

Outcome Based Quality Analysis System

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Abstract : Outcome based education provides an opportunity of overall learning to an engineering graduate who gets trained in all the program outcome laid by the National Board of Accreditation. Course Outcomes (COs) plays an Significant role in Outcome-Based Education (OBE). Also the attainment of Program Outcomes (POs) depends on the attainment of Course Outcomes (COs). For obtaining the program outcome the curriculum for the program is designed in such a manner that the students get drilled in all the 12 Program outcomes considering continuous internal evaluation. It also helps to avoid problems that teachers are facing in the traditional system i.e. Excel so outcome based quality analysis system helps to reduce the paper work and all the extra efforts.

IndexTerms - Outcome based education, Course outcome, program outcome, data analysis, attainment of program outcome, attendance report , admin , faculty, CO-PO mapping.

1.INTRODUCTION

The main intention of the project is to provide the user who can access the files in simple way without using hectic calculation. Along with this feature in Outcome based quality analysis system files get stored automatically so it is easy for the user to re-access it. This system is dynamic as this system is in control of admin, any change which is done by admin gets reflected in all the system. This system is also helpful to get information about all the students, including profile of students. Teachers can see educational details of students including attendance record, test paper marks, quizzes, assignment details. Using this information system will automatically generate attendance percentage without manually calculating it. This system also includes automatic test paper generation using all the provided question banks. Outcome based quality analysis system is very secured as we are providing login form so user can access this system using their login credentials only. In This system user can access information very easily because of its user friendly interface. The project can be really beneficial for those who may have a hard time to navigate around the existing interfaces to derive the quality analysis of students. The project plays a critical role in revolutionizing the existing technologies that contribute towards this domain. The current trend clearly indicates that many people would like to have a portability option available to their services. By using database connectivity for better retrieval procedure can ensure a better quality of service to the end user. Also a simultaneous availability of the student management system ensures to increase the outreach of the project to a better and a wider crowd and hence generate the necessary traffic that can result in the success of the project and also a greater acceptance among multiple users.

2.EXISTING SYSTEM

A. Microsoft Excel: Microsoft outperform will be An spreadsheet produced Toward Microsoft for Windows, macOS, bisexuality Also iOS. It features calculation, graphing tools, turntables, Also a macro modifying dialect known as Visual essential to provision. That information may be put away in the manifestation for outperform sheets. It needs inbuilt formulae to figuring motivation.

B. IONcudos: National Board of Accreditation (NBA), India got to be those permanency signatory part of the Washington accord on 13th June 2014 What's more laid down a situated for particular rules for those institutes On India on attaining result based instruction (OBE). This includes encircling durable system training targets (PEOs), system conclusions (POs), course results (COs), What's more guaranteeing evaluation Furthermore accomplishment of these results.

3.PROPOSED SYSTEM

Problem statement: To create the system which effectively manages the student data while reducing the manual work of faculty members. This online system includes all the necessary modules such as attendance management, Co-Po attainment calculation, Random Question paper generation. Further the whole system is manged by admin.

Tools

- PHP(version>7): PHP 7 - anarchy in the way we bear applications that ability aggregate from websites and adaptable to enterprises and the cloud. This is the best important change for PHP back the abolition of PHP 5 in 2004, bringing atomic achievement improvements, acutely bargain anamnesis consumption, and a host of aboriginal accent appearance to accomplish your appliance soar

- MySQL: MySQL is the world's best accepted attainable antecedent database. With its accurate performance, reliability, and ease-of-use
- Laravel: Laravel is a web appliance framework with expressive, affected syntax. We accept the development charge be an enjoyable, artistic acquaintance to be absolutely fulfilling. Laravel aims to accomplish the development action an adorable one for the developer after sacrificing appliance functionality. Laravel is accessible, yet powerful, accouterment able accouterment bare for large, able-bodied applications.
- Sublime Text Editor: Sublime Text is a proprietary cross-platform antecedent cipher editor with a Python appliance programming interface (API). It natively supports abounding programming languages and markup languages, and functions can be added by users with plugins, about community-built and maintained beneath free-software licenses.
- Composer: Composer is an apparatus for annex administration in PHP.
- Xampp server: xampp is a chargeless and open-source cross-platform web server band-aid assemblage amalgamation developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts accounting in the PHP and Perl programming languages.

Table 3.1. Attainment Levels(Weightage)

CO Attainment Method	Attainment Level		
	1	2	3
University Examination	45% student scoring more than 50% marks in the final examination	55% student scoring more than 50% marks in the final examination	65% student scoring more than 50% marks in the final examination
Internal Assessment	45% students score more than 60% in the internal assessment	55% students score more than 60% in the internal assessment	65% students score more than 60% in the internal assessment

Table 3.2. Assessment Tools-

Abbreviation	Name	Content
UE	University Examination	Oral, Theory Marks
IA	Internal Assessment	Attendance, Practical, Mini Project, Quizes.

Table 3.3. Attainment Level(percentage)

Sr No	Attainment level map	% to be consider
1	3	100%
2	2	66.67%
3	1	33.33%

4. Working of Application:

A. Course Attainment Calculation: Using this Application Admin will be able to Assign the classes and the subjects (courses) to the faculties .Subject Teachers can see the subjects allocated to them and they will be able to define course outcome statements for their subjects and will be able to map these CO statements with the PO(program outcomes) statements . Teachers will upload student marks for unit tests, assignments , Practical , Quizzes etc. and course attainment will be calculated as follows:

Table 4.1. Sample CO-PO Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PSO1	PSO2
CO1	1				2	2									
CO2	2	2	2		3	3	2		1						
CO3		3	3						2						
CO4			3		1		1								
CO5															
Average	1.5	2.5	2.67	0	2	2.5	1.5	0	1.5	0	0	0	0	0	0
Weighted Average	1.67	2.6	2.75	0	2.33	2.6	1.67	0	1.67	0	0	0	0	0	0

B. Test Paper Generation: Instead of creating question paper manually or typing it in text editor, Subject teachers will be able to Upload the question set and can generate the question paper from given question set (System will pick random questions from the question set) Along with this teachers can get the question paper in PDF format.

C. Attendance Module: Instead of taking attendance manually teachers can mark the respective Subject attendance using this software. They can view the student attendance for each day. Class Advisors can download the defaulter lists report and can upload the extra attendance. The defaulter list can be downloaded in PDF format

5.METHODOLOGY

A.CO-PO Mapping:

There are four levels of outcome such as Course Outcome (CO), Program Outcome (PO), Program Specific Outcome (PSO) and Program Educational Objective (PEO). Course Outcomes are the statements that declare what students should be able to do at the end of a course. POs are defined by Accreditation Agencies of the country (NBA in India), which are the statements about the knowledge, skills and attitudes, graduate attributes of a formal engineering program should have. Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. GAs form a set of individually assessable outcomes of the programme The NBA laid down the graduate attributes relating to programme outcomes and is to be derived by program.

Program Specific Outcomes are the statements that assert what the grandaunts of a specific engineering program should do what they can able to do. Program Educational Objectives are the broad statements which describe in detail about the career and professional accomplishments after significant years of graduation that the program prepare the grandaunts to achieve.

Table 5.1. Sample PO statement[3]

At the end of the course student will be able to:		PO/ PSO	Bloom Level
ITC404.1	Describe basic organization of computer and the architecture of 8086 microprocessor.	PO1	L1-Remembering, L2-Understanding,
ITC404.2	Implement assembly language program for given task and perform computer arithmetic operations on integer and real numbers	PO2, PO4,	L1-Remembering, L2-Understanding, L4-Analyzing L6-Creating
ITC404.3	Categorize memory organization and explain the function of each element of a memory hierarchy.	PO1, PO2	L2-Understanding, L3-Appling L4-Analyzing
ITC404.4	Identify and compare different methods for computer I/O mechanisms.	PO3, PO4	L2-Understanding, L4-Analyzing

The CO-PO mapping has been done with correlation levels of 3, 2, 1 and „-“. The notation of 3, 2 and 1 denotes substantially (high), moderately (medium) and slightly (low). The meaning of „-“ is no correlation between CO and PO

Table 5.2. Sample CO attainment report:

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Sr No	CO Reference		Assignment	Practicals	Attendance	Quiz	Mini Project	Average	University	Total CO
1	CO1	%	25		6			15.5	6	8.85
		Level	0		0			0	0	0
2	CO2	%	75		6			40.5	6	16.35
		Level	3		0			1.5	0	0.45
3	CO3	%	67		6			36.5	6	15.15
		Level	3		0			1.5	0	0.45
4	CO4	%			6			6	6	6
		Level			0			0	0	0
5	CO5	%			6			6	6	6
		Level			0			0	0	0
							Average	20.9	6	10.47
							Level	0.6	0	0.18

Table 5.3.Sample PO attainment

CO Ref.		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PSO1	PSO2
CO1	Mapped	1				2	2									
	Attainment	2.95				5.9	5.9									
	Level	0				0	0									
CO2	Mapped	2	2	2		3	3	2		1						
	Attainment	10.9	10.9	10.9		16.35	16.35	10.9		5.45						
	Level	0.3	0.3	0.3		0.45	0.45	0.3		0.15						
CO3	Mapped		3	3						2						
	Attainment		15.15	15.15						10.1						
	Level		0.45	0.45						0.3						
CO4	Mapped			3		1		1								
	Attainment			6		2		2								
	Level			0		0		0								
CO5	Mapped															
	Attainment															

Wighted Average Direct Attainment	8.25	13.45	10.66	---	10.48	12.17	7.93	---	8.55	---	---	---	---	---	---	---
Weighted Average Direct Level	0.24	0.39	0.31	---	0.3	0.33	0.25	---	0.25	---	---	---	---	---	---	---

LABC301	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PSO1	PSO2
Target Level	1.67	2.6	2.75	---	2.33	2.6	1.67	---	1.67	---	---	---	---	---	---
Direct Method Attainment Level	0.24	0.39	0.31	---	0.3	0.33	0.25	---	0.25	---	---	---	---	---	---

Average value has to be taken for each CO. Average CO value is calculated by sum of value entered in each column is divided by number of CO mapped in each column (consider either 3, 2 or 1 entered and need not to consider „-“ entered).

Example: Average for CO1-PO1 = (1+2)/2 = 1.5

Weighted Average for CO!_PO! = [(1*0.33)+(2*0.66)]/(0.33+0.66)

Each course outcome has been calculated from the topics which are assigned from each unit. To evaluate CO-PO matrix in micro-level calculation, Topic-wise, CO-PO mapping may be carried out.

The process of CO-PO mapping [4] is given in figure 5.1 and is explained as below:

Step 1 : Obtain course outcome.

Step 2 : Mapping of course outcome(CO) with program outcome(PO).

Step 3 : Set the weightage for CO assessment.

Step 4 : CO measurement through assessment.

Step 5 : Obtain CO attainment table through direct and indirect assessment methods.

Step 6 : Obtain PO attainment table through direct and indirect assessment methods

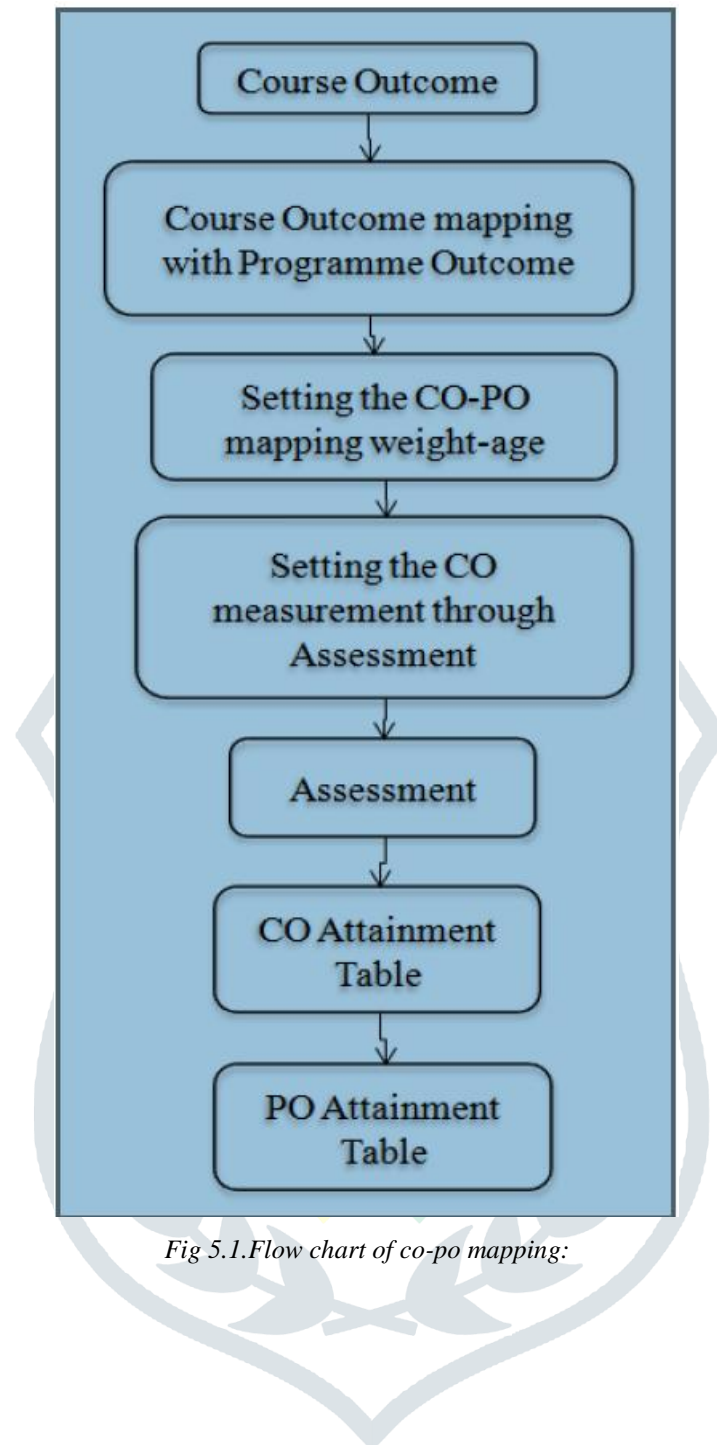


Fig 5.1. Flow chart of co-po mapping:

5. CONCLUSION

A simple and effective method for calculation of course outcome attainment and educational modules are implemented in this project thus reducing the paper work.

A user friendly interface provided by the reliable and functional database will result in a well-accepted application among the target domain. The formation, assessment and attainment of CO can be considered as seed of the successful accreditation, and the sincere efforts in the teaching learning process will lead to achievement of PO, PEO and Vision, Mission of the Program. Hence, a system that provides with a decent user interface, along with the state of the art technology implemented in its system, with a fully reliable and functional database can provide an efficient means of understanding of student progress for students as well as teachers.

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