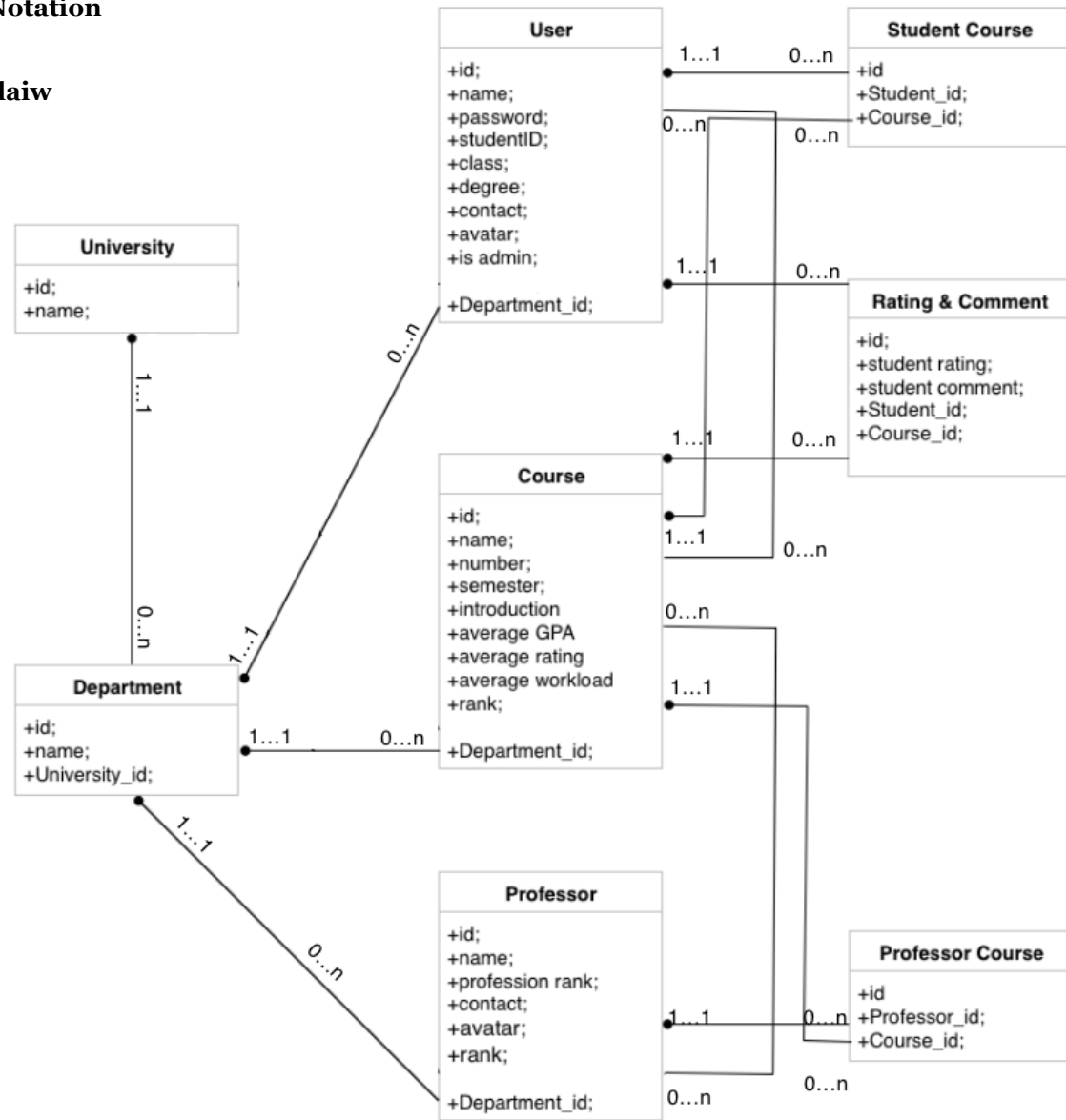


Unified Modeling Language (UML) Notation For First_Class Database

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The elements making up both diagrams are as follows:

- UNIVERSITY is a weak entity with the attributes: id and Name.
 - DEPARTMENT is a weak entity with the attributes: id, Name and University_id.
 - USER is a strong entity with the attributes: Id, Name, Password, StudentID, Class, Degree, Contact, Avatar, Is admin, University_id and Department_id.
 - COURSE is a strong entity with the attributes: Id, Name, Number, Semester, Introduction, Average GPA, Average Rating, Average Workload, Rank, University_id and Department_id.
 - PROFESSOR is a strong entity with the attributes: Id, Name, Profession Rank, Contact, Avatar, Rank, University_id and Department_id.
 - STUDENT COURSE is a weak entity with the attribute: Id, Student_id and Course_id.
 - PROFESSOR COURSE is a weak entity with the attribute: Id, Professor_id and Course_id.
 - RATING & COMMENT is a weak entity with the attribute: Id, Student Rating, Student Comment, Student_id and Course_id.
-
- A UNIVERSITY may have zero or more DEPARTMENTS, USERS, PROFESSORS and COURSEs. A DEPARTMENT/USER/PROFESSOR/COURSE has to belong to only one UNIVERSITY.
 - A DEPARTMENT may have zero or more USERS, PROFESSORS and COURSEs. A USER/PROFESSOR/ COURSE has to belong to only one DEPARTMENT.
 - A USER may have taken zero or more COURSEs. A COURSE may be taken by zero or more USERS.
 - A USER may have zero or more STUDENT COURSE records. A STUDENT COURSE record has to belong to only one USER.
 - A USER may have zero or more RATING & COMMENTs. A RATING & COMMENT has to belong to only one USER.
 - A PROFESSOR may have instructed zero or more COURSEs. A COURSE may be instructed by zero or more PROFESSORs.
 - A PROFESSOR may have zero or more PROFESSOR COURSE records. A PROFESSOR COURSE record has to belong to only one PROFESSOR.
 - A COURSE may have zero or more RATING & COMMENTs. A RATING & COMMENT has to belong to only one COURSE.
 - A COURSE may have zero or more STUDENT COURSE records. A STUDENT COURSE record has to belong to only one COURSE.
 - A COURSE may have zero or more PROFESSOR COURSE records. A PROFESSOR COURSE record has to belong to only one COURSE.

Database use cases:

University

id		name
	1	Carnegie Mellon University
	2	University of Pittsburgh

Department

id		name	avatar	University_id (Foreign Key; Reference Field <u>id</u> in table <u>University</u>)
	1	ECE	XOXO	1
	2	CS	XOXO	1
	3	Psychology	XOXO	2

Course

id	number	name	semester	introduction	average GPA	average rating	average workload	rank	Department _id (Foreign Key; Reference Field <u>id</u> in table <u>Department</u>)
1	18641	Java Smartphone Development	15S	XXXXXXXX XXXXXXX OOOOOOO	3.0	4.5	12.0	1	1
2	15619	Cloud Computing	14F	XXXXXXXX XXXXXXX OOOOOOO	3.5	4.5	20.0	2	2

User

id	name	password	StudentID	class	degree	contact	avatar	is admin	Department _id (Foreign Key; Reference Field <u>id</u> in table Department)
1	Jialiang Tan	123	jialiant	2014F	MS	XOXO	XOXO	FALSE	1
2	Lai Wei	345	laiw	2015S	MS	XOXO	XOXO	FALSE	1
3	Nianzu Tang	456	nianzut	2015S	MS	XOXO	XOXO	FALSE	1
4	Ad Min	678	mina	2012F	PHD	XOXO	XOXO	TRUE	2

Student Courses

id	student_id (Foreign Key; Reference Field <u>id</u> in table Student)	course_id (Foreign Key; Reference Field <u>id</u> in table Course)
1	1	1
2	1	2
3	2	1
4	3	1

Professor

id	name	profession rank	contact	avatar	rank	Department_id (Foreign Key; Reference Field <u>id</u> in table <u>Department</u>)
1	Bob Singh	Professor	XOXO	XOXO	1	1
2	M M	Professor	XOXO	XOXO	2	2

Professor Courses

id	professor_id (Foreign Key; Reference Field <u>id</u> in table <u>Professor</u>)	course_id (Foreign Key; Reference Field <u>id</u> in table <u>Course</u>)
1	1	1
2	2	2

Rating & Comment

id	student rating	student comment	student_id (Foreign Key; Reference Field <u>id</u> in table <u>Student</u>)	course_id (Foreign Key; Reference Field <u>id</u> in table <u>Course</u>)
1	4.0	XOXO	1	1
2	3.5	XOXO	1	2
3	4.0	XOXO	2	1
4	3.5	XOXO	3	1