

Database Management

CSE303

Student Performance monitoring system

Group-4

GROUP MEMBER

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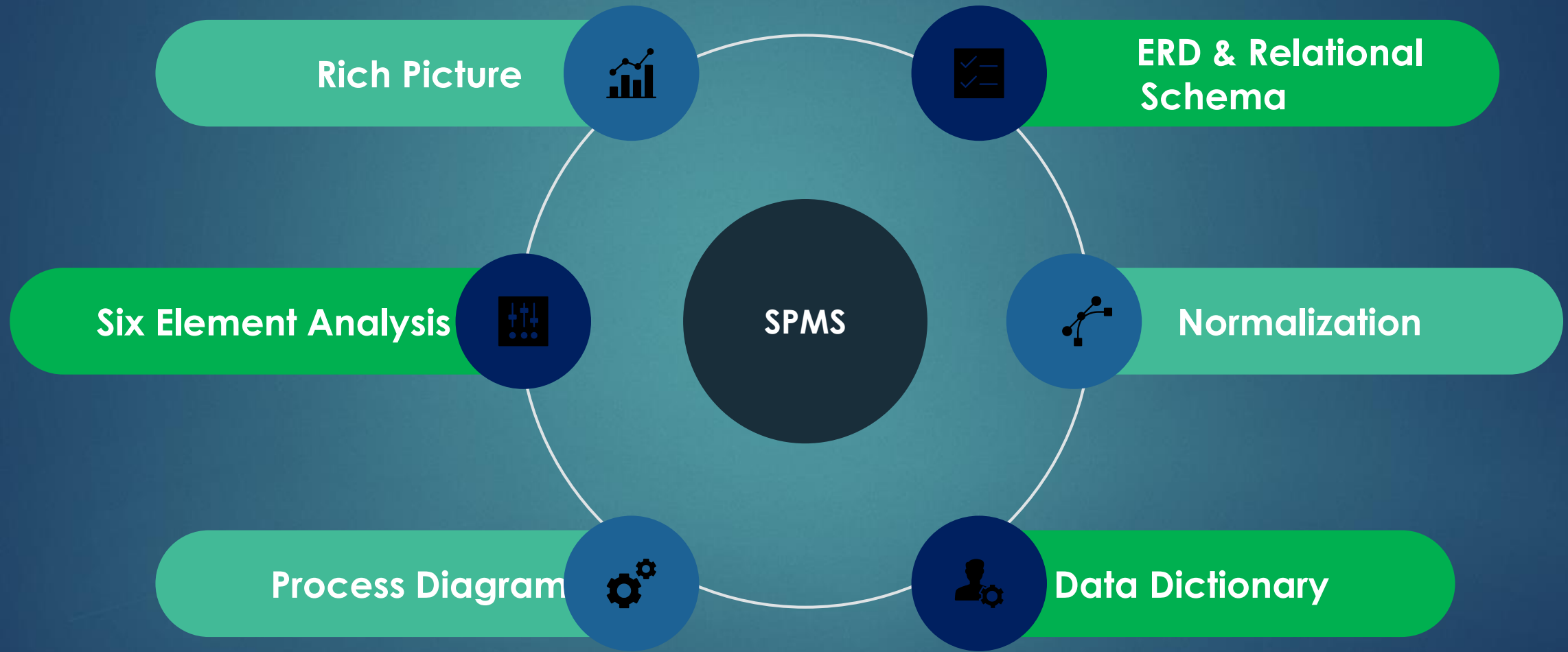
INTRODUCTION

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5/22/2021

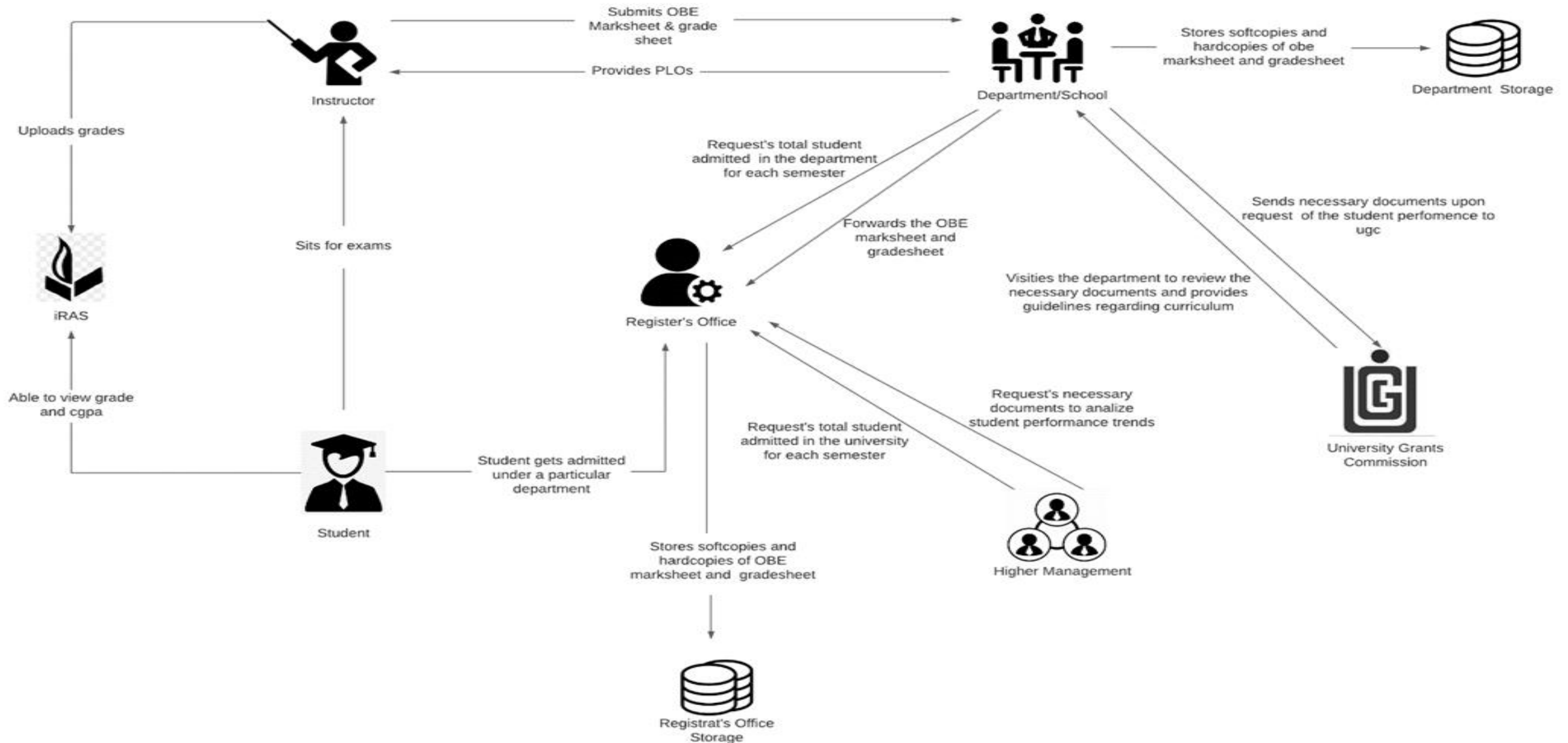
The Student Performance Monitoring System (SPMS) focuses on performance monitoring of student's continuous assessment and examination scores in order to predict their final achievement status upon graduation.

The main goal of this project is to find the systemic problems and limitation we have in our current system in few areas and how can we improve it. The aim of our project is to design, build and deliver a developed software that we believe will help universities everywhere to promote a more productive and effective way of evaluating students. The faculties can input the COs for each of their students so that the system can map the COs to PLO accordingly. We also analyze individual processes that take place under the current system of monitoring student performance and the concerns and problems with those process from start to finish.



RICH PICTURE(AS-IS)

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SIX ELEMENT (AS-IS)

PROCESS NAME

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- ❖ Student sits for exam
- ❖ Student are able to view grades, CGPA and download transcript
- ❖ Instructors uploads grades to IRAS
- ❖ Instructors produce OBE mark sheet and grades sheet and submits it to the department
- ❖ Map Course Outcomes (COs) to Program Learning Outcomes(PLOs)
- ❖ Student gets admitted under a particular department
- ❖ Request for review and change of grades
- ❖ View Records OBE Mark sheets and Course Assessment Reports

SIX ELEMENT (AS-IS)

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Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Student sits for exam	Instructors	Stationery	Computer/ Laptop	Microsoft Word	Microsoft Excel	Internet
	1) Prepare question according to the mapped COs.	1) Pen and paper for writing.	1) Some courses require a computer for coding or open book exam.	1) Typing the question and generating a printable pdf.	1) Used for storing exam marks and calculating final grade	1) Used by students during open book exam
	2) Give a particular time and date for the exam	2) Compass, ruler and other stationery for drawing diagrams	Calculators	Operating System		
	3) Prepare SODs and invigilators	Chairs and Table	1) Some exams require the use of calculators	1) Any OS may be used. e.g. Windows, MacOS.		
	Students	1) For using during exam.	Printers & photocopy machine	Adobe Acrobat Reader		
	1) Attempt the examination	Classroom	1) Instructors use it for printing question papers	1) For viewing the question paper in pdf format		
		Stapler				
		1) For attaching all the extra paper, rough work and answers				

Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Student are able to view grades, cgpa and download transcript	Student	Paper	Computer/ Smart Phone	iRAS	iRAS database server	Internet
	1) Students have to login to iras by entering the student id and password	1) Used for printing and keeping a hardcopy of transcript	1) Used for accessing iras.	1) Provides user interface for view grades and download transcript.	1) iras database server is used for storing and receiving student grade information in iras	1) Internet is required for accessing iras
	2) Select a specific semester		Printer	Browser		
	3) View grades for specific semester		1) For printing the transcript	1) Any browser an be used to access iras. e.g. edge, chrome, Firefox		
	4) Click on the transcript button to download a copy of transcript			Adobe Acrobat Reader		
				1) For viewing the transcript which is in pdf format.		
				Operating System		
				1) Any OS may be used. e.g. Windows, MacOS.		

Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Instructors uploads grades to iras	Instructors		Computer/ Smart Phone	iRAS	iRAS database server	Internet
	1) Instructors types in user id and password for logging into the system		1) Used for accessing iras and submitting the grade	1) Provides user interface for submitting the grades	1) iras database server stores all the grades	1) Internet is required for accessing iras and submitting the grades
	2) The instructor clicks to the submit grade section and is taken into the grade submission page			Browser		
	3) The instructor selects grade for each of the student			1) Any browser an be used to access iras. e.g. edge, chrome, firefox		
	4) Clicks on the submit button to submit the grades			Operating System 1) Any OS may be used. e.g. Windows, MacOS		

Process	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Instructors produce OBE marksheet and grades sheet and submits it to the department	Instructors	Paper	Computer	Microsoft Excel	Department Storage	Internet
	1) Instructor takes quizzes and exam	1) Used for storing hardcopies of OBE marksheet	1) Computer is used for making softcopies of OBE marksheets	1) Used by instructors to calculate the PLO and CO achievement	1) A hardcopy of OBE marksheet and grade sheet is stored in the department storage	1) Online platform such as- google sheets may be used for producing OBE marksheet
	2) Checks the exam script		Printer		Register's Office Storage	
	3) Records the mark for each exam in an excel sheet		1) To print the hardcopies of the OBE marksheet and grade sheet		1) A hardcopy of OBE marksheet and grade sheet is stored in the register's office storage	
	4) Calculates the final grades and					
	5) Calculate total marks received for each CO					
	6) Declare if a student has achieved a specific CO					
	7) Declare if a student has received a PLO for a related CO					
	8) Make a verdict and analysis of how many students were able to receive a certain CO and PLO					

Process	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Instructors produce OBE marksheet and grades sheet and submits it to the department	9) Sends the final version of OBE marksheet to department office					
	Department					
	1) Receives a copy of the OBE marksheet and grade sheet from the instructors					
	2) Stores a copy of the OBE marksheet and grade sheet in department storage					
	3) Sends a copy of the OBE marksheet to the register's office					
	Register's Office					
	1) Receives the OBE marksheet from department					
	2) Store the OBE marksheet in register's office storage					

Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Map Course Outcomes (COs) to Program Learning Outcomes (PLOs)	UGC	Pen and Paper	Computer/Smart devices	Microsoft Word		Internet
	1) Provides guide line to the department about the curriculum	1) Used for brainstorming and rough works	1) Course coordinators use computers to make softcopies of course outcomes (COs)	1) Course coordinators use MS word for making course outline and course assessment report with COs mapping to the PLOs		1) Internet is used to communicate with ugc and other stakeholders to discuss topics related mapping COs and PLOs
	Department		Printers			
	1) Comes with the PLOs		1) Used for print hardcopies of course outcomes (COs)			
	2) Sends the PLOs to the instructor					
	Instructor					
	1) List the course content and course outcome					
	2) Maps the course content to the COs					
	3)Maps the PLOs					
	4)Prepares question paper according to the COs					

Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Student gets admitted under a particular department	Student	Paper	Computer	iRAS	iRAS database server	Internet
	1) Fills up the admission form for taking admission under a particular department	1) Register's office keeps a hardcopy of iras and filling student information. e.g. admission form student blood group, emergence contact number, address	1) Used for accessing iras and filling admission form Printers 1) For printing hardcopies of student information	1) Provides user interface for filling the admission form Browser 1) Any browser an be used to access iras. e.g. edge, chrome, Firefox Operating System 1) Any OS may be used. e.g. Windows, MacOS.	1) iras database server is used for storing all the admission information.	1) Internet is required for accessing the online admission form.
	Register's Office					
	1) Receives the admission form					
	2) Analyze the admission					
	3) Check if the student fulfills all the requirements for getting admitted					
	4) If the student fulfills all the requirements then admit the student under the requested department.					

Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Student gets admitted under a particular department	6) Generate a student id number					
	5) Sends the total number of students enrolled in a semester under a particular department to the department.					
	6) Send the total number of students enrolled in the university to the higher management.					
	Department					
	1) Request total student enrolled in the department					
	2) Receive information about total student enrolled in department					
	Higher Management					
	1) Request total student enrolled in the university					
	2) Receive information about total student					

Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Request for review and change of grades	Student	Pen and Paper	Computer/ Laptop	iRAS	iRAS database server	Internet
	1)Request an Instructor for grade change by sending an application via email.	1)used to note down key points or marks on the students' answer sheets.	1) Used for sending email to the instructor	1)Used by the Register office for changing the grade	1) Update student grade data.	1) Internet is needed to the mail a grade change request.
	Instructor			Operating System	Department Storage	
	1)Receive a grade change mail from the student.			1) Any OS may be used. e.g. Windows, MacOS.	1)Update student grade data.	
	2)Check exam Papers and other assessment upon request.				Register office's Storage	
	3)If change needs to be made, then the instructor informs the department.				1)Update student grade data.	
	4) If not, end the process. Mail the student that his request has been denied.					
	Department					
	1) Receives information regarding grade change of a specific student in a course.					

Processf	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
Request for review and change of grades	2) Sends a request to the register's office for grade change					
	3)Updates the OBE marksheet and grade sheet with the new grade and stores it in the department storage					
	Register's office					
	1)Receive a request from the department for the changing the grade of a student in a specific course.					
	2)Changes the grade of the particular student in the requested course.					
	3)Updates the register's office storage with the new grade					

Process	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
View Records OBE Marksheets and Course Assessment Reports	UGC	Paper and Pen	Computer	Microsoft Excel	Department Storage	Internet
	1. Inform the university head of a deadline within which OBE Marksheets, Course Assessment Reports and other documents are needed for quality inspection to make necessary improvements to degree programs.	1)Used for noting/markng down key points of the report.	1) Used for viewing softcopies of OBE marksheet and grade sheet.	1) Used for viewing softcopies of marksheet Operating System	1) Used for retrieval of OBE marksheet and grade sheet when needed	1) Softcopies of OBE marksheet and grade sheet may be mailed to the ugc officials.
			2) Used for send softcopies of OBE marksheet to the ugc officials.	1) Any OS may be used. e.g. Windows, MacOS.	2) Stores hardcopies and softcopies of OBE marksheet and grade sheet	2) Online platforms such as google sheet may be use for displaying softcopies of marksheet.
	2. Inform the university head if an UGC personnel will visit the campus or softcopies will suffice.					
	3. Visit university heads and relevant schools to receive the necessary documents and reports if that is what was informed.					
	Department 1) Request to view records of OBE Marksheets, Course Assessment Reports to analyze students' performance trends.					

Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
	2) Direct Department Staff to gather necessary documents, OBE Marksheets and Assessment report for a given time-period specified by UGC.					
	3) Receive the necessary documents gathered by the Department					
	4) Evaluate the need to change/ improve the department's educational resources based on students' performance trends.					
	5) Send necessary documents to ugc.					
	Higher Management					
	1) Requests the register's office to send records of OBE Marksheets, Course Assessment Reports to analyze students' performance trends.					

Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Commination
	Register's Office 1) Receive a request from higher management for sending OBE marksheet and grade sheets. 2) Sends the requested OBE marksheets and grade sheets to the register's office.					

PROCESS DIAGRAM (AS-IS)

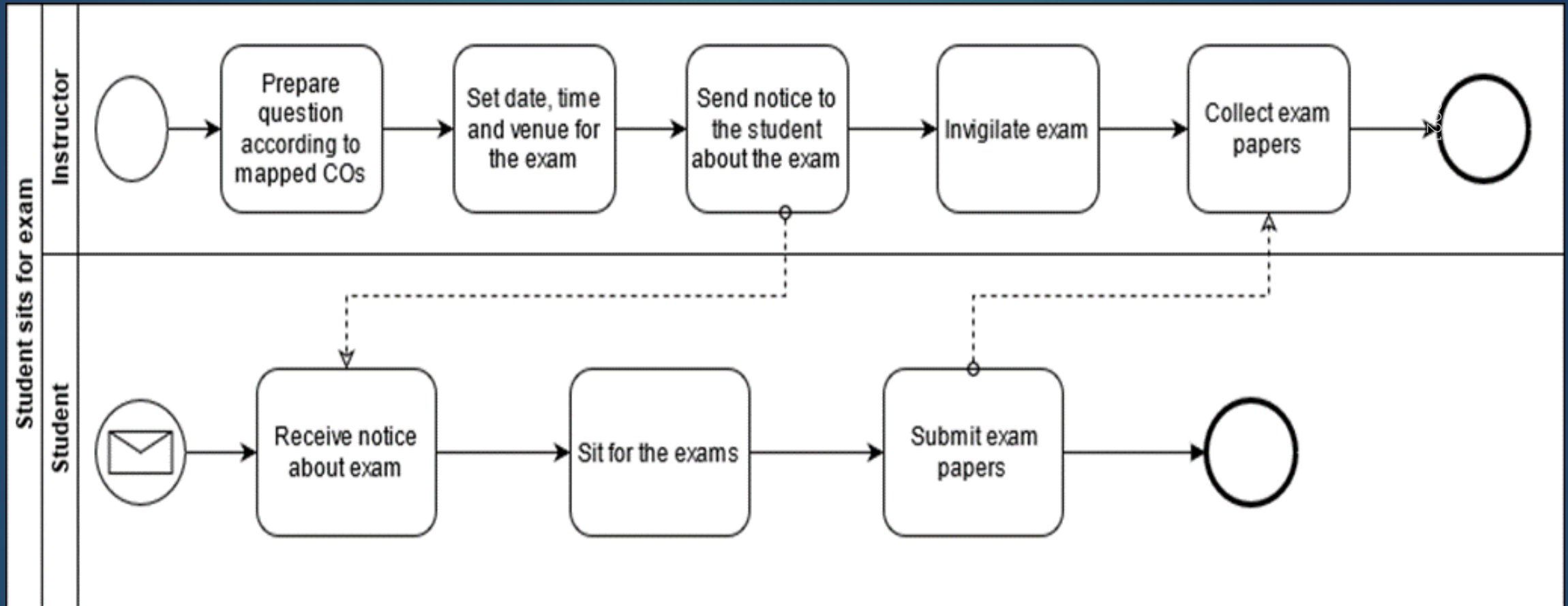


FIGURE 2.1 Process Diagram for Student Sits for exam

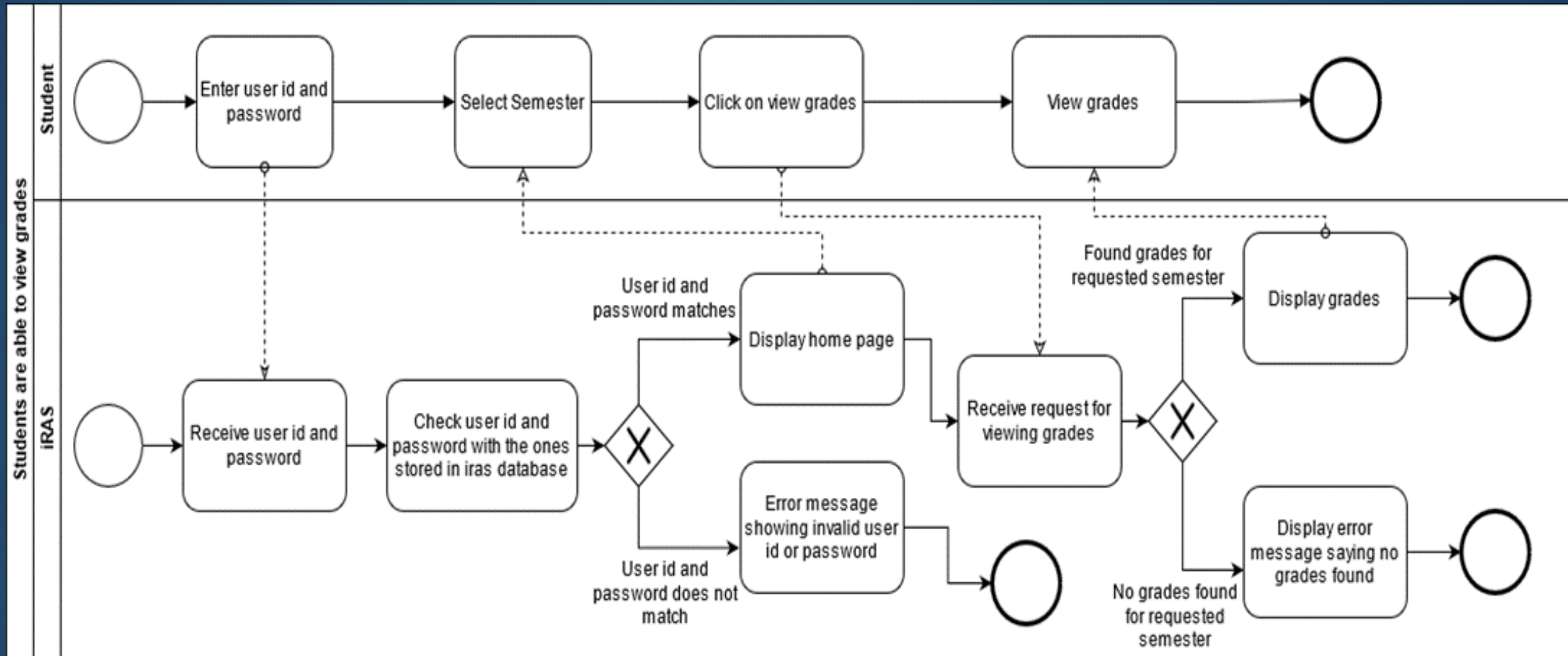


FIGURE 2.2 Process Diagram for Student are able to view grades and CGPA

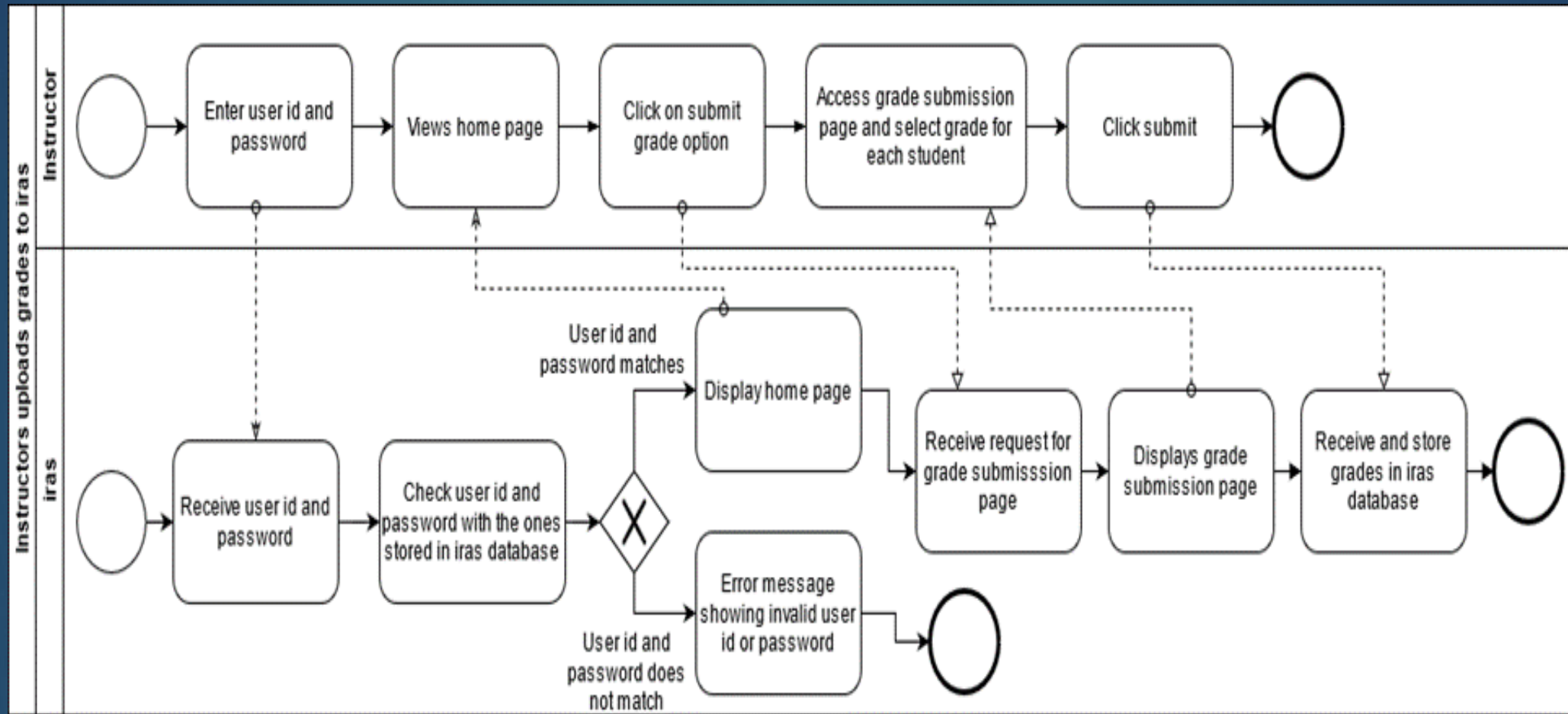


FIGURE 2.3 Process Diagram for Instructor uploading grade to iras

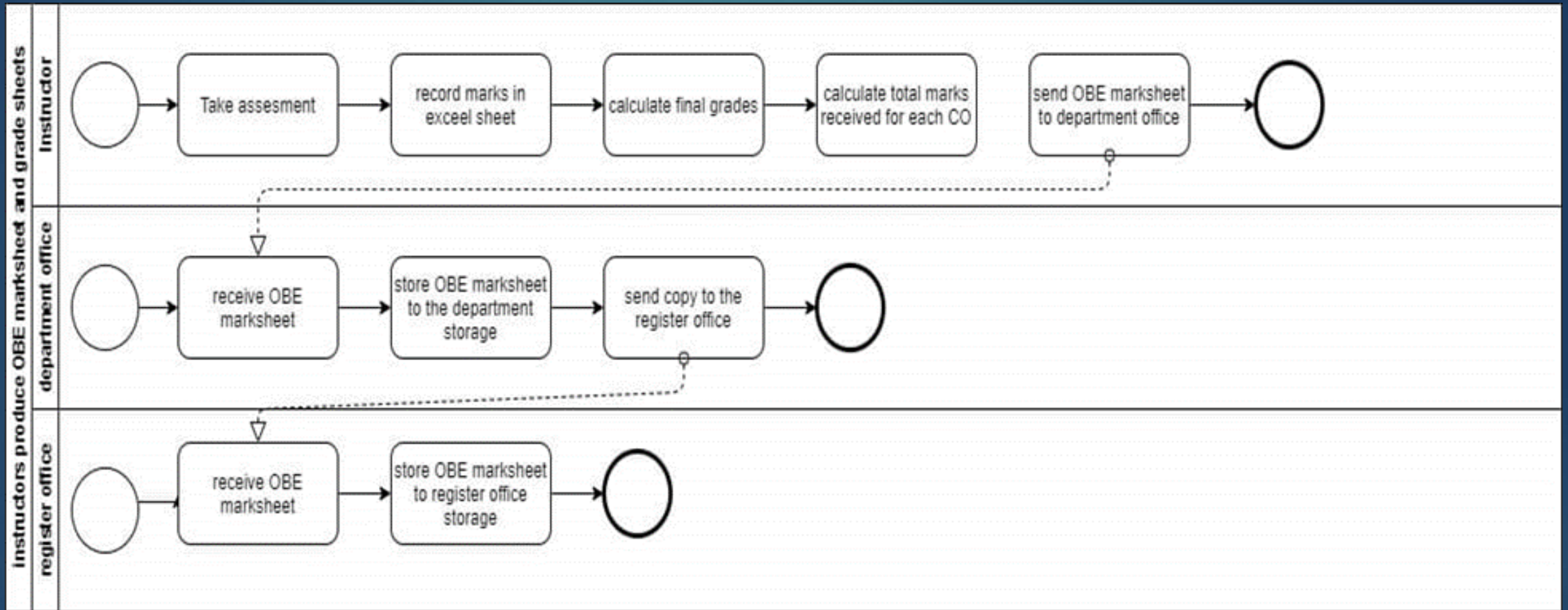


FIGURE 2.4 Process Diagram for Instructor produces OBE mark sheet

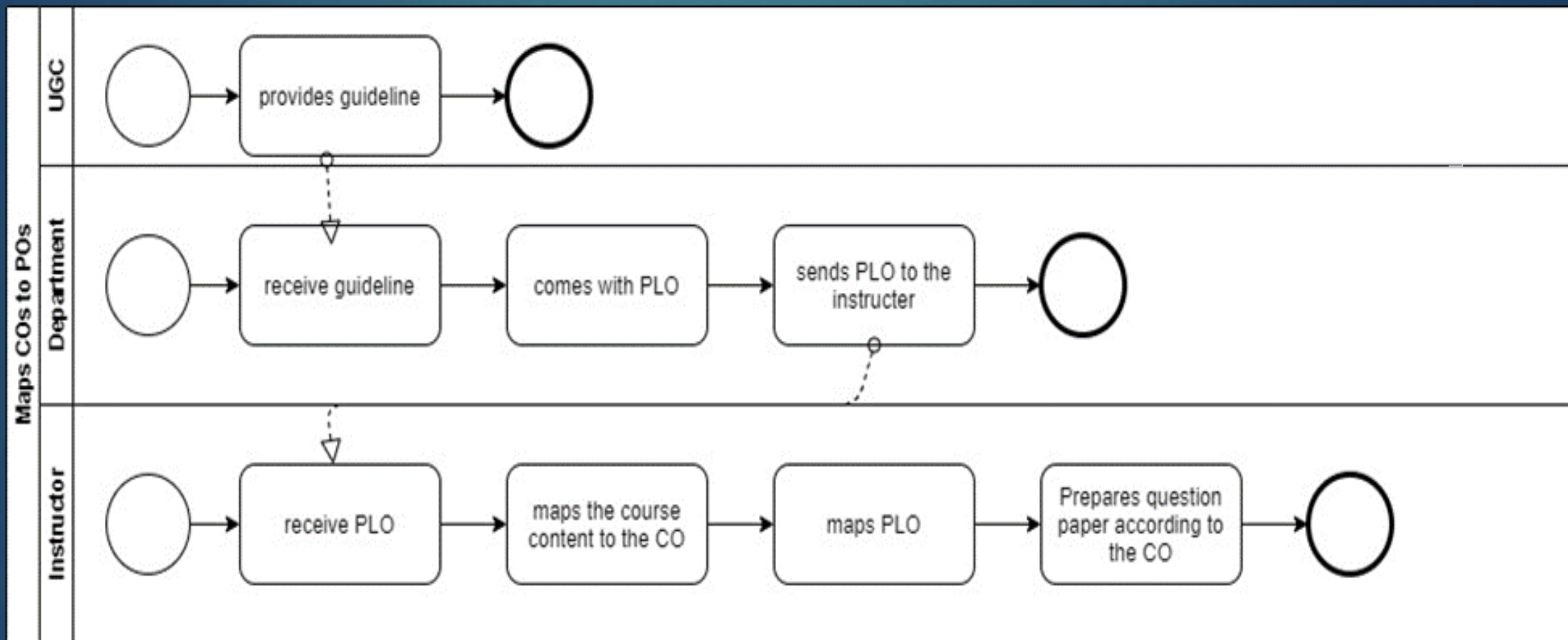


FIGURE 2.5 Process Diagram for Map COs and POs

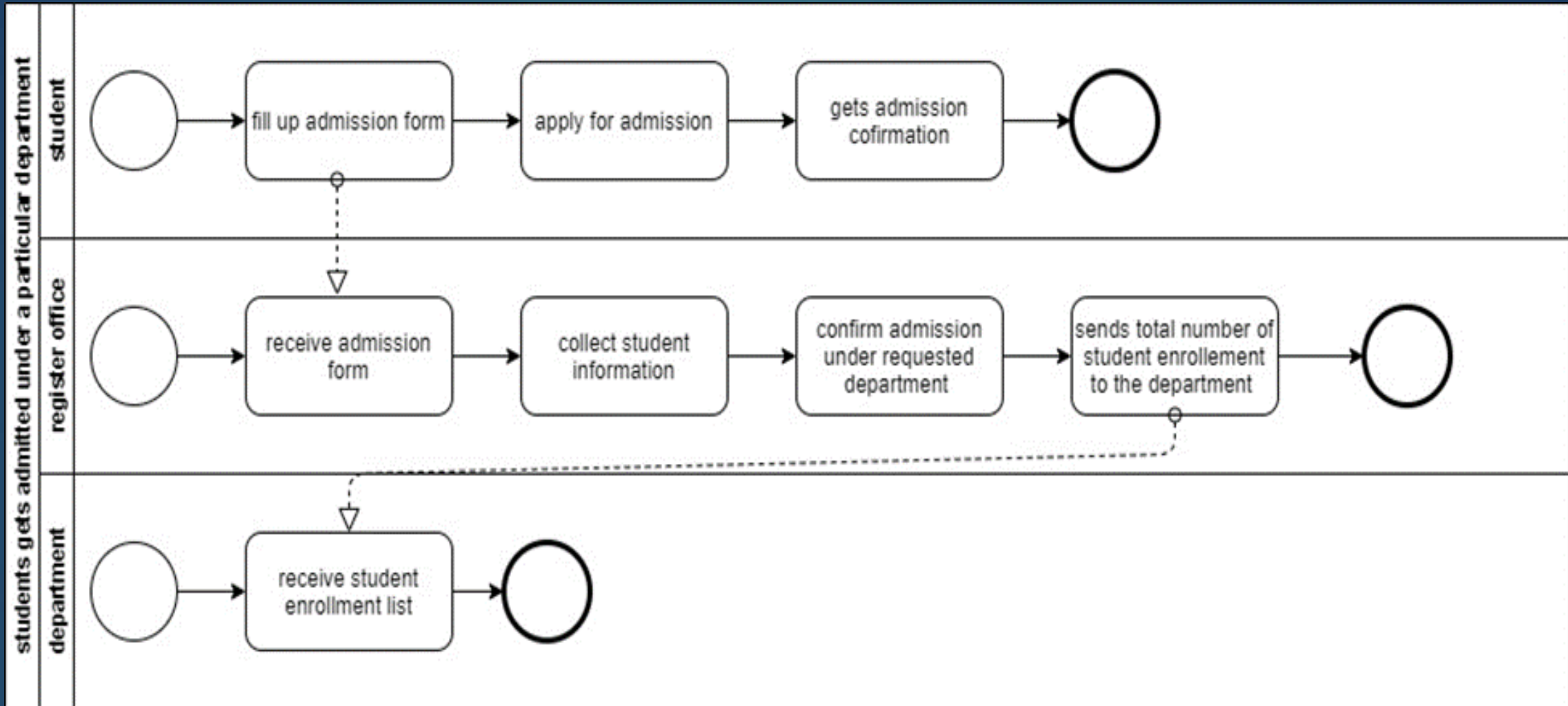


FIGURE 2.6 Process Diagram for Student gets admitted under particular department

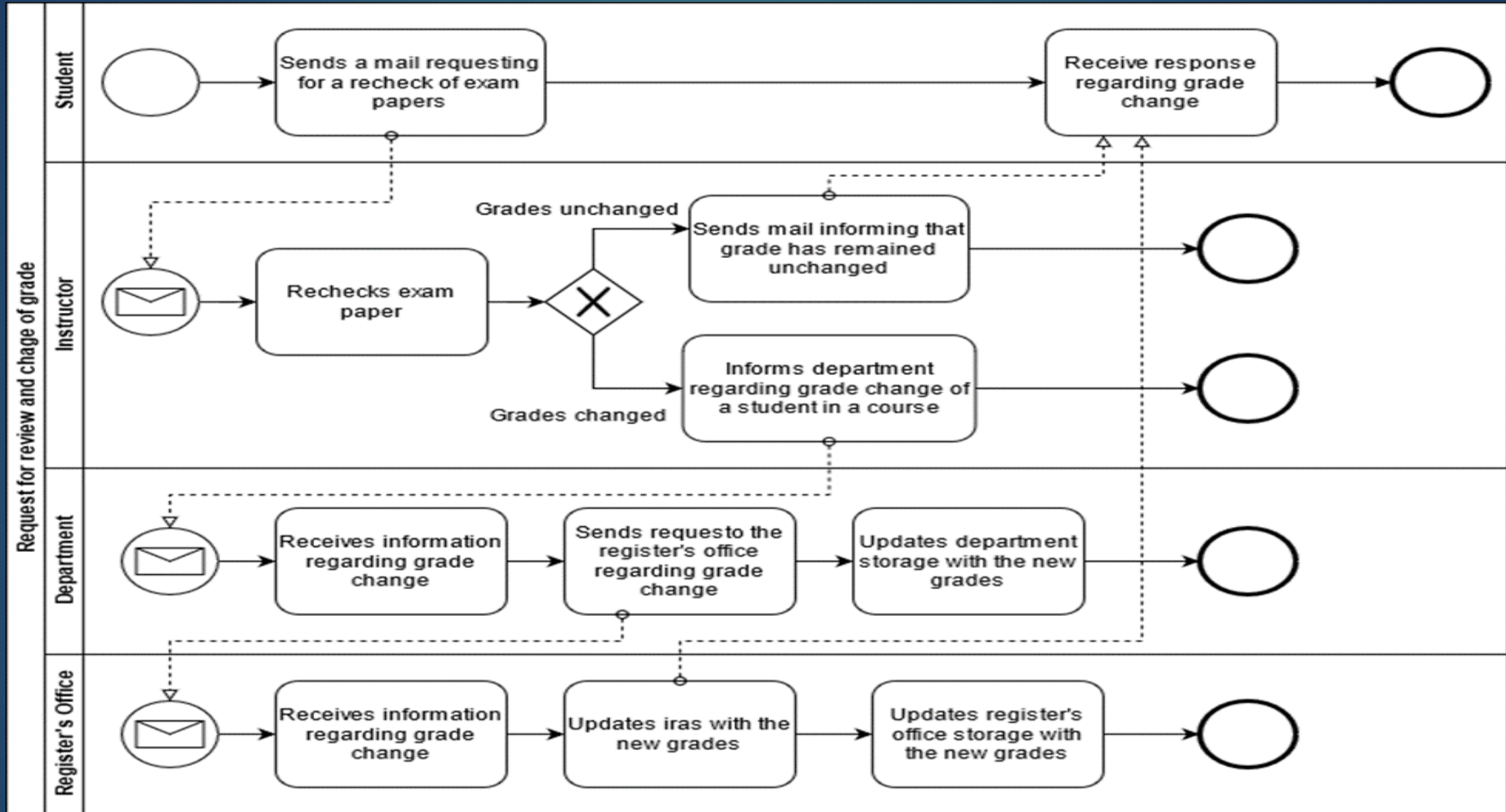


FIGURE 2.7 Process Diagram for request for review and change of grades

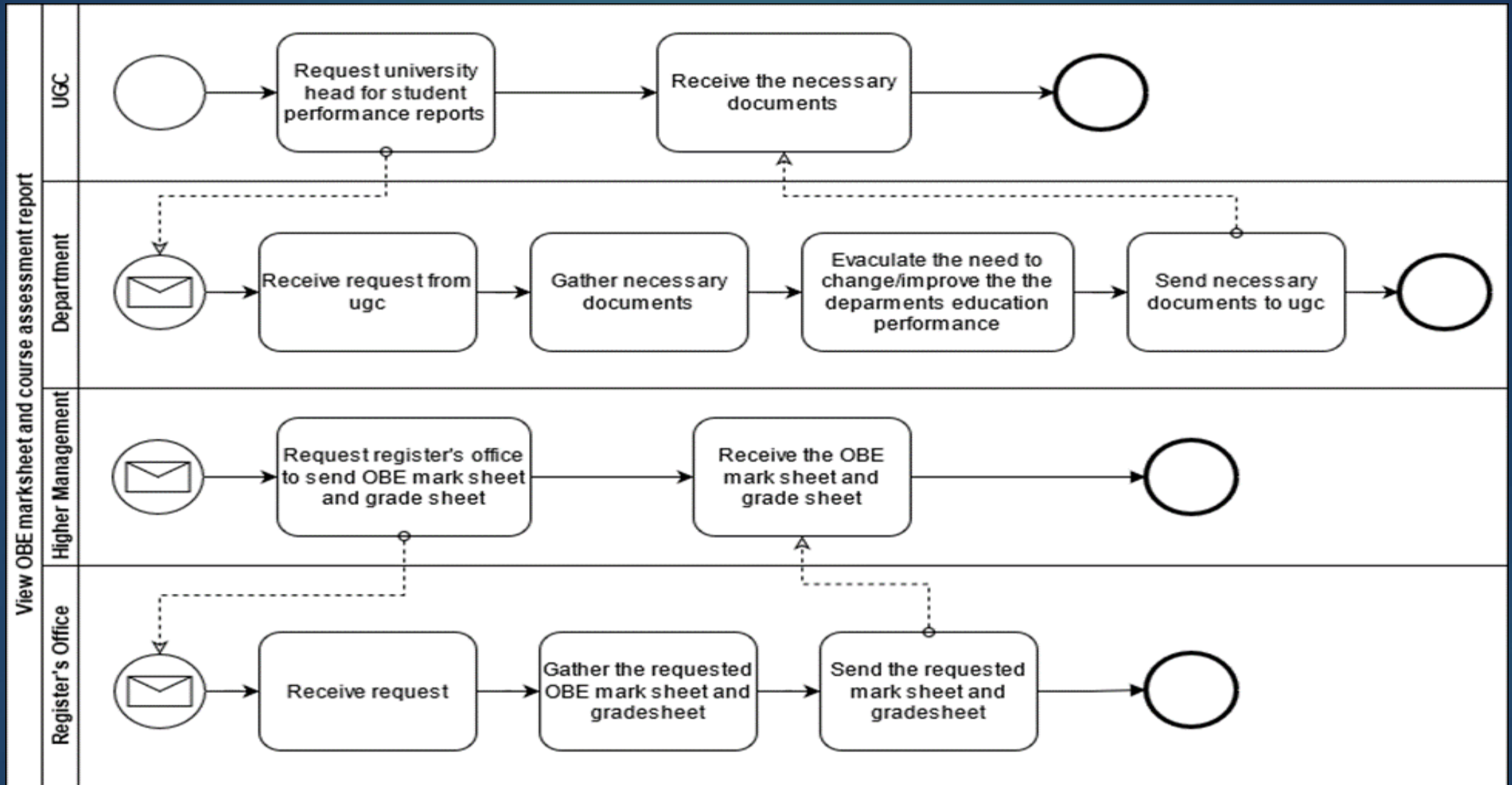


FIGURE 2.8 Process Diagram for view obe mark sheet and course assessment report

PROBLEM ANALYSIS

PROCESS NAME

- ❖ Preparing a Course Assessment
- ❖ Higher Management Viewing Individual Instructor Performance
- ❖ Instructor viewing the CGPA and change the grade
- ❖ Higher management and Instructor viewing OBE mark sheet and grade sheet
- ❖ Students will be able to get grades from Department instead of Instructor
- ❖ Higher Management & Instructor Uploading & Viewing PLOs/CO
- ❖ Student viewing PLO & CO
- ❖ UGC approves curriculum based on PLO and CO

PROBLEM ANALYSIS

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Process Name	Stakeholders	Concern (Problems)	Analysis (reason of the problem)	Proposed Solutions
Preparing a Course Assessment	1.Instructor 2.Student	<p>Sending hardcopy And softcopy Students examination marks And course Assessment report to the register office store the info Time consumption And delay is prime limitation. Even after storing data in the register office store, if there is any need to see the information of any student or any course performance or a particular section of high management then It is very difficult to find these.</p>	<p>In our existing system higher management store assessment data manually As sending hardcopy and softcopy to the register office involve multiple persons and different processes, it could easily led to confusion, loss of important student report card. It also wastes unnecessary resources such as paper and printer.</p>	<p>We will create a system where Higher management will no longer have to wait for the registered office for searching particular student data. If higher management wants to find student data, specific course data, or find specific section-wise student data they can enter only student ID, Course ID, or Section ID in our new system. They will be able to see student performances in the graph shows. And they can download student information.</p>

Process Name	Stakeholders	Concern (Problems)	Analysis (reason of the problem)	Proposed Solutions
Higher Management Viewing Individual Instructor Performance	1.Department Head 2.Dean 3.Instructor	In our existing system higher management can't see their instructor performance digitally. Higher management see only Instructor performance send by the hardcopy of the course wise student performance report. Higher Management can't see how many quizzes and assignment they are taken, whether he is taking regular classes, whether he is giving exam papers properly, what is the result of the student in his section, what was the result of the last semester even under that faculty and what kind of project they are maintains for specific course and prepare a projects specification based on their course	In our existing system higher management can only see Hardcopy for an individual instructor performance, but it's difficult for measuring a performance instructor by instructor, and it's also difficult comparing with previous semester performance because its hardworking and time consumption matter. It also wastes unnecessary resources such as paper and printer.	We will create a new system where Higher Management can see their Instructor Performance department wise, section wise, and course wise. Higher Management can download instructor performance data with graphs or charts. Then they can easily compare to each other and also compare with previous semester result in the same course. After download data Higher Management can see their performance like how many quizzes and assignment they are taking, whether instructor attend the class regularly, also see instructor class performance and class performance feedback by the student after faculty evaluation

Process Name	Stakeholders	Concern (Problems)	Analysis (reason of the problem)	Proposed Solutions
Instructor viewing the CGPA and change the grade	1.Instructor 2.Student	<p>In our existing system without the Higher Management, the faculty cannot see any student's CGPA and grade sheet. They only know about the courses they have taken. Even once they upload the grade to the system, they cannot change it later. If a student's grade changes or applies for a change, the instructor has to help the Register Office and Department Head. And it takes the permission of the obsessed department head to change the grade</p>	<p>Now, instructor can't see any student CGPA and grade sheet and also If a student feels that his or her grade has not been returned or correct, the student will apply along with the instructor. After Application Instructor Contact Department Head Than They Can Check the Script Again. If change is another grade then department head request to Register Office for Change The Grade, It's a Long Term and Hard Process Also its Time Consumption process.</p>	<p>We will create a new system where Higher Management and instructor can see the student CGPA and Grade sheet using student ID in this case instructors and students should be in the same department. And also we will create a system where higher management and instructor can change the grade easily getting application from student after checking script with department head and controller of examination. After. And instructor get permission to resubmits the grades easily using our new system.</p>

Process Name	Stakeholders	Concern (Problems)	Analysis (reason of the problem)	Proposed Solutions
Higher management and Instructor viewing OBE mark sheet and grade sheet	1.Higher management (HM) 2.Instructor 3.Department 4.Dean/Vc	The current process of requesting the head of the department to view records for analysis and inspection can result in delays due to various problems in communication. Since the OBE Marks sheets course assessment reports and other necessary documents are only saved in softcopies (Without database management) and hard copies, it can get tedious and time-consuming to retrieve them when needed.	Due to being a hardcopy, when the Higher management wants to see each course, section, and department wise OBE mark sheet and course assessment then a lot of trouble to maintain this kind of documents, and it is also very difficult to analyze by looking at the hard copy so that the data is likely to be wrong and lost and when these data are compared with any previous data it becomes more difficult. It also wastes unnecessary resources such as paper and printer.	We will create a new system where Higher Management and instructor can see the OBE Mark Sheet, Course Assessment using their ID (Only those to whom Higher management will give permission will be able to see) The system that we will build be there the mark sheet and course assessments will be according to the section, course, and department, and they can download them as needed.

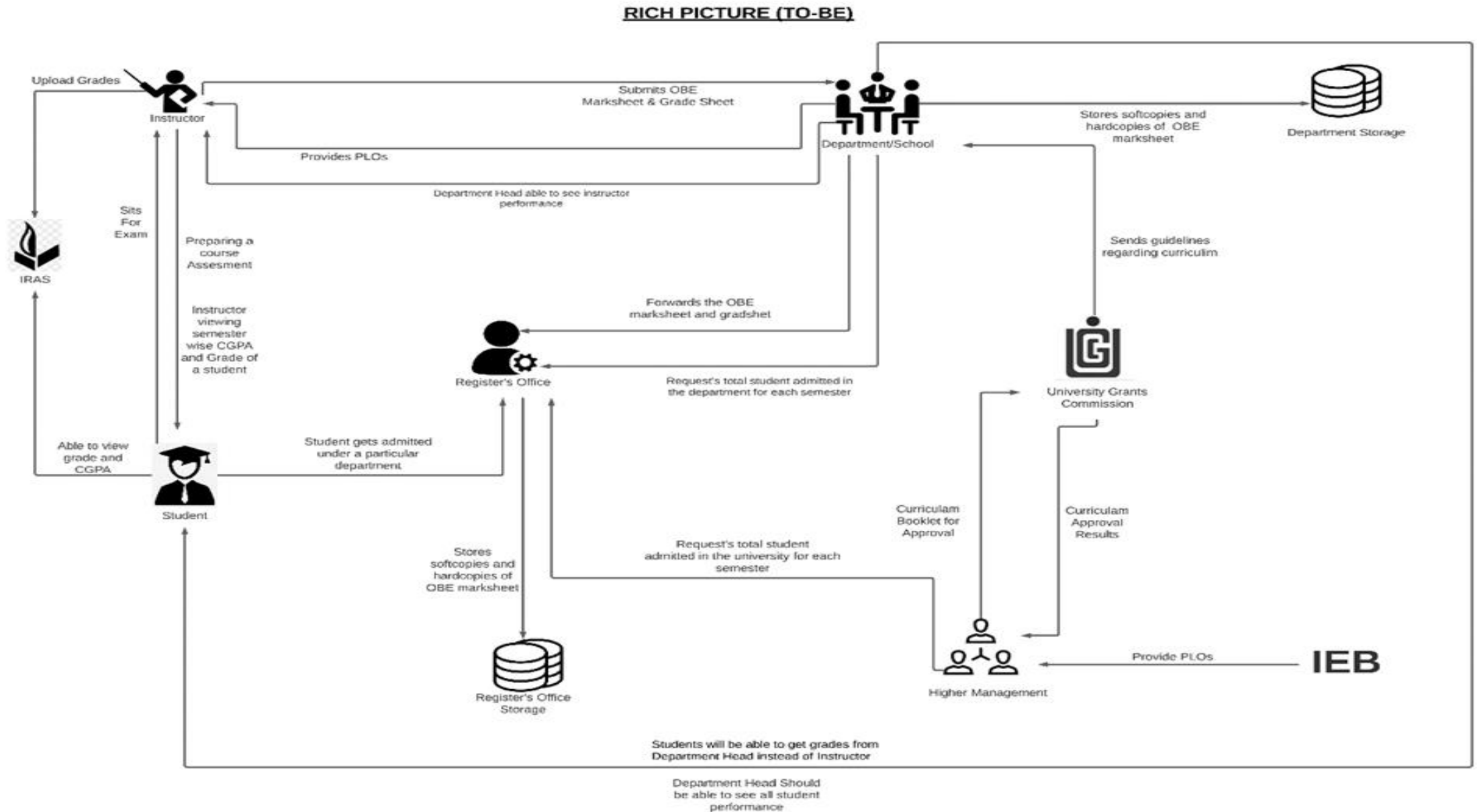
Process Name	Stakeholders	Concern (Problems)	Analysis (reason of the problem)	Proposed Solutions
Students will be able to get grades from Department instead of Instructor	1. Department 2. Instructor 3. Student	We don't have the option to grade someone else instead of the Instructor in our system. If for some reason an instructor cannot give a grade If there is an instructor leave or something tragic happens then there is no option to continue the semester and submit a grade, unless the department manages it.	If necessary, if an instructor is on leave, then the whole matter has to be handled by the department Instead, another instructor has to be appointed and he has to explain the whole process again, it's difficult to manage in a short period of a semester.	We will create a new system where the Department Head can see the performance of the students and give them a grade for Emergency Situations. Based on their PLO & co achievement and OBE mark sheet in the Previous semester
Higher Management & Instructor Uploading & Viewing PLOs/CO	Higher Management (HM) & Department	In our existing system Higher Management (HM), Department Head, Dean/VC and instructor see only hardcopy PLOs and Co achievement, but its time consuming when they want to check it manually. There are many students in one section and every course has many sections and each department has many students, so a lot of student information is not possible to check manually. In this case, there is a possibility to lose data.	The current system does not support Viewing PLOs and CO achievement. Due to which no one Instructor, Higher Management cannot see the POL & Co Achievement and student performance	We will create a new system where Where instructors can upload Plo & Co reports, all of the higher management and instructors can see and download the data. They will be able to view this data using input Student id to the system and see Plo & co achievement of any specific student, course-wise, and section-wise.

Process Name	Stakeholders	Concern (Problems)	Analysis (reason of the problem)	Proposed Solutions
Student viewing PLO & CO	1.Student	In our existing system Student cannot see our PLOs and Co achievement. They cannot even see the hardcopy.	It is important for every student to see their Plo and co-Achievement, what course they are doing, it is important to know what did they achieved and what issues need to be improved. But it is not seen in our existing system now.	We will create a new system where Students will be able to see and download the file and they will be able to view their Plo & Co achievement and compare with the other Course.
UGC approves curriculum based on PLO and CO	1. Higher Management (HM) 2. UGC	HM needs to send the curriculum booklet manually. HM needs to send the updated Curriculum to the Department every time.	It will take time for the UGC to receive the Curriculum booklet and process the information. It is a hassle to send manually every time the curriculum is updated	We can transfer the curriculum in our new system by which it could be accessed easily by the members and it also could be edited real time by the HM and updated instantly whenever changes are required by the UGC.

RICH PICTURE (TO-BE)

RICH PICTURE (TO-BE)

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SIX ELEMENT (TO-BE)

PROCESS NAME (TO-BE)

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5/22/2021

- ❖ Preparing Course Assessment of Instructor
- ❖ Instructor Able to see the result of another courses of a Student
- ❖ Students will be able to get grades from Department instead
- ❖ UGC approves curriculum based on PLO and CO
- ❖ Department Head able to see all instructor Performance
- ❖ Higher Management and Instructor viewing OBE mark sheets and grade sheet
- ❖ Instructor viewing CGPA and change the grade
- ❖ Student viewing PLO & CO

SIX ELEMENT (TO-BE)

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System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
Preparing Course Assessment of Instructor	<p>Instructor:</p> <ol style="list-style-type: none"> 1)Log in to a “New System”. 2) Instructor will be shown the courses they have/had for every semester under “Semester” Tab. 3)Select course (section and thereof). 4)Create (quiz/ exam/ project) 5)For each student, each student’s score for each question. 6) Upload the Assessment report for the students. <p>Student:</p> <ol style="list-style-type: none"> 1)Login to the “New System”. 2)Goes to desired course. 3)Click on “Course Assessment’ 4) Download it. 	<p>Google Forms:</p> <ol style="list-style-type: none"> 1)Used for recording a student’s remote response to the questions. 	<p>Computer:</p> <ol style="list-style-type: none"> 1)Used for accessing the “New System”. <p>Printer:</p> <ol style="list-style-type: none"> 1)Printout the softcopy of Assessment report. 	<p>New System Faculty frontend:</p> <ol style="list-style-type: none"> 1)Provides user interface for the faculty to enter student assessment data 	<p>Google Classroom:</p> <ol style="list-style-type: none"> 1)Import assessment data from google forms(or classroom, depending on their API), manually or automatically 	<p>Internet:</p> <ol style="list-style-type: none"> 1)New System is a fully online web application: all preparing and requests thereof are sent through the internet. <p>Email:</p> <ol style="list-style-type: none"> 1)Email is the primary method of notifying the students about major assessment

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
Instructor Able to see the result of another courses of a Student	<p>Instructor:</p> <ol style="list-style-type: none"> 1.Login to New System. 2. Search that specific student's id. 3. See the grades of other courses for intended semester but only his/her(Instructor) Department. <p>Register Office:</p> <ol style="list-style-type: none"> 1.Access New System. 2.View Students grades of other courses if and when it's necessary 	<p>Pen and Paper:</p> <p>Note down the grade if needed.</p>	<p>Computer/Phone:</p> <ol style="list-style-type: none"> 1.Used for accessing New System. 2.Used Computer to make softcopies. <p>Printer:</p> <p>Printout the softcopies.</p>	<p>New System</p> <p>Instructor frontend: 1.</p> <p>Provides the online user interface for viewing grades.</p>	<p>Networking devices (Router, Switch Bridge, Hub):</p> <p>Used by Instructor and students to access the Internet.</p> <p>Database Server:</p> <p>Instructor receive the student information in New System.</p>	<p>Internet:</p> <p>All related data searched through internet.</p>

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
Students will be able to get grades from Department instead	Department: 1. Collect the student's OBE mark sheet & grade sheet. 2. Log in to New System. 3. Click on "Performance Monitoring" tab. 4. Search Student I'd to upload his/her grade. 3. Select a particular course & section according to the Department. 4. Submit the grade next to the student's name based on their PLO & co achievement and OBE mark sheet	Calculator: Marks are calculated with a calculator.	Computer: Used for accessing IRAS. Printer: Printout the softcopy of the mark sheet.	Excel sheet: Marks-sheet can be created using Excel sheet, Google sheet Email Software: Used for communication between Department head and Instructor.	New System RDBMS: 1. This Database management used to store and maintain student grades' information	Internet and Gmail: The marks sheet can be taken through emails or any other internet messaging platforms.

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
UGC approves curriculum based on PLO and CO	Higher management: 1)Log in to New System. 2)Requests for Program approval to UGC based on Plo & CO. UGC: 1)Receive the request from Higher Management. 2)Feedback the higher management.	Paper: 1)Use to print book of curriculum. 2)Use for signature.	Printer: 1)Use for print. Computer: 1)Save the file.	Microsoft Word: 1)Use for save book. Excel sheet: Necessary data store.	Gmail: Using for mail send. Web Server: 1)Update information. Microsoft Database: Instructor excess CO's form.	Internet: Using send mail UGC and update and upload new Version

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
Department Head able to see all instructor Performance	Department Head : 1.Login to New System. 2.Click on “Performance Monitoring” tab. 3.Select course and section, according to Department.	Paper: Instructor send the hardcopy of the semester wise student performance report to the	Computer/Phone: 1.Used for accessing New System. 2.Create softcopies of record of all assessment date. Printer: 2.If needed Printout the softcopies.	Excel sheet: Record necessary assessment data in Excel sheet. Department frontend: Update activity of Instructor. Printing Software: Used for printing Software doc. PDF Viewer: To view the transcript in PDF-form.	New System server: Store update activity. Department Storage: Record of instructor assessment.	Internet: Need to connect New System.

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
Higher Management and Instructor viewing OBE mark sheets and grade sheet	<p>Department Head/ Dean/ VC/ Board of Trustees:</p> <ol style="list-style-type: none"> 1)Log into New System Department Head dashboard. 2)View department Assessment report 3)View Course Assessment Reports & OBE Mark sheets, searchable by year, according to the Department & Course. 4)View individual student reports. <p>Instructor:</p> <ol style="list-style-type: none"> 1)Log into New System Instructor dashboard. 2)Using ID & Password. 	<p>Pen and paper:</p> <ol style="list-style-type: none"> 1. May be used for high-level notetaking. 	<p>Cloud Server:</p> <ol style="list-style-type: none"> 1. Receive and process incoming requests <p>Computer/ mobile:</p> <ol style="list-style-type: none"> 1. View reports & mark sheet, grade sheet. 	<p>New System Instructor frontend:</p> <ol style="list-style-type: none"> 1. Provide user interface for online Instructor navigation. 2. Show specific reports on request. 3. Sort report data in customizable ways (by PLO, by CO, by semester, by course, by time) <p>Excel sheet: Record necessary report in Excel sheet.</p>	<p>System RDBMS:</p> <ol style="list-style-type: none"> 1. For a specific course and student(s), retrieve PLO/ CO achievement data from RDBMS and tabulate them. 2. From tabulated data, derive outcome analysis and verdict 	<p>Internet:</p> <ol style="list-style-type: none"> 1. New System is a fully online web application: all packets and requests thereof are sent through the internet.

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
	<p>3)Click on “Performance Monitoring” tab.</p> <p>4)View Course Assessment Reports & OBE Mark sheets according to the Department, Course & Section.</p> <p>5)Download them if they want or need.</p>					

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
Instructor viewing CGPA and change the grade	<p>Student:</p> <ol style="list-style-type: none"> 1.Log into New System Student Dashboard 2. Goes to desired course 2.Click on “Request Grade Change” 3.Fills form e.g. with reason for grade change 4.Submits the grade change request <p>Instructor:</p> <ol style="list-style-type: none"> 1.Logs into Instructor dashboard 2.Reviews grade change request 3.Check exam Papers and other assessment upon request. 	<p>Pen and paper:</p> <ol style="list-style-type: none"> 1. May be used for high-level notetaking. 2. Hard copies of student test papers used for review 	<p>Computer/Phone:</p> <ol style="list-style-type: none"> 1.Used for viewing and making changes to grades 	<p>New System Student frontend:</p> <ol style="list-style-type: none"> 1. Provide user interface making grade change requests 2.Show “Request Grade Change” interface 3.Provide field to input reason for grade 4.Show submit button interface 	<p>New System RDBMS:</p> <ol style="list-style-type: none"> 1. Changed grade data are stored here 	<p>Internet:</p> <ol style="list-style-type: none"> 1. This New System is a fully online web application: all packets and requests therefore are sent through the internet.

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
	<p>4.If change needs to be made, then the instructor changes the grade and inform or Submit the grade to the Department. 5.If not, end the process. Mail the student that his request has been denied.</p> <p>Department</p> <p>1.Receives information regarding grade change of a specific student in a course.</p> <p>2. Updates the OBE mark sheet and grade sheet with the new grade and stores it in the department storage.</p> <p>3.Inform to the Register's office for changing the grade</p>			<p>New System Instructor frontend:</p> <p>1.Provide user interface for instructor to make grade changes</p> <p>2.Show requested grade change details</p> <p>3.Show approve or disapprove button</p> <p>4.If approved, provide field for new grade input</p>		

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
	<p>Register's Office:</p> <p>1)Receive a request from the department for updating new grade of a student in a specific course.</p> <p>3)Updates the register's office storage with the new grade</p>					

System Process	Human	Non-comb Hardware	Computing Hardware	Software	Database	Network and Communication
Student viewing PLO & CO	Student: 1.Log into New System Student Dashboard 2. Click on “Performance Monitoring” tab 3. Select course and time period 4. Click on “Plo & CO's report” 5. View OBE mark sheet in browser. 7. Obtain information about their performance for the selected semester. 8. Download report in PDF form	Pen & Paper: Note down the grade if needed. Calculator: Marks are calculated with a calculator.	Computer/Phone: 1.Used for accessing New System. Printer: 1.If needed Printout the softcopies	System Student frontend: 1.Provide user interface for online Student navigation 2. Show specific reports 3. Sort report data in customizable ways (by PLO, by CO, by semester, by course, by time)	New System RDBMS: 1. A Database Management Service is used to store, maintain, edit and receive the list of COs and PLOs of each student, student's grade information and transcript.	Internet: All related data searched through internet.

PROCESS DIAGRAM (TO-BE)

process diagram (To be)

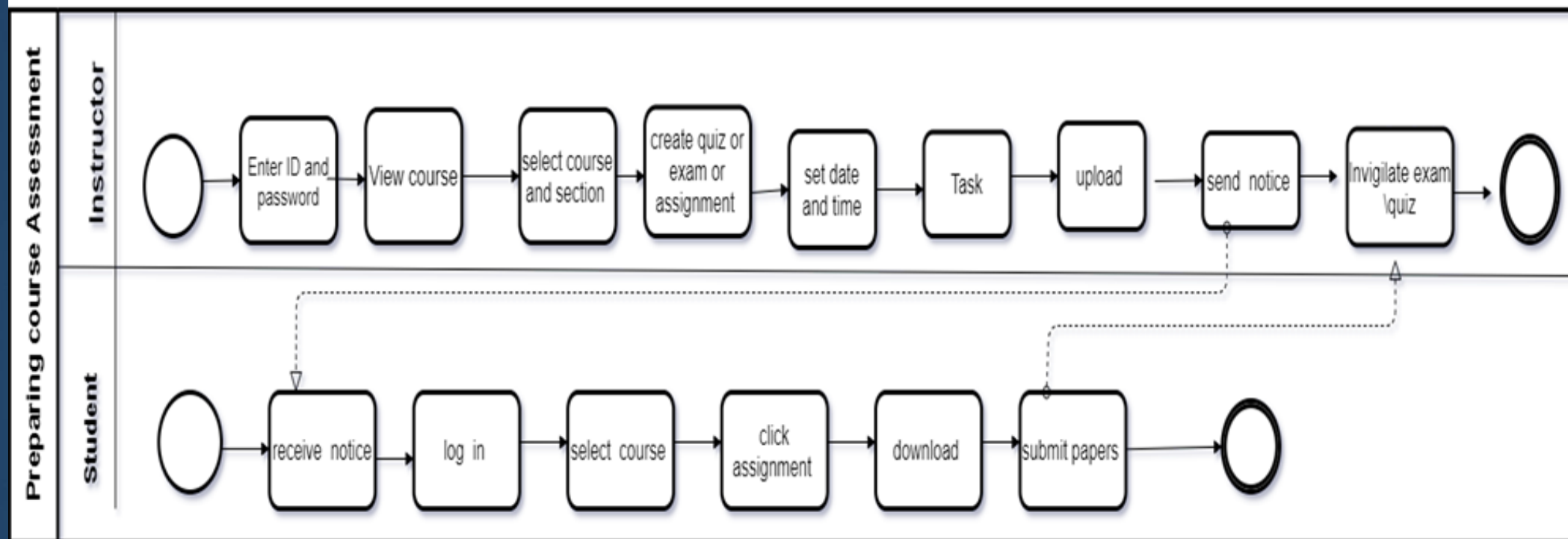


FIGURE 2.1: Process Diagram for preparing course assessment

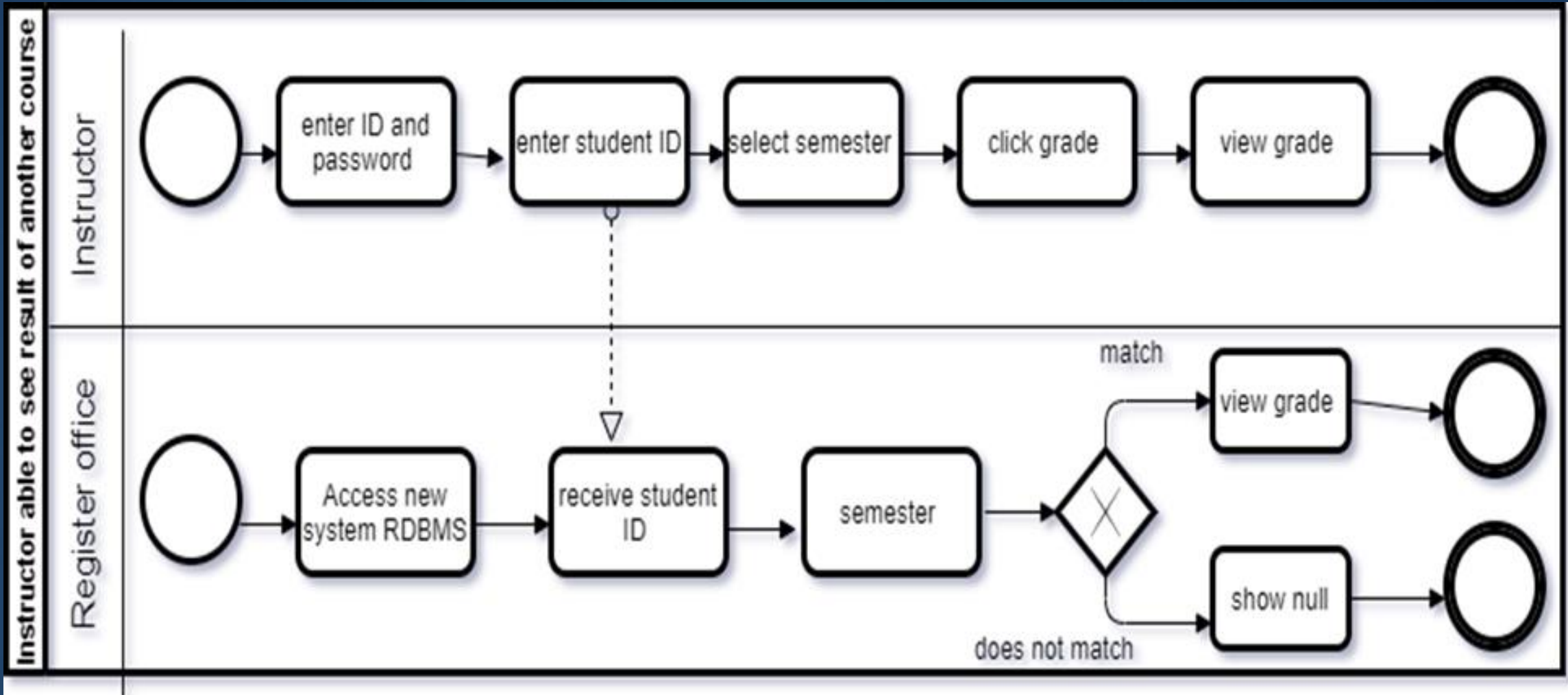


FIGURE 2.2: Process diagram for instructor able to see any course result

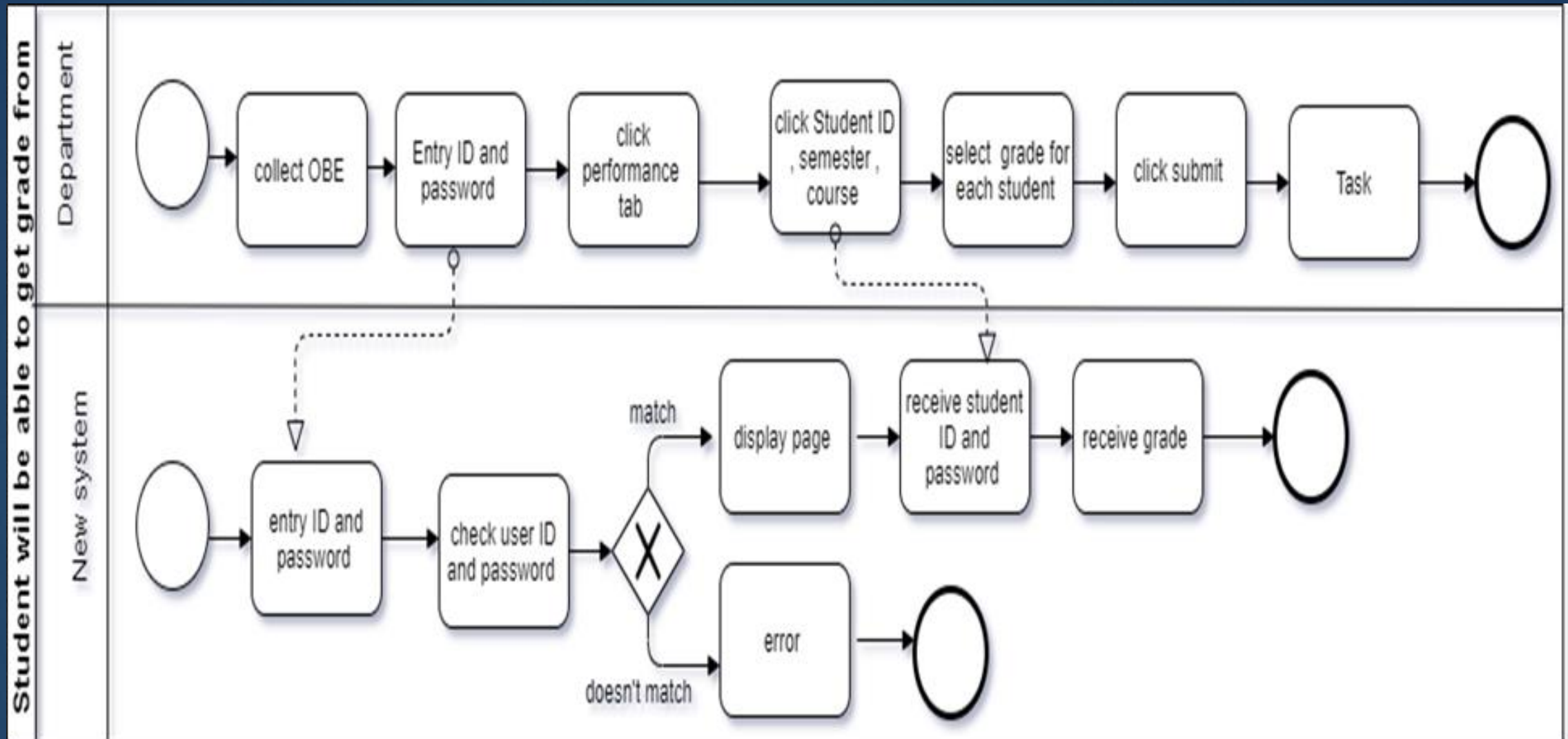


FIGURE 2.3: Student will be able to get grade form

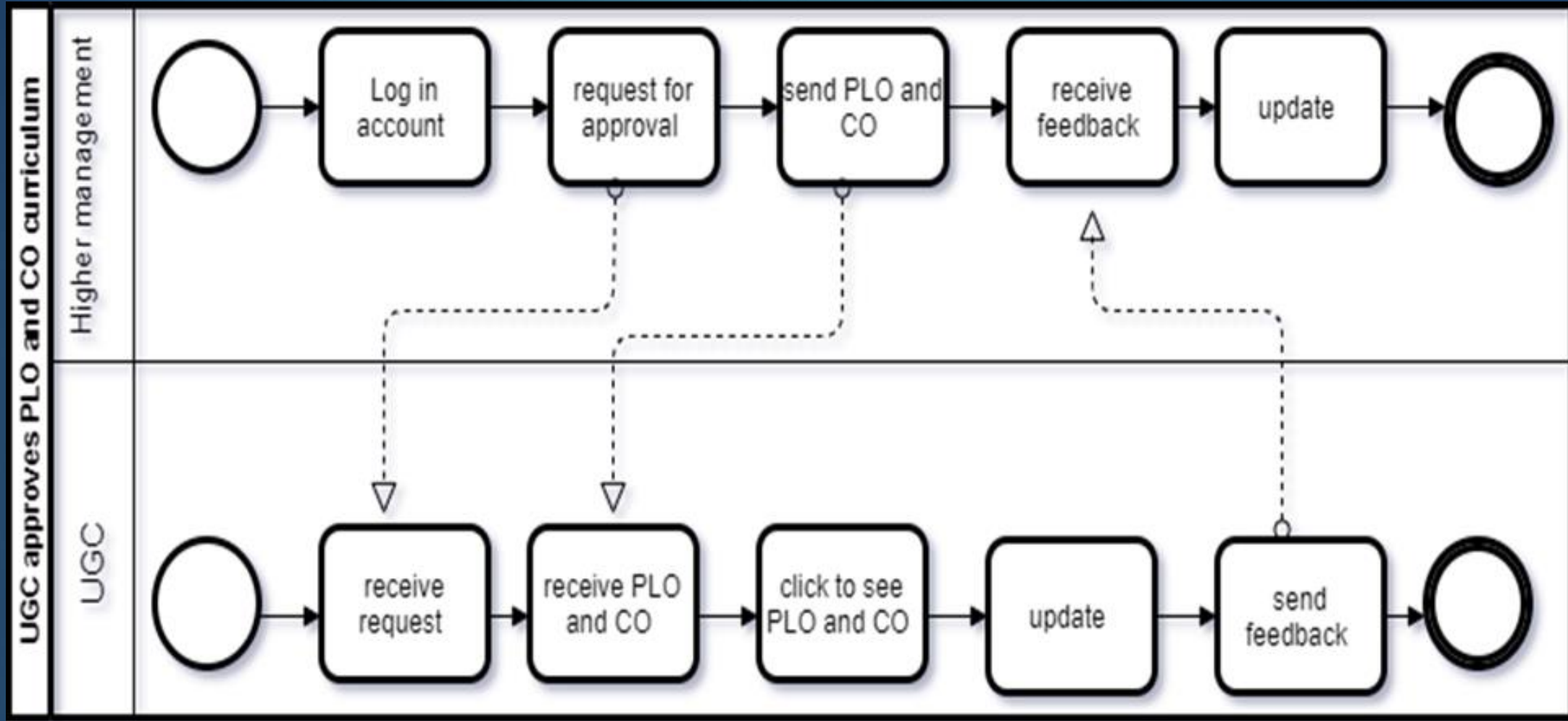


FIGURE 2.4: UGC approves PLO and CO Curriculum

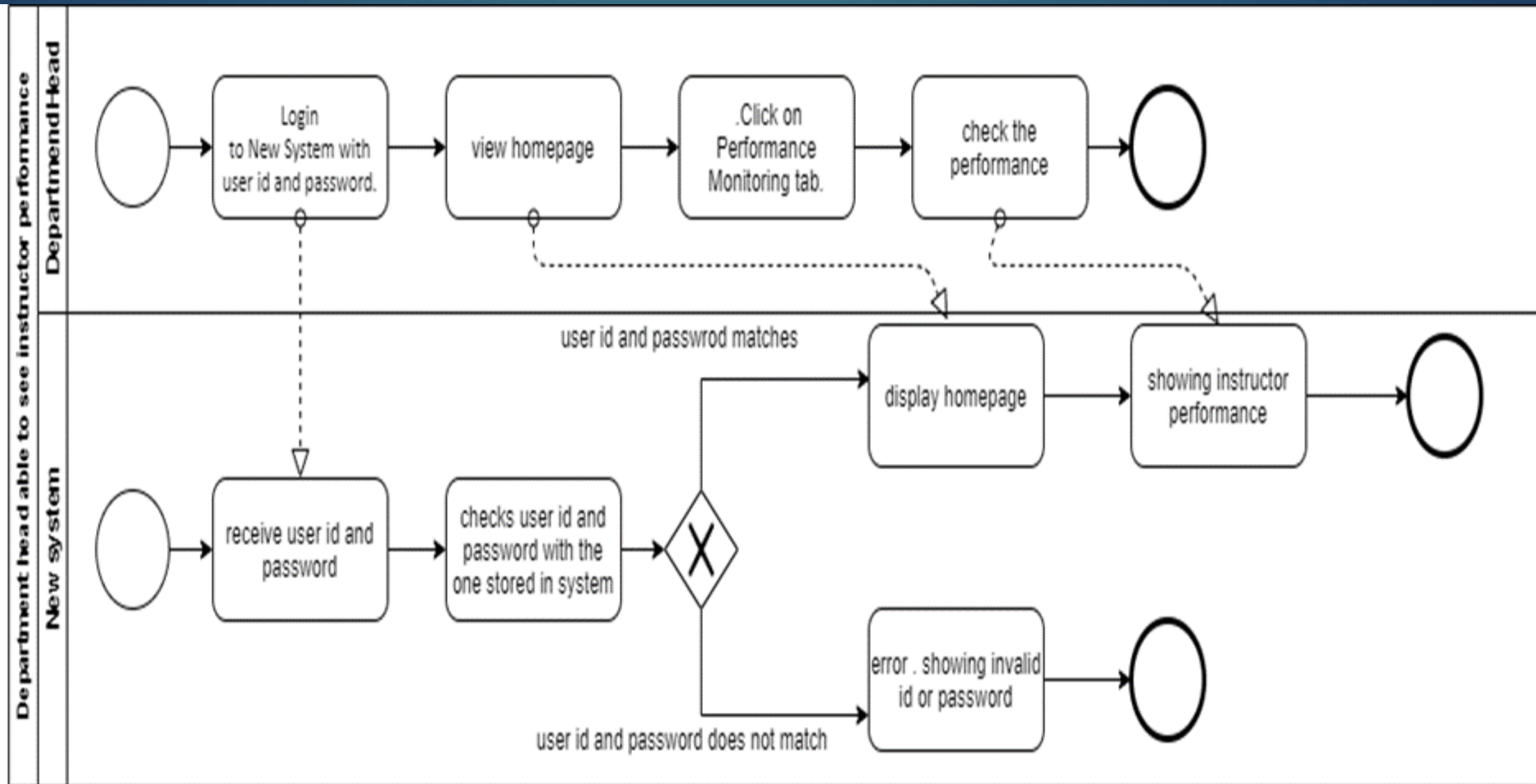


FIGURE 2.5 : Department head able to see instructor performance

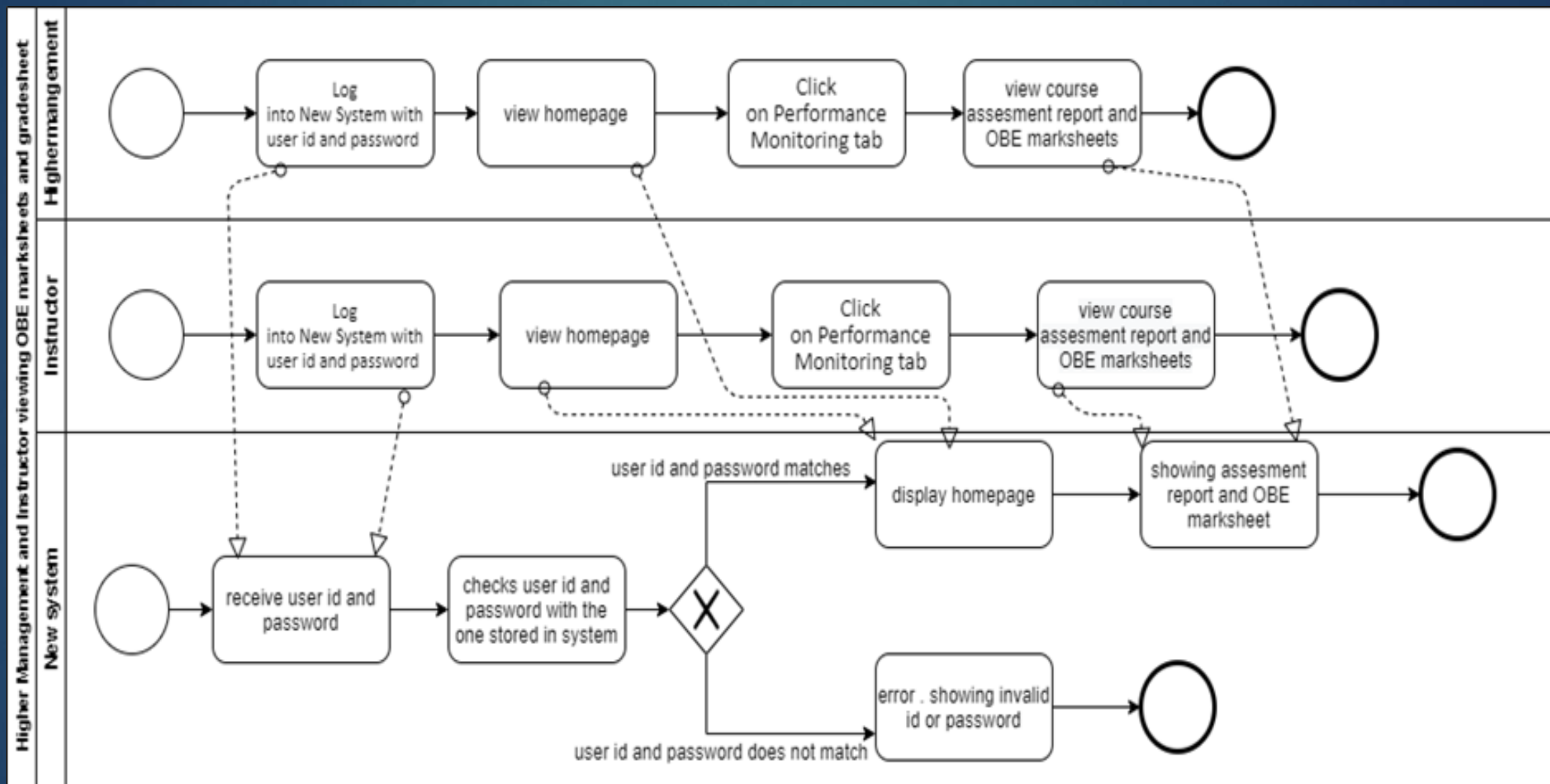


FIGURE 2.6 : Higher Management and Instructor viewing OBE marksheets and grade sheet

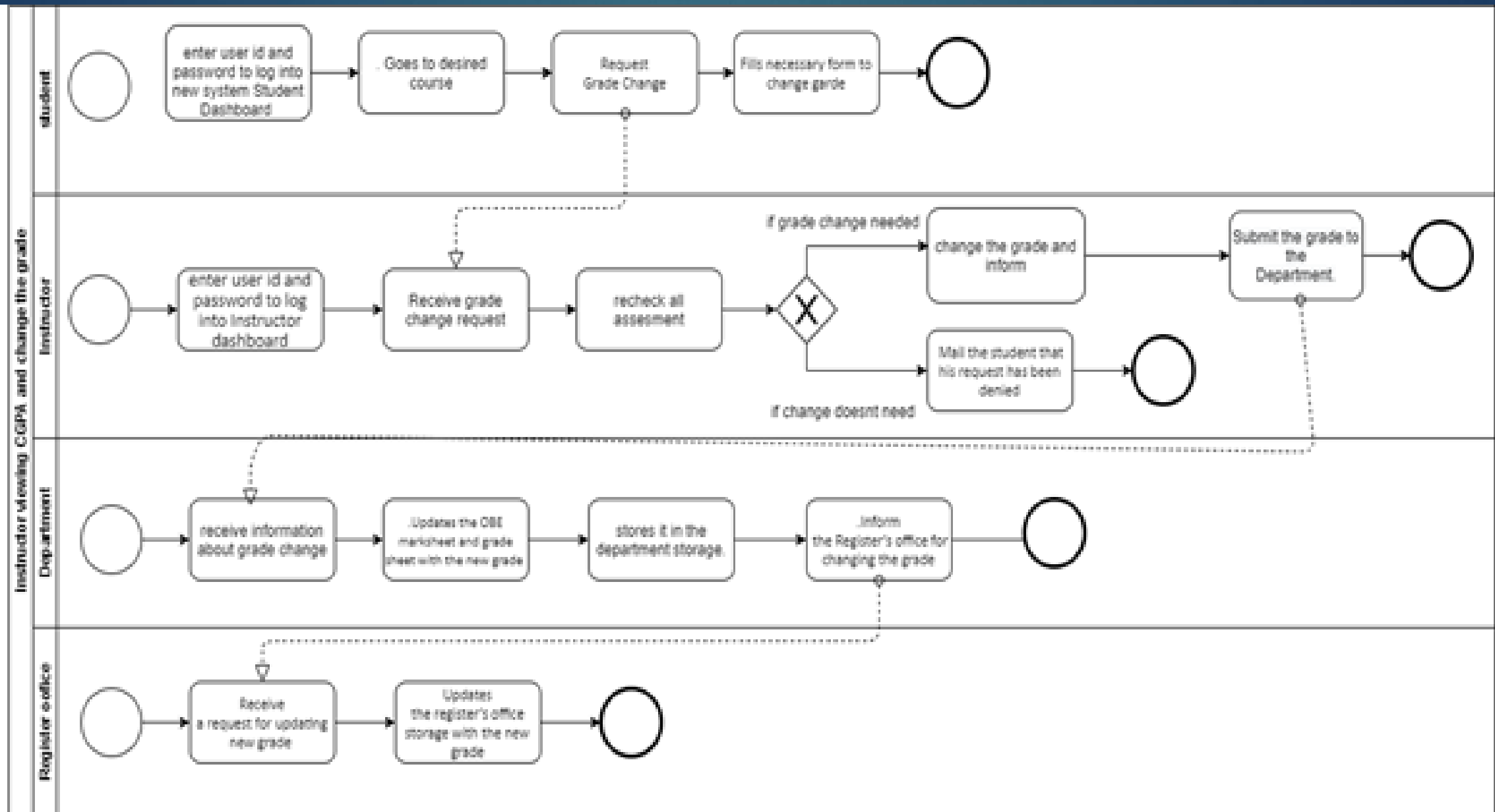


FIGURE 2.7 : Instructor viewing CGPA and change the grade

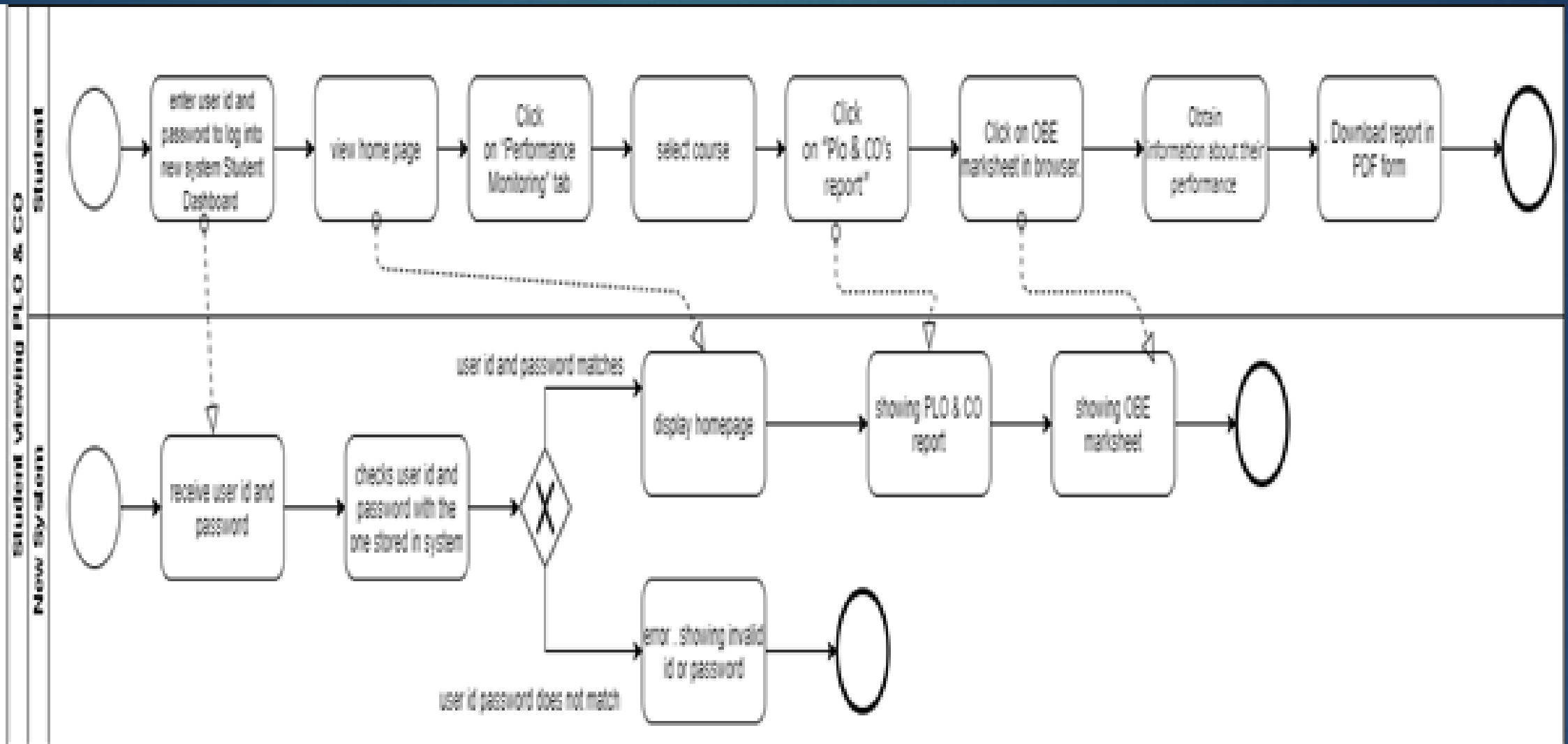


FIGURE 2.8 : Student viewing PLO and CO

FIGURE 2.8 Student viewing PLO & CO

BUSINESS RULE

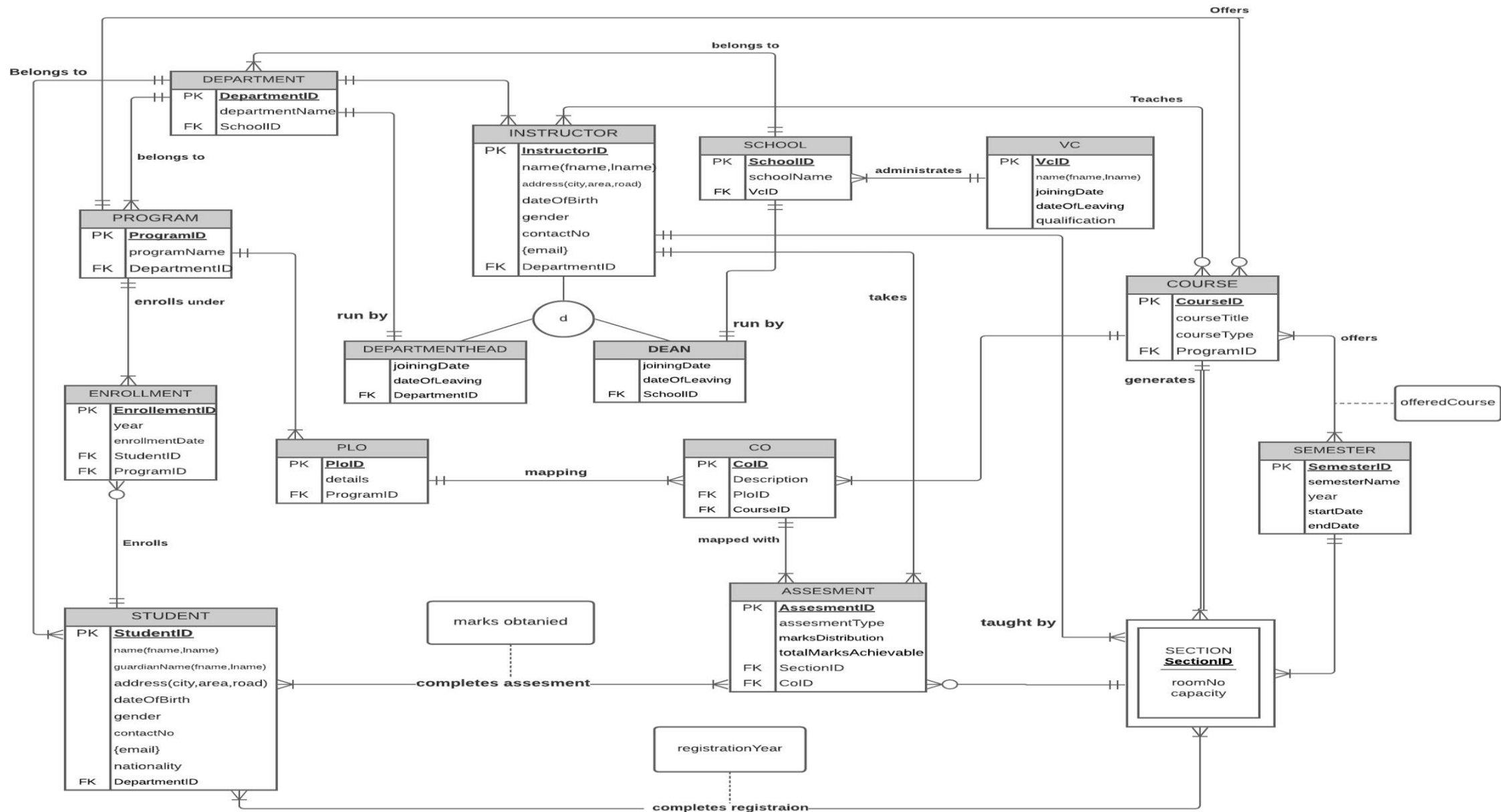
62

- ▶ 1) A student may register under one or more programs. A program may have multiple students.
- ▶ 2) A department may have multiple programs. A program must be exactly under one department.
- ▶ 3) A school may have multiple departments. A department must be exactly under one school.
- ▶ 4) A department may have multiple instructors. An instructor must be exactly under one department.
- ▶ 5) A department must have exactly one head.
- ▶ 6) A school must have exactly one dean.
- ▶ 7) A program may have multiple PLOs. A PLO may be under multiple programs.
- ▶ 8) An instructor may teach multiple courses. A course must have exactly one instructor.
- ▶ 9) A course may have multiple sections. A section must be under exactly one course.
- ▶ 10) A student may take multiple assessments. A particular assessment must be taken exactly by one student.
- ▶ 11) A section may have multiple assessments. An assessment must have one exact section.

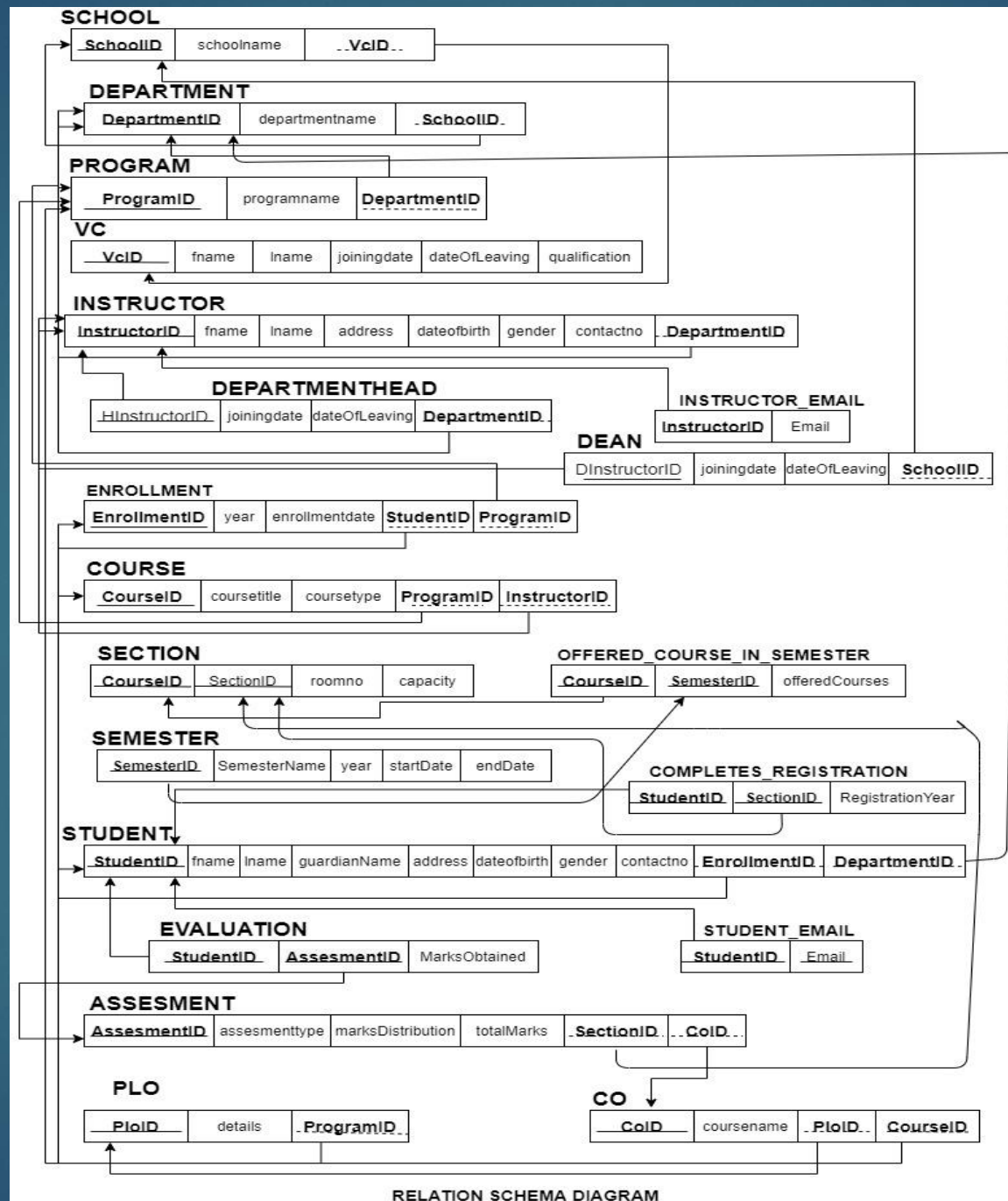
ERD

ENTITY RELATIONSHIP DIAGRAM

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ENTITY RELATIONSHIP DIAGRAM TO RELATIONAL SCHEMA



NORMALIZATION

School	SchoolID	s1	Enrollment	enrollemntID	n1
				year	n2
	School name	s2		Enrollment date	n3
	VCID	v1		studentID	t1
VC				ProgramID	p1
	vcID	v1	student	studentID	t1
	Fname	v2		fname	t2
	Iname	v3		iname	t3
	Joining datew	v4		City	t4
	Leaving date	v5		Road	t5
	Qualification	v6		Area	t6
Department	departmentID	d1		Date of birth	t7
	Departmentname	d2		Gender	t8
				Contact no	t9
program	schoolID	S1		Nationality	t10
	programID	p1		enrollmentID	n1
	Program name	p2		departmentID	d1
Instructor	departmentID	d1	Assessment	Assessment ID	a1
	InstructorID	i1		Assessment type	a2
	fname	i2		Marks distribution	a3
	Iname	i3		sectionNO	e1
	City	i4		studentID	t1
	Area	i5		COID	o1
	Road	i6		PLOID	l1
	Date of birth	i7		Student complete assessment	a4
	Gender	i8		Student marks obtained	a5

NORMALIZATION

			Course		
Department Head	departrmentheadID	h1		Course type	c3
	qualification	h2		programID	p1
	Joining date	h3		InstructorID	i1
	Date of leaving	h4		semesterID	r1
Dean	deanID	x1	Section	sectionNO	e1
	Annual salary	x2		courseID	c1
	Joining date	x3		Room no	e2
	Date of leaving	x4		capacity	e3
				Start time	e4
				End time	e5
PLO	PLOID	l1	Semester	SemesterID	r1
	Details	l2		year	r2
	programID	p1		Start date	r3
CO	COID	o1		End date	r4
	Course name	o2			
	PLOID	l1			

NORMALIZATION

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s1->	s 2, v1
v1->	v2,v3,v4,v5,v6
d1->	d2,s1
p1->	p2,d1
i1->	i2,i3,i4,i5,i6,i7,i8,i9,d1
il,h1->	h2,h3,h4
il,x1->	x2,x3,x4
n1->	n2,n3,t1,p1
t1->	t2,t3,t4,t5,t6,t7,t8,t9,t10,n1,d1
a1->	a2,a2,a3,a4,a4,e1,t1,o1,l1
c1->	c2,c3,p1,i1,r1
e1->	e2,e3,e4,c1
l1->	l2,p1
o1->	o2,l1
r1->	r2,r3,r4

NORMALIZATION

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SchoolID->	School name, VCID
vcID ->	Fname,iname, Joining date, Leaving date, Qualification
departmentID ->	Department name, schoolID
ProgramID->	Program name , departmentID
Instructor ID->	Fname, iname, city, area, road, date of birth, gender , contact no (gmail), departmentID
Instructor Deartment HeadID->	Qualification , joining date , date of leaving
Instructor DeanID->	Annual salary, joining date ,date of leaving
enrollmentID->	Year, enrollment date, studentID, programID
studentID->	Fname,iname,city,road,area,date of birth,gender , contact no(gmail),nationality , enrollmentID, departmentID
Assessment >	Assessment type, marks distribution, sectionNO,, studentID, COID ,PLOID, student complete assessment , student marks distribution
courseID->	Course title, course type, programID, instructorID, semesterID
sectionNO->	courseID, room no, capacity , start time
PLOID->	Details, programID
CO->	Course name , PLOID
SemesterID->	Year, start time, end date

1NF

If a relation that has a primary key and in which there are no repeating groups will be 1nf.

But our functional dependency table and relation have repeating groups and a primary key has not defined so the relation not will be 1nf.

2NF

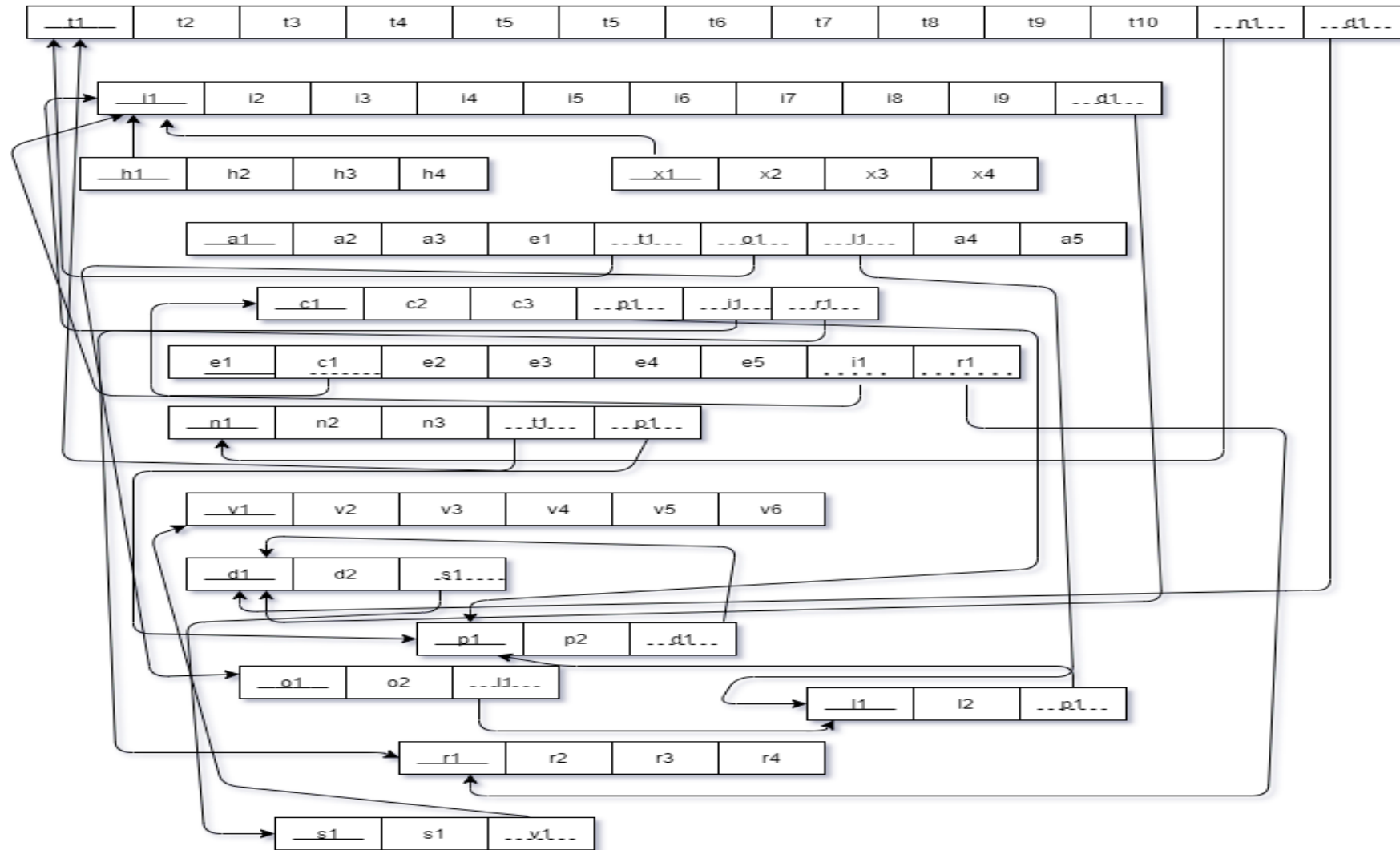
If a relation in first normal form in which every non key attribute is fully functionally dependent on the primary key and a functional dependency in which one or more non key attributes are functionally dependent on part of the primary key that's time relation will be 2NF

But our relation not fully dependent on primary key and functional dependency have not any non-key attributes are not functionally dependent on primary key. This relation not also 1NF. There are no composite keys present this step is not required.

So the relation not will be 2NF.

3NF

Remove all transitive dependencies



Each non key attribute that is a determinant a relation and create a new relation. That attribute becomes the primary key of the new relation.

BCNF

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Relation which every determinant is a candidate key is said to be in BCNF.

Each and every functional dependency relation have candidate key and candidate key identify non key attribute. This relation has not non-key attribute can identify primary key.

So all relation in a BCNF.

DATA DICTIONARY

VC_T

Name	DataType	Size	Remark
nvcid	Number	7	This is the Primary Key for VC. Example: “19*****”
cname	Text		This is the name of vc Example: “md khan”
djoiningDate	DateTime		This contains the date when vc took charge of his role . Example : “01.01.2015
dleavingDate	DateTime		This contains the date when vc discharged from his role Example : “01.01.2020
cqualification	Text		This contains the qualification of vc Example “ PHD , BSC”

Name	DataType	Size	Remark
cschoolid	Text	5	This is the Primary Key of School Example: “SETS”
Cschoolname	Text		This is the name of the School. Example: “School of Engineering, Technology and Science”
nvcid	Number		This is the foreign key from the VC table . Example : “19*****. “

Name	DataType	Size	Remark
cdepartmentid	Text		This is the Primary Key of the Department. Example: “EEE”
cdepartmentname	Text		This is the name of the Department. Example: “Computer Science and Engineering”
cschoolid	Text		This is the Foreign Key of the table School. Example: “SETS”

Student_T

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Name	Data Type	Size	Remark
nstudentid	Number		This is the Primary Key for the Student. Example: “1800001”
cname	Text		This is the name of the Student. Example: “Muhammad Akib”
cguardianname	Text		This is the name of the guardian. Example: “Muhammad karim”
caddress	Text		This is the address of the Student. Example: “House 270, Road 6, Block C, Bashundhara, Dhaka, Bangladesh
ddateofbirth	Datetime	“dd/mm/yy”	This the Date of Birth of the Student. Example: “01-01-2000”
cgender	Text		This is the gender of the Student. Example: “M”
ncontactno	Number		This is the phone number of the Student. Example: “0191211141”
cemail	Text		This is the email address of the Faculty. Example: “mahady@iub.edu.bd”
cnationality	Text		This contains nationality of the student Example: “Bangladeshi”
ndepartmentid	Number		This is the Foreign Key from the Department table. Example: “CSE

Name	DataType	Size	Remark
ninstructorID	Number		This is the Primary Key for Faculty. Example: “1501*** “
cname	Text		This is the first name of the instructor. Example : “ Abdur Rahim”
caddress	Text		This is the address of the instructor. Example: “House 1, Road 1, Sector 1, Uttara, Dhaka, Bangladesh
ddateofbirth	DateTime	DD-MM-Y YYY	This the Date of Birth of the instructor. Example: “01-01-1993”
cgender	Text		This is the gender of the instructor . Example: “F”
ncontactno	Number		This is the phone number of the instructor. Example: “01910101010”
cemail	Text		This is the email address of the instructor. Example: “rakib@iub.edu.bd”
cdepartmendid	Text		This is the Foreign Key from the Department table. Example: “CSE”

Name	DataType	Size	Remark
djoiningDate	DateTime		This contains the date when a department head took charge of his role Example : “01.01.2015”
dleavingDate	DateTime		This contains the date when a department head discharged from his role Example : “01.01.2020”
cdepartmentID	Text		This is the Foreign Key from the Department table. Example: “CSE”

Name	DataType	Size	Remark
djoiningDate	DateTime		This contains the date when a Dean took charge of his role Example : “01.01.2015”
dleavingDate	DateTime		This contains the date when a Dean discharged from his role. Example : “01.01.2020”
cschoolid	Text		This is the Foreign Key of the table School. Example: “SETS”

Name	DataType	Size	Remark
cploid	Text	5	This is the primary key for Program Learning Outcome. Example: "PLO1"
cdetails	Text		This is the details of the Program Learning Outcome. Example: "An ability to select and apply the knowledge, techniques, skills, and modern tools of the computer science and engineering discipline"
cpogramid	Text		This is the foreign key from Program table Example: "B.Sc".

Name	Data Type	Size	Remark
ccoid	Text	5	This is the Primary Key for Course Outcome. Example: "CO1"
ccoursename	Text		This is the name of the course Example: "Database management system"
cploid	Text		This is the foreign key from the Program Learning Outcome table. Example: "PLO1"
ccourseid	Text		This is the foreign key from the course table . Example: "CSE203"

Enrollment_T

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Name	Data Type	Size	Remark
enrollmentid	Number		This is the Primary Key for Enrollment Example : "1"
year	Datetime		This is the year of Enrollment Example: "2017"
enrollmentdate	Date Time	DD-MM-YYYY	This contains the date of the enrollment. Example : 30/01/2021
studentid	Number		This is the Foreign key from the Student Table. Example: "1800001"
programid	Text		This is the Foreign Key from Program table Example: "B.Sc".

Name	DataType	Size	Remark
cprogramid	Text		This is the Primary Key for program. Example : “BSC”
cprogramname	Text		This is the name of the program . Example : “Bachelor of Science”
cdepartmentid	Text		This is the Foreign Key from the Department table. Example: “CSE”

Name	DataType	Size	Remark
ccourseid	Text		This is the Primary Key for the Course. Example: “CSE203”
ccoursetitle	Text		This is the name of the Course. Example: ”Data Structure”
ccoursetype	Text		This is the type of the Course. Example: “Core”
cprogramid	Text		This is the Foreign Key from Program table Example: ”B.Sc”.

Name	DataType	Size	Remark
nsectionID	Number		This is the Primary Key for Section Example :”2”
croomno	Text		This is the room number of a section. Example: “B1101”
ncapacity	Number		This is the total capacity of a section . Example :”50”

Name	DataType	Size	Remark
nassessmentID	Number		This is the Primary Key for assessment . Example : “1”
cassessmenttype	Text		This is the type of assessment . Example : “Assignment ,Viva”
emarksdistribution	Text		This contains the marks distribution.
Ctotalmarksachievable	Text		This contains how much mark a student can achieve in total . Example : “100”
nsectionid	Number		This is the foreign key from section table Example” 1001”
ccoid	Text		This is the foreign key from the Program Learning Outcome table. Example: “CO1”

Name	DataType	Size	Remark
nSemesterid	Number		This is the Primary Key for semester Example:1
nSemesterName	Text		This is the name of the semester Example: "Fall"
dyear	DateTime		This contains the year of that semester . Example : " 2021"
dstartdate	DateTime		This is the starting date of the semester . Example : "15.02.21"
denddate	DateTime		This is the ending date of the semester . Example : "10.05.21"

INPUT FORMS OUTPUT TABLE & GRAPHS

Welcome To Dashboard

Total Student of Computer Science and Engineering:

31

Total number of department in SPMS:

5

Total number of school in SPMS:

4

Total number of students in SPMS:

35

STUDENT PLO ACHIEVEMENT INPUT FORM

Student PLO achievement

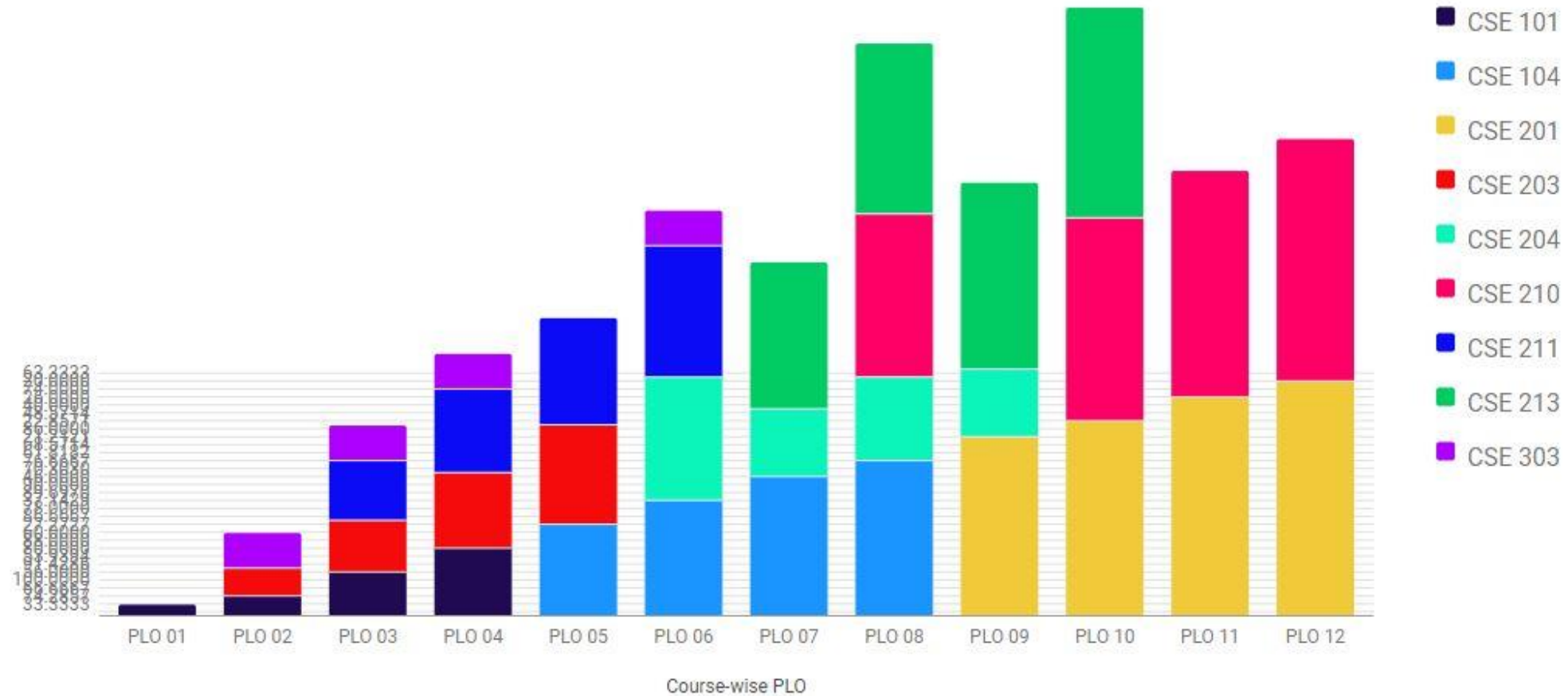
COURSE WISE PLO ACCHIEVEMENT TABLE

	PLO NO	CSE 101	CSE 104	CSE 201	CSE 203	CSE 204	CSE 210	CSE 211	CSE 213	CSE 303
1	PLO 01	33.3333	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	PLO 02	74.2857	N/A	N/A	66.6667	N/A	N/A	N/A	N/A	100.0000
3	PLO 03	56.0000	N/A	N/A	91.4286	N/A	N/A	53.9394	N/A	100.0000
4	PLO 04	80.0000	N/A	N/A	88.0000	N/A	N/A	60.0000	N/A	100.0000
5	PLO 05	N/A	27.2727	N/A	86.6667	N/A	N/A	78.0000	N/A	N/A
6	PLO 06	N/A	37.1429	N/A	N/A	89.6970	N/A	90.0000	N/A	100.0000
7	PLO 07	N/A	46.0000	N/A	N/A	80.0000	N/A	N/A	70.3030	N/A
8	PLO 08	N/A	76.6667	N/A	N/A	60.0000	61.8182	N/A	68.5714	N/A
9	PLO 09	N/A	N/A	21.2121	N/A	80.0000	N/A	N/A	86.0000	N/A
10	PLO 10	N/A	N/A	22.8571	N/A	N/A	48.5714	N/A	40.0000	N/A
11	PLO 11	N/A	N/A	26.0000	N/A	N/A	74.0000	N/A	N/A	N/A
12	PLO 12	N/A	N/A	20.0000	N/A	N/A	63.3333	N/A	N/A	N/A

COURSE WISE PLO ACCHIEVEMENT

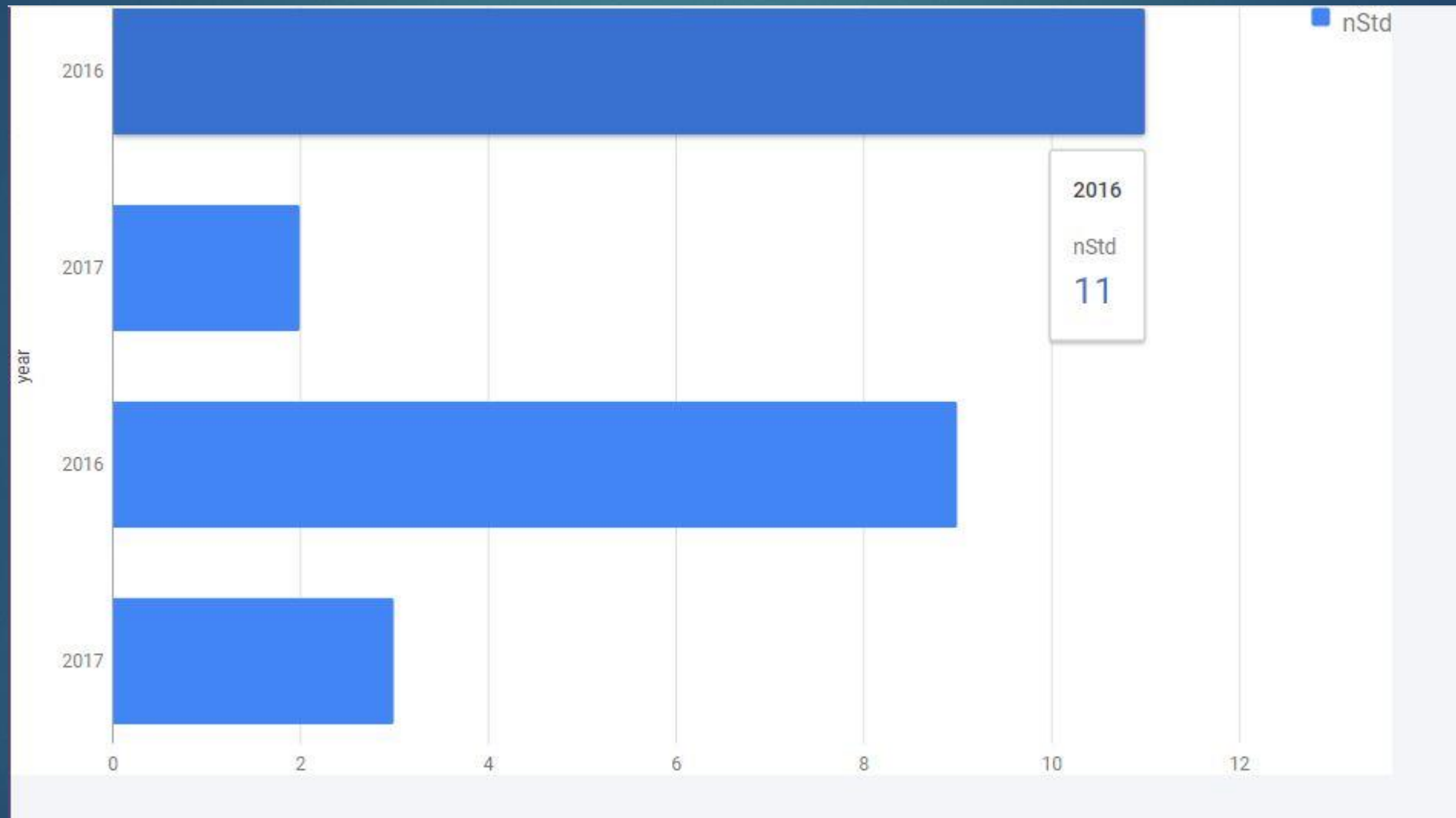
96

Course-wise PLO achievement



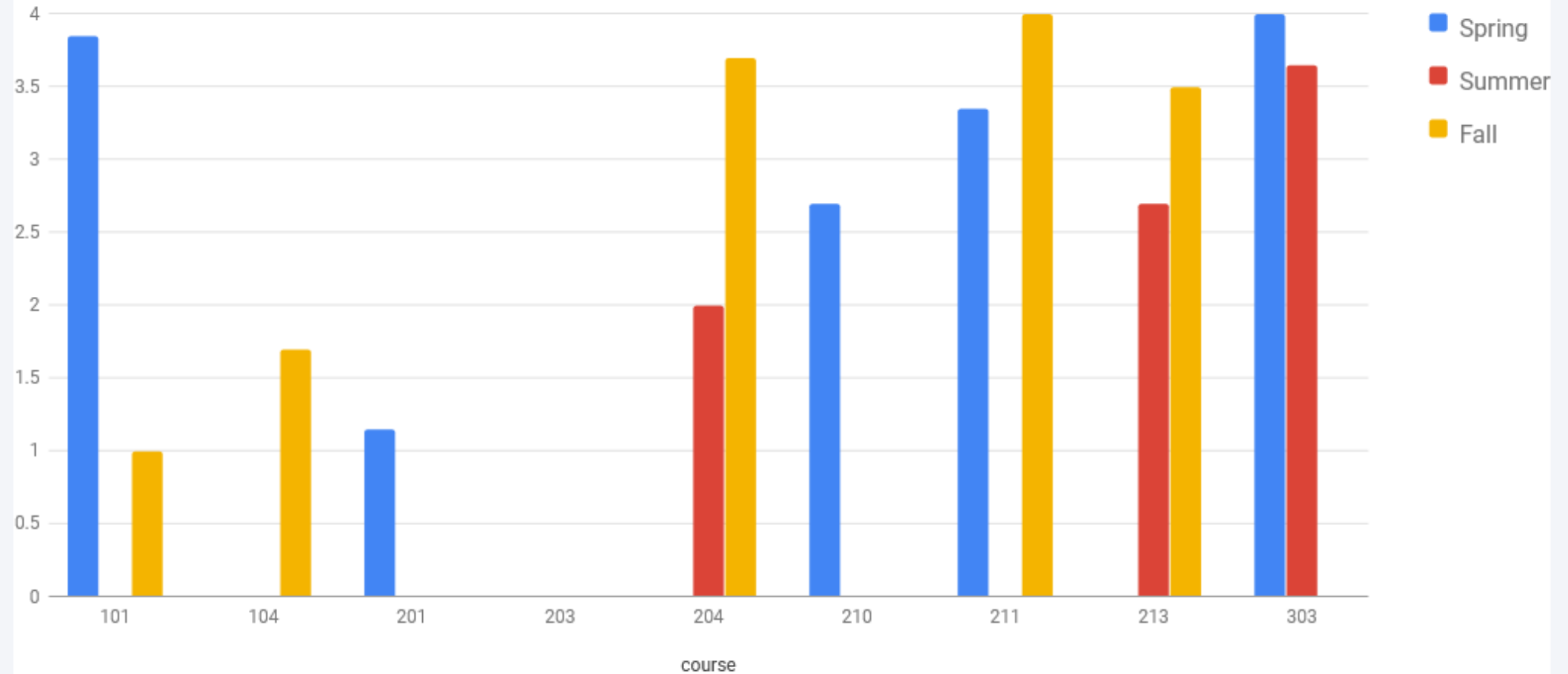
PROGRAM WISE STUDENT ENROLLMENT

97



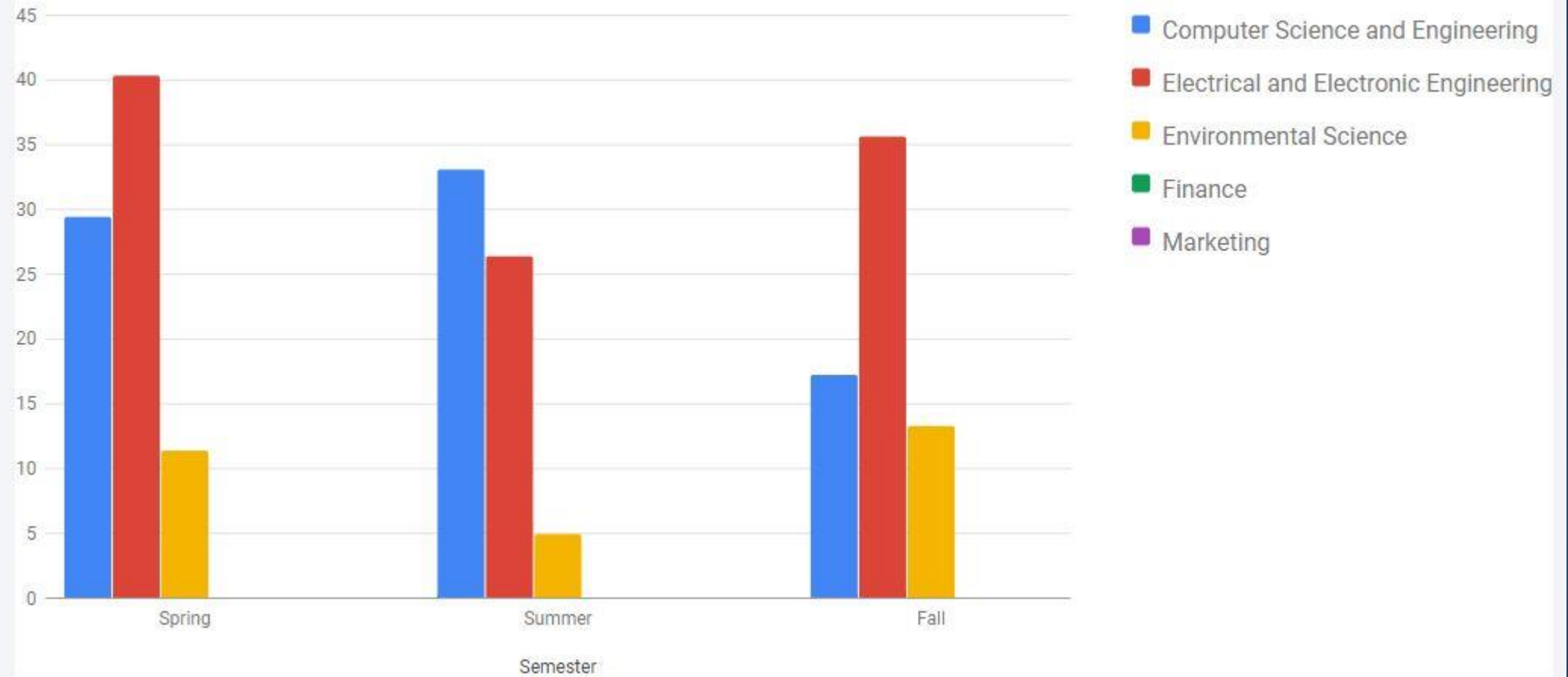
COURSE WISE STUDENT PERFORMANCE

course wise Student Performance



DEPARTMENT WISE STUDENT PERFORMANCE

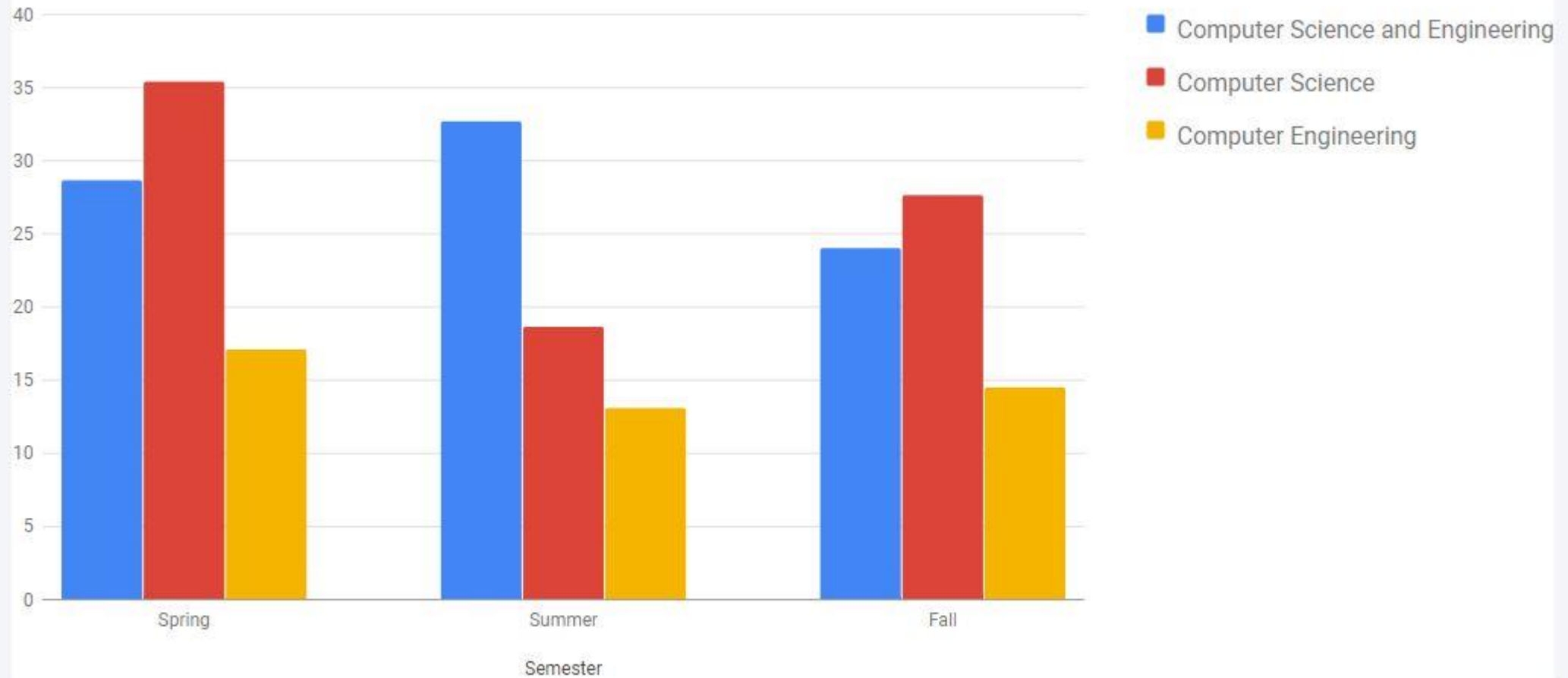
Department wise Student Performance



PROGRAM WISE STUDENT PERFORMANCE

100

Program wise Student Performance

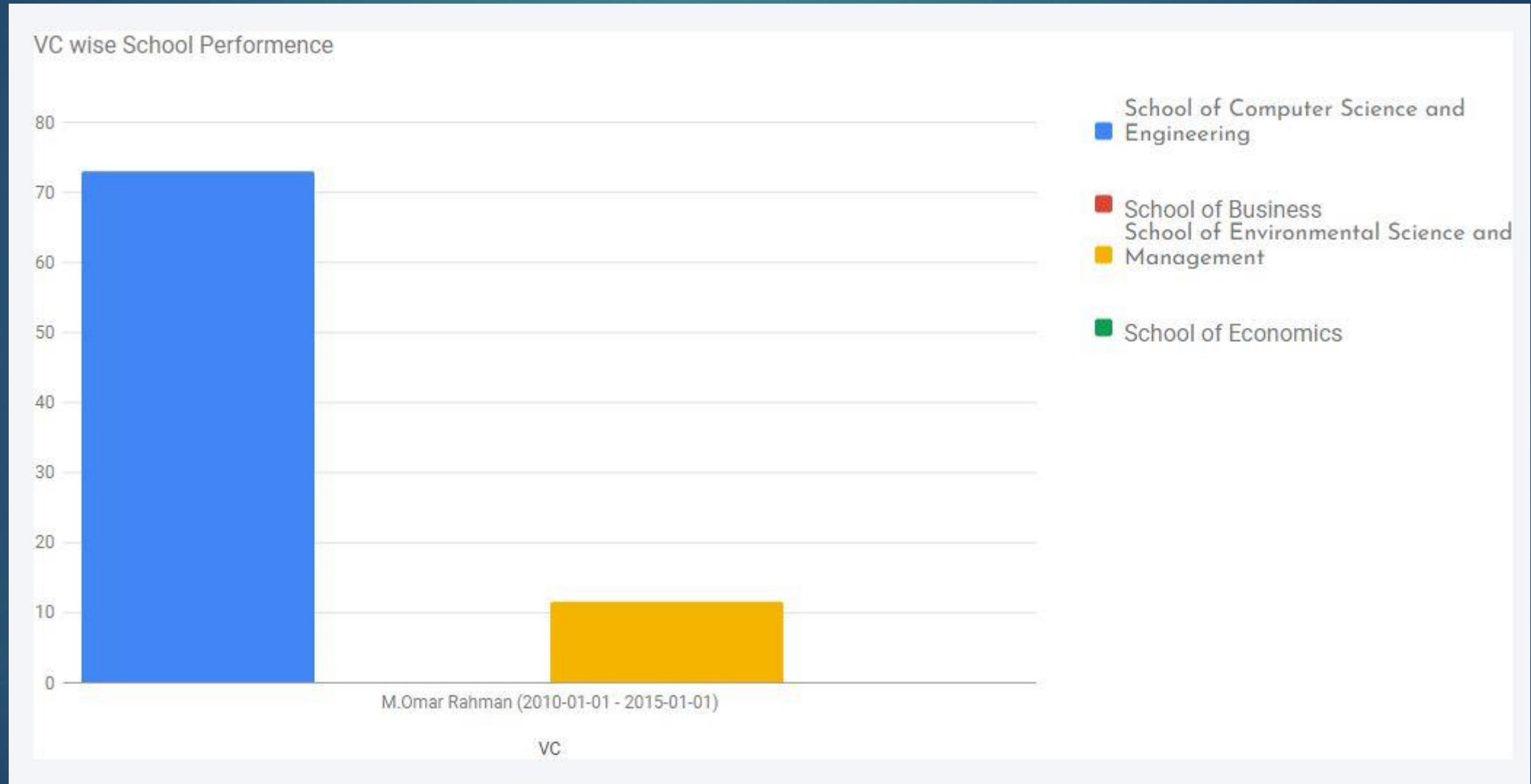


STUDENT WISE STUDENT PERFORMANCE

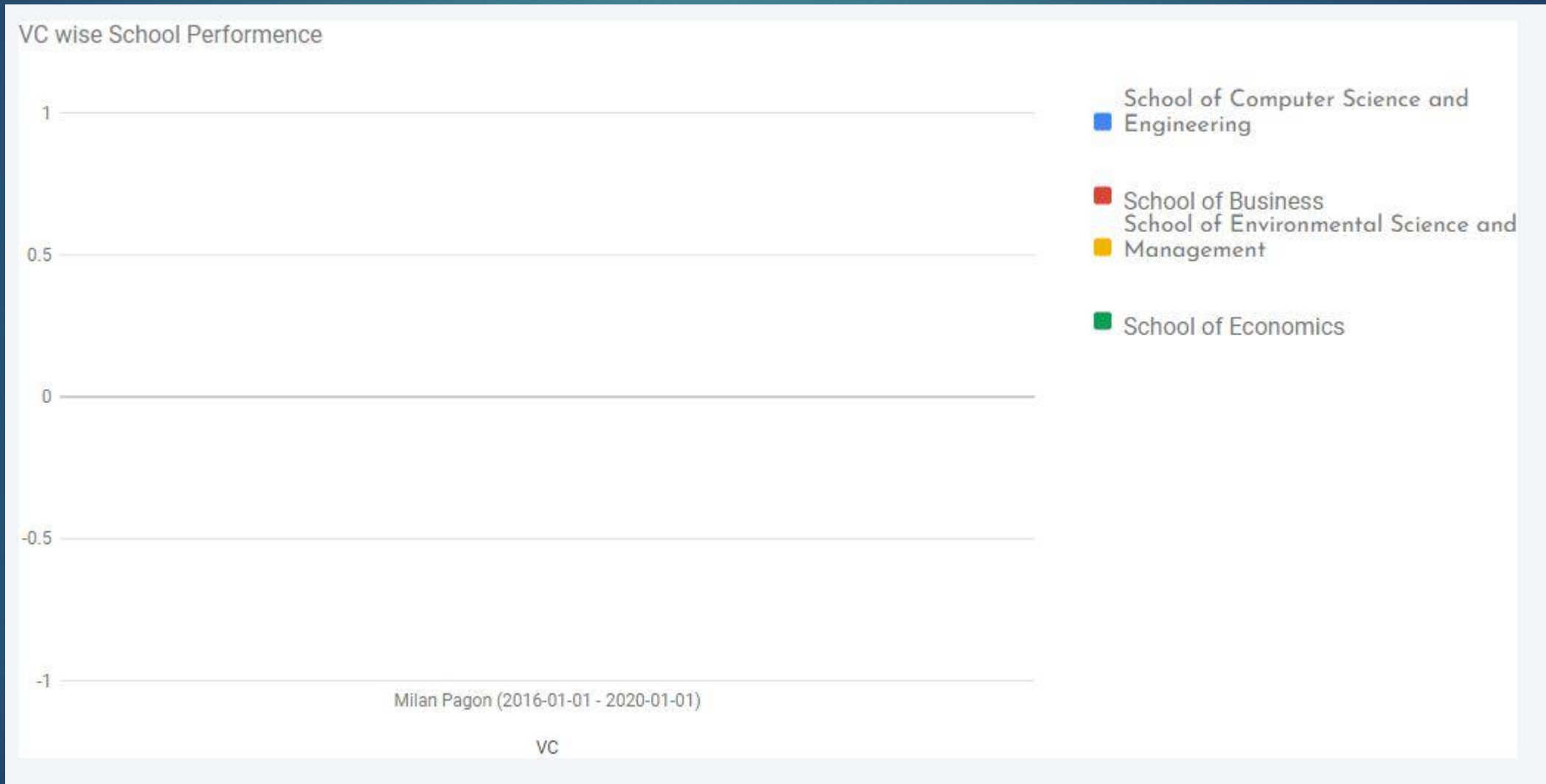
101



VC WISE SCHOOL PERFORMANCE



VC WISE SCHOOL PERFORMANCE



THANK YOU