PERFORMANCE MEASUREMENT OF COURSES/FACULTY WITHIN A UNIVERSITY

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Introduction

Objectives

Objective is to create a performance measurement solution to enable universities to measure the quality of the course they offer and how they are relevant in getting student a job or a Co Op.

Inputs from students graduating from the university will be taken for a period of 5 years to track their achievements/progress and link them back to the courses/faculty they enrolled.

University Departments can review the performance of their units based on feedback from their graduated students.

A similar model also for the education systems in the developing countries to track the progress of students moving to higher education after graduating from 12th grade.
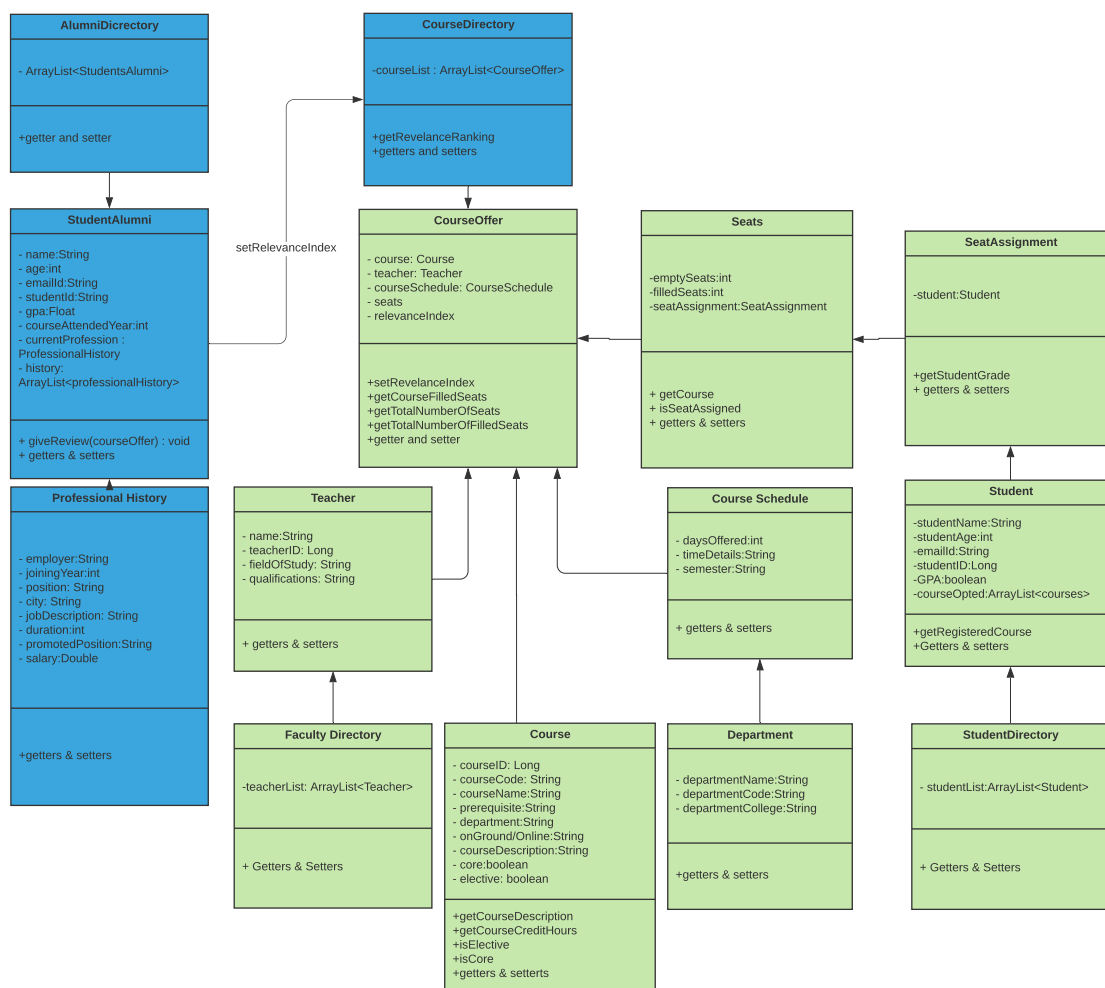
Object Model:

The model diagram proposed has additional classes to the existing University Model.

The 'StudentAlumni' class will be used to store details of graduating students, the course they enrolled, the year they were hired (For a Co Op/Full time position), progress they make in terms of promotion, GPA etc.
These attributes will serve as the input to the Scoring algorithm to return 'Relevance Index' that can be set for each Course offered -Professor unique combination.
This ranking system will provide the necessary analytics to review the current courses relevance.
All Graduated students – 'StudentAlumni' objects will be stored in the StudentAlumni directory (ArrayList)

AlumniDicrectory
- ArrayList<StudentsAlumni>

+getter and setter

CourseDirectory
-courseList : ArrayList<CourseOffer>

+getRevelanceRanking
+getters and setters

StudentAlumni
- name:String
- age:int
- emailId:String
- studentId:String
- gpa:Float
- courseAttendedYear:int
- currentProfession : ProfessionalHistory
- history: ArrayList<professionalHistory>

+ giveReview(courseOffer) : void
+ getters & setters

setRelevanceIndex

CourseOffer
- course: Course
- teacher: Teacher
- courseSchedule: CourseSchedule
- seats
- relevanceIndex

+setRevelanceIndex
+getCourseFilledSeats
+getTotalNumberOfSeats
+getTotalNumberOfFilledSeats
+getter and setter

Seats
-emptySeats:int
-filledSeats:int
-seatAssignment:SeatAssignment

+ getCourse
+ isSeatAssigned
+ getters & setters

SeatAssignment
-student:Student

+getStudentGrade
+ getters & setters

Professional History
- employer:String
- joiningYear:int
- position: String
- city: String
- jobDescription: String
- duration:int
- promotedPosition:String
- salary:Double

+getters & setters

Teacher
- name:String
- teacherID: Long
- fieldOfStudy: String
- qualifications: String

+ getters & setters

Course Schedule
- daysOffered:int
- timeDetails:String
- semester:String

+ getters & setters

Student
-studentName:String
-studentAge:int
-emailId:String
-studentID:Long
-GPA:boolean
-courseOpted:ArrayList<courses>

+getRegisteredCourse
+Getters & setters

Faculty Directory
-teacherList: ArrayList<Teacher>

+ Getters & Setters

Course
- courseID: Long
- courseCode: String
- courseName:String
- prerequisite:String
- department:String
- onGround/Online:String
- courseDescription:String
- core:boolean
- elective: boolean

+getCourseDescription
+getCourseCreditHours
+isElective
+isCore
+getters & setterts

Department
- departmentName:String
- departmentCode:String
- departmentCollege:String

+getters & setters

StudentDirectory
- studentList:ArrayList<Student>

+ Getters & Setters

Sequence Diagram:

1. Alumni is the actor here. Department act as the Admin to check on the measures.

2. Review from the Alumni (giveReview) will have all the parameters that are required to calculate the performance ranking.

3. Relevant index is also taken into consideration for calculating the ranking.

4. Rankings can be fetched on the basis of course-Professor mapping to provide which courses taught by which professors are of highest ranking.
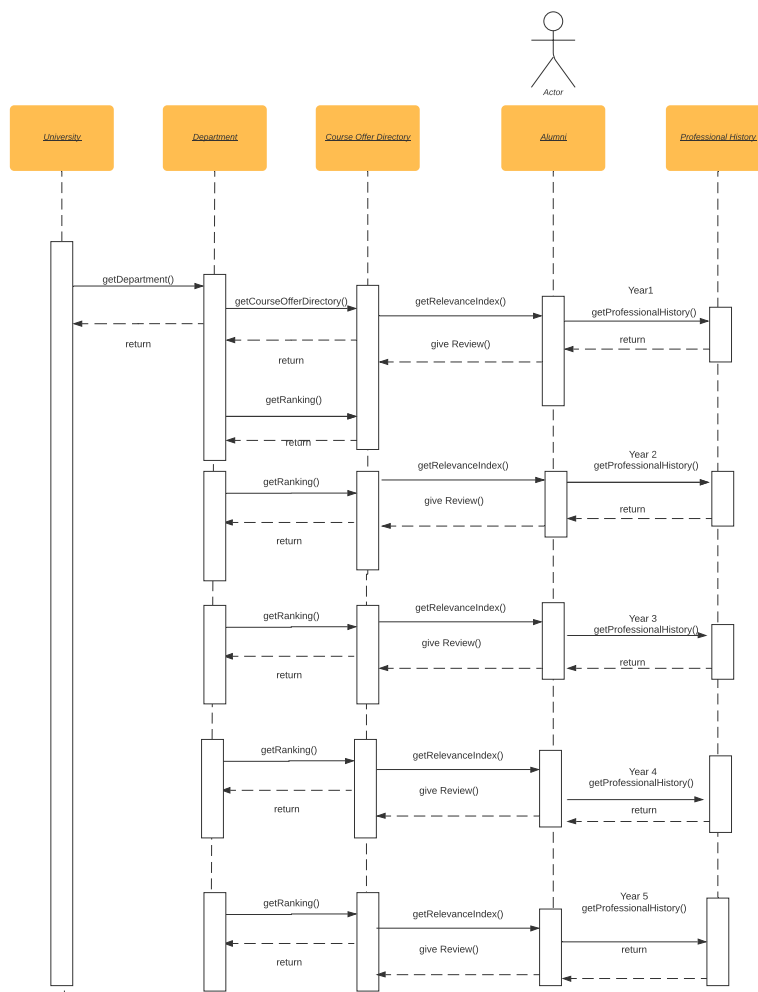
Ranking criteria

Course Relevance Index

1. Graduated student ranks each of the courses that he enrolled with a score of 1 to 5

2. 5 points added to each promotion that he gets during his tenure.

3. 5 points added to increase in salary range.

4. As years of experience increase. The relevant course score is multiplied by 2 each year with the previous value

This will provide the necessary metrics to provide feedback to a course and the professor teaching that course.

Graduated Student Performance index (Hidden from the student)

Weighted average calculated based on the below factors –

Number of promotions by year.
Salary increase.
Self-employment/Start-up traction
Papers published.

This score will be compared with the student's **GPA** to make an inference if GPA plays an important role in a professional success.

Alumni Data

Alumni details are stored in two objects:
1) StudentAlumni
2) StudentAlumniProfessionalHistory

As the name implies, StudentAlumni will contain various attributes such as,
Name, Student ID, Age, Total Years of Experience, Type of Employment, Current Employment Details, and Employment History

StudentAlumniProfessionalHistory will maintain the professional history of the Alumni.

Alumni will have access of the following pages:

Alumni Yearly Survey

Student : **John Doe**   Student ID : **12345678** Program :   **Information System**
Year   : **2018-2019**   Term   : **Spring**

Professional Details:

Current Designation : [   ]   Employment Type : ○ Co-op
Current Employer : [   ]   ○ Full-Time
                                                               ○ Self-Employed
Total Experience (Years) : [0 ∨]   Salary : [< 80K$ ∨]
Any technical papers published : [   ]   Skillsets : [   ]

My Professional History

Employer	Date Of Joining	Date of Release	Designation	Skillsets

[Begin Survey]

As seen above, the Alumni, after successful login, will see his details, along with this professional details. The professional History table displays the history.

Alumni Yearly Survey

`<<`

Student : **John Doe**   Student ID : **12345678** Program :   **Information System**
Year   : **2018-2019**   Term   : **Spring**

Program Courses Taken: My Graduate History

Courses List
Subject 1
Subject 2
Subject 3
Subject 4
Subject 5
Subject 6
Subject 7

	Least			*Most Helpful*	
Subject 1 :	○1	○2	○3	○4	○5
Subject 2 :	○1	○2	○3	○4	○5
Subject 3 :	○1	○2	○3	○4	○5
Subject 4 :	○1	○2	○3	○4	○5
Subject 5 :	○1	○2	○3	○4	○5
Subject 6 :	○1	○2	○3	○4	○5
Subject 7 :	○1	○2	○3	○4	○5
Subject 8 :	○1	○2	○3	○4	○5

Submit

After pressing the 'Begin Survey' button the Alumni User is led to the above Survey form. They
can see their graduate course history in table, along with the survey radio buttons. Alumni
will select the appropriate radio button for each subject.

Admin Dashboard

Admin can view the course ranking each year, after the completion of survey.

Admin can view the rank for the courses, can search for the courses using the fields, also view the table in descending.

GPA vs Performance Index

College : **College of Engineering**	College Code : **12345678**
Year : **2018-2019**	Program : **Information System**

GPA and Performance Index

[   ] Search

Alumni Student ID	Alumni Student Name	Performance Index Score	Rank	GPA

View Least to First

GPA vs Performance Index will give performance index ranking of each Alumni along with their graduate GPA for analysis of GPA relevancy.

Object model for Kindergarten to 12th Grade in developing countries