



CSE303

DATABASE MANAGEMENT SYSTEM

PRESENTATION.

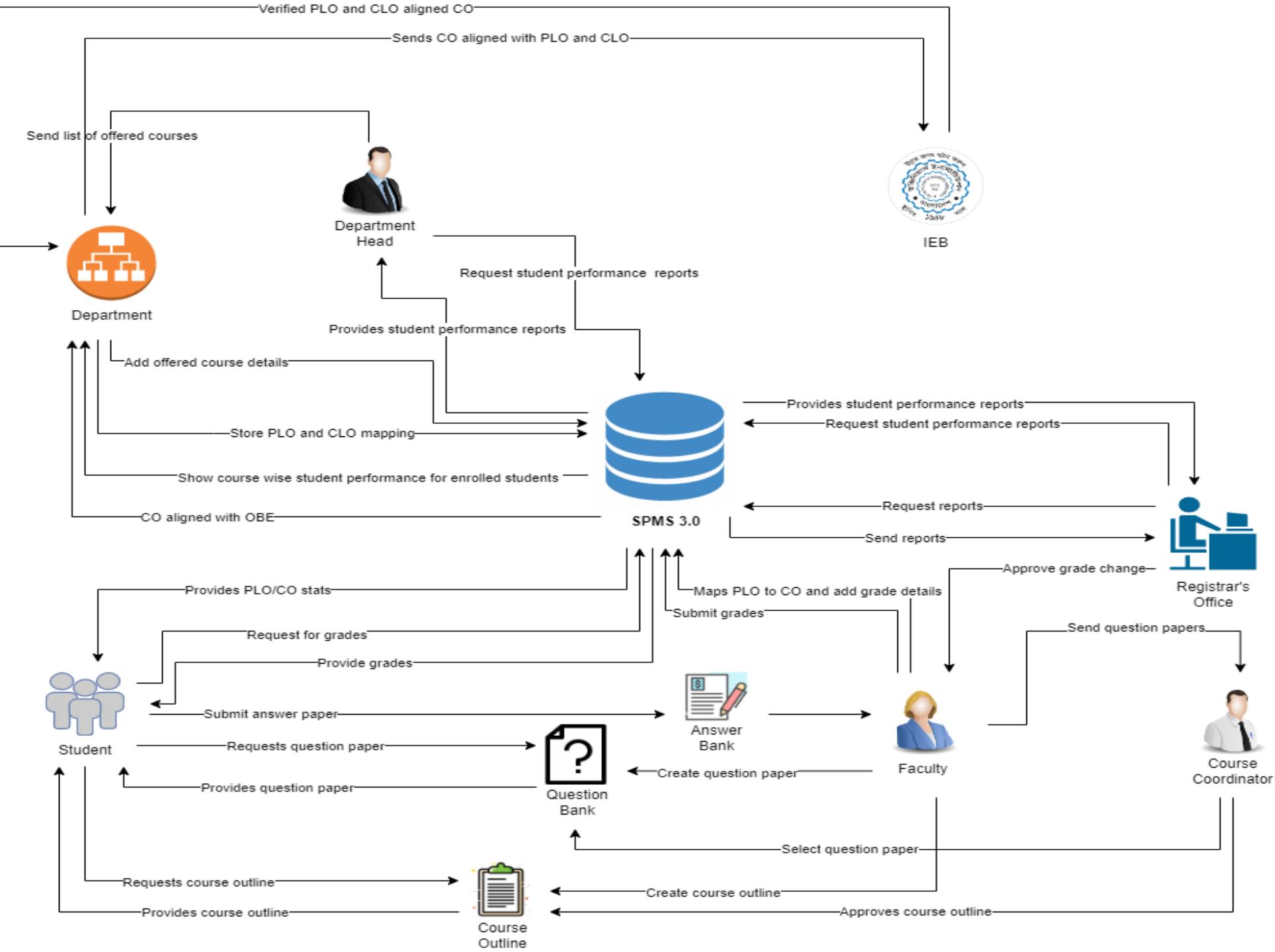
Group 4: Wall Breaker

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**(Student Performance
Monitoring System)**

RICH PICTURE (AS-IS)



SIX ELEMENT ANALYSIS (AS-IS)

Process	System Roles					
	Human	Noncompeting Hardware	Computing Hardware	Software	Database	Network & Communication
Map Course Outcomes (COs) to Program Learning Outcomes (PLOs).	<p>IEB: 1. Send verified PLO and CLO aligned CO to the Department.</p> <p>Department: 1. Received CO aligned with OBE. 2. Store PLO and CLO mapping. 3. Sends CO aligned with PLO and CLO to IEB.</p> <p>Faculty: 1. List the course material. 2. List the COs. 3. Connect course objectives to course content (COs). 4. Maps PLO to CO. 5. Map COs to specific project work, midterm, and final exam questions. 6. Using the course outline, course content, and COs, begin creating course assessment reports.</p>	<p>Pen and Paper: 1. Is utilized for recording more advanced problem-solving ideas.</p> <p>Board and Marker: 1. Is utilized for recording more advanced problem-solving ideas.</p>	<p>Computer: 1. Course Coordinators create softcopies of the Course Outcomes (COs) of the particular courses in which they excel using computers.</p> <p>Printer: 1. To print out physical copies of Course Outcomes (COs).</p>	<p>MS Word: 1. Course coordinators create detailed course outlines in MS Word and course evaluation reports that map course outcomes (COs) to program learning outcomes (PLOs).</p> <p>Excel Sheet: 1. The course makes use of an Excel sheet. Coordinators will link particular midterm, final exam, and project works to particular course outcomes.</p>		<p>Internal and Email: 1. To connect with IEB or other stakeholders about crucial issues pertaining to the mapping of course outcomes to program learning outcomes, utilize the internet and email.</p> <p>Others: Use telephones or other physical contact to have essential conversations with stakeholders about the mapping course. Outcomes to Program Learning Outcomes.</p>

SIX ELEMENT ANALYSIS (AS-IS)

Record Student Course Performance Data.	Faculty: 1. Assign assignments and project work. 2. Complete tests and quizzes all semester long. 3. Keep track of each student's evaluation data for each assessment (tests, assignments, projects, and exams) throughout the semester on both digital and paper copies. 4. Keep track of the scores for every particular question on the midterm and final exams. 5. Determine the combined scores for all assignments, tests, midterms, and finals, then assign final grades to each student in a particular course. 6. Convert midterm and final marks. 7. Enter all of a student's grades for a course into a marksheet. 8. Grade the student. 9. Enter final grades for students on SPMS. 10. Send the Department the Marksheets. 11. Deliver the Marksheets to the Office of the Registrar.	Pen and Paper: 1. Record evaluation information and marks in tabular format using a pen and paper (hardcopies).	Computer: 1. Computers are used to create softcopies of all assessment data records for certain courses.	Excel Sheet: 1. Fill out Excel sheets with the appropriate assessment information and final grades. SPMS: 1. Upload students' final grades to SPMS so that they can view them or have them viewed by the registrar's office.	Department Storage: 1. The department office and registrar's office may save copies of student assessment data and final grades for future reference. SPMS Database: 1. Information on student grades is kept and maintained by SPMS using a database server.	Internet: 1. To communicate with IRAS and store student final grades, one uses the Internet.
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SIX ELEMENT ANALYSIS (AS-IS)

View Course Reports over a given time-period for inspection and analysis of student performance trends.	Faculty: a) <u>Take</u> Assessments for specific courses. b) <u>Send</u> Assessment report to the Head of the Department. c) Announce a date for checking students' performance on the Assessments. Students: a) Check their performance in the given Assignments b) If There is any Query then inform faculty. Head of the Department: a) Check students' Performance reports for the course. b) Send a Performance report to the CITS. CITS: a) <u>Preserve</u> the performance report in the database.	Pen And Paper: a) Write Down the record of the course report. Room: a) if there is any query in the performance report then come to a specific room to check.	Computer: a) Computer used to record the performance report. b) Students may sign in to Google Classroom. Printer: a) may be printed a copy sent to the Department Head And CITS. Google ClassRoom: Faculty may use Google Classroom to Announce the date of check report. Mobile	MS Word: a) <u>Record</u> the Analysis report in Word. Excel Sheet: Mark All Individual <u>report</u> , Overall report And make a Spider web of Total Analysis report.	Department Storage: Department Storage is being used to record the analysis for comparison to previous semesters.	Internet: Faculty use the internet to upload notices for check reports in google classroom.
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SIX ELEMENT ANALYSIS (AS-IS)

<p>Produce OBE Marksheets & Bloom's Taxonomy Report.</p>	<p>Faculty:</p> <ol style="list-style-type: none"> Calculate the total marks received for each CO by calculating the marks received for questions and/or other Assessments mapped to CO's. Calculate the total percentages received for each COs on the <u>OBE Marksheets</u>. Declare if a student has achieved a specific CO (if the CO percentage is greater than or equal to 40). Declare if a student has received a PLO for a related CO. Make a table giving the verdict and analysis of how many students were able to receive a certain CO and PLO and other documents containing necessary information and data. <u>Design Course</u> Assessment Report using Course Outline, Course Content, and Course Outcomes. Send the final version of the <u>OBE Marksheets</u> to the Dept. Office. <p>Department Office:</p> <ol style="list-style-type: none"> Send the <u>OBE</u> mark sheet, Course Assessment Report, and others to the Registrar's Office. Store the <u>OBE</u> Marksheets and Course Assessment Report in the department. <p>Registrar's Office:</p> <ol style="list-style-type: none"> Stores the <u>OBE</u> Marksheets and Course Assessment Reports and other documents and reports in the Registrar's Office. 	<p>Pen and Paper</p> <ol style="list-style-type: none"> <u>OBE</u> mark sheet Stored in hardcopy. Additional markings may be made to further separate between students 	<p>Computer/Phone:</p> <ol style="list-style-type: none"> Uses computers to make softcopies of the <u>OBE</u> Marksheets and Course Assessment Reports. Printer: <ol style="list-style-type: none"> Print hardcopies of final versions of the OBE Marksheets and Course Assessment Reports. 	<p>Code d Excel sheet:</p> <ol style="list-style-type: none"> Faculty/ course Coordinator uses automated excel sheets to calculate the student's success/ failure in Achieving PLOs. <p>MS Word:</p> <ol style="list-style-type: none"> Used to make Bloom's taxonomy report softcopies. 	<p>Department Storage:</p> <ol style="list-style-type: none"> Records of students' assessment data and final grades will be saved in the department for future reference. <p>Registrar's Office Storage:</p> <ol style="list-style-type: none"> <u>OBE</u> Marksheets, Course Assessment Reports, and other documents submitted by the department are stored for future reference. 	<p>Internet/Mail:</p> <ol style="list-style-type: none"> An Online platform (such as <u>Google Sheets</u>) may be used for processing the OBE assessment data spreadsheet and Bloom's taxonomy datasheet.
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SIX ELEMENT ANALYSIS (AS-IS)

View Records OBE Marksheets, Course.	<p>Faculty: <u>a)Make</u> an individual OBE mark sheet for Students.</p> <p><u>b)Request</u> to CITS to Upload in SPMS.</p> <p>Student:</p> <ul style="list-style-type: none">a) Login to IRAS.<u>b)Request</u> IRASH to get the report of OBE marksheet.c) get marksheet <p>SPMS:</p> <ul style="list-style-type: none">a)<u>SPMS</u> got a request to upload an OBE marksheet.b) Upload Marksheetsc) Got a request from a student to see their marksheet report.c)Upload Specific marksheet to the student.	<p>Pen and paper: Faculty use to note specific students and also mark for the out performers within the <u>Students</u>.</p>	<p>Computer:</p> <p><u>a)Students</u> send request through Computer Using his ID.</p> <p>Mobile: Students send requests through Mobile using his ID.</p> <p>Printer: Faculty may print out the whole performance Coy and discuss in the <u>Classroom</u></p>	<p>MS Word: Faculty Record report in MSW Word.</p> <p>Excel Sheet: For individual performance and mapping ousting performers.</p> <p>Web Browser: Students or faculty both have to go through the web browser to send requests to SPMS.</p> <p>PDF Viewer: when Students send requests to see their marks sheet, The CITS send a PDF copy of mark Sheet.</p>	<p>Department Storage: Department Storage is being used to record the analysis for comparison to previous semesters.</p> <p>SPMSDatabase : SPMS preserve all the Data to the Database so that anytime any student can ask to see his <u>mark</u> Sheet.</p>	<p>Internet : To use a Web Browser for Sending request Internet is must needed.</p>
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SIX ELEMENT ANALYSIS (AS-IS)

<p>Request for Question Bank files.</p> <p>Faculty: 1. prepare question papers. 2. Give away the question paper to the course coordinator for selection. 3. Take exams from returned Question papers. 4. Got Script from Students 5. Check exam scripts of students.</p> <p>Course Coordinators:</p> <p>1. Receive question papers from faculty. 2. Moderate question paper 3. Send selected question paper for exam.</p> <p>Students:</p> <p>1. Ask for exam's question papers. 2. Perform exam 3. Submit exam's script to faculty.</p>	<p>Pen & Paper: Students Submit their Previous year question.</p>	<p>Computer: If Exam held on Online then the <u>faculty</u>. <u>Student</u> both use Computer</p> <p>Mobile: a) Students may use Mobile to Attaining in the Exam. b) if the exam is physical then after exam Faculty take a Snap the Question s and upload in the Google classroom for making a Question bank.</p> <p>Printer: If Exam held on Physically then faculty print out hard Copy of the Question.</p>	<p>Web Browser: Students or faculty both have to go through the web browser to attain an Exam.</p> <p>PDF Viewer: If it is in online Then the faculty upload a pdf file in the classroom and students have to access it in the PDF file.</p>	<p>Google Drive: Exam Question will be stored in Google Drive of the Classroom.</p>	<p>Internet : To have Access in Google Classroom Student and teacher Both need internet.</p>
<p>Request for Course Outlines.</p> <p>Faculty: 1. Generate course outline. 2. Send the course outline to the course coordinator.</p> <p>Course Coordinators:</p> <p>1. Authorize course outline.</p> <p>Students:</p> <p>1. Seek for course outline. 2. Receive course outline.</p>	<p>Pen & Paper:</p> <p>a) Faculty Send a hard copy of outlines to the Course coordinator. b) <u>Students</u> receive a hard copy of the Approved course outline from the faculty.</p>	<p>Computer: Students may use computers to get their course outlines in the Google Classroom.</p> <p>Printer: Faculty may give Student outline hardcopies.</p>	<p>Web Browser: Students or faculty both have to go through the web browser to Upload the course outline as PDF in online Google Classroom.</p> <p>PDF Viewer: If it is in online Then the faculty upload a pdf file in the classroom and students have to access it in the PDF file.</p>	<p>Google Drive: Outlines will be stored in Google Drive of the Classroom.</p>	<p>Internet : To have Access in Google Classroom Student and teacher Both need internet.</p>

PROCESS Diagram (As-Is)

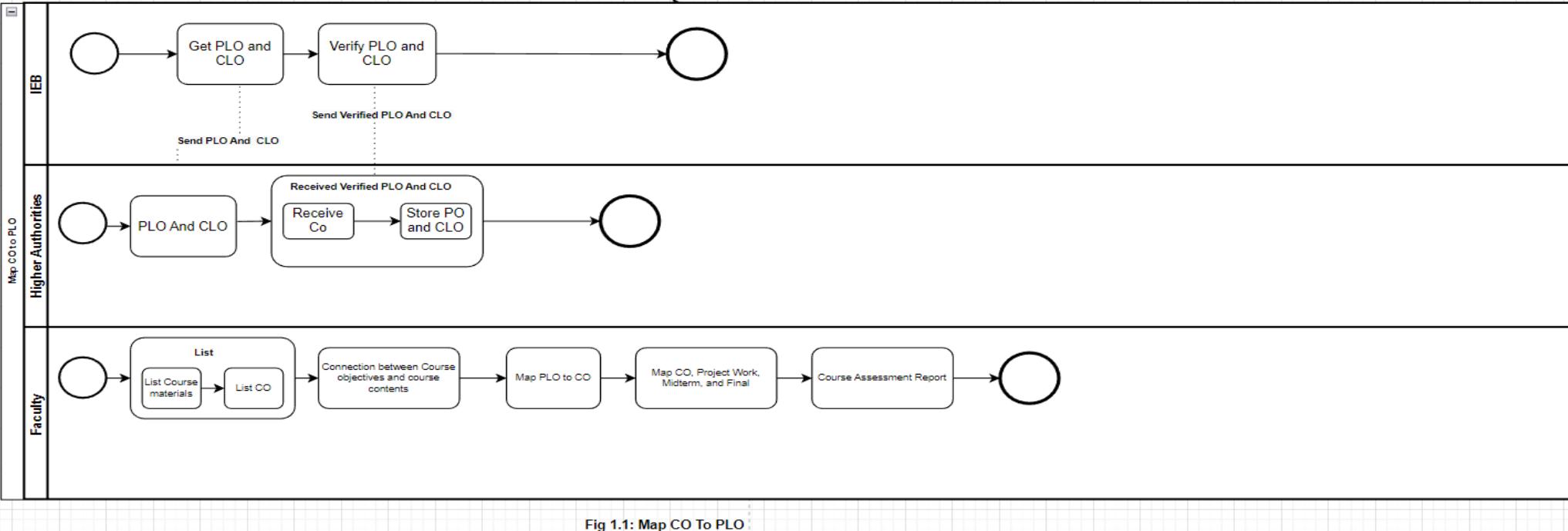


Fig 1.1: Map CO To PLO

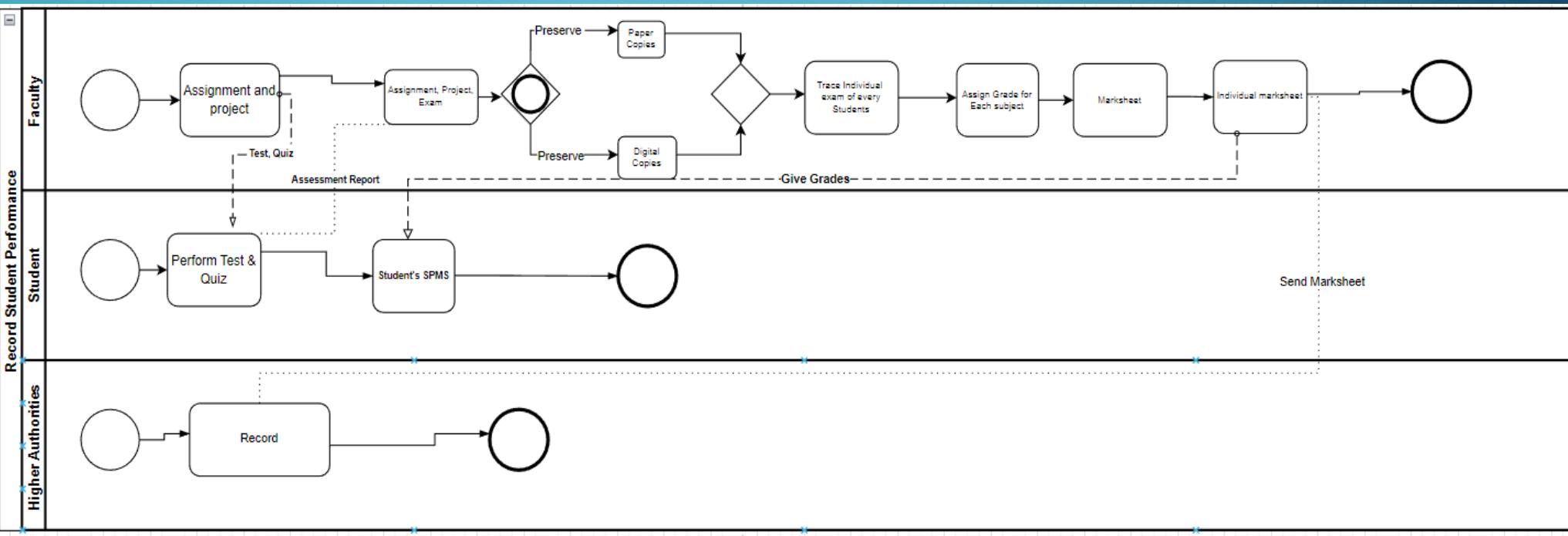


Fig 1.2: Record Student Performance

PROCESS Diagram (As-Is)

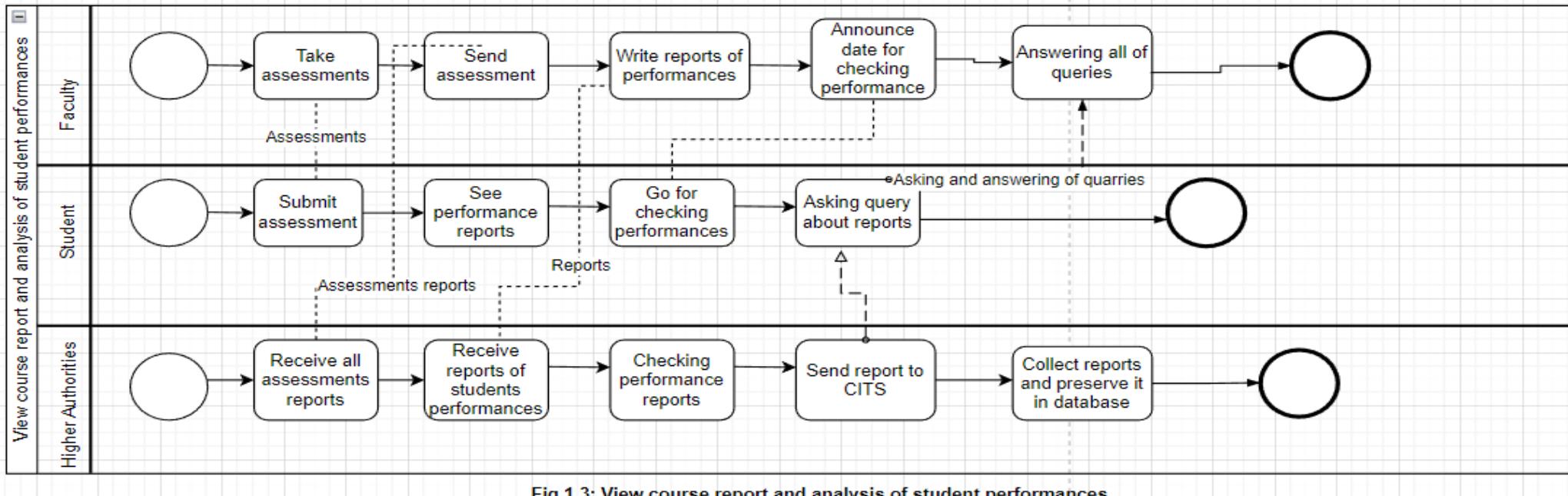


Fig 1.3: View course report and analysis of student performances

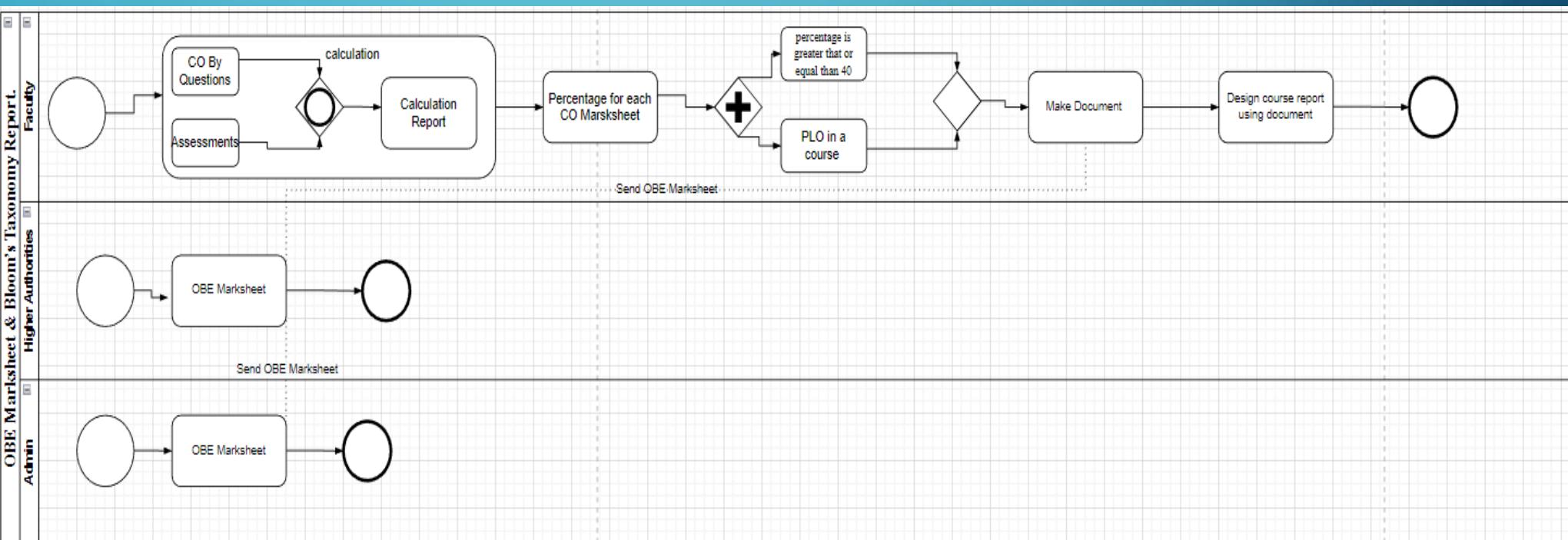


fig 1.4: Produce OBE Marksheet & Bloom's Taxonomy Report.

PROCESS Diagram (As-Is)

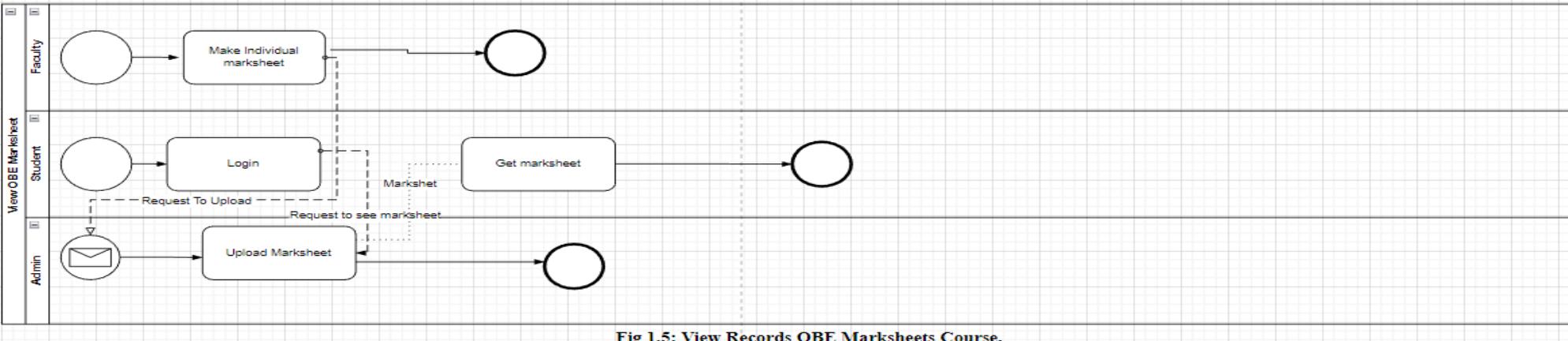


Fig 1.5: View Records OBE Marksheets Course.

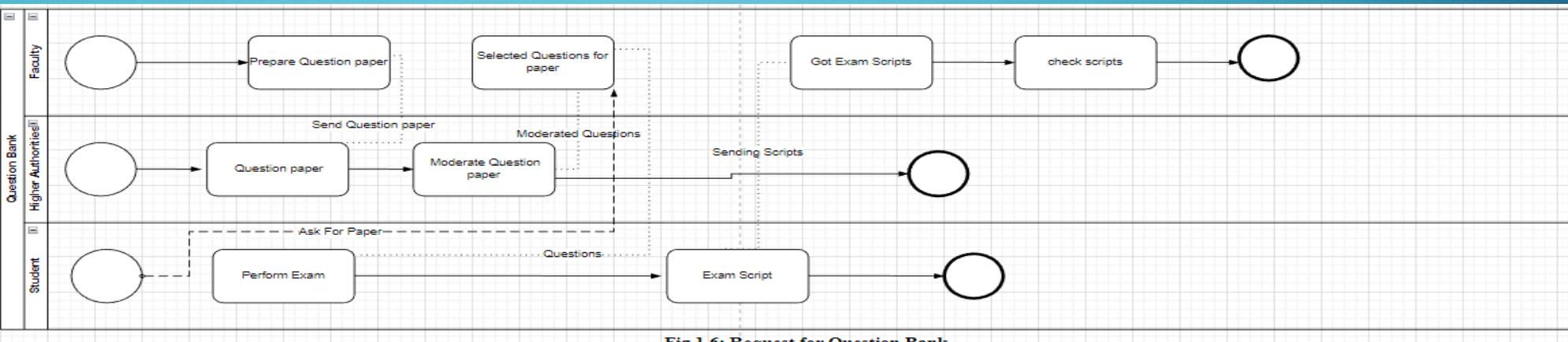


Fig 1.6: Request for Question Bank.

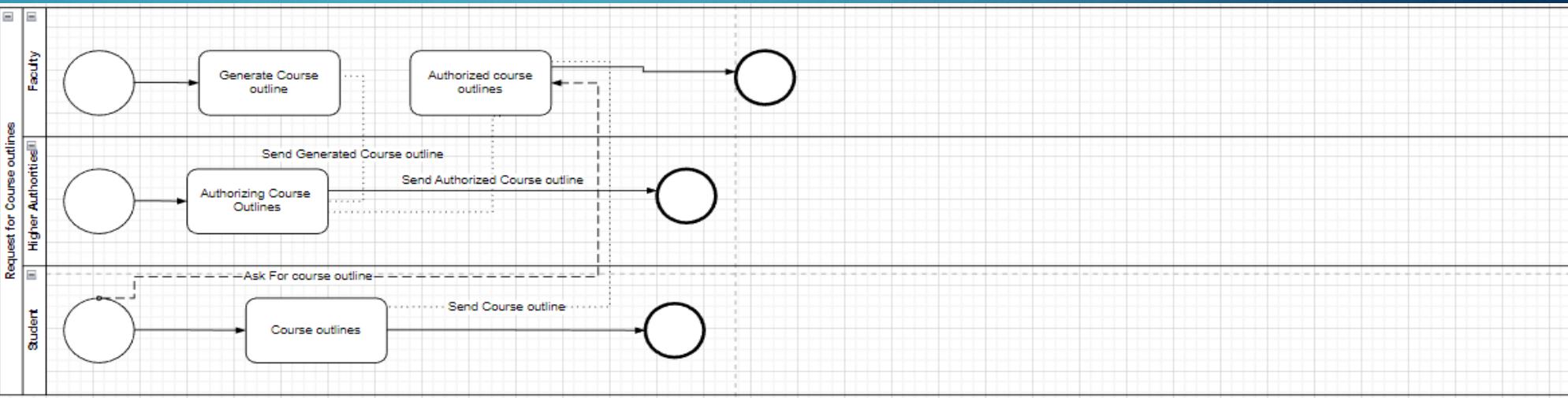


Fig 1.7: Request for Course Outline.

Problem Analysis

Process Name	Stakeholder	<u>Concerns</u> (Problem)	<u>Analysis</u> (Reason of the Problem)	Proposed Solution
Update the PLO's initial mapping	1. Department	The department has to manually map each course under the present system using paper and pen. Therefore, the department must manually prepare the mapping again if updates are necessary. This is a serious problem.	The department must create the mapping manually under the current system, which takes time, adds more labor, and does not make the most use of available resources.	Therefore, the following are the methods to address this issue: 1. A weight or level will be given to each PLO and course. 2. The PLO and Courses are mapped based on this weight/level. The resulting matrix would be used to perform the initial mapping. 3. Depending on how many courses and courses that have PLO, the admin may quickly adjust the mapping.
Reviewing scripts and creating grade sheets.	1. Student 2. Faculty 3. Department	1. Answer scripts are manually reviewed and marked by specific faculty members. 2. The grade sheets' marks must be manually calculated, tabulated, and graded by the members.	Given the number of students, manually reviewing answer scripts takes a lot of time, and then there's the manual creation of grade sheets. The likelihood of error while checking the scripts rises as a result.	These problems can be resolved through automation: 1. The system will automatically check scripts and provide the mark sheet for exams with multiple-choice questions. If the exam is in quiz format, for example, our system shows the MCQ marks and also provides the answer scripts. 2. For tests of this nature, faculty members must hand check, mark, and grade the answer sheets. However, the system creates the grade sheet after the marks are submitted. The system will provide the grades and marks to the students.

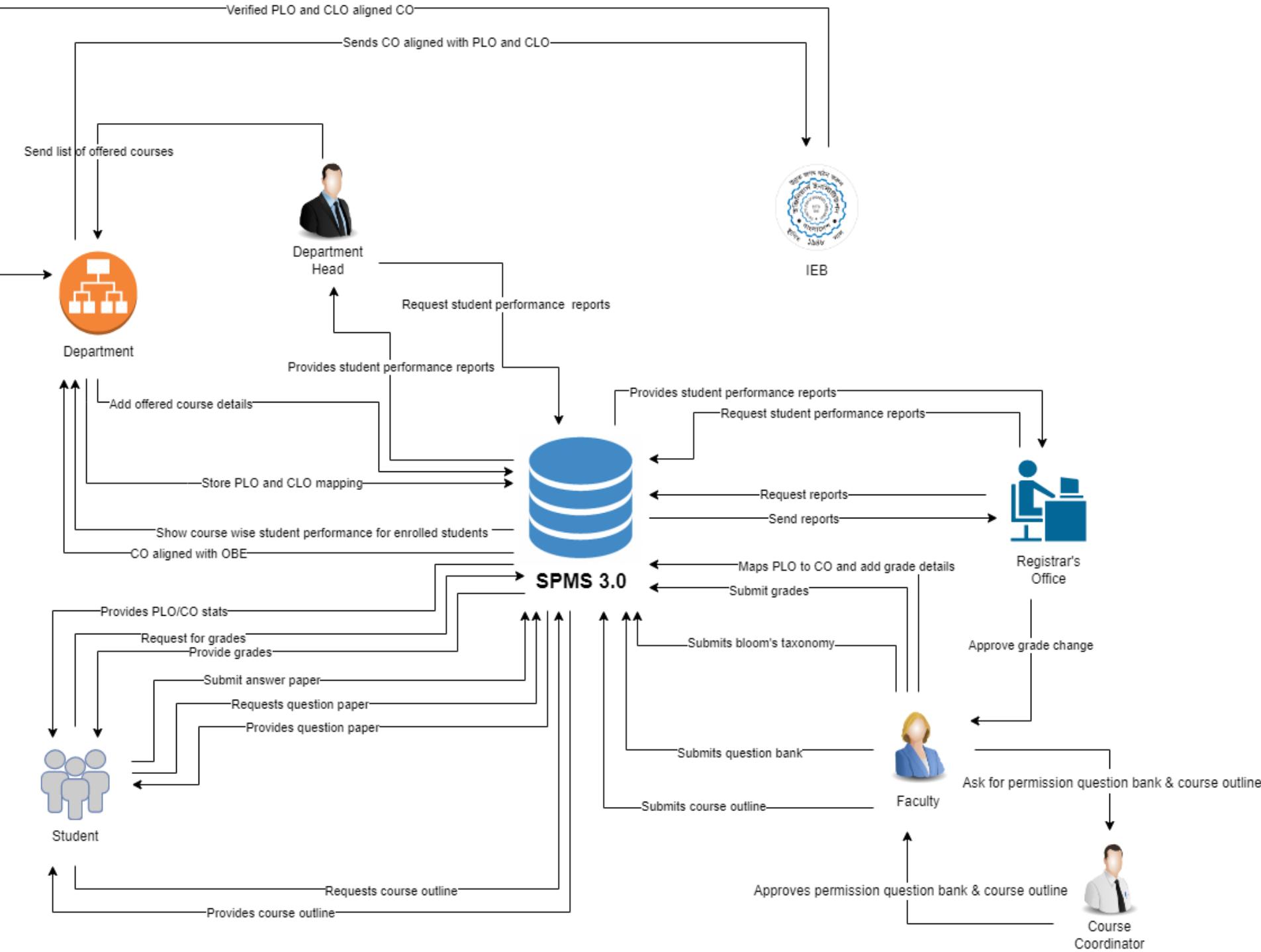
Problem Analysis

Automated mapping to prepare for a particular course preparation for course assessment.	1. Faculty	<p>It takes time and won't always be consistent for faculty to base their course preparation on the prior PLO or first mapping of the PLO. They have to keep track of how many PLOs they are mapping when mapping PLO and CO, which can be difficult and cause other issues.</p>	<p>The faculty must manually construct the mappings under the current system, which increases the likelihood of mistakes and issues when they map PLO and CO.</p>	<p>Our system will have predefined PLO labels and course labels to address this issue. If the faculty is happy with the suggested number of CO and assessments, the system will generate a table showing how the CO and assessments are mapped out for them. (They may update the mappings if they are not happy.)</p>
When creating the test, make suggestions for questions from the question bank	1. Faculty members.	<p>Because the faculty must constantly manually map the COs to the questions and construct the question paper, designing questions takes more time and effort.</p>	<p>Because it is not possible to effectively recycle all known prior question papers, the question papers are thrown away after an exam. The professors don't have a binder with former exam papers or an exam history.</p>	<p>All verified question papers will be saved in our system as soft copies that the faculty can access when creating new tests. For instance, it will be advised to look through the exam history of the midterm papers for that course if a faculty is about to create a midterm question paper. In this manner, the time and effort needed to design a paper are both decreased.</p>

Problem Analysis

Improvement report	Storage	<p>2. Faculty members must find the lowest percentage for each PLO a student has for all PLOs after personally checking the proportion.</p> <p>3. Reports must be created from the data.</p>	<p>report to be transferred from SPMS to the faculty.</p> <p>Additionally, faculty members are more likely to make mistakes while determining the lowest proportion. The instructor may unintentionally enter some incorrect data when assembling the information.</p> <p>Furthermore, since each semester will be subject to change depending on the students' performance, it is needlessly difficult to pinpoint issues and find solutions.</p>	<ol style="list-style-type: none">1. A graph showing the number of students enrolled in each department over a given time frame/number of semesters.2. A course-wise student performance trend for a given time period/semester based on GPA.3. Student performance trends for a certain time period/semester based on instructors, using GPA.4. Trend in student performance for a selected subject, according to the instructor, over a given time frame/semester.5. The lowest percentage of each PLO for each student and the PLO percentage relating to the particular course. Describe potential fixes or ideas for enhancing the kids' performance.6. A comparison of the proportion of PLO attempts with the percentage of PLOs that were successful
Check question difficulties level	1. Faculty 2. Department 3. Student	With the current system, the department has no scope to check the difficulty level of the exam questions. As a faculty is preparing the course planning, they must know the ques level when they are making it.	In the current system, the department has to come up with a scope to check the difficulty level of the questions. But there is no implemented scope to check this in the SPMS system.	As such, these are the ways to combat this problem: <ol style="list-style-type: none">1. Bloom's Taxonomy feature has to be implemented here.2. The faculty member must check the question difficulty level while they were making the questions.3. Also graph displaying the level of the questions by following the keywords of the questions.

Rich Picture (To-Be)



Six Element (To-Be)

Process	System Roles					
	Human	Non_computing Hardware	Computing Hardware	Software	Database	Network & Communication
Review and update the Initial Mapping of PLO's (Course-wise)	<p>Department:</p> <ol style="list-style-type: none"> 1. Department must enter the system's website to map PLO and CLO aligned with CO. 2. Click on mapping to map and then a new table is generated and shown. 3. The tables contain the lists of all courses and PLOs. It also shows how a PLO can be mapped to various courses as well as how many PLOs can be mapped with a certain course. 4. The PLOs and courses will have labels. The PLOs will be shown based on the level that will help the department to identify PLO mapping. 5. Then the department can store it in our system database through a click. 	<p>Pen & Paper: PLOs and the courses are mapped by using pen and paper.</p>	<p>Computer: Computer is used for entering our website and updating the PLO and course mapping.</p>	<p>SPMS 3.0: OBE 2.0 is required to update PLO and CO mapping.</p>	<p>SPMS 3.0 Database (Unsure): The mappings of PLOs and COs are stored here.</p>	<p>Internet: It is an online website. It is required to upload the PLO and course planning.</p>

Six Element (To-Be)

Course Progress	Faculty:	Pen & Paper:	Computer / Laptop/ Smartphone:	Internet Browser:	SPMS	Internet:
	<ol style="list-style-type: none">1. The faculty logs in successfully using ID and password.2. Goes to the question paper creation section.3. Designates an exam type as well as dictates the total marks.4. Sets question numbers.	Some questions may have to be answered in a paper and scanned for upload. Rough work may be done.	Both the students and the faculty need devices to conduct the examination successfully.	Suitable internet browsers for website navigation such as Google Chrome, Mozilla Firefox, Safari etc.	3.0 Database: Used for accessing the SPMS 3.0 software and database by both students and faculty members.	:

Six Element (To-Be)

Make grade sheets after checking Answer Script	<p>Faculty:</p> <p>1. The faculty has to input the answers into the system and check script as well as mark accordingly. For example, the website will show the marks and answers for the MCQs in a quiz.</p> <p>2. The system composes mark sheets in excel files which the faculty collects.</p> <p>Student:</p> <p>1. Students can look over their marks and answer scripts directly on the website.</p> <p>2. They can detect their grade on the website.</p>	<p>Paper:</p> <p>When the faculty has to print the mark sheets and grade sheets, he/she uses paper.</p>	<p>Computer/Laptop:</p> <p>In the purpose of logging into the website for checking the marks and grades by both the students and faculty members.</p> <p>Printer:</p> <p>For printing the necessary documents such as mark sheets, grade sheets etc.</p>	<p>SPMS 3.0:</p> <p>Requisite for examining answer scripts, marks and grade sheets.</p>	<p>SPMS 3.0 Database :</p> <p>Requisite for storing answer scripts, marks and grade sheets.</p>	<p>To access the SPMS 3.0 software and database, it is used by both the students and faculty members.</p>
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Six Element (To-Be)

Mapping a specific course automatically and prepare the course assessment Planning	<p>Faculty:</p> <ol style="list-style-type: none">1. The initial mapping of PLO and course is already done by the department. Faculty members <u>have to</u> enter the website first and then log in with their IDs.2. They can view their assigned course and the PLOs for that course that are suggested by the department.3. If a report is available, the faculty can view the CQI report. If it is <u>necessary</u> then the faculty members can also update the PLO mapping.4 System will provide the faculty with a few suggestions. For example, the number of course outcomes and PLO with the label wise courses, the specific PLOs, the number of assessments etc. If the faculty members want to change <u>something</u> then they have to select the number of CO and map that CO with PLO.5. Designs a specific question in an alike pattern by browsing through the previous papers of the almost identical types of <u>exam</u>.6. Set out the marking for that question.7. If it is needed then make another question by using the same procedures 4-6.8. Clicks on the "Save" option and successfully saves the paper as usual.9. In addition, include further information regarding the exam. For instance, the duration topics etc. <p>Student:</p> <ol style="list-style-type: none">1. The student logs into the website by successfully using ID and password.2. Clicks on the <u>exam</u> section for the exam history and the upcoming exam announcements for all courses the student is enrolled in during the registration of that ongoing semester.3. They can learn about details of other exams and the syllabus by clicking upcoming exams options.	<p>Stationary:</p> <p>Paper is used for printing the necessary instructions for the course outline and assessments planning as CO and PLO based details.</p> <p>Necessary tools such as calculator, ruler, pencil, eraser etc. is needed for solving all questions and writing them.</p>	<p>Computer:</p> <p>For logging into our website and adopting the PLO and CO mapping assessment and course outcome mapping etc.</p> <p>Operating System:</p> <p>The user may use any OS such as Windows, Mac, Linux etc.</p>	<p>SPMS 3.0:</p> <p><u>SPMS 3.0</u> is needed for updating the PLO and CO mapping, assessment and course outcome mapping etc.</p>	<p>SPMS 3.0 Database:</p> <p>The mappings of PLOs and COs are reserved here.</p>	<p>Internet:</p> <p>The internet is required to update the PLO and CO mapping and also the assessment planning.</p>
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Six Element (To-Be)

Update student enrollment information in SPMS	<p>Registrar Office:</p> <ol style="list-style-type: none"> 1. SPMS 3.0 gives the notice of updating the student information to the registrar office. 2. The updated enrollment report for the student is submitted. <p>Higher Authority (Imperium):</p> <ol style="list-style-type: none"> 1. Requests to access the student enrollment report. 2. View the student enrollment report in the form of a graph. 	<p>Paper: Used for printing necessary documents.</p> <p>Pen: Used for writing something on the report.</p>	<p>Computer: Used for logging to the website and conducting respective tasks by higher authority and registrar office members.</p> <p>Database Server: Receiving data from the registrar office as well as sending data to them in order to store or update information into the database.</p>	<p>SPMS 3.0: Used for updating the student enrollment information.</p> <p>Operating System: The user may use any OS such as Windows, Mac, Linux etc.</p>	<p>SPMS 3.0 Database: The updated student enrollment information is stored here.</p>	<p>Internet: To access the SPMS 3.0 software and the database, the registrar office personnel and higher authority use the internet.</p>
Generate Continuous Quality Improvement Report	<p>Faculty:</p> <ol style="list-style-type: none"> 1. Launch the website first. 2. Find and select the desired course. 3. The system will present all activities upon clicking the student performance option. 4. The CQI report button will display PLO percentage upon click. 5. Check if a student falls below a certain PLO (soft copy) on that exam section. 6. Give feedback via rating on that specific exam. 	<p>Paper: <u>When a</u> faculty wants to print any types of documents then the paper is being used.</p>	<p>Computer: Computer is used by both the students and faculty members to log into the website and generate the report.</p> <p>Database Server: The faculty has access to the database where they can store or update the information into the database.</p>	<p>SPMS 3.0: The report has originated through the system.</p> <p>Operating System: The user may use any OS such as Windows, Mac, Linux etc.</p>	<p>SPMS 3.0 Database: The database is used for the purpose of storing the updated report.</p>	<p>Internet: Used by the faculty members to access the SPMS 3.0 software and database.</p>

PROCESS Diagram (To-Be)

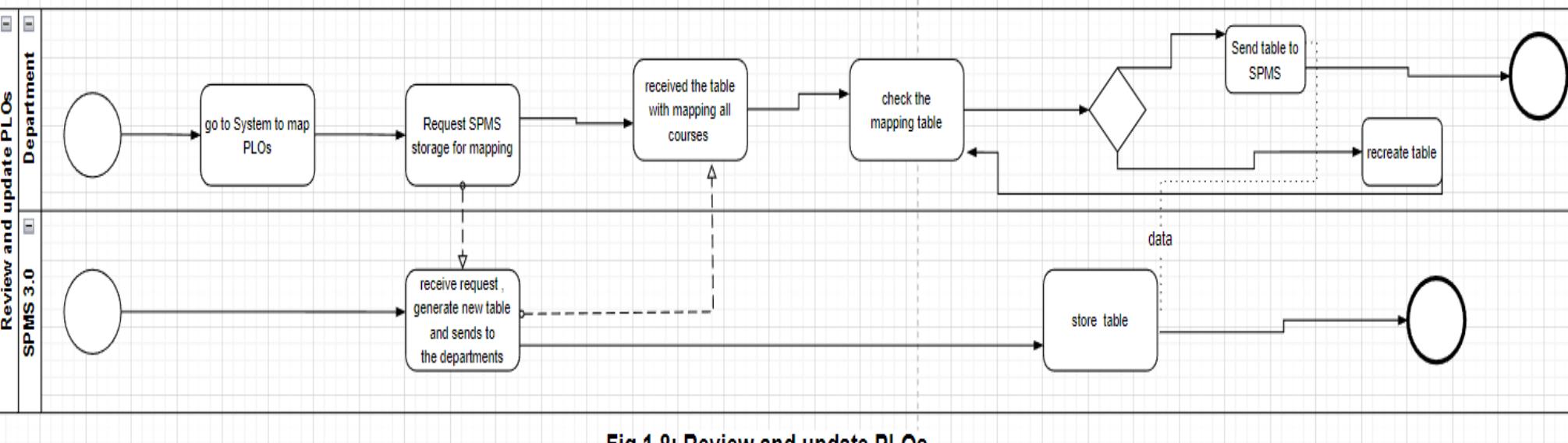


Fig 1.8: Review and update PLOs

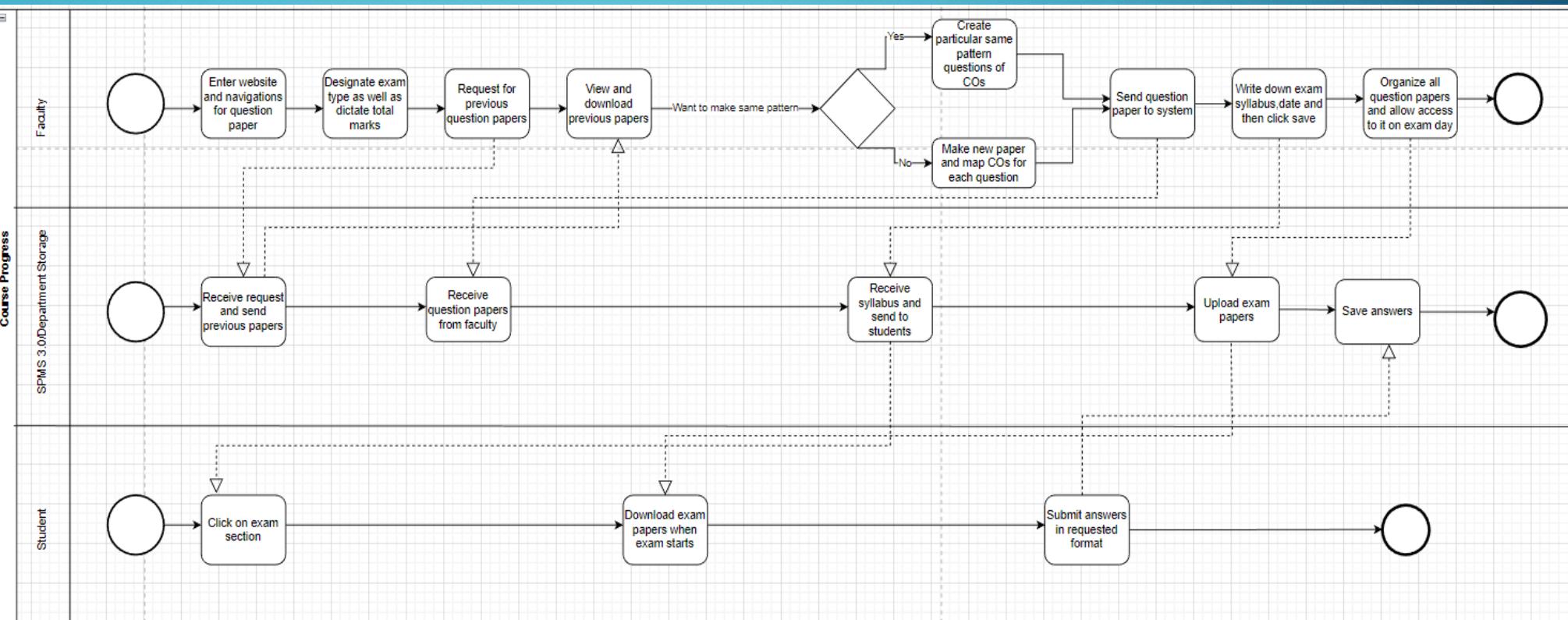


Fig 1.9: Course Progress

PROCESS Diagram (To-Be)

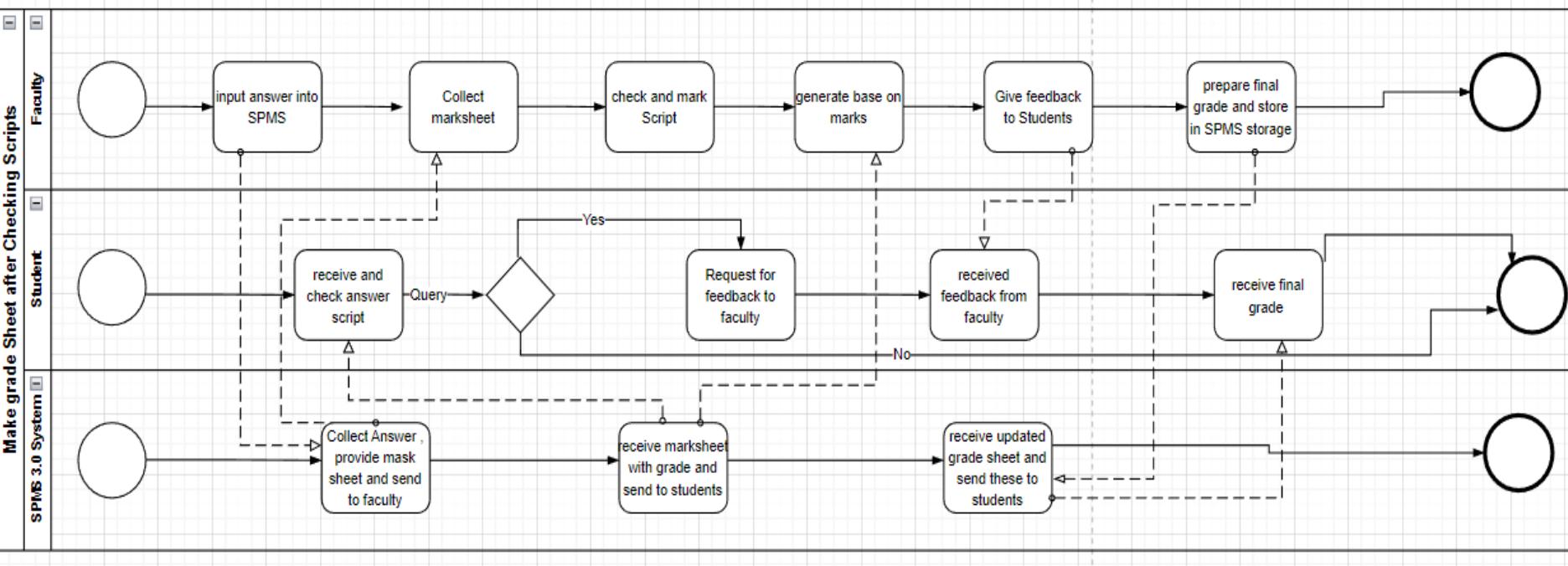


Fig 1.10: Make grade Sheet after Checking Scripts

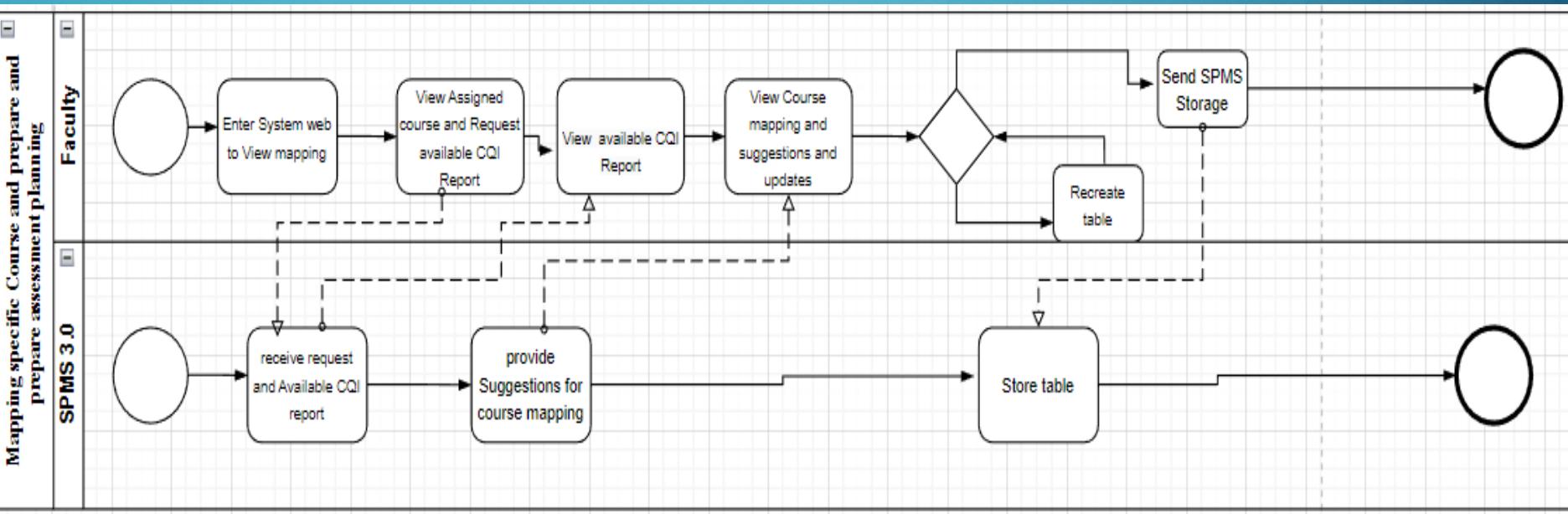


Fig 1.11: Mapping specific Course and prepare and prepare assessment planning

PROCESS Diagram (To-Be)

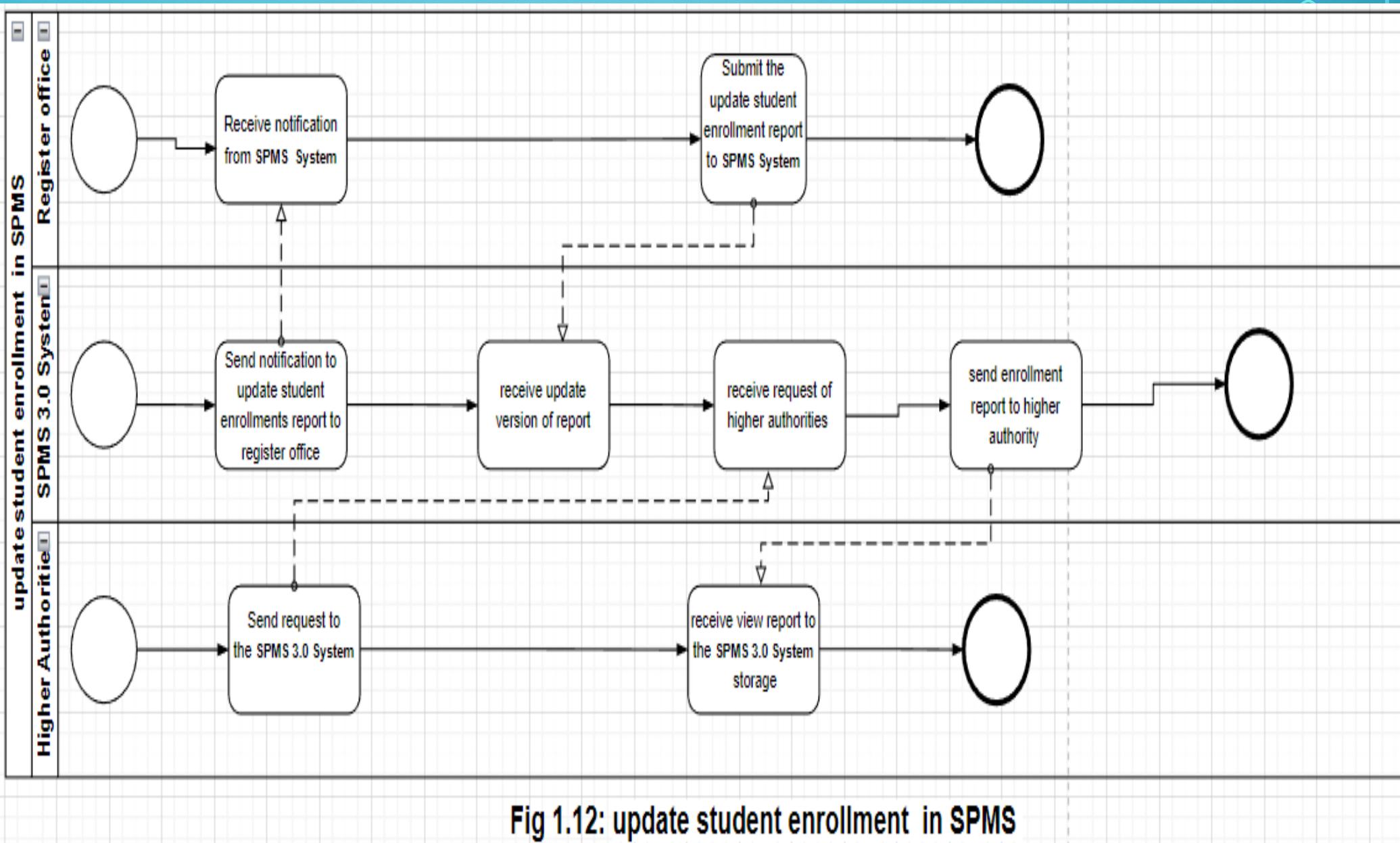


Fig 1.12: update student enrollment in SPMS

PROCESS Diagram (To-Be)

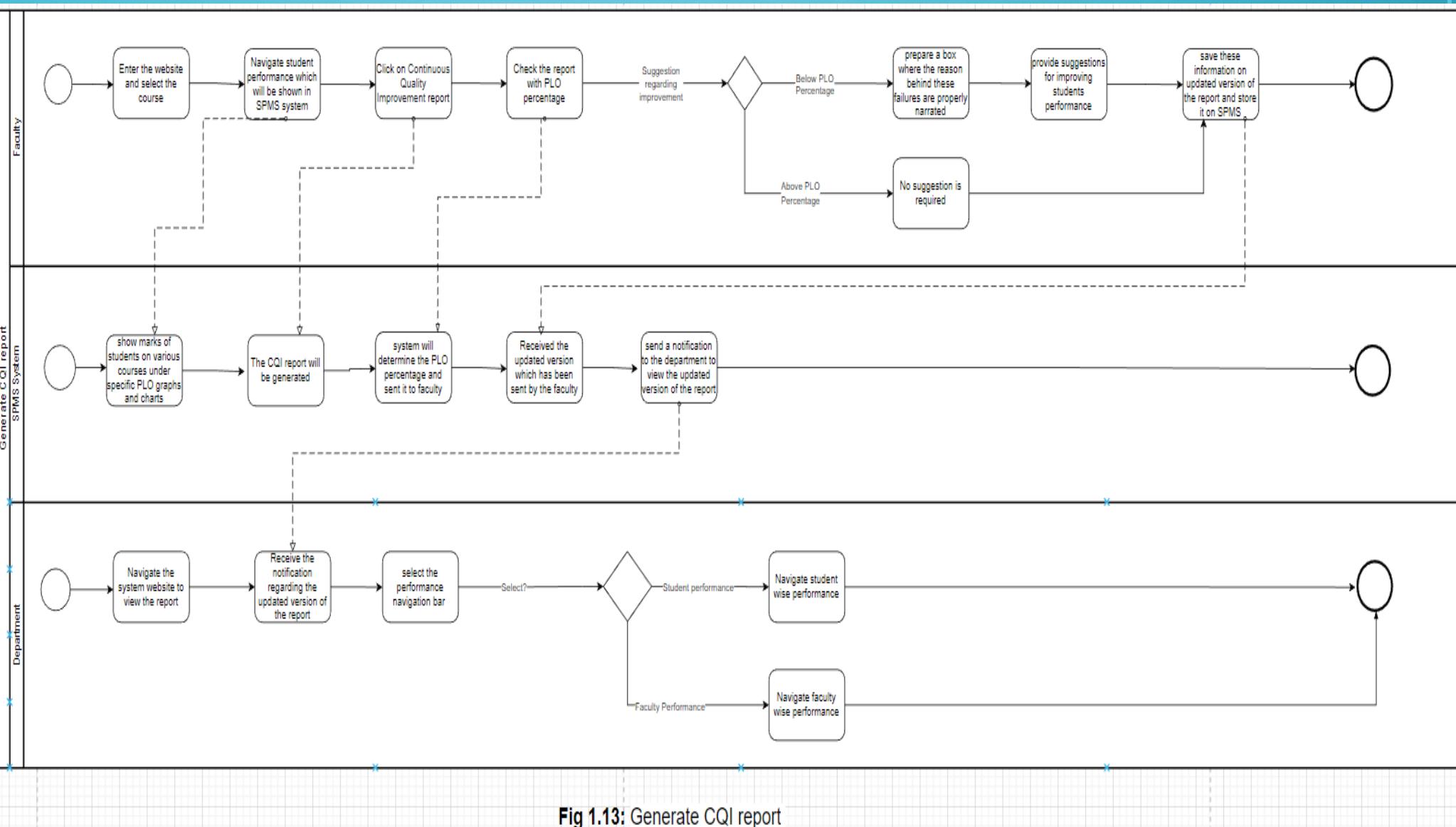


Fig 1.13: Generate CQI report

Entity Relationship Diagram

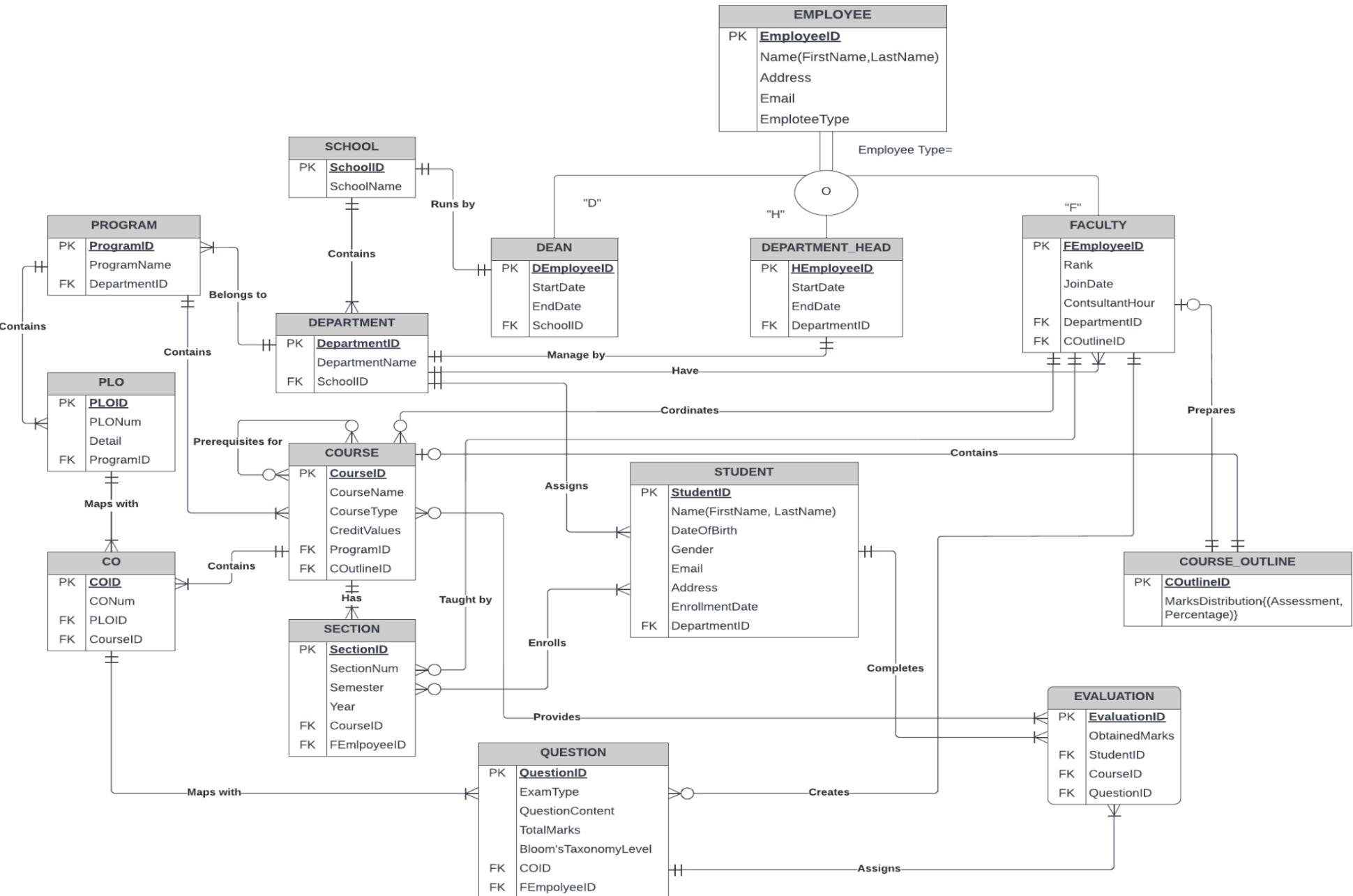


Figure : Entity relationship diagram

Entity Relationship Diagram To Relational Schema

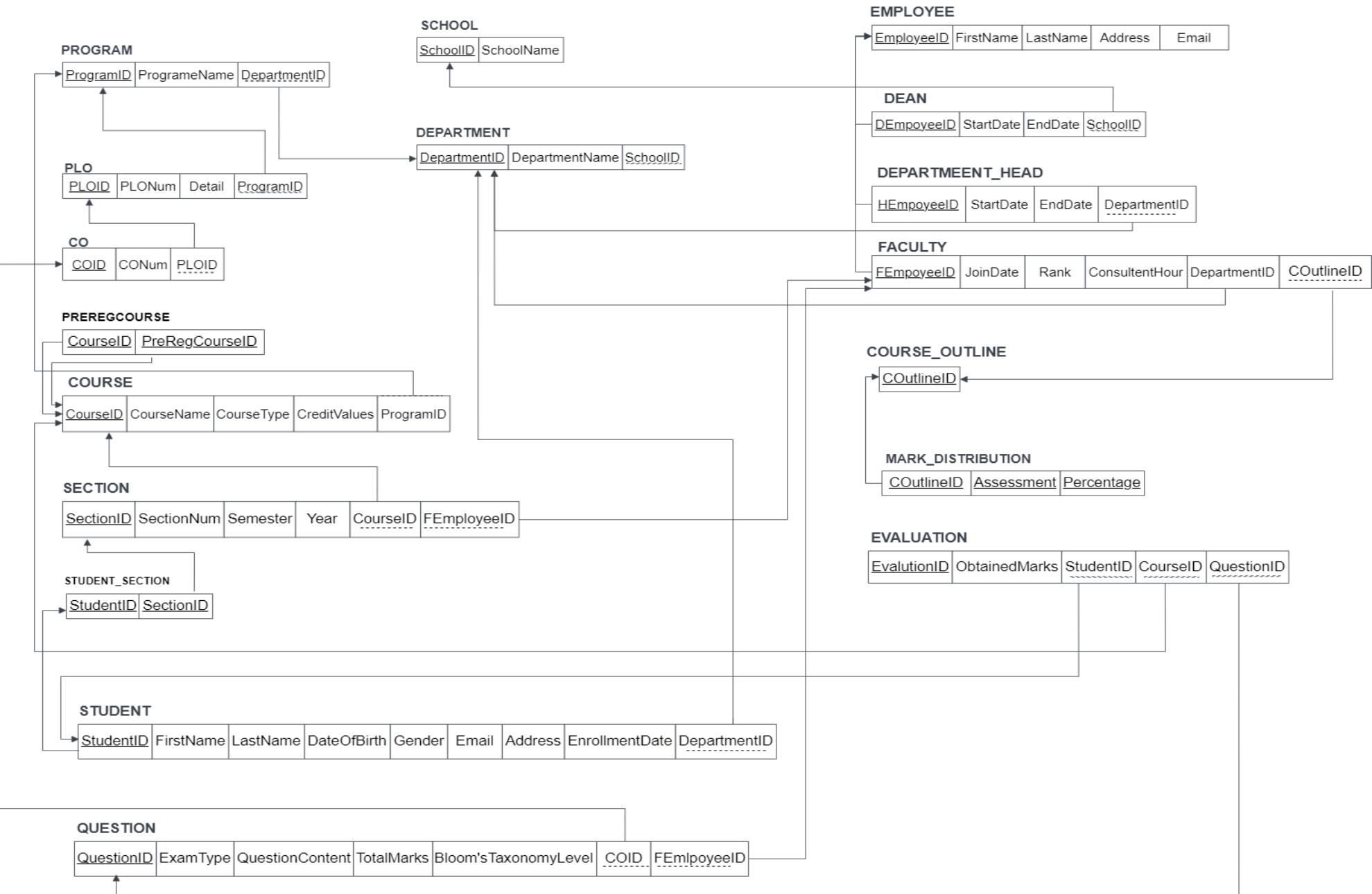


Figure : Entity relationship diagram to Relational Schema

Normalization

SchoolID L1	SchoolName L2
DepartmentID D1	DepartmentName, SchoolID D2, L1
ProgramID P1	ProgramName, DepartmentID P2, D1
PLOID A1	PLONum, Detail, ProgramID A2, A3, P1
COID B1	CONum, PLOID B2, A1
CourseID R1	PreRegCourseID R2
CourseID C1	CourseName, CourseType, CreditValues, ProgramID C2, C3, C4, P1
SectionID G1	SectionNum, Semester, Year, CourseID, FEmployeeID G2, G3, G4, C1, F1
StudentID N1	SectionID G1
StudentID S1	Firstname, LastName, DateOfBirth, Gender, Email, address, EnrollmentDate, DepartmentID S2, S3, S4, S5, S6, S7, S8, D1
QuestionID Q1	ExamType, QuestionContent, TotalMarks, Bloom'sTaxonomyCategory, Bloom'sTaxonomyLevel, COID, FEmployeeID Q2, Q3, Q4, Q5, Q6, B1, F1
EmployeeID E1	FirstName, LastName, Address, Email E2, E3, E4, E5
DEmployeeID I1	StartDate, EndDate, SchoolID I2, I3, L1
HEmployeeID H1	StartDate, EndDate, DepartmentID H2, H3, D1
FEmployeeID F1	Join date, Rank, ConsultantHour, DepartmentID, COutlineID F2, F3, F4, D1, J1
COutlineID J1	CoursePolicy J2
COutlineID K1	Assessment, Percentage K2, K3
EvaluationID M1	ObtainedMarks, StudentID, CourseID, QuestionID M2, S1, C1, Q1

Normalization

L1 → L2
D1 → D2, L1
P1 → P2, D1
A1 → A2, A3, P1
B1 → B2, B3, A1
R1 → R2
C1 → C2, C3, C4, P1
G1 → G2, G3, G4, C1, F1
N1 → G1
S1 → S2, S3, S4, S5, S6, S7, D1
Q1 → Q2, Q3, Q4, Q5, Q6, B1, F1
E1 → E2, E3, E4, E5
I1 → I2, I3, L1
H1 → H2, H3, D1
F1 → F2, F3, F4, D1
J1 → J2
K1 → K2, K3
M1 → M2, S1, C1, Q1

Normalization

1NF: A relation that has a primary key and in which there are no repeating groups

M1 M2 A1 A2 A3 B1 B2 B3 C1 C2 C3 C4 D1 D2 F1 F2 F3 F4 G1 G2 G3 G4 L1 L2 K1 K2 M1 M2 N1 P1 P2 Q1 Q2 Q3 Q4 Q5 Q6 R1 R2

E1 E2 E3 E4 E5 I1 I2 I3 H1 H2 H3

Figure : 1NF

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

M1 M2 A1 A2 A3 B1 B2 B3 C1 C2 C3 C4 D1 D2 F1 F2 F3 F4 G1 G2 G3 G4 L1 L2 K1 K2 M1 M2 N1 P1 P2 Q1 Q2 Q3 Q4 Q5 Q6 R1 R2

E1 E2 E3 E4 E5 I1 I2 I3 H1 H2 H3

Figure : 2NF

Normalization

3NF: A relation that is in second normal form and has no transitive dependencies

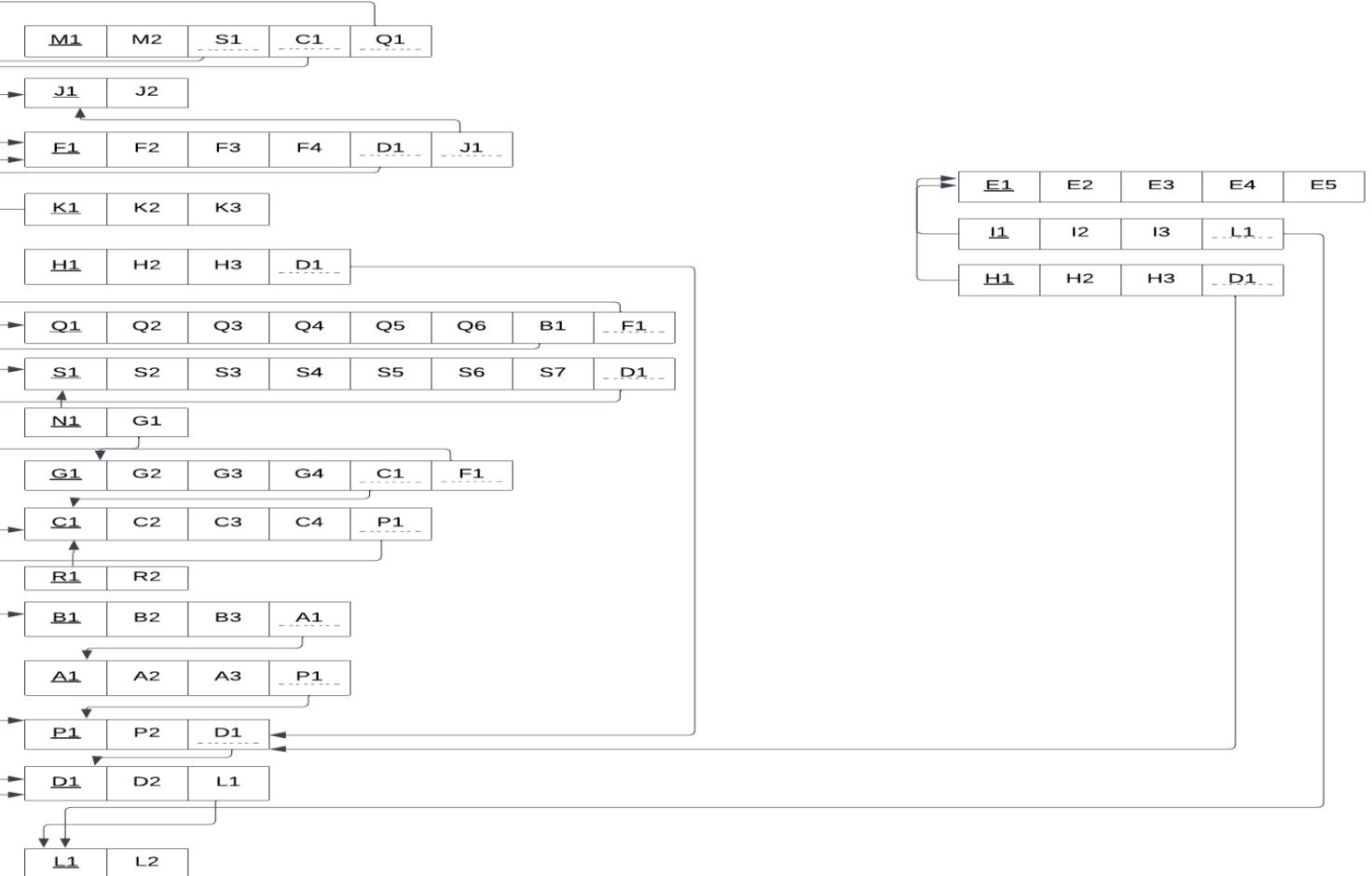


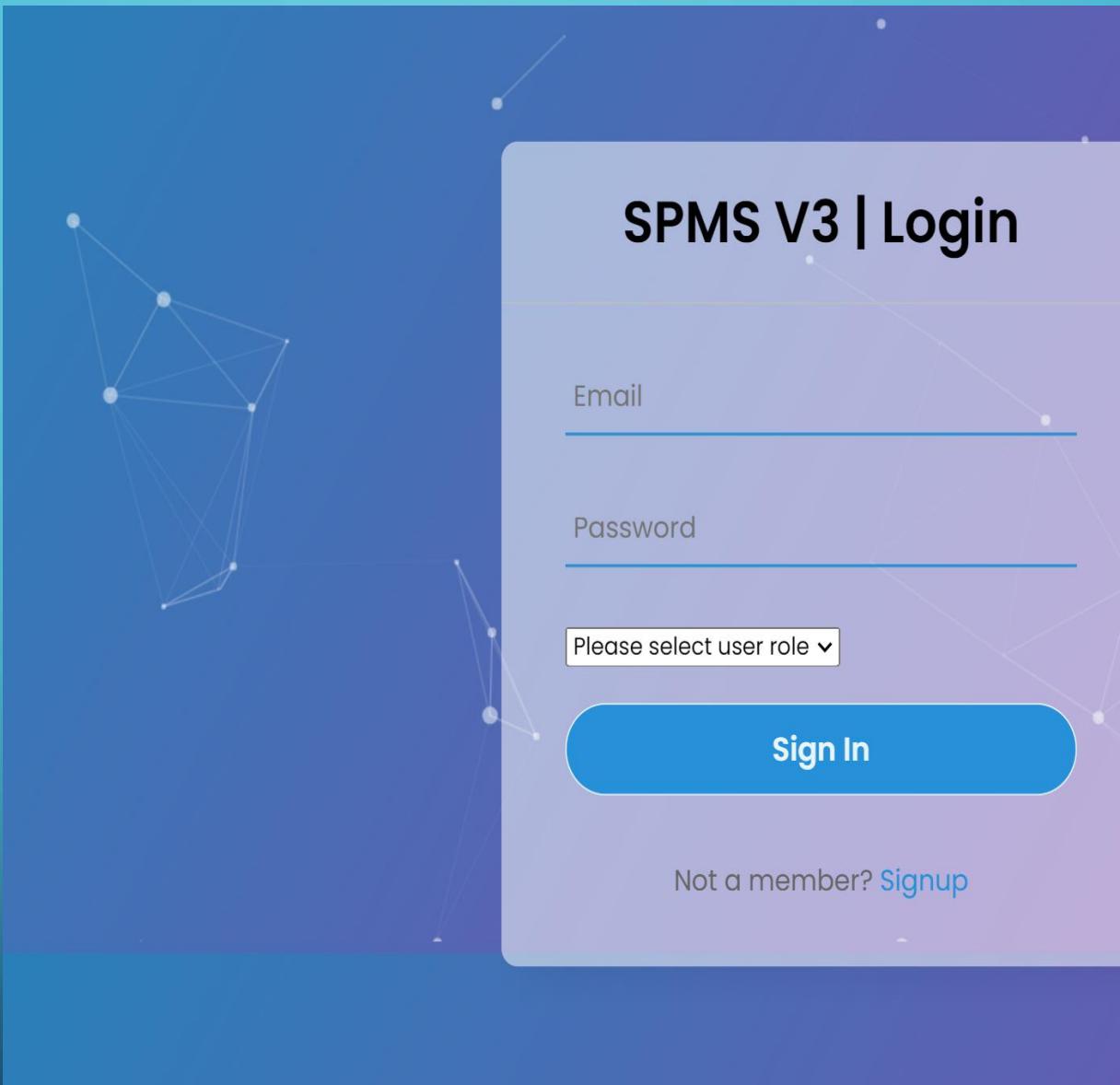
Figure : 3NF

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

IMPLEMENTATION

LOG IN DASHBOARD OF SPMS:

- Front End : HTML,CSS, Bootstrap
Javascript, Chart JS
- Backend : PHP, XAMPP



SPMS V3 | Register

Full Name

User Name

Email

Password

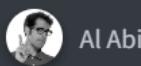
Retype Password

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SPMS

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Al Abid Supto

Search

[Dashboard](#)[Faculty](#)[Sign Out](#)

Add Question Bank (Quiz/Midterm/Final)

Course ID**Question Details****Section****CO1****CO2****CO3****CO4****Exam Type**

Please select type



Search



Dashboard

Faculty



Question

Bloom's Taxonomy Level

Per Question

Course Outline

Sign Out

Add Course Outline

Course ID**Course Description****Section****Semester**

Please select semester

Course Outline Choose File No file chosen Upload Here**Course Title****Credit Value**

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216 </section>
217 <?php
218 }
219 elseif ($do == "Insert") {
220 // code...
221 if (isset($_POST['upload'])) {
222 // code...
223 $course_id      = $_POST['courseid'];
224 $section        = $_POST['section'];
225 $course_title   = $_POST['course_title'];
226 $credit_value   = $_POST['credit_value'];
227 $duration       = $_POST['duration'];
228 $course_desc    = $_POST['course_desc'];
229
230
231
232 $pdf      = $_FILES['pdf']['name'];
233 $tmp_pdf   = $_FILES['pdf']['tmp_name'];
234
235 $random_number = rand(0, 1000000);
236 $pdfFile = $random_number.$pdf;
237
238 move_uploaded_file($tmp_pdf, "dist/img/users/" . $pdfFile);
239
240 $sql = " INSERT INTO courseoutline( course_id, section, semester, course_outline, course_title, credit_value, duration,
241 course_desc ) values( '$course_id', '$section', '$semester', '$pdfFile', '$course_title', '$credit_value', '$duration',
242 '$course_desc' ) ";
243 $uploadInfo = mysqli_query($db, $sql);
244
245 if ($uploadInfo) {
246 // code...
247 header("Location: courseoutline.php");
248 } else {
249 echo "Query Filed" . mysqli_error($db);
250 }
251 }
252 }
253 elseif ($do == "Edit") {
```



Search



Dashboard

CO & PO Achieve Percentage Table

CO & PO Achieve Spider Chart

Student Enrollment Analysis Table

School Wise Analysis Chart

Department Wise Analysis Chart

Gain Chart

CO's and PO's achieved by the students.

Sl.	Number of Students	CO	Successfully Achieved	Successfully Achieved(%)	Failed to Achieve	Failed to Achieve(%)
1	103	CO1	55	53.00	48	47.00
2	103	CO2	28	27.00	75	73.00
3	103	CO3	50	49.00	53	51.00
4	103	CO4	59	57.00	44	43.00
5	103	PO2	55	53.00	48	47.00
6	103	PO3	28	27.00	75	73.00

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```

Sl.	Number of Students	CO	Successfully Achieved	Successfully Achieved(%)	Failed to Achieve	Failed to Achieve(%)
<?php						
\$sql = "SELECT * FROM spiderchart";						
\$all_cat = mysqli_query(\$db, \$sql);						
\$i = 0;						
while (\$row = mysqli_fetch_assoc(\$all_cat)) {						
// code...						
\$cat_id	= \$row['id'];					
\$cat_total_student	= \$row['number_of_students'];					
\$cat_co	= \$row['CO'];					
\$cat_successfully_achieved	= \$row['successfully_achieved'];					
\$cat_successfully_achieved_per	= \$row['successfully_achieved_per'];					
\$cat_failed_to_achieve	= \$row['failed_to_achieve'];					
\$cat_failed_to_achieve_per	= \$row['failed_to_achieve_per'];					
\$i++;						
?>						
<tr>						
<th scope="row"><?php echo \$i; ?></th>						
<td><?php echo \$cat_total_student; ?></td>						
<td><?php echo \$cat_co; ?></td>						
<td><?php echo \$cat_successfully_achieved; ?></td>						
<td><?php echo \$cat_successfully_achieved_per; ?></td>						
<td><?php echo \$cat_failed_to_achieve; ?></td>						
<td><?php echo \$cat_failed_to_achieve_per; ?></td>						



Search



Dashboard

CO & PO Achieve Percentage Table

CO & PO Achieve Spider Chart

Student Enrollment Analysis Table

School Wise Analysis Chart

Department Wise Analysis Chart

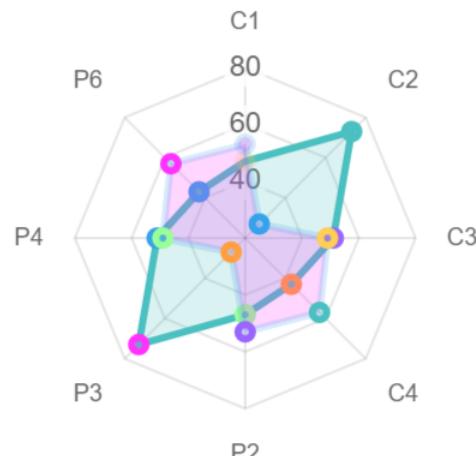
Gain Chart

Dashboard

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CO's and PO's achieved by the students

Successfully achieved
 Failed to achieve



```
37
38     $sql = "SELECT * FROM spiderchart";
39     $all_cat = mysqli_query($db, $sql);
40     $i = 0;
41
42     while ($row = mysqli_fetch_assoc($all_cat)) {
43         // code...
44
45         $cat_successfully_achieved_per[] = $row['successfully_achieved_per'];
46         $cat_failed_to_achieve_per[]     = $row['failed_to_achieve_per'];
47
48     }
49
50 ?>
51
52     <div class="col-lg-5 offset-3 my-0">
53         <div class="card bg-white">
54             <div class="card-body">
55                 <h5>CO's and PO's achieved by the
56 students</h5>
57             </div>
58             <div class="card-body">
59                 <canvas id="myChart"></canvas>
60             </div>
61         </div>
62     </div>
63     <script src="https://cdn.jsdelivr.net/npm/chart.js"></script>
64     <script>
65         const cat_successfully_achieved_per = <?php echo json_encode($cat_successfully_achieved_per); ?>;
66         const cat_failed_to_achieve_per = <?php echo json_encode($cat_failed_to_achieve_per); ?>;
67         var ctx = document.getElementById('myChart').getContext('2d');
68         var myChart = new Chart(ctx, {
69             type: 'radar',
70             data: {
71                 labels: ['C1', 'C2', 'C3', 'C4', 'P2', 'P3', 'P4', 'P6'],
```

```
63 <script src="https://cdn.jsdelivr.net/npm/chart.js"></script>
64 <script>
65     const cat_successfully_achieved_per = <?php echo json_encode($cat_successfully_achieved_per); ?>;
66     const cat_failed_to_achieve_per = <?php echo json_encode($cat_failed_to_achieve_per); ?>;
67     var ctx = document.getElementById('myChart').getContext('2d');
68     var myChart = new Chart(ctx, {
69         type: 'radar',
70         data: {
71             labels: ['C1', 'C2', 'C3', 'C4', 'P2', 'P3', 'P4', 'P6'],
72             datasets: [
73                 {
74                     label: 'Successfully achieved',
75                     data: cat_successfully_achieved_per,
76                     backgroundColor: [
77                         'rgba(255, 51, 253, 0.2)',
78                         'rgba(54, 162, 235, 0.2)',
79                         'rgba(255, 206, 86, 0.2)',
80                         'rgba(75, 192, 192, 0.2)',
81                         'rgba(153, 102, 255, 0.2)',
82                         'rgba(255, 159, 64, 0.2)',
83                         'rgba(153, 255, 153, 0.2)',
84                         'rgba(75, 192, 192, 0.2)'
85                     ],
86                     borderColor: [
87                         'rgba(54, 162, 235, 0.2)',
88                         'rgba(54, 162, 235, 1)',
89                         'rgba(255, 206, 86, 1)',
90                         'rgba(75, 192, 192, 1)',
91                         'rgba(153, 102, 255, 1)',
92                         'rgba(255, 159, 64, 1)',
93                         'rgba(153, 255, 153, 1)',
94                         'rgba(255, 51, 253, 1)'
95                     ],
96                     borderWidth: 3
97                 },
98                 {
99                     label: 'Failed to achieve',
100                    data: cat_failed_to_achieve_per,
101                    backgroundColor: [
102                         'rgba(255, 206, 86, 0.2)',
103                         'rgba(75, 192, 192, 0.2)',
104                         'rgba(153, 102, 255, 0.2)'
```

```
--  
66  
67  
68     <?php  
69  
70         if (isset($_GET['search'])) {  
71             // code...  
72             $filtervalues = $_GET['search'];  
73             $sql = " SELECT * FROM courseoutline WHERE CONCAT(course_id,semester) LIKE '%$filtervalues%' ";  
74             $all_course_outline = mysqli_query($db, $sql);  
75             $i = 0;  
76  
77             while ($row = mysqli_fetch_assoc($all_course_outline)) {  
78                 // code...  
79                 $id           = $row['id'];  
80                 $course_id    = $row['course_id'];  
81                 $section       = $row['section'];  
82                 $semester      = $row['semester'];  
83                 $course_outline = $row['course_outline'];  
84                 $i++;  
85                 ?>  
86  
87                 <tr>  
88                     <th scope="row"><?php echo $i; ?></th>  
89  
90                     <td><?php echo $course_id; ?></td>  
91                     <td><?php echo $section; ?></td>  
92                     <td><?php echo $semester; ?></td>  
93                     <td><a href="dist/img/users/<?php echo $course_outline; ?>" target="_blank" id="anchors"><?php echo $  
94                         course_outline; ?></a></td>  
95                     <!-- <td></td> -->  
96                     <td>  
97                         <div class="btn-group">  
98                             <a href="singlepdf.php?PDF=<?php echo $id; ?>">  
99                                 <i class="fas fa-download"></i>  
100                            </a>  
101                        </div>  
102                    </td>  
103  
104             </tr>  
105             <?php  
106         }  
107     }  
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Search



Dashboard

Student

 Question Bank Course Outline Sign Out

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a

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All Course Outline Informations

Sl.	Course ID	Section	Semester	Course Outline	Download
1	CSE101	7	Autumn22	480535CSE303_CourseOutline.pdf	
2	CSE303+L	2	Autumn22	971371CSE 303L, Course Outline.pdf	

[All Course Outline Download Here](#)

```
1 <?php
2
3 include"include/db.php";
4 require('fpdf/fpdf.php');
5
6 if (isset($_GET['PDF'])) {
7     # code...
8     $co_id = $_GET['PDF'];
9     $sql = " SELECT * FROM courseoutline WHERE id = '$co_id' ";
10    $selected_co = mysqli_query($db, $sql);
11
12    while ($row = mysqli_fetch_assoc($selected_co)) {
13        # code...
14        $pdf = new FPDF('P','mm','A3');
15
16        $pdf->AddPage();
17        $pdf->SetFont('Times','','12');
18
19        $pdf->Cell(260,10,'Course ID: ' . $row['course_id'],0,1,'C',false);
20        $pdf->Cell(260,10,'Course Title: ' . $row['course_title'],0,1,'C',false);
21        $pdf->Cell(260,10,'Semester: ' . $row['semester'],0,1,'C',false);
22        $pdf->Cell(260,10,'Credit Value: ' . $row['credit_value'],0,1,'C',false);
23        $pdf->Image('dist/img/users/outline.png',0,80);
24        $pdf->Image('dist/img/users/md.png',0,200);
25        $pdf->Image('dist/img/users/cps.png',8,308);
26        $pdf->Cell(260,10,'Contact Hour/Week: ' . $row['duration'] . ' minitues',0,1,'C',false);
27
28        // $pdf->Cell(60,10,'Course Description: ' . $row['course_desc'] ,0,1,'L',false);
29        $pdf->ln(30);
30
31    }
32    $pdf->Output();
33 }
34
35 // $pdf = new FPDF('P','mm','A4');
36 // $pdf->AddPage();
37 // $pdf->SetFont('Arial','B',16);
38 // $pdf->Cell(40,10,'Hello World!');
39
40
```

```
1 <?php
2
3 include"include/db.php";
4 require('fpdf/fpdf.php');
5
6 $sql = " SELECT * FROM courseoutline ";
7 $selected_co = mysqli_query($db, $sql);
8 $pdf = new FPDF('P','mm','A3');
9
10 while ($row = mysqli_fetch_assoc($selected_co)) {
11     # code...
12
13     $pdf->AddPage();
14     $pdf->SetFont('Times','',12);
15
16     $pdf->Cell(260,10,'Course ID: ' . $row['course_id'],0,1,'C',false);
17     $pdf->Cell(260,10,'Course Title: ' . $row['course_title'],0,1,'C',false);
18     $pdf->Cell(260,10,'Semester: ' . $row['semester'],0,1,'C',false);
19     $pdf->Cell(260,10,'Credit Value: ' . $row['credit_value'],0,1,'C',false);
20     $pdf->Image('dist/img/users/outline.png',0,80);
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23     $pdf->Cell(260,10,'Contact Hour/Week: ' . $row['duration'] . ' minitues',0,1,'C',false);
24
25 // $pdf->Cell(60,10,'Course Description: ' . $row['course_desc'] ,0,1,'L',false);
26 $pdf->ln(30);
27 }
28 $pdf->Output();
29
30
31 ?>
```



Search



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Student



Question Bank

Course Outline

Sign Out

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All Question Bank Informations

Sl.	Course ID	Section	Semester	Question Bank	Exam Type
1	CSE101	4	Autumn22	941076mid_software.pdf	Quiz
2	CSE303	2	Autumn22	183332quiz.pdf	Midterm
3	CSE303	2	Autumn22	420189Class test-1_SP-2022.pdf	Midterm
4	CSE317	1	Autumn22	507820quiz.pdf	Final

```
57
58         <?php
59
60             if (isset($_GET['search'])) {
61                 // code...
62                 $filtervalue = $_GET['search'];
63                 $sql = " SELECT * FROM questionbank WHERE CONCAT(course_id,semester,exam_type) LIKE '%$filtervalue%' ";
64                 $all_question = mysqli_query($db, $sql);
65                 $i = 0;
66
67                 while ($row = mysqli_fetch_assoc($all_question)) {
68                     // code...
69                     $id          = $row['id'];
70                     $course_id   = $row['course_id'];
71                     $section     = $row['section'];
72                     $semester    = $row['semester'];
73                     $question    = $row['question'];
74                     $exam_type   = $row['exam_type'];
75                     $i++;
76                     ?>
77
78                     <tr>
79                         <th scope="row"><?php echo $i; ?></th>
80
81                         <td><?php echo $course_id; ?></td>
82                         <td><?php echo $section; ?></td>
83                         <td><?php echo $semester; ?></td>
84                         <td><a href="dist/img/users/<?php echo $question; ?>" target="_blank" id="anchor"><?php echo $question
85                             ; ?></a></td>
86                         <td><?php echo $exam_type; ?></td>
87                         <!-- <td></td> -->
88
89                     </tr>
90
91             }
92
93         } else { echo "No Record Found "; }
```



Search



Dashboard

CO & PO Achieve

Percentage Table

CO & PO Achieve Spider Chart

Student Enrollment Analysis Table

School Wise Analysis Chart

Department Wise Analysis Chart

Gain Chart

School Wise & Department Wise Student Enrollment Analysis

SL.	SCHOOL	DEPARTMENT	SEMESTER	COURSE ID	ENROLLED
1	SLASS	MKT	Summer21	AAT101	39
2	SBE	BBA	Summer21	ACN201	48
3	SBE	BBA	Summer21	ACN202	49
4	SLASS	ACT	Summer21	ANT101	40
5	SBE	BBA	Summer21	ACN301	40
6	SBE	BBA	Summer21	ACN305	40
7	SELS	ENVS	Summer21	BCB103	11
8	SELS	ENVM	Summer21	RCR104	11

```
42          <tr>
43          <th scope="col">Sl.</th>
44          <th scope="col">SCHOOL</th>
45          <th scope="col">DEPARTMENT</th>
46          <th scope="col">SEMESTER</th>
47          <th scope="col">COURSE ID</th>
48          <th scope="col">ENROLLED</th>
49          <!-- <th scope="col"></th> -->
50          </tr>
51      </thead>
52      <tbody>
53      <?php
54
55          $sql = "SELECT * FROM enrollment";
56          $all_enroll = mysqli_query($db, $sql);
57          $i = 0;
58
59          while ($row = mysqli_fetch_assoc($all_enroll)) {
60              // code...
61
62              $enroll_id      = $row['id'];
63              $school         = $row['school'];
64              $department     = $row['department'];
65              $semester       = $row['semester'];
66              $course_id      = $row['course_id'];
67              $enrolled       = $row['enrolled'];
68              $i++;
69
70          ?>
71
72          <tr>
73          <th scope="row"><?php echo $i; ?></th>
74          <td><?php echo $school; ?></td>
75          <td><?php echo $department; ?></td>
76          <td><?php echo $semester; ?></td>
77          <td><?php echo $course_id; ?></td>
78          <td><?php echo $enrolled; ?></td>
79
80          </tr>
81
```



Search



Dashboard

CO & PO Achieve Percentage Table

CO & PO Achieve Spider Chart

Student Enrollment Analysis Table

School Wise Analysis Chart

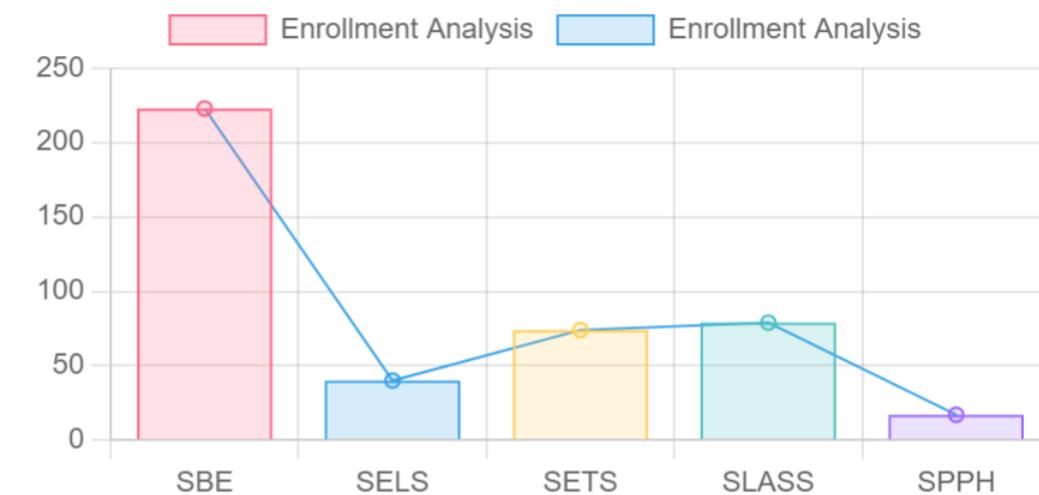
Department Wise Analysis Chart

Gain Chart

Dashboard v2

[Home](#) / [Dashboard v2](#)

School Wise Student Enrollment Chart





Search



Dashboard

CO & PO Achieve Percentage Table

CO & PO Achieve Spider Chart

Student Enrollment Analysis Table

School Wise Analysis Chart

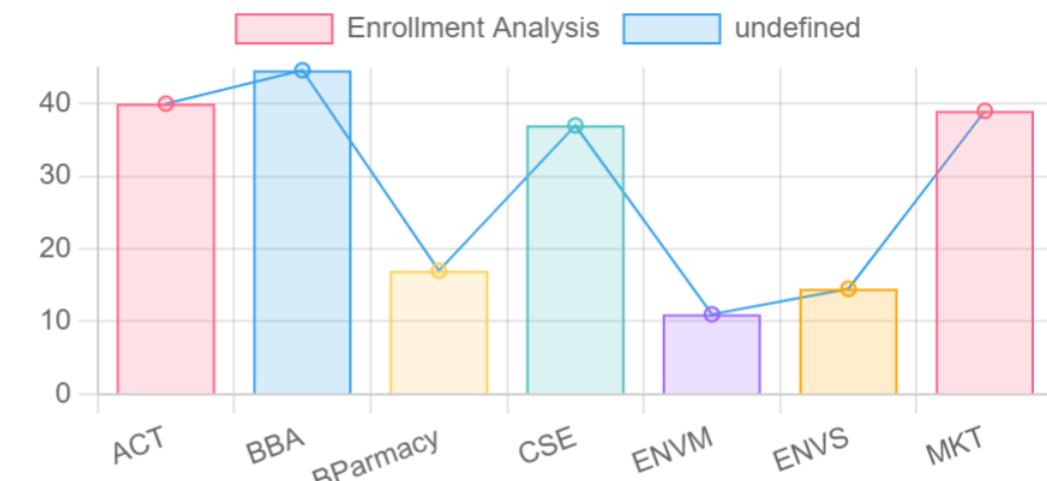
Department Wise Analysis Chart

Gain Chart

Dashboard

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Department Wise Student Enrollment Chart



```
36 <?php
37
38     $sql = "SELECT department, AVG(enrolled) AS total
39             FROM enrollment
40             GROUP BY department";
41     $all_enrolls = mysqli_query($db, $sql);
42     $i = 0;
43
44     // $total = array();
45
46     while ($row = mysqli_fetch_assoc($all_enrolls)) {
47         // code...
48
49         $department[] = $row['department'];
50         $total[] = $row['total'];
51         $i++;
52
53     }
54
55
56 ?>
57
58     <div class="col-lg-8 offset-2 my-5">
59         <div class="card bg-white">
60             <div class="card-body">
61                 <h5>Department Wise Student Enrollment Chart</h5>
62                 </div>
63                 <div class="card-body">
64                     <canvas id="myChart"></canvas>
65                 </div>
66             </div>
67         </div>
68         <script src="https://cdn.jsdelivr.net/npm/chart.js"></script>
69         <script>
70             // Setup Block
71             const department = <?php echo json_encode($department); ?>;
72             const total = <?php echo json_encode($total); ?>;
73             const data = {
74                 labels: department,
75                 datasets: [
```

Thank you

Md. Akram Hossain Md. Adib Al Supto . Ishraque Rahman . Md. Asif Intesar
. Nahin Fatima . Md. Abdullah Al Hasan