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Assessment of University Metrics along with Growth Nature for Each Category using MVC, Data Analytics

Srikrishna Sampath Kumaran

BTech in Computer Science and Engineering, SRM IST, Vadapalani, Chennai, India
Student, Computer Science and Engineering, SRM Institute of Science and Technology, Vadapalani, Chennai, India

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Abstract - *Nowadays due to increase in globalization and modernization, there are lot of developments and improvements taking place in each and every domain in the present world. For the past few decades, there has been drastic improvement in the field of "education and human resources". Nowadays in many countries most of the schools, colleges and universities are surveyed for measuring the quality and quantity of education provided by the institution, and also the efficiency of the management of the institution. In this project, I am going to create an efficient university management system which will be useful for any academic institution. It can be used not only for analyzing the teacher's way of teaching by getting feedback from the students, but also for analyzing the performance of the students in that institution. More importantly, this software can also be used for doing analysis of the whole institution for various purposes.*

***Key Words*: analysis, teacher's way of teaching, feedback, performance, quality, quantity.**

1. INTRODUCTION

The university management system is developed to abolish the physical work of data entry which is time-consuming and it is also elevated to countermand the problem that exists in going through the existing manual system. Moreover, this system is intended for the need to improve the quality and quantity of the education provided by the university or other institutions.

This application is designed in such a way that it is user-friendly and at the same time it tends to lessen or avoid the error to the maximum while using the data. It is designed to help the institution in various kinds of tactical planning and at the same time different kinds of assessment and analytics are performed in order to evaluate the performance of the teacher, as well as student in their academics. It is used for storing the information regarding the student records, teacher's records etc. Starting from registration of new student it manages the details of the attendance and rank calculation of the marks of each student. The project deals with the analytics and assessment of the student as well as the teacher and the institution as a whole. The design of the university management system lays emphasis on three kinds of users: admin, teacher and student. Hence for each user, I have designed a software. And amalgamation of these three software together fabricates the university management system. Exhibiting of analytics and other performance assessments of the teacher and student is sole purpose of the software. This system benefits the teacher, as they can view their assessment report of their teaching performance and tune it to the latest updates. This system benefits the student as he/she can view their subject-wise performance and of each subject and other possible growth possibilities to improve their skills for the upcoming examination based on their until now performance, and they can also view their self-assessment report which is based on the rank calculation of the marks obtained by them in each subject in the respective exams conducted. This system benefits the admin as all the admin personnel along with higher officials like chairman, founder etc., can have access to all the details of the student and teacher along with their performance and other analytics, in the institution, including handling of queries of the student as well as teacher etc.

2. BACKGROUND AND RELATED WORK

The main objective of this project is to cultivate and magnify the application with various types of analytics, assessment which will make this management system even more serviceable and utilitarian. The University Management System encompasses the self-assessment, which is pertinent to the teacher and the student, the subject wise performance of the student, feedback/query handling, the class performance analytics, the open student growth analytics, the business analytics, the digital notice board, advice and discussion forum, Identity Access management panel etc. The necessity of the student is:

- Login to the application using the register number and password.
- They can view their self-profile in the navigator menu.

- They can define their career as shown by the career helper option in their dashboard.
- They can give feedback and enter complaints and other queries in the query handling option.
- They can view the newsletter of their campus using the digital notice board.
- They can view their subject wise performances of them in each subject, in the exams conducted throughout the semester.
- They can assess their performance in each subject by doing rank calculation of the marks scored by the student in respective exams
- They can also view their attendance.

The prerequisite of the teacher is:

- Login to the application using their id and password.
- They can view the list of all the students who have done or yet to do the payment of fees like tuition fees, exam fees etc in the payment management option.
- They can view the subject-wise performance of each student in each subject.
- They can view their self-assessment report and their teaching performance analytics of them, in the subject they teach.
- They can add new events in the digital notice board in case of occurrence of a new event.
- They can do the class performance analytics to improve the quality and quantity of the education.
- They can do the open student growth analytics to help the students in further improving their performance.
- They can solve student queries and can also give feedback and other queries using the feedback handling option.

The requisite of the admin is:

- Login to the application using their id and password.
- They can access all the details of their employees/teachers and students
- They can do registration of the new employees/teachers and students
- They can use the analytics data for various purpose of their business.

3. PRESENTATION OF THE MAIN CONTRIBUTION OF THE PAPER/SCOPE OF THE RESEARCH

In the present diegesis, the system was designed to just capture data from the database and then exhibit it as desired by the user and there was no analytics and performance evaluation for the teachers as well as students and university. So it is salient and required to build a university management system to shrink those drawbacks, and show various kinds of analytics and other performance assessments in order to improve the caliber and extent of the education provided in the institution and to also use it for doing various kinds of business.

3.1 Objective

The main objective of the university management system is to proffer an approach for prolific governance of all components for representing the performance assessments in an even more better manner. As a developer I have discerned the information as:

- To provide consultation on the spot.
- It manages the database of the student based on the marks obtained by them in the various cycle tests and various other parameters etc.
- To exhibit subject-wise performance of the student in their respective exams.
- To display assessment report of the student in order to improve the performance in upcoming examination and so on.

3.2 The detailed architecture diagram

The execution of university management system, comprises of authentication page and the navigator menu each for admin, teacher, student. The user has to login into the system using their ID and password in order to authenticate himself as member of the organization. Each homepage consists of the login page for all three users admin, teacher, student where they have to login to access further details.

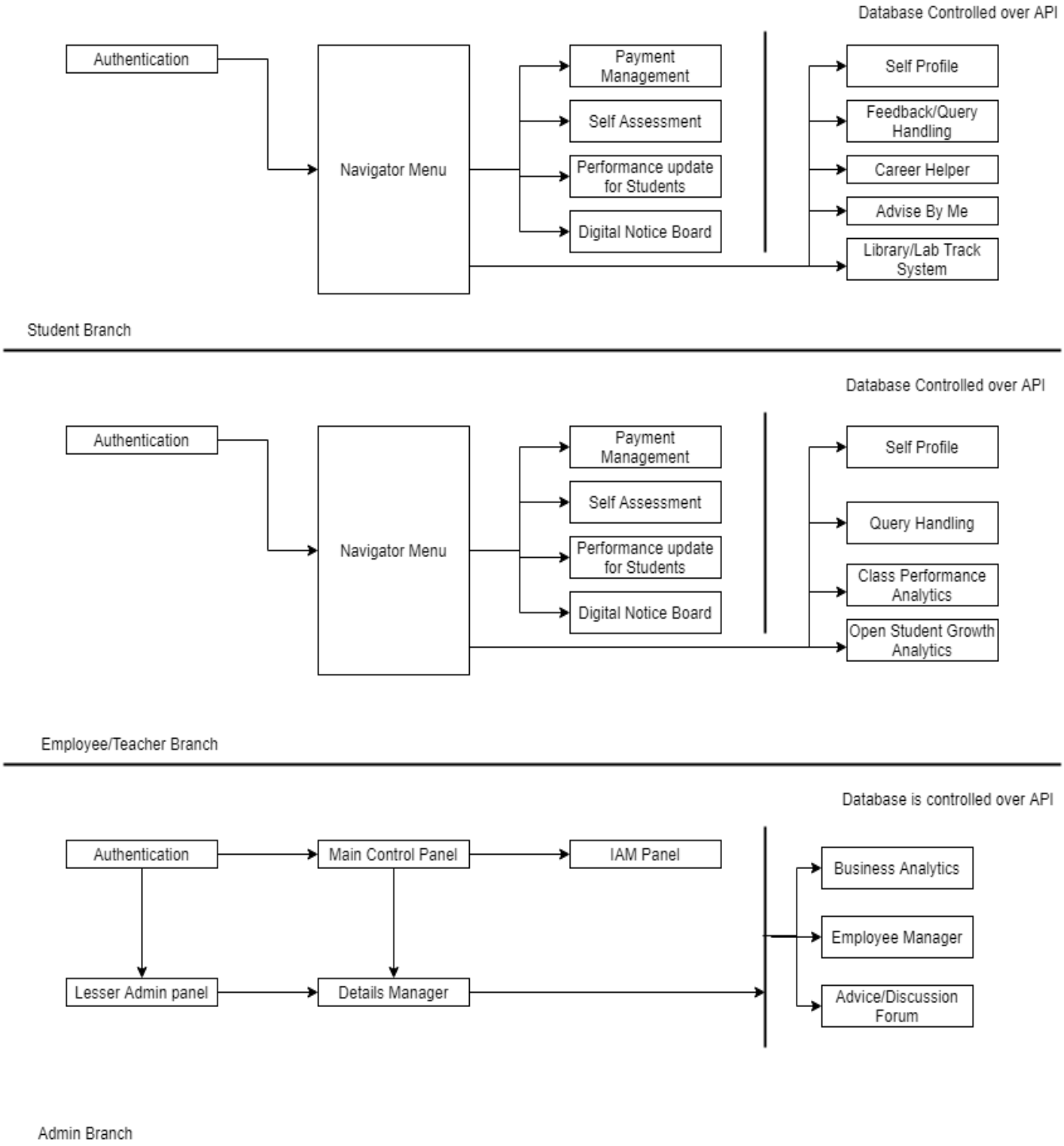

Fig 1.1 :- The architecture diagram

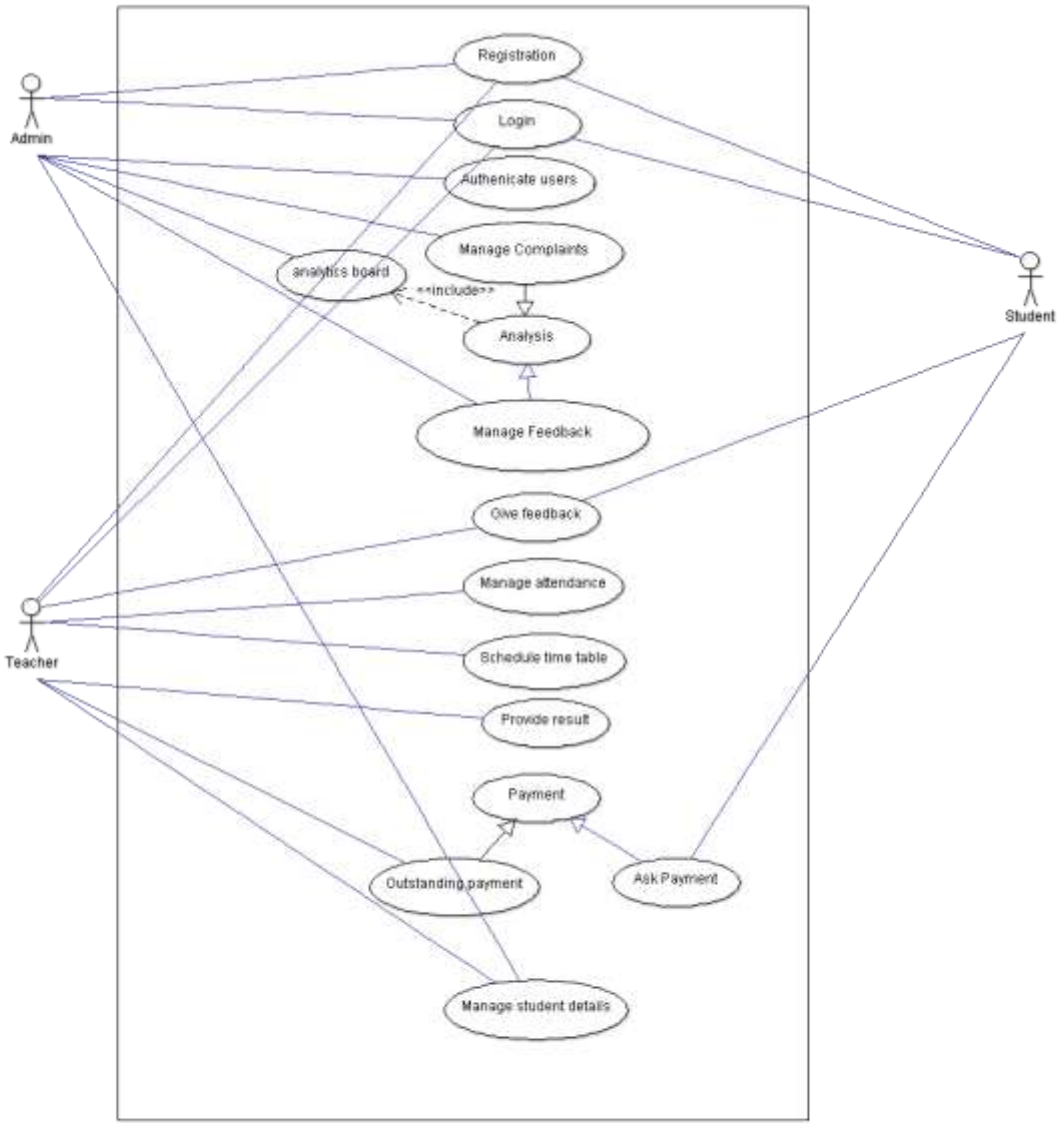

Fig 1.2:- The Use Case Diagram

3.3 PROPOSED METHODOLOGY

The teaching performance is evaluated by considering some of the parameters like understandability of the concept, punctuality while teaching, ability to clear student doubts, tendency to be impartial, ability to gain student attention, presentation of teacher, ability to clear concept in simple manner etc and some other parameters like overall subject performance, lower expectancy, higher expectancy. Furthermore, the algorithm calculates the rating of the teacher by doing the summation of all the parameters and multiply it with 5 for each parameter in order to show how many students have rated the teacher accordingly. And then for each parameter the average value is calculated by doing the summation of the values obtained for that particular parameter and then repeat this process for all the seven parameters and then add all the summation values obtained and then divide it by 7 and this is the value which tells the teacher's rating as a whole. The lower expectancy is calculated by first, obtaining the number of the students who have scored less in their exams based on mark categories. And then do the summation of the number of students based on the number of categories. Higher expectancy is

calculated by doing the summation of the number of students based on the number of categories. And then the lower expectancy value is compared with higher expectancy value and overall subject performance and accordingly the rating of the teaching performance is given. The following parameters are :-

UoC- Understandability of Concept.
PwT- Punctuality while Teaching
AtCSD- Ability to Clear Student Doubts
TtbI- Tendency to be Impartial
AtGSA- Ability to Gain Student Attention
PoT- Presentation of Teacher
AtCCiSM- Ability to Clear Concept in Simple Manner
CountCT1[40-45]- number of students who got marks between 40 and 45 in cycle test 1
CountCT2[40-45]- number of students who got marks between 40 and 45 in cycle test 2 CountCT3[40-45]- number of students who got marks between 40 and 45 in cycle test 3
CountCT1[45-50]- number of students who got marks between 45 and 50 in cycle test 1
CountCT2[45-50]- number of students who got marks between 45 and 50 in cycle test 2 CountCT3[45-50]- number of students who got marks between 45 and 50 in cycle test 3
CountCT1[50-55]- number of students who got marks between 50 and 55 in cycle test 1
CountCT2[50-55]- number of students who got marks between 50 and 55 in cycle test 2 CountCT3[50-55]- number of students who got marks between 50 and 55 in cycle test 3
CountCT1[60-70]- number of students who got marks between 60 and 70 in cycle test 1
CountCT2[60-70]- number of students who got marks between 60 and 70 in cycle test 2 CountCT3[60-70]- number of students who got marks between 60 and 70 in cycle test 3
CountCT1[70-80]- number of students who got marks between 70 and 80 in cycle test 1
CountCT2[70-80]- number of students who got marks between 70 and 80 in cycle test 2 CountCT3[70-80]- number of students who got marks between 70 and 80 in cycle test 3
CountCT1[80-90]- number of students who got marks between 80 and 90 in cycle test 1
CountCT2[80-90]- number of students who got marks between 80 and 90 in cycle test 2 CountCT3[80-90]- number of students who got marks between 80 and 90 in cycle test 3
CountCT1[90-100]- number of students who got marks between 90 and 100 in cycle test 1
CountCT2[90-100]- number of students who got marks between 90 and 100 in cycle test 2 CountCT3[90-100]- number of students who got marks between 90 and 100 in cycle test 3
Minimum[subjectCT1]- Minimum score obtained by the student in that subject in cycle test 1.
Average[subjectCT1]- score obtained by the student in that subject in cycle test 1 on an average.
Maximum[subjectCT1]- Maximum score obtained by the student in that subject in cycle test 1.
Minimum[subjectCT2]- Minimum score obtained by the student in that subject in cycle test 2.
Average[subjectCT2]- score obtained by the student in that subject in cycle test 2 on an average.
Maximum[subjectCT2]- Maximum score obtained by the student in that subject in cycle test 2.
Minimum[subjectCT3]- Minimum score obtained by the student in that subject in cycle test 3.
Average[subjectCT3]- score obtained by the student in that subject in cycle test 3 on an average.
Maximum[subjectCT3]- Maximum score obtained by the student in that subject in cycle test 3.

Overall Subject Performance (OSP)= Minimum[subjectCT1] + Average[subjectCT1] + Maximum[subjectCT1] + Minimum[subjectCT2] + Average[subjectCT2] + Maximum[subjectCT2] + Minimum[subjectCT3] + Average[subjectCT3] + Maximum[subjectCT3];

Lower Expectancy (LE)= CountCT1[40-45] + CountCT1[45-50] + CountCT1[50-55] + CountCT2[40-45] + CountCT2[45-50] + CountCT2[50-55] + CountCT3[40-45] + CountCT3[45-50] + CountCT3[50-55];

Higher Expectancy (HE)= CountCT1[60-70]+ CountCT1[70-80]+ CountCT1[80-90]+ CountCT1[90-100]+ CountCT2[60-70]+ CountCT2[70-80]+ CountCT2[80-90]+ CountCT2[90-100]+ CountCT3[60-70]+ CountCT3[70-80]+ CountCT3[80-90]+ CountCT3[90-100];

If value of LE is lesser than HE

The teaching performance rating is 4.0
If value of LE is lesser than HE but greater than the LE limit
The teaching performance rating is 3.0
If value of LE is greater than HE
The teaching performance rating is 2.0

4. EXISTING SYSTEM

As mentioned, that the existing system used before were used to store only the important details like your self-profile and other personal details. As information related to the various other important postulates were not available in digitalized format, they had to be maintained manually. There was no analytics and assessment used for either the teacher or the student for improving the quality of education. It resulted in the growth of various drawbacks:

- Lack of security feature and no data integrity.
- Decreasing the manpower increased the various other kinds of maintenance costs.
- Customisation is done on the go.
- Scalability is very less.
- There was no role of direct officials in the system.
- Analytics drawn was not in favour of either the student or teacher, but just on the favour of university.

5. EXPERIMENTAL RESULTS

1) Authentication Module- Every user has to login into the system in order to authenticate themselves. It can only be used by the members of the organization (student, teacher, admin).

Fig 2.1:- Login Page

2) Self-Assessment – It tells you about the teaching performance evaluation in case of the teacher, and the performance of the student in each subject in each exam in case of the student.

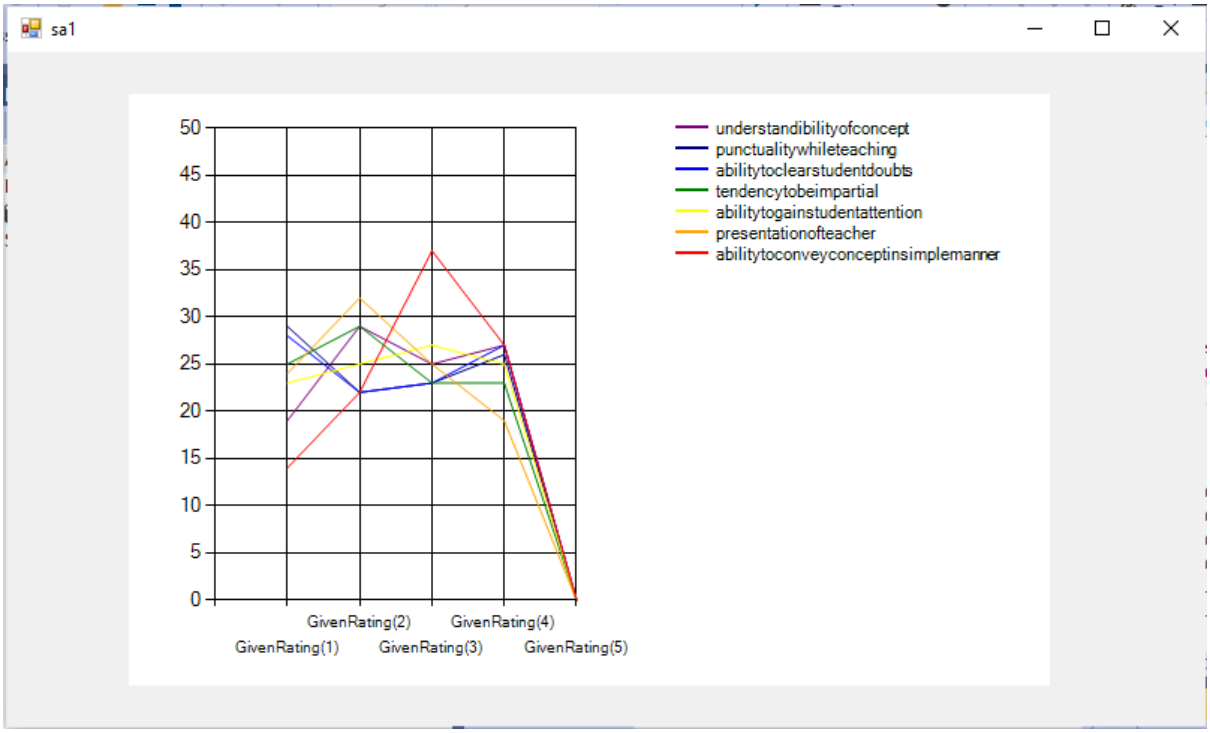

Fig 2.2:- Self Assessment(Teacher)

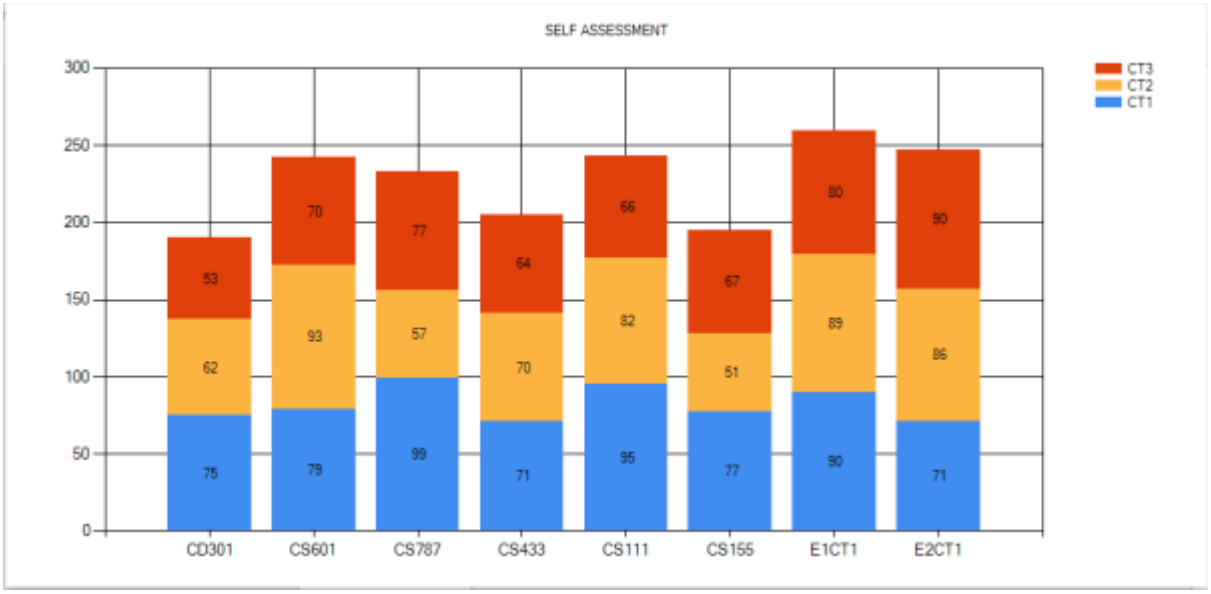

Fig 2.3:- Self Assessment(Student)

6. CONCLUSION

By this project I am trying to enhance this system in order to heighten and implement the improvements of the performance in teaching as well as improvements in exam performance. Presently my system is going to be used to be used as a good management system in various colleges and universities. I am aiming to represent the performance analytics and other assessments in an even more meaningful manner so that users those who are using the system find it easy to use and will be able to contribute to the growth and other improvements in the field of education.

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