INFO 5100 Application Engineering and Development

Assignment 3

University Quality Monitoring

Project By :

TEAM NO 25

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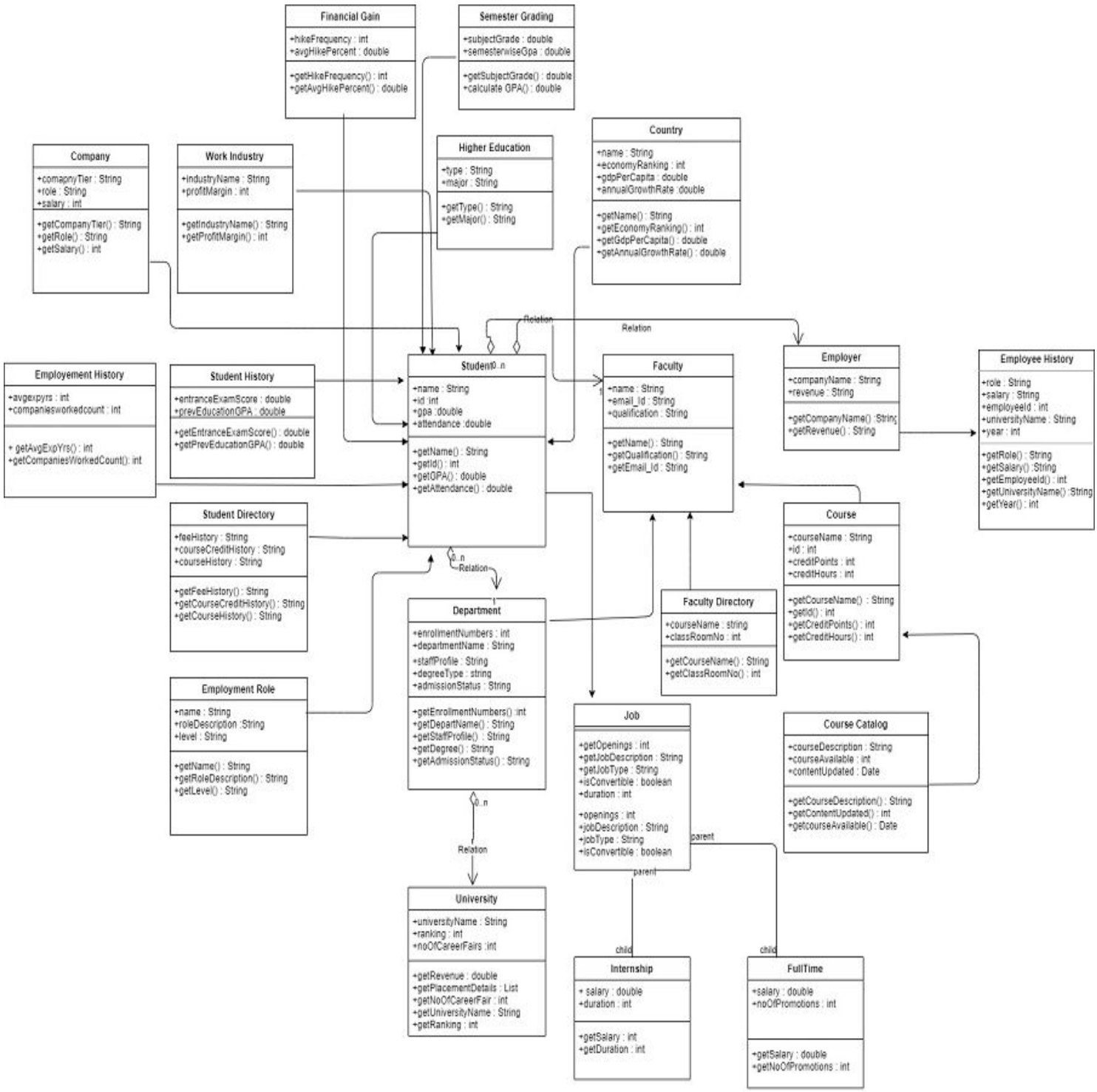
Content:

1. Problem Statement

The objective of this assignment is to instill the techniques for turning an object model into a machine for information gathering and data aggregation.We want to use software engineering techniques to improve the quality of education anywhere and hold people accountable for improving the quality of life through education, learning to learn, and feedback. We create a performance measurement solution to enable universities to measure the quality of the education they deliver to their students. The approach will be to look into how an educational system in terms of faculty and courses contribute to the growth of their graduates over a 5-year period. We figure out ways to track the jobs and promotions graduates get over time and assign rankings accordingly. In addition, track the connection of courses and their relevance to graduates' growth.

2.1 Class Diagram



2.2 Components Involved:

1. **Department:**

   This component contains all the department details.

Attribute	Data Types	Description
departmentName	String	Name of the department
enrollmentNumbers	int	Number of students enrolled in specific department
staffProfile	String	Overall staff details
degreeType	String	Degree type
admissionStatus	String	Admission details

   Methods: getEnrollmentNumbers(), getDepartmentName(), getStaffProfile(), getDegree(), getAdmissionStatus().

2. **Student**

   This component contains details with respect to the student profile.

Attribute	Data Types	Description
studentName	String	Name of the student
studentId	int	Unique id of student
gpa	double	Student overall score till now
attendanceDetails	double	Attendance percent till now

   Methods: getStudentName(), getStudentId(), getgpa(), getAttendanceDetails(),

3. **Faculty**

   This will contain details about various faculties and research work details.

Attribute	Data Types	Description

facultyName	String	Name of the faculty
email_Id	String	Email id of the faculty to contact them for doubts
qualification	String	Highest qualification of the faculty

Methods: getfacultyName(), getEmailId(), getQualification()

4. **Financial Gain**

This will contain details on the financial gains received by that student.

Attribute	**Data Types**	**Description**
hikeFrequency	int	How often is the hike received
avgHikePercent	double	The average percentage of the hike received

Methods: getHikeFrequency(), getAvgHikePercent()

5. **Semester Grading**

This will contain details of the grading as well as the semester-wise GPA received by the student per semester.

Attribute	**Data Types**	**Description**
subjectGrade	double	Total grade for that semester
semesterwiseGpa	double	GPA of that semester

Methods: getSubjectGrade(), getSemesterwiseGpa()

6. **Company**

This will contain details of the company where the student is employed after graduation.

Attribute	Data Types	Description
companyTier	string	Tier level at which the company belongs
role	string	Role of the student at the company
salary	int	Salary earned per annum

Methods: getCompanyTier(), getRole(), getSalary()

7. **Work Industry**

This will contain details of the industry the student is a part of.

Attribute	Data Types	Description
industryName	string	Name of the industry
profitMargin	int	Profits of that industry

Methods: getIndustryName(), getProfitMargin()

8. **Higher Education**

This will contain details of higher education completed by the student prior to joining the University

Attribute	Data Types	Description
type	string	Type of higher education
major	double	Major pursued

Methods: getType(), getMajor()

9. **Country**

This will contain details of the country the student belongs to.

Attribute	Data Types	Description
name	string	Name of the country
economyRanking	int	Country's economic ranking
gdpPerCapita	double	Its GDP per capita
annualGrowthRate	double	The country's annual growth rate

Methods: getName(), getEconomicRanking(), getGdpPerCapita(), getAnnualGrowthRate()

10. Employment History

This will contain details of the employment history of the student

Attribute	Data Types	Description
avgExpYears	int	Years of experience of the student
companiesWorkedCount	int	Number of companies that the student worked for

Methods: getAvgExpYears(), getCompaniesWorkedCount()

11. Student History

This will contain details of the previous education and the scores attained by the student

Attribute	Data Types	Description
entranceExamScore	double	Score from entrance exam
prevEducationGpa	double	GPA of previous education

Methods: getEntranceExamScore(), getPrevEducationGpa()

2.3 Detailed Analysis

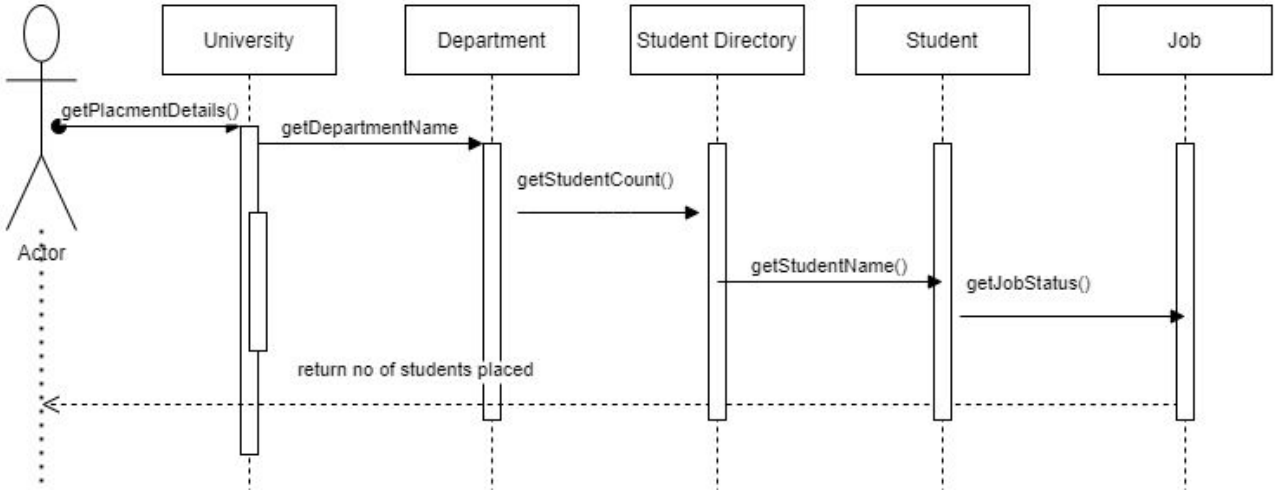
There are various aspects that need to be considered for a better quality of education system for the long run. Below are few points which we have highlighted:

- **Research Papers:**

If better research papers are delivered, this might increase the funds received for the implementation and will the product patented. Overall infrastructure will improve.

- **Company Feedback:**

Students already placed will deliver quality of work when the coursework is good enough for them to be industry ready which will increase in the placement for the future students and increase the enrollment of the students every year. University overall revenue and ranking will improve.



- **Industry :**

The Industry to which a student eventually belongs to from his career helps an University visualize which department/Course related students end up at which Industry category. This

helps the University understand, whether their vision about their students ending up at a certain Industry bucket has been achieved. If there is a misalignment in the results, the University can explore as to what went wrong with a good set of students and how they could not align with University's Vision.

➢ **Company:**

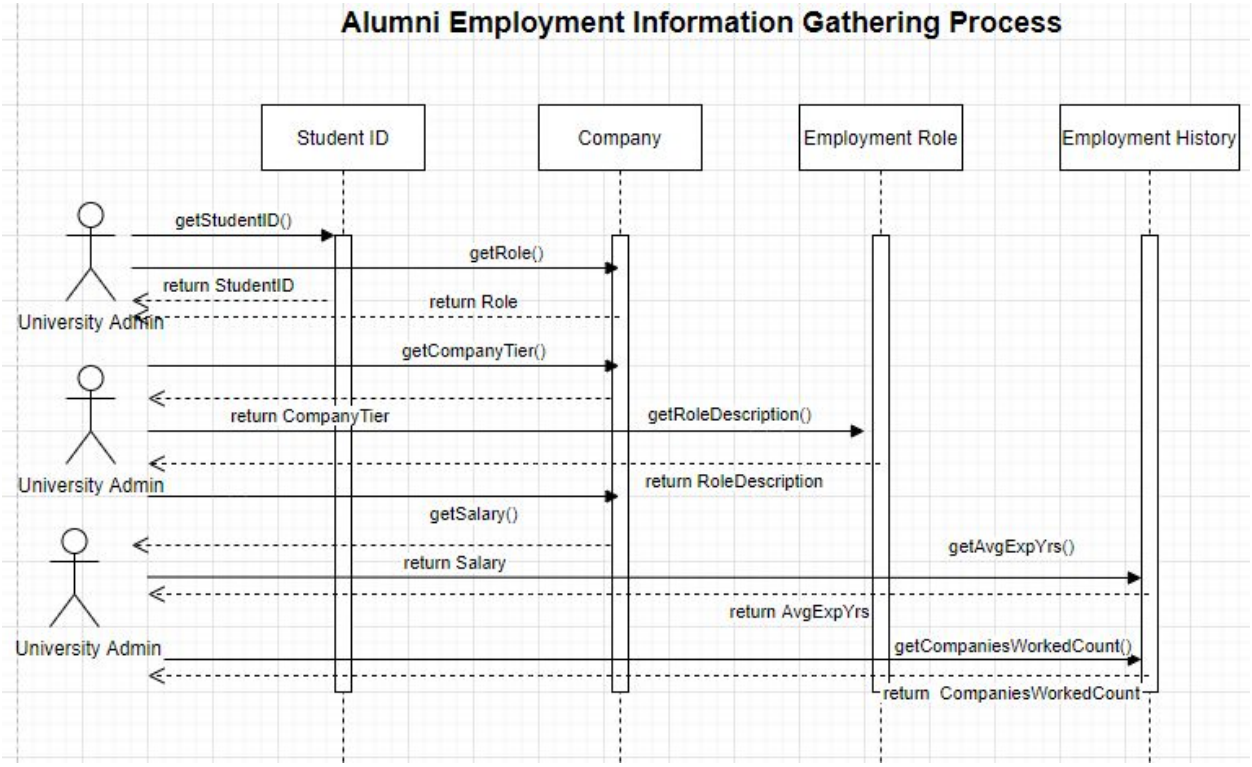
Apart from the Industry itself, a Firm/Company into which a student gets into determines the level of talent the student gains from his education in the University. If a majority of a student set goes into Tier-1 or Tier-2 buckets, the University is definitely doing good. If that does not happen to be the case, more filtering on which student set, belonging to which course-department can reveal more on what the University has to improve itself on.

➢ **Employment History:**

History of Employment is a key driver to show how good a Student is and to which Companies he is easily able to crack his interviews for. Apart from this, this history talks more on the career path a Student intends to choose based on his learnings from his previous jobs. All of this information ties back to which category of Departments - Course catalogs - Faculty combination the student belonged to. It can even be attributed to his history of Grades in and outside the University, may be in his Academic education, etc. A University can learn a lot about what to improve, having known about this information.

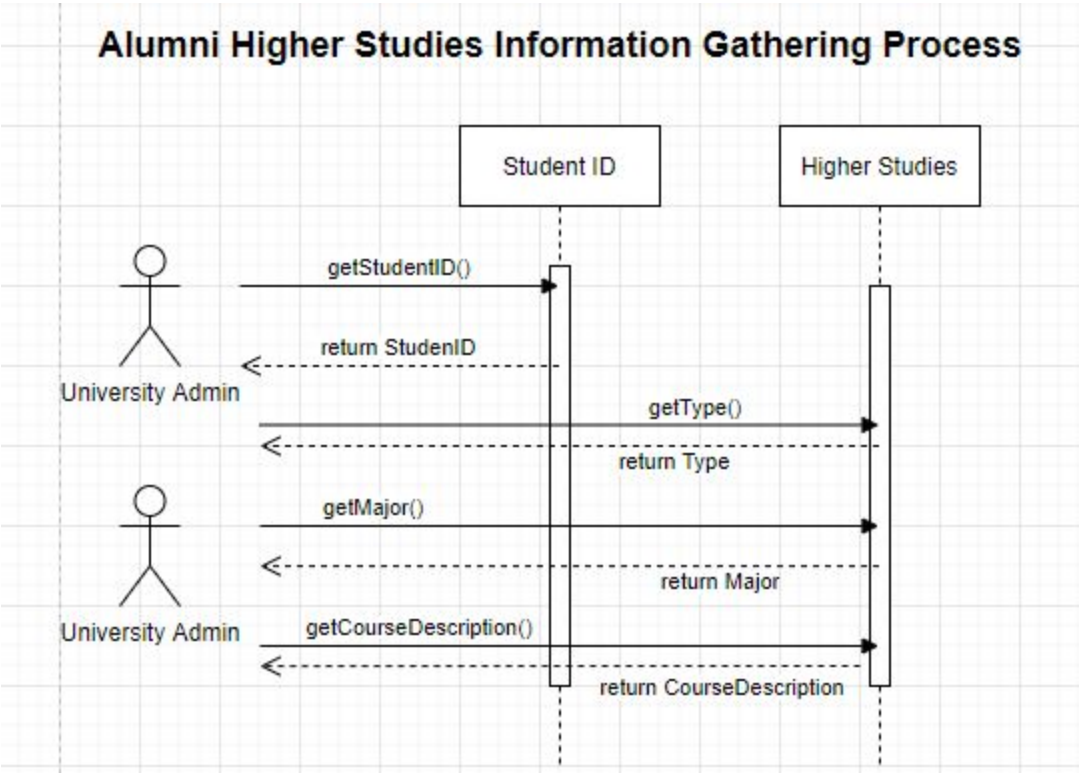
➢ **Employment Role:**

The Role a student eventually holds, belongs to in his future also describes if he aligned with the University's vision for his category of students. If a major subset of this category went away from University's vision of a career path, then the University will be under serious criticism in improving themselves towards this.



➢ **Higher Studies:**

A Student getting motivated to pursue higher education comes from the University where he learnt his basics properly. There is usually a vision that the student gets while pursuing his Under Graduation/ Post Graduation, that pushes the student to think beyond into a Masters'/Doctorate degree. Students belonging to this bucket are a proof to the Department, courses, Faculty, etc under which he/she studied. Such Departments, Courses, Faculty should be an example for the rest of the less-improved areas under an University.



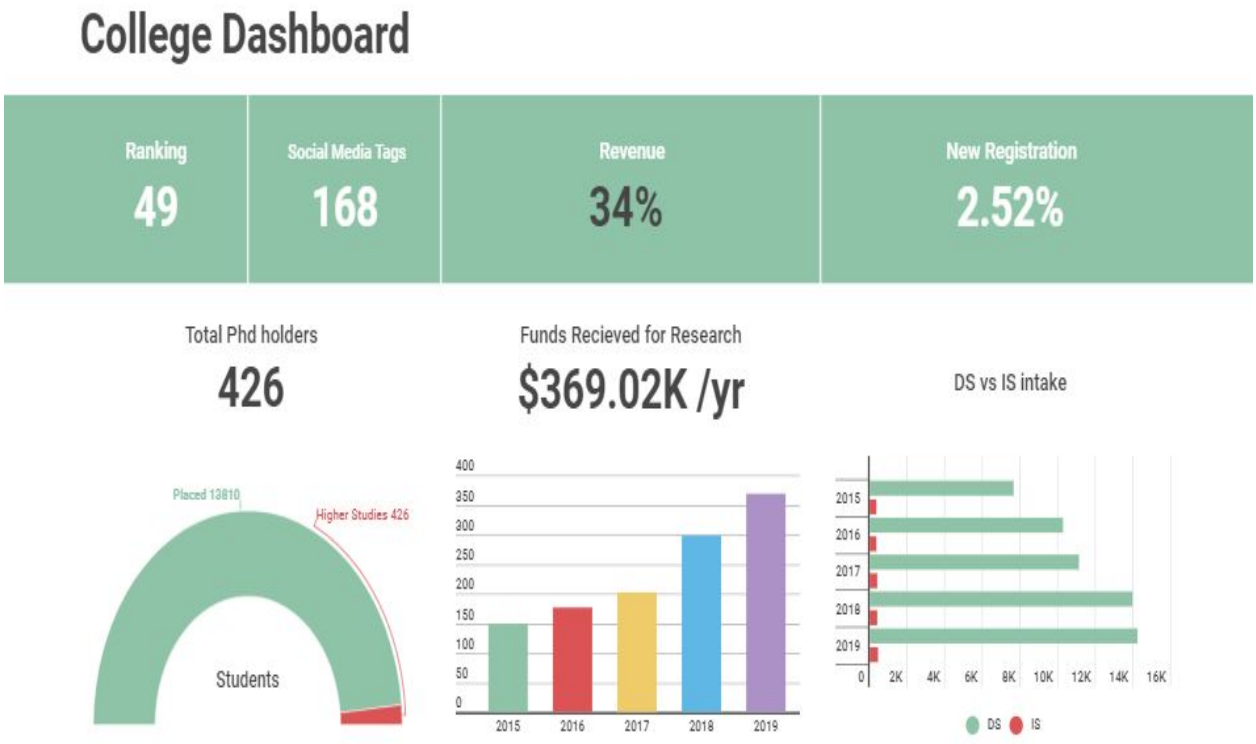
➢ **Country:**

Sometimes there is a major subset of students who go abroad to start working in other countries. Depending on the Country's economy ranking, the University can also understand the upgrade/degrade factor the student ended up picking. This can go back to how the Student's choice and mentoring were in the times when he/she belonged to the College Education days. Universities can use this future information to improve on the relevant parameters.

➢ **Financial Gain:**

One of the key factors determining how well a student is doing after stepping out of the University period is this. With the help of monetary parameters, one can determine how well a Student has excelled in his career. A University can also have this as one of the metrics to measure its success on its Alumni and look for areas of improvement.

3. Dashboard


College Dashboard
Ranking
49
Social Media Tags
168
Revenue
34%
New Registration
2.52%
Total Phd holders
426
Funds Recieved for Research
$369.02K /yr
DS vs IS intake
Placed 13810
Higher Studies 426
Students
400
350
300
250
200
150
100
50
0
2015
2016
2017
2018
2019
2K
4K
6K
8K
10K
12K
14K
16K
DS
IS