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APPLICATION ENGINEERING AND DEVELOPMENT

PERFORMANCE MEASUREMENT SOLUTION

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Project overview

This University Management project demonstrate a model which can be used to store all the university's related information such as information of professors, students, courses that university offers, which all colleges and department university has, alumni of university, etc. This system will serve as a medium using which university can measure and know how they are doing and what is the response of their students and alumni. This will help university to measure the growth they offer to students by keeping a check on their alumni.

This model can be used to develop a software by which university can improve the quality of education anywhere and hold people accountable for improving the quality of life through education, learning to learn, and feedback. It can be used as a platform using which university can showcase what they have to offer to new students and what they can expect when they will arrive in the university. Also, it can be used by new student to choose the university as it will bring a transparency to new students.

PROBLEM STATEMENT

Creating a Performance Measurement Solution for universities to enable universities to measure the quality of the education they deliver to their students. Along with that find a way to hold people accountable for improving the quality of life through education, learning to learn, and feedback. Also, find a way to help new students to choose a university where they want to go for studies.

SOLUTION

This model is designed in a way to help universities find the solution for the given problem by utilizing the various performance measurement systems and by taking regular feedback from students and their alumni. This model is designed in a way so that university can broadcast what it has to offer to new students and tell students how they are different and better than other university on a single page.

We have designed it in a way that current university students will submit feedback form every 3 months in which they will give their feedback about the courses and professors. Also, with this model we can take feedback from alumni every year where they will tell how the knowledge, they got from university is helping them in corporate culture and university will get to know what promotions their students are getting and how they are growing which will help universities to design and alter their curriculum and make it more diverse so that students will be more ready to go and work once they graduate.

We are also using several Performance Indicator to measure performance of professors and alumni like,

1. Performance Measurement for Professors
2. Performance Measurement for Alumni

CLASSES DEFINITION

1. University:

University class is the parent class of all classes and represent one university which has several colleges in it. It will hold several data which will define a university. The data what this class will hold will be:

Variables:

1. University Name
2. University Address
3. University ID
4. Established Year
5. Phone Number
6. University President
7. University Mascot
8. Website

Methods:

1. Method to Add a University: addNewUniversity();
2. Method to Update a University: updateUniDetails();
3. Method to Delete a University: deleteUniversity();
4. Getter and Setters of all the private variables.

2. College:

College class inherit the University class and has all the information about it's University. College class holds several data which defines a college and is the parent class of several other departments which comes under a specific college. The data that this class hold will be,

Variables:

1. College Name
2. College ID
3. College Address
4. Type of College: Gives detail about the type of college whether it is Engineering, Law, Business college.
5. College Dean
6. College Website

Methods:

1. Method to Add a College: addCollege();
2. Method to Update a College: updateCollege();
3. Method to Delete a College: deleteCollege();
4. Getters and Setters of all the private variables

3. Department:

Department class will hold the information about the departments that a college has. It is a child of college class and hold the information about the university it belongs to. It also acts as a parent class to several other classes like Course_Catalog, Professional_Directory, Student_Directory. The data that this class hold will be,

Variables:

1. Department Name
2. Number of Courses in a Department
3. Department Head

Methods:

1. Method to Add New Department: addNewDepartment();
2. Method to Update Department details: updateDepartmentDetails();
3. Getters and Setters of all the private variables

4. Course_Catalog:

This class holds all the information of a course and have its details. It is a child class of department class as course always comes under a department. The data that this class hold will be,

Variables:

1. Course Name
2. Course ID
3. Course Duration
4. Fees

Methods:

1. Method to Add New Course: addNewCourse();
2. Method to Update Course Details: updateCourseDetails();
3. Method to Delete a Course: deleteCourse();
4. Getters and Setters of private variables.

5. Professor_Directory:

This class is a child class of Department class and holds information about all the professors in a department. This class contains several methods and variables to store information about the professor like,

Variables:

1. Professor Name
2. Professor's Awards
3. Professor's experience
4. Professor's research
5. Professor's Course Name

Methods:

1. Method to Add New Professor: addNewProfessor();
2. Method to Update Professor Details: updateProfessorDetails();
3. Method to Delete a Professor: deleteProfessor();
4. Getters and Setters of private method

6. Student_Directory:

This class holds the record of students and is a child class of Department class. It also acts as a parent class to Alumni class and Student_Transcript class. This class contains several methods and variables to store information about the students like,

Variables:

1. Student Name
2. Student Age
3. Student Address
4. Student Contact Number
5. Student's Current GPA
6. Student's Course

Methods:

1. Method to Add New Student: addNewStudent();
2. Method to Update a Student: updateStudent();
3. Method to Delete a Student: deleteStudent();

7. Alumni:

This class holds the information about the university's alumni and is a child class of student class as a student will turn into an alumni once graduate. It contains several methods and variables to store information about the student like,

Variables:

1. Alumni's current job role
2. Field of work
3. Years of experience

Methods:

1. Method to Update an Alumni: updateAlumni();
2. Getters and Setters of private variables.

8. Student_Transcript:

This class is used to store the GPA of student in their transcript. It is a child class of Student_Directory class as a transcript belongs to a student. It holds sevral methods and variables like,

Variables:

1. Course Name
2. Course ID
3. Course Grade
4. Course Completion Date

Methods:

1. Method to Get Transcript: getTranscript();
2. Method to Update Transcript: updateTranscript();

9. Feedback:

This class is parent class to Student_Feedback class and Alumni_Feedback class. It holds the common data which both student and alumni will provide in the feedback. It has several methods and variables like,

Variables:

1. Name
2. ID
3. Email
4. Contact Number
5. LinkedIn ID

Methods:

1. Method to Add New Feedback: addFeedback();
2. Method to Get Feedback: getFeedback()
3. Setters and Getters of private variables

10. Student_Feedback:

This class is a child class of Feedback class and will be specifically to hold the feedback that a student gives about the professor, university and course. It will have several methods and variables like,

Variables:

1. Name
2. ID
3. Email
4. Contact Number
5. Linked ID
6. Course
7. Professor Feedback
8. Course Feedback
9. University Feedback

11. Alumni_Feedback:

This class will be specifically to hold the alumni feedback. It is child class of Feedback class and will use its method and variable to add new feedback and get the feedback which is given by an alumni. It will have several methods and variables like,

Variables:

1. Name
2. Email
3. ID
4. Contact Number
5. Linked ID
6. Course
7. Employer
8. Employer Feedback
9. Years of Experience
10. Course rating as per its usefulness in career

PERFORMANCE MEASUREMENT INDICATORS

1. Performance Measurement for Professors

This is used to measure the performance of professor which will tell the university about how the professor is delivering the knowledge to students and how they are performing and where they can improve. This indicator will be using several factors to calculate this rating which will be coming from different classes we have made. It will use the Professor class to get the awards and honors professor has received, professors total work experience and the main thing which is the feedback professor will be receiving from students.

1.1 Awards and Honors: This score depends on total awards and honors the professor has received in his life.

Number of Awards and Honors	Score
0-2	5
2-5	8
5+	10

1.2 Work Experience: This score depends on the total relevant work experience professor has in the field he is teaching.

Total Year of Work Experience	Score
0-3	5
3-7	8
7+	10

1.3 Student Feedback/ Ratings: This depends on the feedback form that student use to rate the professor.

Student Rating	Score
0-3	5
4-6	7
7-8	9
9-10	10

SAMPLE DATASET

Name: Professor A

Work Experience: 5 years

Student Rating: 9

Awards and Honors: 7

SCORE: (8 + 10 + 10) / 3 = 9.33

2. PERFORMANCE MEASUREMENT FOR ALUMNI

This metrics is used to measure the performance of alumni which are the students who has graduated from the university and are working in the corporate industry now. This will help university to know how their university is helping the students to grow in their career and how the courses they have taught to students are being used in their job. This depends on the total years of experience the student has gained and it also depends on the promotions the student has received while working. It also depends on the salary of the salary and if the student is working in the same field in which he graduated.

2.1 Total Years of Experience: This depends on the total years of experience alumni has gained.

Years of Experience	Score
0-2	**5**
3-4	**9**
5+	**10**

2.2 Promotions: This factor depends on the total promotion alumni has received.

Number of Promotions	Score
0-1	**6**
2-4	**8**
4+	**10**

2.3 Salary: This depends on the salary of alumni.

Salary	Score
50000-70000 USD	**6**
70000-90000 USD	**8**
90000+ USD	**10**

2.4 Field of Working: This depends on the field the alumni student is working in. It means if the student is working the same domain that student was graduated in or now.

Field of job	Score
Different field of study	**5**
Same field of study	**10**

SAMPLE DATA SET:

Alumni X is working in ABC company as Software Engineer from last 3 years and have got 2 promotions till now. He was a student of Computer Science and have a salary of 160000 USD.

SCORE: (8 + 9 + 10 + 10) / 4 = 9.25

UNIVERSITY FEATURES PAGE

This page will be used by universities to showcase what they have to offer to new students and how they can help the students to achieve heights. As an international student it is very difficult to choose the right university which will give you everything to make you best in your domain. We have designed this page by giving all the possible thoughts which would have helped us in choosing the university and would have made our life easy. It would also help universities to display how they are better than other universities.

For this we have taken several factors and have tried to gather all the data from different classes we have used in our project. Some of the factors are:

1. **ALUMNI NETWORK:** This factor will be used to display the top alumni university had in last 2 years using the performance metrics given above. This will help the students to see what university can do. Also, we can give the linkedIn id of the alumni so that students can see the growth.

2. **COURSES OFFERED:** Here we will be displaying all the courses university is offering along with the curriculum so that students can see what exactly the courses are and make a better choice of university and courses. We will be using Courses class for this.

3. **LIVE STUDENT FEEDBACK:** This we will be using to show the feedback of current students and tell how the university is developing them each day. This will also help to show how good professors and courses are in the university. We will be using student feedback table for this.

4. **PROFESSOR'S ACHIEVEMENT:** We are using the data from professor class here to display the awards and honors professor has received in his life. Also, we will show the research professor is working on which will help new students in making a good choice

5. **ALUMNI GROWTH IN 5 YEARS:** We will be using alumni class again here to show the growth of alumni after graduating from a particular university. We will be sending the mail to university every year to fill the alumni feedback form which can help students to see what heights they can achieve by being a part of university.

6. **LOCATION:** This section is also very important for students as a deciding factor of universities. University can showcase the location advantage they have like the climate of the city it is located in. Also, which all companies are located in the vicinity of university which can help students to get a job even faster.