

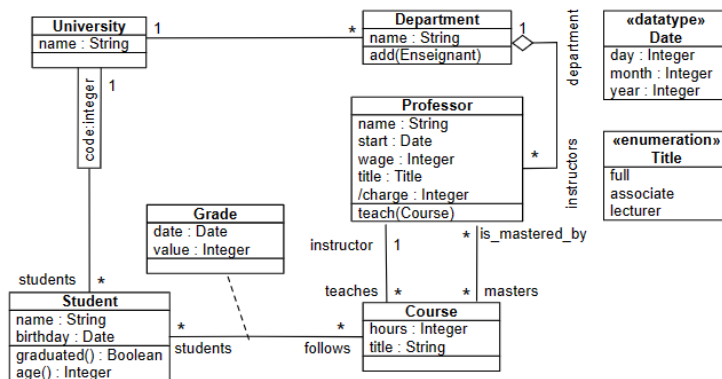
## Quiz # 2(Section A)

Formal Methods 19/3/2024

Name: -----

Roll No:-----

For the following UML Class Diagram, write down constraints in OCL. (Total Points= 16, 2 points each)



1. A department's university should not be null.

context Department

inv: self. university <> null or inv: self. university ->notEmpty()

2. A university must have at least one department

context University

inv: self. departments->size() > 0

3. A student average grade is always greater than 4:

context Student

inv: self.grade.value->average() > 4

4. There is at least one student named 'Ali' in the university

context University

Inv: self.students->exists(each | each.name = 'Ali')

Or

Inv: self.students->exists(name = 'Ali')

5. All instructors in a department are associate professors.

context Department

inv: self.instructors->forAll(title = Title::associate)

6. If the title of the Professor is 'full' he teaches at least three courses.

Context Professor

Inv: (self.title=Title::full) implies self.teaches->size()>=3

7. The wage of all instructors in a departments is at least 100,000 PKR.

context Department

inv: self.instructors->forAll(wage> =100,000)

8. A student cannot follow more then three courses at a time

context Student

inv: self.follows->size() <=3