    session_start();
    //session_destroy();

    if ($_SESSION['message']){
        $message = $_SESSION['message'];
        echo "<script type='text/javascript'>
            alert('$message');
        </script>";
    }
?>

<!DOCTYPE html>
<html>
    <head>
        <title>Student Data Entry</title>
        <style>
            body {
                font-family: Arial, sans-serif;
                background-color: #f2f2f2;
            }

            form {
                background-color: mediumaquamarine;
                padding: 20px;
                border-radius: 10px;
                box-shadow: 0 0 10px rgba(0,0,0,0.3);
                width: 500px;
                margin: 0 auto;
            }

            label {
                display: inline-block;
                width: 150px;
                margin-bottom: 10px;
            }

            input[type="text"] {
                width: 300px;
                height: 30px;
                border: 1px solid black;
                border-radius: 5px;
                padding: 5px;
            }
        </style>
    </head>
    <body>
        <form>
            <label>Name:</label>
            <input type="text" name="name">
        </form>
    </body>
</html>

```

The code includes PHP logic to check if there is a message in the session and output it via a JavaScript alert. It also contains a CSS block that styles the entire page with a light blue background and a central form. The form itself has a medium aquamarine background, rounded corners, and a box shadow. It features a label for 'Name:' and an input field for entering text.

```

CSVFILE.php - Group-Project-Repository - Visual Studio Code
File Edit Selection View Go Run ...
CSVFILE.php > html > body > div.nav
OPEN EDITORS 2 unsaved
GROUP... 40
addExam.php 41
addExamConfig.php 42
answerScriptGrading.p... 43
background.png 44
CLO.php 45
clochart.php 46
clovewinfo.php 47
composer.json 48
composer.lock 49
connect.php 50
courseOutline.css 51
courseWisePerforman... 52
createCourseOutline.p... 53
createCourseOutlineC... 54
createCourseOutlineP... 55
createpdf.php 56
CSVFILE.php 57
CSVFILECONFIGURE.p... 58
dataEntry.php 59
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Ln 83, Col 11 Spaces: 4 UTF-8 CRLF PHP Go Live Prettier
85°F Haze 9:45 AM 4/26/2023

CSVFILE.php - Group-Project-Repository - Visual Studio Code
File Edit Selection View Go Run ...
CSVFILE.php > html > body > div.nav
OPEN EDITORS 2 unsaved
GROUP... 62
addExam.php 63
addExamConfig.php 64
answerScriptGrading.p... 65
background.png 66
CLO.php 67
clochart.php 68
clovewinfo.php 69
composer.json 70
composer.lock 71
connect.php 72
courseOutline.css 73
courseWisePerforman... 74
createCourseOutline.p... 75
createCourseOutlineC... 76
createCourseOutlineP... 77
createpdf.php 78
CSVFILE.php 79
CSVFILECONFIGURE.p... 80
dataEntry.php 81
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Ln 83, Col 11 Spaces: 4 UTF-8 CRLF PHP Go Live Prettier
85°F Haze 9:45 AM 4/26/2023

```

The image shows two instances of Visual Studio Code side-by-side, both displaying PHP code related to the SPMS 4.0 project.

**Top Window (CSVFILE.php):**

```

<h1>SPMS 4.0</h1>
<form action="CSVFILECONFIGURE.php" method="POST" enctype="multipart/form-data">
  <label for="student_id">CSV FILE:</label>
  <input type="file" id="file" name="file" accept=".csv" />

  <input type="submit" value="Import" name="import" id="submit">
</form>

<footer class="footer">
  | <p>Student Performance Monitoring System</p>
</footer>
</body>
</html>

```

**Bottom Window (CSVFILECONFIGURE.php):**

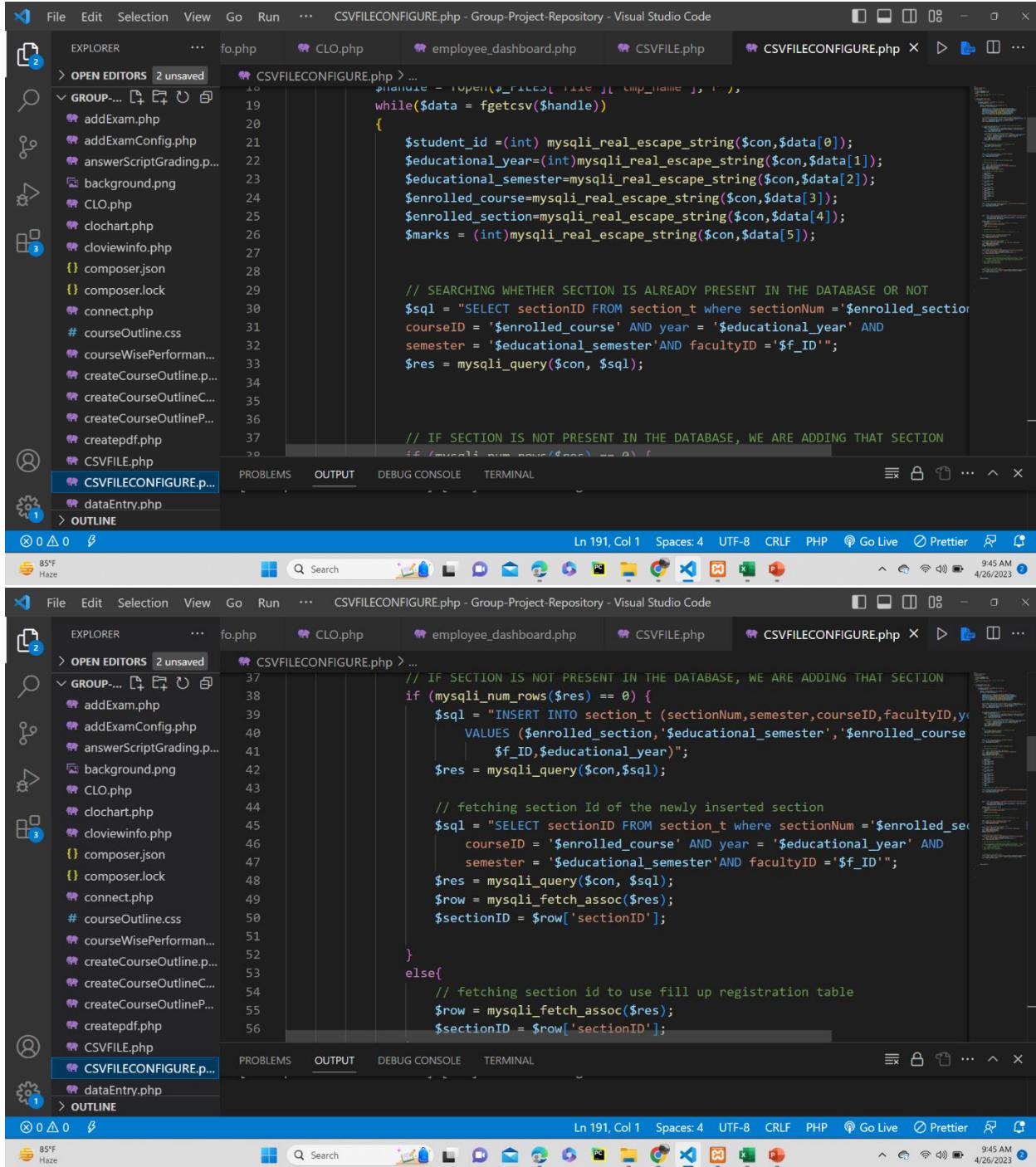
```

<?php
include 'connect.php';
session_start();

if(isset($_SESSION['ID'])){
  $f_ID = $_SESSION['ID'];
} else{
  // handle the case when $ID is not set in the session
  echo 'f_ID is not set';
}

if (isset($_POST["import"])){
  if ($_FILES['file']['name']){
    $filename = explode(".", $_FILES['file']['name']);
    if ($filename[1] == 'csv'){
      $handle = fopen($_FILES['file']['tmp_name'], "r");
      while($data = fgetcsv($handle))
      {
        ...
      }
    }
  }
}

```



```

CSVFILECONFIGURE.php - Group-Project-Repository - Visual Studio Code
File Edit Selection View Go Run ... CSVFILECONFIGURE.php > ...
OPEN EDITORS 2 unsaved fo.php CLO.php employee_dashboard.php CSVFILE.php CSVFILECONFIGURE.php > ...
GROUP... addExam.php addExamConfig.php answerScriptGrading.p... background.png CLO.php clochart.php cloviewinfo.php composer.json composer.lock connect.php courseOutline.css courseWisePerforman... createCourseOutline.p... createCourseOutlineC... createCourseOutlineP... createpdf.php CSVFILE.php CSVFILECONFIGURE.p... dataEntry.php > OUTLINE
19 while($data = fgetcsv($handle))
20 {
21     $student_id = (int) mysqli_real_escape_string($con,$data[0]);
22     $educational_year=(int)mysqli_real_escape_string($con,$data[1]);
23     $educational_semester=mysqli_real_escape_string($con,$data[2]);
24     $enrolled_course=mysqli_real_escape_string($con,$data[3]);
25     $enrolled_section=mysqli_real_escape_string($con,$data[4]);
26     $marks = (int)mysqli_real_escape_string($con,$data[5]);
27
28     // SEARCHING WHETHER SECTION IS ALREADY PRESENT IN THE DATABASE OR NOT
29     $sql = "SELECT sectionID FROM section_t where sectionNum ='$enrolled_section'";
30     courseID = '$enrolled_course' AND year = '$educational_year' AND
31     semester = '$educational_semester'AND facultyID ='$f_ID'";
32     $res = mysqli_query($con, $sql);
33
34     // IF SECTION IS NOT PRESENT IN THE DATABASE, WE ARE ADDING THAT SECTION
35     if (mysqli_num_rows($res) == 0) {
36         $sql = "INSERT INTO section_t (sectionNum,semester,courseID,facultyID,y...
37         VALUES ($enrolled_section,'$educational_semester','$enrolled_course...
38         '$f_ID','$educational_year')";
39         $res = mysqli_query($con,$sql);
40
41         // fetching section Id of the newly inserted section
42         $sql = "SELECT sectionID FROM section_t where sectionNum ='$enrolled_se...
43         courseID = '$enrolled_course' AND year = '$educational_year' AND
44         semester = '$educational_semester'AND facultyID ='$f_ID'";
45         $res = mysqli_query($con, $sql);
46         $row = mysqli_fetch_assoc($res);
47         $sectionID = $row['sectionID'];
48
49     }
50
51     // fetching section id to use fill up registration table
52     $row = mysqli_fetch_assoc($res);
53     $sectionID = $row['sectionID'];
54
55 }
56

```

The image displays two identical instances of the CSVFILECONFIGURE.php file within the Visual Studio Code interface. Both instances show the same PHP code for managing student course performance and registration.

```

else{
    // fetching section id to use fill up registration table
    $row = mysqli_fetch_assoc($res);
    $sectionID = $row['sectionID'];
}

// CODE FOR FILL UP THE REGISTRATION TABLE

$sql = "INSERT INTO registration_t (sectionID,studentID)
VALUES ($sectionID,$student_id)";
$res = mysqli_query($con,$sql);

// CODE FOR FILL UP THE STUDENT COURSE PERFORMANCE TABLE

// fetching registration ID

// fetching registration ID

```

The code includes sections for inserting into the registration table and calculating GPA based on marks. It uses MySQLi for database interactions and conditional statements to determine GPA ranges.

The image shows two identical instances of the CSVFILECONFIGURE.php file open in Visual Studio Code. The code is a PHP script that calculates a student's GPA based on their marks. It includes logic for marks ranging from 75 down to 0, with corresponding GPAs of 3.0, 2.7, 2.3, 2.0, 1.7, 1.3, 1.0, and 0.0 respectively. The script also inserts data into a database table named student\_course\_performance\_t.

```

else if ($marks>=75){
    $gpa = 3;
}
else if ($marks>=70){
    $gpa = 2.7;
}
else if ($marks>=65){
    $gpa = 2.3;
}else if ($marks>=60){
    $gpa = 2;
}else if ($marks>=55){
    $gpa = 1.7;
}else if ($marks>=50){
    $gpa = 1.3;
}else if ($marks>=45){
    $gpa = 1;
}else {
    $gpa = 0;
}

// inserting data into student_course_performance_t

```

The second instance of the code shows additional database insertion logic for backlog\_data\_t, including SQL queries for inserting into the backlog table.

```

$sql = "INSERT INTO student_course_performance_t (registrationID,totalMarks)
VALUES($registrationID,$marks,$gpa)";
$res = mysqli_query($con,$sql);

$sql = "INSERT INTO backlog_data_t(sectionNUM,studentID,semester,courseID,f_
year,totalMarksObtained) VALUES
('$enrolled_section',$student_id,'$educational_semester','$enrolled_c
$f_ID,$educational_year,$marks')";

$result = mysqli_query($con, $sql);
if ($result){
    // $_SESSION['message'] = "Your data submission is successful";
}

```

```

CSVFILECONFIGURE.php - Group-Project-Repository - Visual Studio Code
File Edit Selection View Go Run ... CSVFILECONFIGURE.php - Group-Project-Repository - Visual Studio Code
EXPLORER fo.php CLO.php employee_dashboard.php CSVFILE.php CSVFILECONFIGURE.php > ...
OPEN EDITORS 2 unsaved
GROUP... 128 header("location:studentcloinfo.php");
addExam.php 129 } else {
addExamConfig.php 130 echo "Submission Failed";
answerScriptGrading.p... 131 }
background.png 132
CLO.php 133 // INSERTING DATA INTO EXAM TABLE
clochart.php 134
cloveviewinfo.php 135 // checking whether the examName and section is already there or not
composer.json 136
composer.lock 137
connect.php 138
courseOutline.css 139
courseWisePerforman... 140
createCourseOutline.p... 141
createCourseOutlineC... 142
createCourseOutlineP... 143
createpdf.php 144
CSVFILE.php 145
CSVFILECONFIGURE.p... 146
dataEntry.php 147
Ln 191, Col 1 Spaces: 4 UTF-8 CRLF PHP Go Live Prettier 9:46 AM 4/26/2023
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
CSVFILECONFIGURE.p... > OUTLINE
CSVFILECONFIGURE.php - Group-Project-Repository - Visual Studio Code
File Edit Selection View Go Run ... CSVFILECONFIGURE.php - Group-Project-Repository - Visual Studio Code
EXPLORER fo.php CLO.php employee_dashboard.php CSVFILE.php CSVFILECONFIGURE.php > ...
OPEN EDITORS 2 unsaved
GROUP... 148 $examID = $row['examID'];
addExam.php 149
addExamConfig.php 150
answerScriptGrading.p... 151
background.png 152
CLO.php 153
clochart.php 154
cloveviewinfo.php 155
composer.json 156
composer.lock 157
connect.php 158
courseOutline.css 159
courseWisePerforman... 160
createCourseOutline.p... 161
createCourseOutlineC... 162
createCourseOutlineP... 163
createpdf.php 164
CSVFILE.php 165
CSVFILECONFIGURE.p... 166
dataEntry.php 167
Ln 191, Col 1 Spaces: 4 UTF-8 CRLF PHP Go Live Prettier 9:46 AM 4/26/2023
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
CSVFILECONFIGURE.p... > OUTLINE
CSVFILECONFIGURE.php - Group-Project-Repository - Visual Studio Code
File Edit Selection View Go Run ... CSVFILECONFIGURE.php - Group-Project-Repository - Visual Studio Code
EXPLORER fo.php CLO.php employee_dashboard.php CSVFILE.php CSVFILECONFIGURE.php > ...
OPEN EDITORS 2 unsaved
GROUP... 148 $examID = $row['examID'];
addExam.php 149
addExamConfig.php 150
answerScriptGrading.p... 151
background.png 152
CLO.php 153
clochart.php 154
cloveviewinfo.php 155
composer.json 156
composer.lock 157
connect.php 158
courseOutline.css 159
courseWisePerforman... 160
createCourseOutline.p... 161
createCourseOutlineC... 162
createCourseOutlineP... 163
createpdf.php 164
CSVFILE.php 165
CSVFILECONFIGURE.p... 166
dataEntry.php 167
Ln 191, Col 1 Spaces: 4 UTF-8 CRLF PHP Go Live Prettier 9:46 AM 4/26/2023
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
CSVFILECONFIGURE.p... > OUTLINE

```

The image shows two instances of Visual Studio Code side-by-side, both displaying code files.

**Top Window (CSVFILECONFIGURE.php):**

- File Explorer:** Shows files like fo.php, CLO.php, employee\_dashboard.php, CSVFILE.php, and CSVFILECONFIGURE.php (the active editor).
- Code Editor:** Displays PHP code for inserting data into the ANSWER\_TABLE. The code includes variables like \$sql, \$con, \$marks, \$registrationID, and \$examID.
- Status Bar:** Shows line 191, column 1, and other settings like Spaces: 4, UTF-8, CRLF, PHP, Go Live, and Prettier.

**Bottom Window (spms.sql):**

- File Explorer:** Shows files like spms.sql (the active editor), studentcloconfigure.php, spiderChart.php, and school\_department\_program\_stats.php.
- Code Editor:** Displays MySQL SQL statements for creating the backlog\_data\_t table and altering the question\_t table.
- Status Bar:** Shows line 1243, column 34, and other settings like Spaces: 2, UTF-8, CRLF, SQL, Go Live, and Prettier.

## CHAPTER 5 – CONCLUSION:

In conclusion, in the student performance monitoring system project we developed some valuable features that have improved the system's functionality and usability. With the inclusion of CLOs in the database, students can now track their progress in achieving specific learning objectives through an easy-to-understand chart. Additionally, the ability to create course outlines and question banks within the system has made it easier for teachers to manage their courses and provide relevant assessments.

Furthermore, students can now download PDFs directly from the system, enabling them to access important materials at any time, from anywhere. These enhancements have made the system more user-friendly, efficient, and effective in supporting students' learning and development.

Overall, this project has achieved its goal of enhancing the student performance monitoring system and providing a more comprehensive tool for tracking and improving student performance. The features we have implemented will undoubtedly have a positive impact on students' academic success and contribute to their future achievements.

### A. PROBLEM AND SOLUTION:

#### **Analysis Phase:**

During the Analysis Phase, one of the major problems faced was the confusion around the Rich Picture and Six Element Analysis of the organizational operations since there was no data available regarding those operations. However, Faculty members and other stakeholders were interviewed in order to overcome such confusions, and information received during the interview was collected in order to get a better understanding of the system that was being developed.

#### **Designing Phase:**

Some problems were faced while creating the EERD and Relational Schema during the

Design Phase, However, constant feedbacks from the faculty were enough to overcome those issues.

#### **Implementation Phase:**

All the System Requirements were completed successfully.

Front-End Developing tools: HTML, CSS, JavaScript

Back-End Developing tools: PHP.

Database-integration: MySQL

#### **B. Additional Features and Future Development:**

In SPMS 4.0, we have already implemented features like tracing the student po and co. We have also introduced some features like creating course outline, questions bank, and evaluating exam script.

Students can see their course wise performance, course wise co mapping. Faculty and admin also can see these features in their end.

There are still a lot of features we can include in our system to make our system more useful to students. as well as faculty. Some features are mentioned below, we can add in our system in future:

- ⊕ In the system we can include a feature that enables parents and teachers to communicate with each other about student progress. This could be particularly useful for students who may need additional support outside of the classroom.
- ⊕ The system can include a feature where both students and faculty can see the students' attendance.
- ⊕ In the system we also can add a system where faculty would be able to trace the students who are going to fail the course by analyzing their mid and quiz exam. This system will be very helpful for the students as the teacher would be able to help those students by seeing their performance. We also can add a feature like faculty will get a notification that in his/her course, who are performing poorly.
- ⊕ The system could provide multilingual support to ensure that students who speak languages other than the primary language of instruction are able to fully engage with the system.

