STUDENT PERFORMANCE MONITORING SYSTEM

CSE303: DATABASE MANAGEMENT SYSTEM

GROUP 3

SHANAZ RAZIA FIDDA: 1731389

MD. TAREK AZIZ: 1730050

MD. ZAHIDUL ISLAM: 1721883

TOUFIQ AHMED NILOY: 1631281

BM FAHIM ABRAR: 1630263

SHAHNEWAZ MUHAMMAD RAJIT: 1630736

MAHFUZUR RAHMAN: 1811077

CONTENT

- CHAPTER 1: INTRODUCTION
- CHAPTER 2: REQUIREMENT ANALYSIS
- RICH PICTURE (AS-IS)
- SIX ELEMENTS (AS-IS)
- PROCESS DIAGRAM (AS-IS)
- PROBLEM ANALYSIS
- RICH PICTURE (TO-BE)
- SIX ELEMENTS (TO-BE)
- PROCESS DIAGRAM (TO-BE)
- CHAPTER 3: LOGICAL SYSTEM DESIGN
- BUSINESS RULE
- ENTITY RELATIONSHIP DIAGRAM

Chapter 1: Introduction

Our goal is to deliver a project that will design and build to help universities to promote a productive way for student performance monitoring system. We intend to provide a wholesome experience for students, faculties, head of departments and all the higher authorities. This application is a one-stop place for students to track their progress, for faculties to track course curriculum and all the higher authorities to monitor quality of education provided. We have added features to track students CGPA trend and sleeker way of workflow. This application gives the power to generate new student accounts much faster

Chapter 2: Requirement Analysis RICH PICTURE (AS-IS)

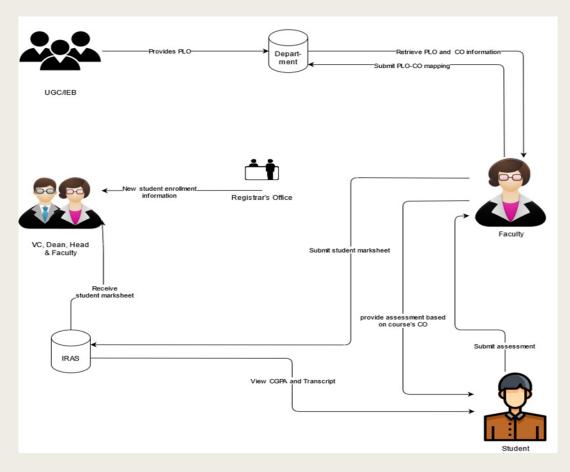


Figure: Rich Picture As-Is

SIX ELEMENTS (AS-IS)

Process			Syste	m Roles		
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & Communicat ion
RECEIVE NEW STUDENT ENROLLM ENT INFORMAT ION	Registrar office: 1)log in to computer 2) Receive request for enrolment information from VC, head of department, faculty, and dean. 3) Retrieve enrollment information from registrar office's DB 4) Provide requested enrolment information to faculty, dean, head of department, VC as soft copy or printed copy. Faculty, dean, head of department, VC: 1) log in to computer 2) Sends request for student enrollment information	Paper and Stationary: Send student enrollment information as printed copy to VC, head of departmen t, faculty, and dean. Folders Store student enrolment information as printed copies.	Computer: 1) Used by registrar office employees to send and/or receive new enrolment information to VC, head of department, faculty, and dean. 2) Used by VC, head of department, faculty, and dean to request and receive new student enrollment information. Registrar's Office DB server: Used registrar's office store student enrollment information Printer: To print new student enrollment information.	Used by Registrar's office, VC, head of department, faculty and dean to send and receive new student information. Office suite: Used by VC, head of department,	office database to store new student enrollment information. Excel Files: Used to store new student enrollment information	Internet: Used to send or receive student enrollment information between Registrar's office and VC, head of department, faculty, dean Telephone: Used for verbal communicati on between Registrar's office and VC, head of department, faculty and dean.

	to rogintary					
	to registrar's office. 3) Receive enrollment student information from registrar's office.		Networking Device: Used for internet access, internal database access or communicati onal use.			
Receive student mark-sheet	VC, head of department, faculty, dean: 1) Log in to their corresponding IRAS account. 2) Search for course wise, semester wise department wise student mark-sheet. 3) Download the mark-sheet.	Paper and Stationary: Used to print the downloade d mark-sheet. Store the printed mark-sheet.	Computer: Used by VC, head of department, faculty, and dean to retrieve and download student mark-sheet from their IRAS account. printer: Used by VC, head of department, faculty, and dean to print downloaded mark-sheet. IRAS DB server: Used by IRAS to store student mark-sheet. Networking device: Used for internet access, internal database	Operating system: Used in VC, head of department, faculty and dean's computer. IRAS: To retrieve mark-sheet. Office suite: Used by VC, head of department, faculty and dean to generate student performance trend.	RDBMS: Used by IRAS to store student mark sheet. Excel Files: Used to store student mark-sheet local computer.	Internet: Used by VC, head of department, faculty, dean to retrieve student mark sheet from their correspondin g IRAS account.

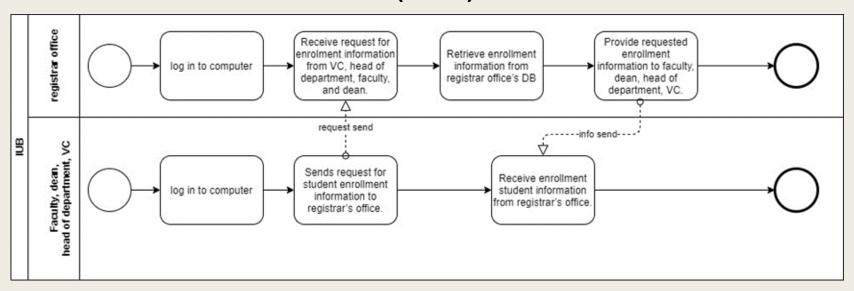
			access			
View CGPA and Transcript	Student: 1) Students have to login to their IRAS account at first 2) They can view their CGPA from their IRAS dashboard 3)In order to view their transcript, they have enter year and semester from their dashboard and click on "Transcript" button to download the transcript of that particular semester	Paper: May be used by students to print their transcript Folder: To store the printed transcript	Computer: Used by students to visit the IRAS website and view CGPA and transcript Printer: Used by students to print the transcripts IRAS DB server: Used by IRAS to store student CGPA and transcripts Networking device: Used for internet access, internal database access	Operating system: Used in students' computer. IRAS: To retrieve student CGPA and mark-sheet. PDF Viewer: Used to students view the downloaded transcripts	RDBMS: Used by IRAS to store student CGPA and transcripts	Internet: Used by students to login to their IRAS account and access their CGPA and transcripts.
Record student assessmen ts and submit mark-sheet	Faculty: 1)Take classes, record student attendance and student class participation 2) Request department for PLO and CO	Pen and paper: 1) Usedby departmen t to send PLO and CO as printed form to faculty. 2) Used by teacher to make	Computer: 1) Used by faculty to create assignment and exam paper. 2) Used by department to store PLO and CO	Operating system: Used in faculty, department and student's computer. Office suite: Used by	RDBMS: Used by faculty to store student mark sheets in IRAS DB.	Internet: 1) Used by faculty and department to receive and send PLO and CO information. 2) Used by student, faculty and department

information	exam	information.	faculty to	to
of particular course	paper and assignmen t.	Used by student to view exam	create assignment and exam	communicat e.
3) Receive and download PLO and CO fron department	assignmen		рарег.	Telephone: Used for verbal communicati on between
	t. Folder: Used by departmen t student and faculty to store paper.	mark		
to IRAS. Departmen				
1) Receive request for PLO and CO for a particular course from faculties				

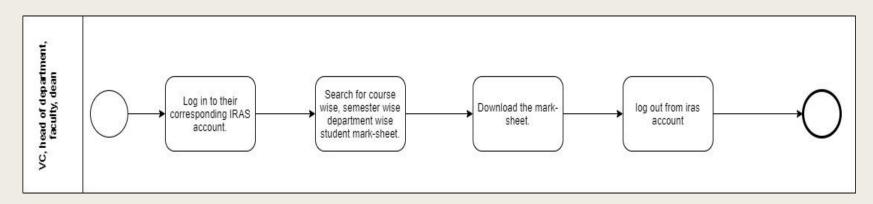
	Send PLO and CO to faculties				
	Student: 1) Attend classes and participates in class discussion 2) Receives assignment and exam notifications from faculties 3) Attempts assignment problems and submits them to faculties 4) Takes exam on designated schedule and classroom and submits exam paper to faculties				
PLO CO mapping	Faculty: 1) Request department for PLO and CO information. 2) receive PLO and CO information from department 3) Download the PLO co information. 4) Discuss with	Pen and paper: Used by faculty to view PLO and CO information as printed form.	Computer: Used by faculty and department to receive and send PLO and CO information. Printer: Used by faculty to print the PLO and co information.	Operating system: Used in department and faculty's computer. PDF viewer: To see the PLO and co information.	Internet: Used by faculty and department to receive and send PLO and CO information and communicat e with each other. Telephone: Used for verbal communication between

otherfaculty member to create PLO and CO map. 5)sends PLO CO map to			faculty and department.
Department t:			
1) Receive request from faculty for PLO and CO information.			
2) Send PLO and CO information to faculty.			
3) Receive PLO and CO mapping from faculty.			
4) Store PLO co map.			
5) Download the PLO co map.			

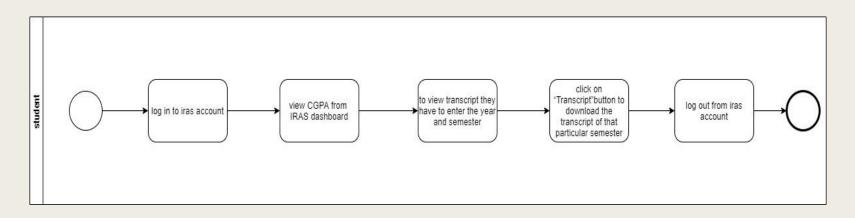
BUSINESS PROCESS DIAGRAM (AS-IS)



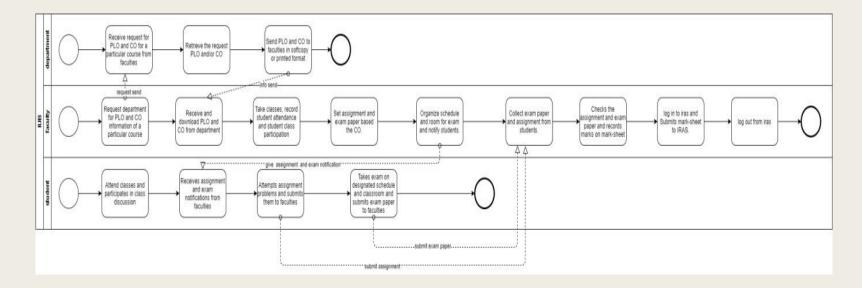
BPMN (AS-IS) FIGURE 1: View new enrollment data



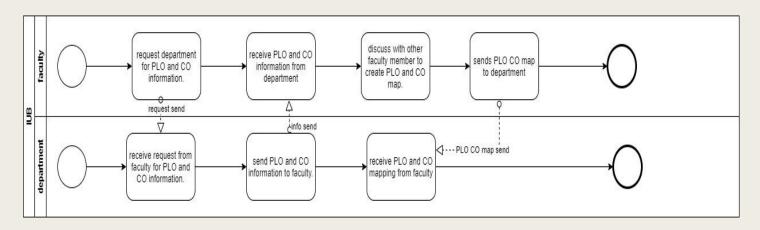
BPMN (AS-IS) FIGURE 2: View Student Mark-sheet by VC, Dean, Head, and Faculty



BPMN (AS-IS) FIGURE 3: View Transcript by Students



BPMN (AS-IS) FIGURE 4: Record Student Assessment



BPMN (AS-IS) FIGURE 5: Map PLO to CO

PROBLEM ANALYSIS

Process Name(s)	Stakeholders	Concerns	Analysis	Proposed Solution
"Record Student Assessment and submit marksheet", and "Map PLO CO"	Faculty Department	Faculties have request the department to send PLO and CO details and the Department has to respond to the request	This process is time consuming as the request from the faculties has to receive by the department and retrieve necessary documents to be sent. Also, this process is resource consuming as well, as the faculty may have to send request using paper form or use any third party software for the task.	Rather than keeping the PLO and CO documents to themselves they will upload the documents to the SPM DB and faculties can easily access the files without needing to request the department
View new enrollment information	VC, Dean, Head, Faculty Registrar's Office SPM Admin	In order to view the enrollment data, VC, Dean, Head and Faculty have send request to registrar's office and in response the registrar's office will send the data	consuming and	Instead of requesting the registrar's office, VC, Dean, Head and/or Faculties can view enrollment data from the enroll record on the SPM DB. Also, SPM software can show them a nice graphical analysis of enrollment

			generating trends will be even more difficult	
View Student CGPA Trend	VC, Dean, Head, Faculty	In order to see PLO achievement and CGPA trends of students, VC, Dean, Head and Faculty has to get the raw marksheet data from IRAS	that they download from IRAS contains raw course-wise	and generate the

RICH PICTURE (TO-BE)

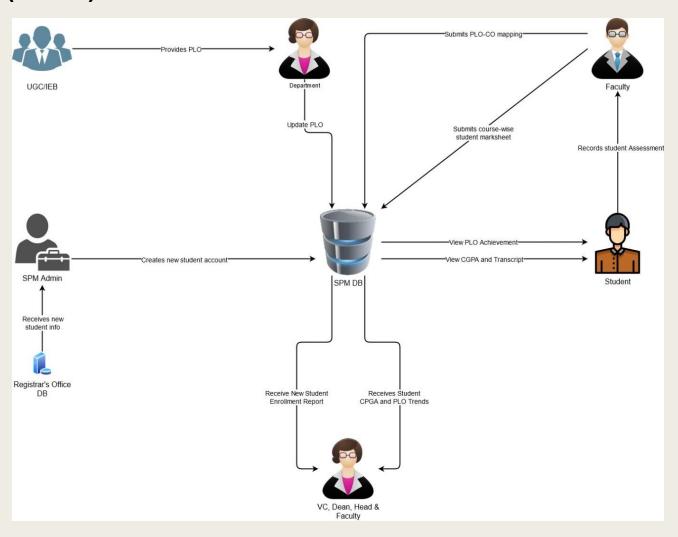


Figure: Rich Picture TO-BE

SIX ELEMENT ANALYSIS (TO-BE)

Process	System Repo	rt				
	Human	Non- computing Hardware	Computing Hardware	Software	Database	Internet & Communicati on
Create new students account	SPM Admin: 1)Receives new Students info from Registrar's office database 2) Log in to SPM DB. 3) Generate new student accounts from provided information. 4) Log out from SPM DB.	Pen, Paper and Stationeries: 1) May be used by SPM admin note-down any corrupted information sent from registrar's office	Computer: 1)Used by SPM Admin to receives data from registrar's office database & generate new Students accounts Database Server: 1)Registrar's office DB from which new students information will be sent 2)SPM DB in which new students account will be stored	Operating System: Used by SPM Admin to operate their computer Office Suite: May be used to store information locally in Excel format	RDBMS: 1) Used by both SPM DB & Registrar's office DB to stored information Excel Software: May be used to store information locally in Excel format	Internet: 1) Used to access and modify SPM database 2)Communic ate between SPM Admin & Registrar's office Telephone: Used for verbal communicate between SPM Admin & Registrar's office

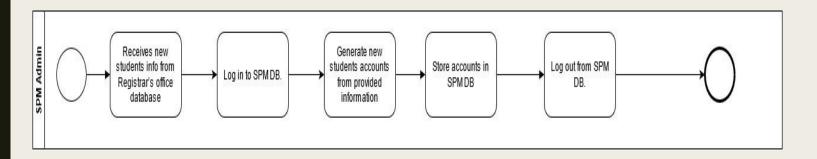
Update PLO on SPM DB	Department: 1) Gets PLO from	Pen, Paper and Stationeries :	Computer: 1) Used by UGC/IEB to send PLO	Operating System: Used by both	RDBMS: Used for SPM DB to stored PLO	Internet: 1) Used by UGC/IEB to provide PLO
	UGC/IEB 2) Log in to SPM DB. 3) Stores PLO in SPM DB 4) Log out from SPM	1) May be UGC/IEB Send printed version of PLO.	2) Used by department to store PLO Database Server: Store PLO information	department and UGC/IEB to operate their computer Office Suite:	information	to department 2) Used by department to stored PLO in SPM DB 3) Used to communicate between department
	DB. UGC/IEB: Send PLO to department		for SPM	Used by UGC/IEB to create or modify PLO		Telephone: Used for verbal communication between department
Record student assessm ent and submit mark- sheet	Faculty: 1)Take classes, record student attendance and student class participation 2)Log in to SPM DB. 3) Fetch PLO and CO information of a particular course from SPM 4) Set assignment and exam paper based the CO. 5) Organize schedule and room	Pen, Paper and Stationeries: 1) May be used by students to take lecture, write assignments, reports or take exam. 2) May be used by faculty to write lecture outline or print exam questions Folder: May be used by teacher to store students' assignments	Computer: 1) May be used by student to send assignments, reports or take online exams 2) May be used by faculties to view and mark the given reports, assignments or exams Database Server: Used by SPM DB store student mark sheets	Operating System: 1) Used by both faculties and students to operate their computers Office suite: 1) Used by students to write assignment s and reports 2) Used by faculty to write lecture outline or print exam questions	RDBMS: Used to store students' course wise mark sheet to SPM DB Excel Sheet: Used by faculties to store student mark sheets locally	Internet: 1) Used by students to submit the reports, assignments or take online exams 2) Used by faculty to receive student assessment 3) Used by teacher to store students course wise mark sheet to SPM DB 4) Communicate between student and teacher

for exam and notify students. 6) Collect exam paper and assignment from students. 7) Checks the assignment and exam paper and records marks on mark-sheet 8) Log in to	papers or mark sheet	Google Classroom and Google Form: May be used for online classes and online examination	
SPM and Submits mark-sheet. 9) Log out.			
Student:			
Attend classes and participates in class discussion Receives assignment			
and exam notifications from faculties			
3) Attempts assignment problems and submits them to faculties			
4) Takes exam on designated schedule and classroom and submits			
exam paper to faculties			

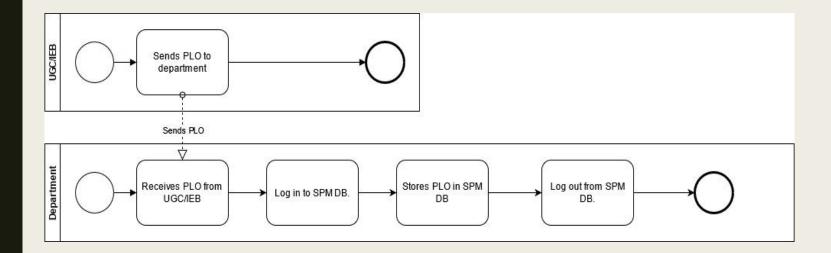
Update	Faculty:	Pen, Paper	Computer:	Operating	RDBMS:	Internet:
PLO-CO mapping to SPM DB	1) Login to SPM and retrieve PLO and CO information for a certain course from SPM 2) Discuss PLO-CO among several faculties 3) Map PLO-CO 2) Submit PLO-CO mapping in SPM DB	and Stationeries: 1) May be used by faculty to print the PLO-CO mapping	1) Used by faculty to view PLO chart and submit PLO-CO mappings Printer: May be used by faculty to print the PLO-CO mapping Database Server: Used by SPM to store PLO info and PLO-CO mappings	System: Used by faculty to operate their computer Printing software: May be used by faculty to print the PLO-CO mapping	Used by SPM DB to store PLO- CO mapping	1) Used by faculty to store the PLO-CO mapping 2) Used to communicate with faculties and higher authorities Telephone: Used for verbal communication between faculties and higher authorities
View student CGPA, transcript and PLO achievem ents	Student: 1) Login to SPM and move the "achieveme nts". 2) CGPA will be displayed by default 3) To view transcript, they have to enter semester and year. 4) PLO achievemen ts will be displayed on the dashboard	Paper: May be used to print transcript Folder: May be used by store printed transcripts	Computer: Used to view or download, PLO achievemen ts, CGPA and transcripts Database Server: Used by SPM to store student mark sheets	Operating System: Used by students to operate their computer Printing software: May be used to print transcript PDF Viewer: Used to view transcripts in printable format	RDBMS: Used by SPM DB to store student mark sheets Excel Sheet: May be used by students to store CGPA locally	Internet: Used by students to access SPM and view their CGPA and transcripts

Receive	VC, Dean of	Pen and	Computer:	Operating	RDBMS:	Internet:
student	School,	paper:	Used to	System:	Used by	Used by the
CGPA and PLO	Head of Department	Used by the	view CGPA	Used by the	SPM DB to store	users to
trends	and	users to note	and PLO	users to	student	access SPM
	Faculties:	down any particular	trends	operate their	CGPA and	and view their CGPA and
	1) Login to	trends in		computer	PLO trends	PLO trends
	their SPM	CGPA and	Database	-		
	account	PLO	Server:			
	2) They		Used by			
	have to enter	Folder:	SPM to store			
	semester	Used to	student			
	range to	store the	CGPA and			
	view the CGPA and	papers	PLO trends			
	PLO					
	achievemen					
	ts trends.					
	3) They can optionally					
	enter					
	particular					
	school, department					
	or program					
	to view					
	overall CGPA and					
	PLO allu					
	achievemen					
	ts					
	4)					
	Leadership team can					
	also view					
	faculty-wise					
	student CGPA and					
	PLO					
	achievemen					
	ts					
	5) Faculties					
	can view overall					
	CGPA and					
	PLO					
	achievemen ts for					
	students					
	instructed					
	by them.					

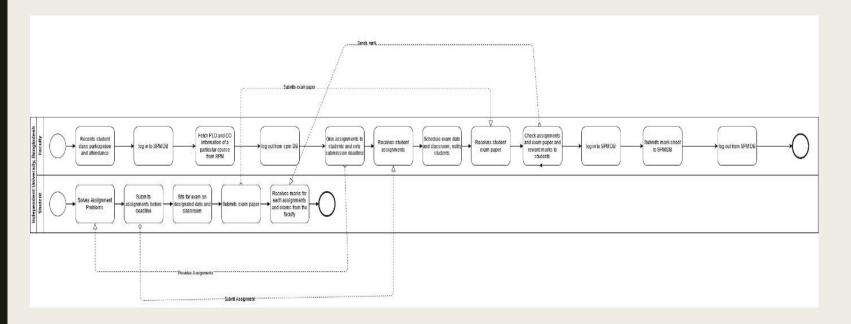
BUSINESS PROCESS DIAGRAM (TO-BE)



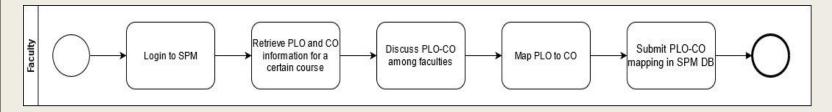
BPMN (TO-BE) FIGURE 1: Create new studentaccount



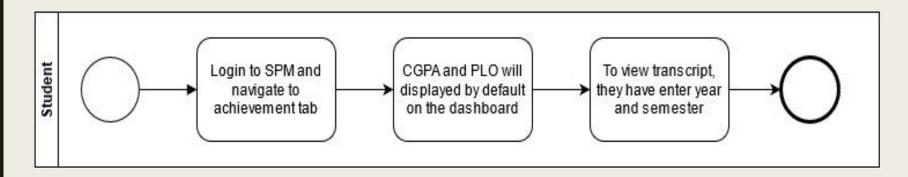
BPMN (TO-BE) FIGURE 2: Update PLO on SPM DB



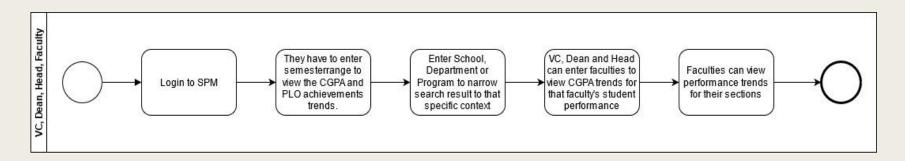
BPMN (TO-BE) FIGURE 3: Record student assessment and submit mark-sheet



BPMN (TO-BE) FIGURE 4: Update PLO-CO mapping to SPM DB



BPMN (TO-BE) FIGURE 5: View student CGPA, transcript and PLO achievements



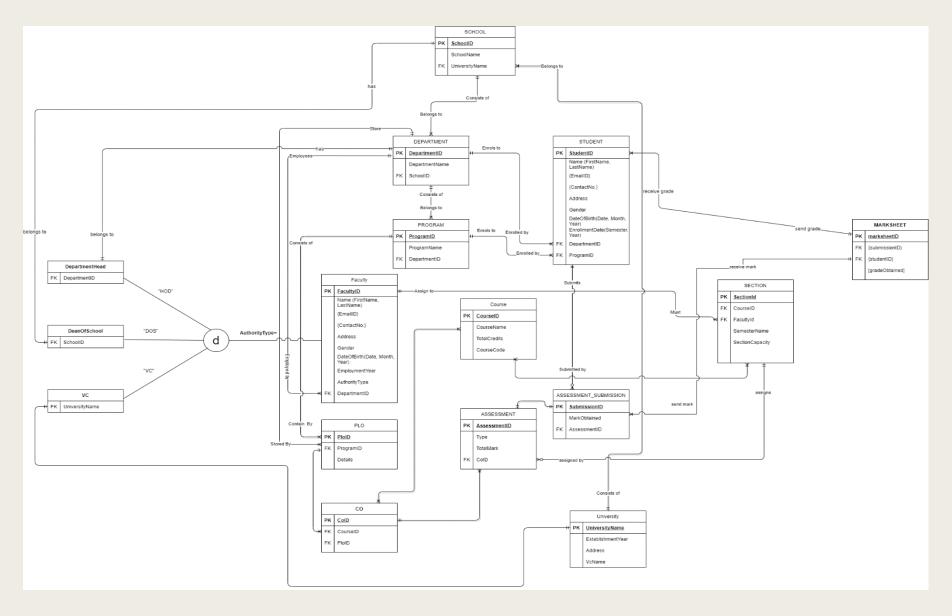
BPMN (TO-BE) FIGURE 6: Receive student CGPA and PLO trends

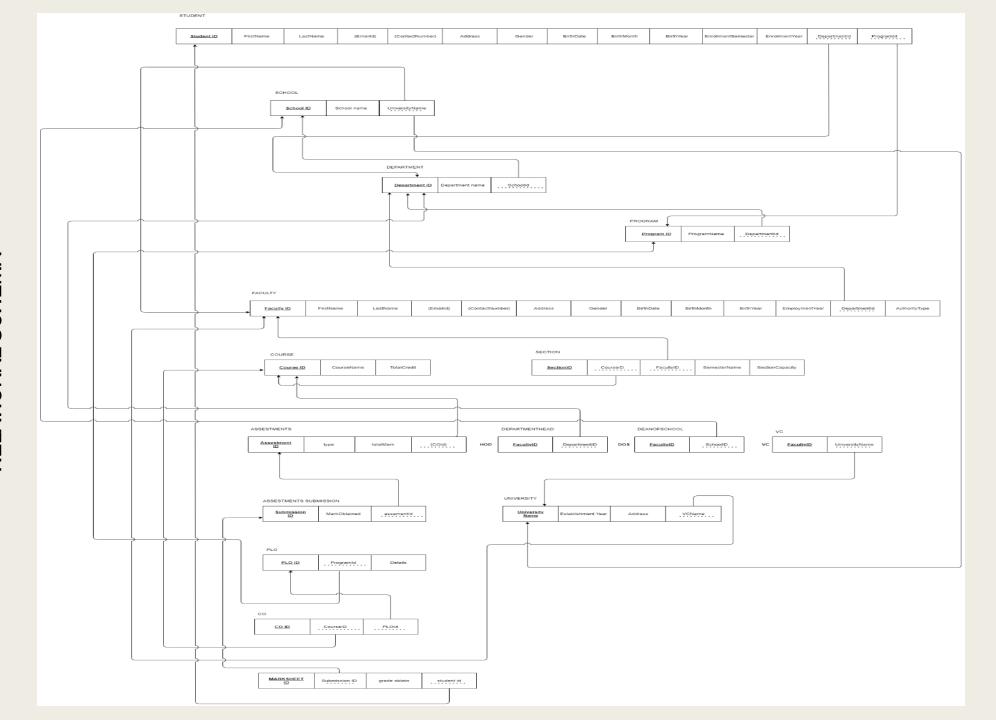
Business Rule

A department is enrolls multiple students. Each student is enrolled by exactly one department. A department must belongs to exactly one school. A school is consist of many department. A department must have exactly one head of department. A head of department is belongs to exactly one department. A department must employee many faculty. A faculty is employed by exactly one department. A student is enrolls to exactly one section. Each section must have many students. A faculty is assign to many section. A section must have exactly one faculty. A course is assign to many section. A section must contains exactly one course. A section may assign many assessment. Each assessment is assign by exactly one section. An assessment is assign to many student. Each student must receive many assessment. An assessment must have multiple Cos. A CO is belongs to exactly one assessment. A CO is belongs to exactly one course. A course must have many Cos. A CO is belongs to exactly one PLO. A PLO must have many CO's. A PLO is stored by exactly one department. A department must store many PLOs. A PLO is contain by exactly one program. A program must consist of many PLOs. A program is enrolls many student. Each student is enrolled by exactly one program. A program must belongs to exactly one department. A department is consist of many program. A school must have exactly one dean of school. A dean of school is belongs to exactly one school. A school must belongs to exactly one university. A university is consist of many school. A university must have exactly one VC. A VC is belongs to exactly one university.

A student may submit many assessment answer. An assessment answer must submitted by exactly one student. A student must receive grade from exactly one mark sheet. A mark sheet must send grade to many students.

ERD





NORMALIZATION

1NF: In the schema we need to remove all the multivalued attributes.

2NF: In this schema there will be no partial dependencies.

3NF: In this schema we have to remove transitive dependencies.

BCNF: Remove remaining anomalies resulting from multiple candidate keys.

DATA DICTONARY:

tblcourse

Name	Data type	Size	remark
ccourseID	Text		This is the primary key of the course. Example:cse303
ccourseName	Text		This is the name of the course. example: database management
ntotalCredit	Number		This is the credit of the course. Example:4

tbluniversity

Name	Data type	Size	Remark
cuniversityName	Text		This is the primary key and name of the university. Example: Independent University, Bangladesh
dEstablishmentYear	Datetime	XXXX	This is the year of Establish the university. Example:1993
caddress	Text		This is the address of the university. Example: Plot 16 Block B, Affabuddin Ahmed Road
			Bashundhara R/A, Dhaka, Bangladesh
cVCName	Text		This is the name of the vice chancellor of the university. Example: Tanweer Hasan

tblschool

Name	Data type	Size	Remark
cschoolID	Text		This is the primary key of the school. Example:SETS
cschoolName	Text		This is the name of the school. Example: School of Engineering, Technology & Sciences
cuniversityName	Text		This is the foreign key from the university table. Example: Independent University, Bangladesh

tbldepartment

Name	Data type	Size	remark
cdepartmentID	Text		This s the primary key of the department. example: CSE
cdepartmentName	Text		This is the name of the department. example: computer science and engineering.
cschoolID	Text		This is the foreign key from the school table. Example:SETS

tblprogram

Name	Data type	Size	Remark
cprogramID	Text		This is the primary key of the program.
cprogramName	Text		This is the name of the program.
cdepartmentID	Text		This is the foreign key from the department
			table. Example: CSE

tblstudent

Name	Data type	Size	Remark
cstudentID	Text	7	This is the primary key of the student. Example: 1234567
cstudentName	Text		This is the name of the student. Example: MR Abdul Korim
cemailID	Text		This is the email of student. Example: abdul@gmail.com
ncontractNo	Number	11	This is the contract number of the student. Example:01911111111
caddress	Text		This is the address of the student. Example: sector6, house 6, road 6 uttara, Dhaka
cgender	Text		This is the gender of the student. Example:male
ddateOfBirth	Date time	dd/mm/yy	This is the birth date of the student. Example:06/06/96
denrollmentYear	Date time	XXXX	This is the enrollment year when the student got admitted in the university. Example:2016
cdepartmentID	Text		This is the foreign key from department table. Example: CSE
cprogramID	Text		This is the foreign key from the program table.

tblfaculty

Name	Data type	Size	Remark
cfacultyID	Text	5	This is the primary key of the faculty. Example:11111
cname	Text		This is the name of the faculty. Example: MR.gousul azom
cemailld	Text		This is the email address of the faculty. Example:gousul@gmail.com
ncontractNo	Number	11	This is the contract number of the faculty. Example:7654321
caddress	Text		This is the address of the faculty. example:sector5,read5, house 5 uttara, dhaka
cgender	Text		This is the gender of the faculty. Example:male
ddateOfBirth	Date time	dd/mm/yy	This is birth time of the faculty. Example: 11/12/66
demploymentYear	Date time	Yyyx	This is the employment year when the faculty joined as employee in the university. Example:2009
cdepartmentID	Text		This is the foreign key from the department table. Example: CSE

tblsection

NAME	DATA TYPE	SIZE	REMARKS
csectionID	Text		This is the primary key of the section. Exmaple: CSE 303 SEC 01
ccousrseID	Text		This is the foreign key from the course table. Example: cse301
cfacultyID	Text		This is the foreign key from the faculty table.

		Exmaple:11554
csemesterName	Text	This is the name of the semester. Example Spring 2016.
nsectioncapacity	Number	This is the total capacity of a section Example: 30.

tblplo

NAME	DATA TYPE	SIZE	REMARK
cploID	Text		This is the primary key of the PLO(Program Learning Outcome). Example:"PLO1"
cprogramID	text		This is the foreign key from the program table. Example: M.sc.
cdetails	Text		This is the details of the PLO.

tblco

NAME	DATA TYPE	SIZE	REMARKS
ccoID	Text		This is the primary key of the CO. Example "CO1"
ccourseID	Text		This is the foreign key from the course table. Example:"CSE303"
cploID	Text		This is the foreign key from the PLO table. Example: "PLO2"

tblassessmentID

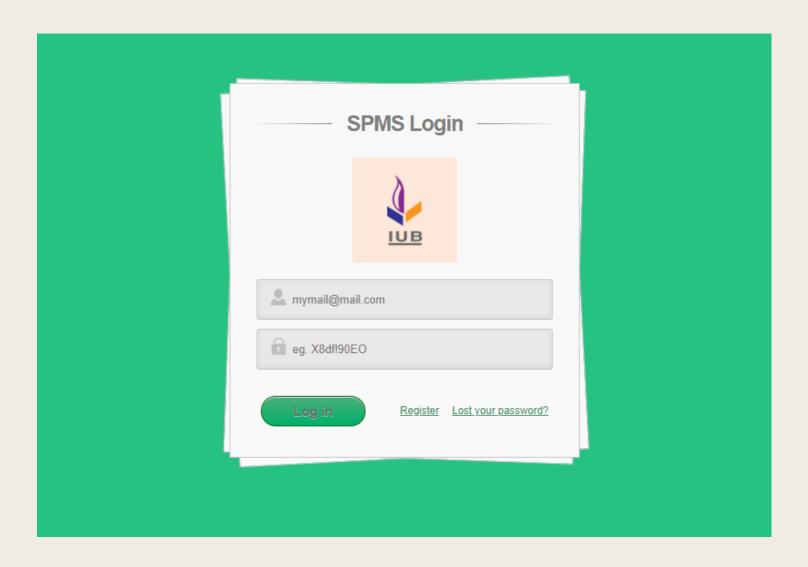
NAME	DATA TYPE	SIZE	REMARKS
cassesmentID	Text		This is the primary of the assessment.
ctype	Text		This is the type of the assessment. Example:assignment
ntotalMarks	Number		This is the mark for the assessment. Example:25
ccoID	Text		This is foreign key from the CO table.example:CO1

tblassessment submission

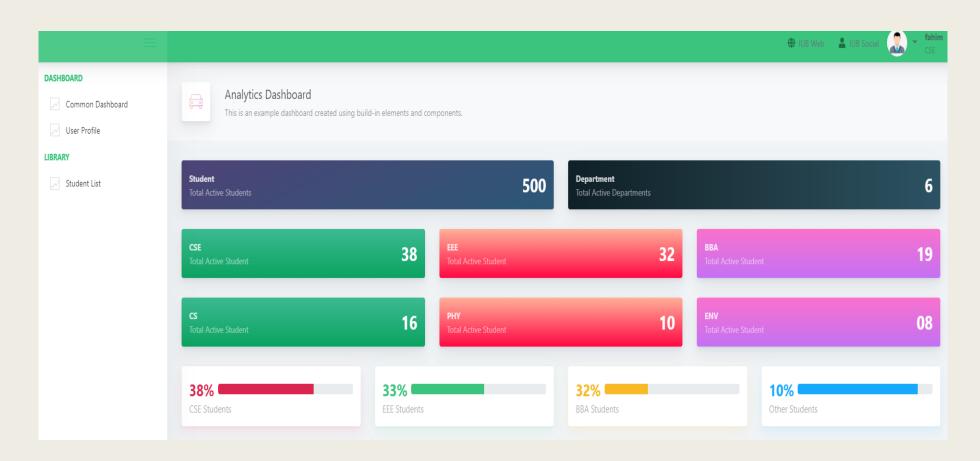
NAME	DATA TYPE	SIZE	REMARKS
csubmissionID	Text		This is the primary key of the assessment submission.
nmarkObtained	Number		this is the mark obtained by a student. Example:7
cassessmentID	Text		This is foreign key of the assessment ID.

tblmarksheet

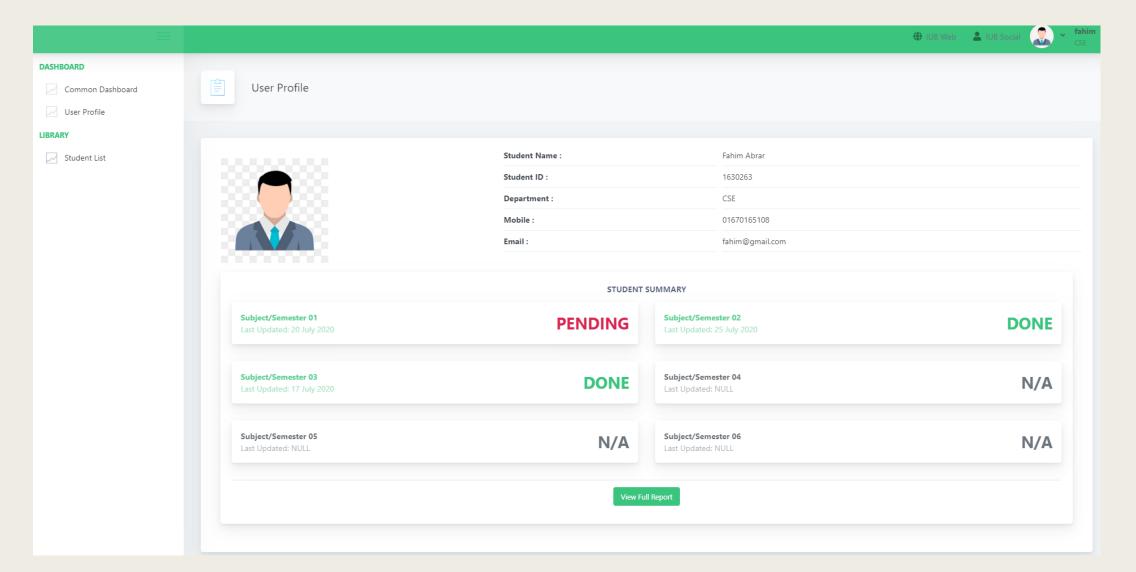
NAME	DATA TYPE	SIZE	REMARKS
cmarksheetID	Text		This is the primary key of the marksheet ID.
submissionID	Text		This is the foreign key of the submission ID.
cstudentID	Text		This is the foreign key of the student ID.
ngradeObtained	Number		This is the game obtained by a student. Example: 2.15



LOGIN INTERFACE



ANALYTICS DASHBOARD



USER PROFILE



DASHBOARD

Common Dashboard

✓ User Profile

LIBRARY

Student List

STUDENT MARK SHEET

#	Program Learning Outcome(PLO)	Course Outcome(CO)	Bench Mark/Target	Unit	Achievemnt	Justification/Logical Explanation [Supervisor's use Only]
	DIO 01	CO 01	100	%	70	Test Comment
ľ	PLO 01	CO 02	100	%	80	Test Comment
	2 PLO 02	CO 01	100	%	85	Test Comment
2		CO 02	100	%	95	Test Comment
		CO 03	100	%	65	Test Comment

STUDENT MARKSHEET