Assignment-1

1) Draw the class diagram of your CSE-470 project (10)

2) Nexus University is pioneering a "SmartCampus" initiative to fully integrate its academic and administrative operations. You are tasked with designing the core class diagram for this new system. (10)

   The university itself is a singular entity that is comprised of several distinct **Schools** (e.g., "School of Engineering," "School of Humanities"). Each **School** is uniquely identified by a `schoolId` and has a `name`. A **School** is managed by a `dean`, who must be a **Professor**. The **Schools** are fundamental components of the **University**; they cannot exist independently of it.

   Each **School** houses multiple **Departments** (e.g., "Computer Science," "History"). A **Department**, identified by `deptCode` and `deptName`, belongs to exactly one **School**. Like **Schools**, **Departments** are integral parts of their **School** and cannot exist separately. **Departments** are responsible for managing their curriculum, which consists of many **Courses**. A **Course** (`courseId`, `title`, `credits`) is offered by exactly one **Department**. The **Department** "manages" its list of **Courses**, but the **Courses** are distinct entities that could theoretically be moved to another department.

   The system must manage various types of people. We can generalize all people as a `UniversityMember`, ~~which is an abstract concept~~. All **UniversityMembers** share common properties like `universityId`, `firstName`, `lastName`, and `email`, and a common abstract behavior `login()`.

   There are two main concrete types of **UniversityMembers**: **Students** and **Employees**.

   - A **Student** is identified by a `studentId` and also has a `major` and a `gpa`.
   - An **Employee** is also an abstract concept, generalizing all paid staff. All **Employees** have an `employeeId` and a `salary`.

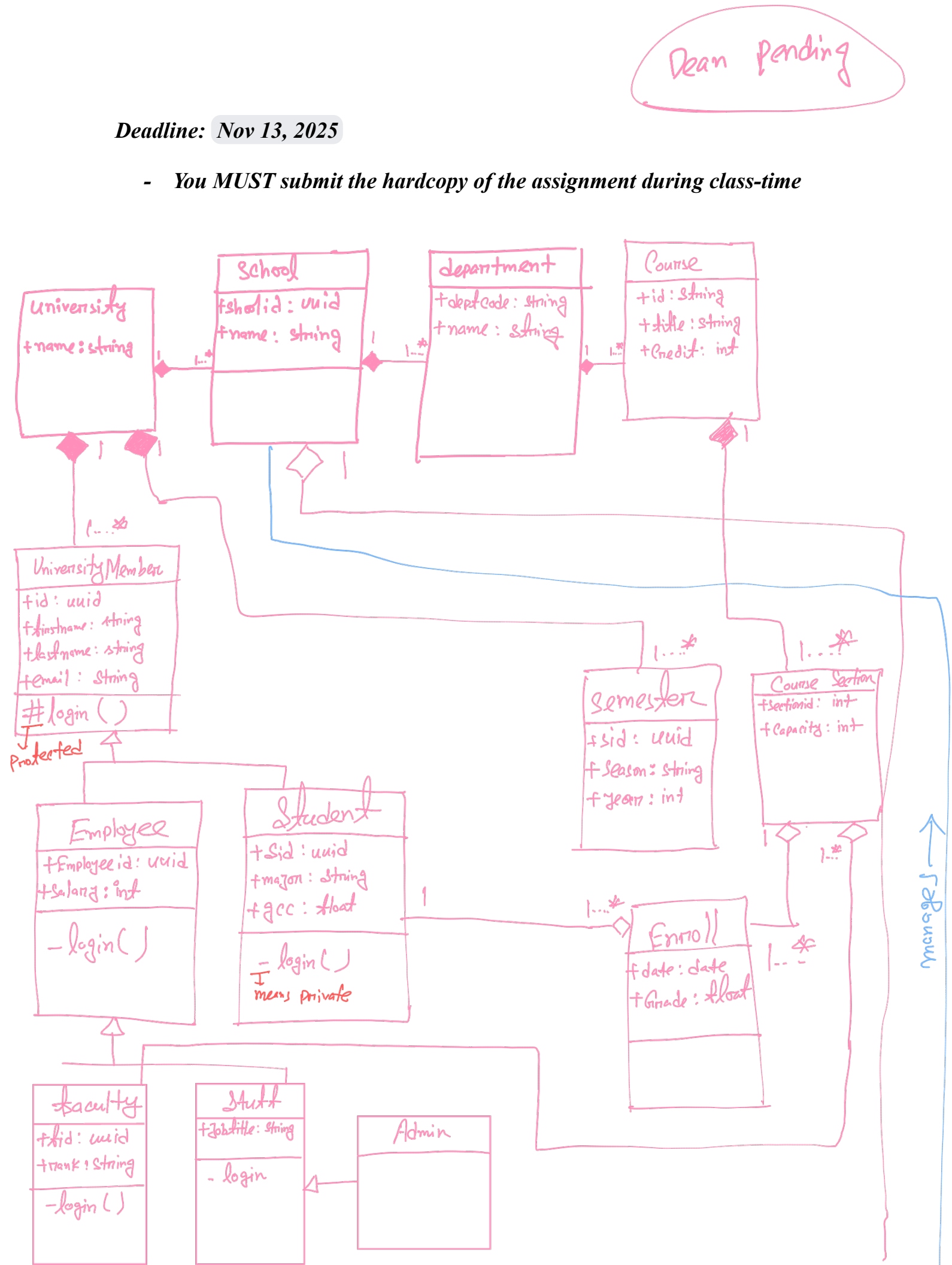
Employees are further categorized into **Staff** and **Faculty**.

- **Staff** members have a `jobTitle`. A special type of **Staff** is an **Admin**, who has a `permissionLevel`.
- **Faculty** members (`facultyId`, `rank`) are the ones who teach. A special type of **Faculty** is a **Professor**. **Professors** have the additional responsibilities to `adviseStudents()` and `conductResearch()`. As mentioned, one **Professor** is designated as the `dean` for each **School**.

Students do not enroll in abstract **Courses**. Instead, they enroll in specific **CourseSections** offered in a particular **Semester** (`semesterId`, `season`, `year`).

- Each **CourseSection** (`sectionId`, `capacity`) corresponds to exactly one **Course**, but a **Course** can have many sections (e.g., Section 1 and Section 2 of "CS101").
- Each **CourseSection** is taught by exactly one **Faculty** member.
- A **Student** can enroll in many **CourseSections**, and a **CourseSection** can have many **Students** (up to its `capacity`, which we'll model as 0 to 60 for this design).
- The system must track this relationship. An **Enrollment** record is created to link one **Student** to one **CourseSection**. This **Enrollment** record must store the `grade` received by the student and the `enrollmentDate`.

Draw a detailed Class Diagram based on this scenario. You must correctly identify all classes (including abstract classes and interfaces), attributes, methods, and relationships (Inheritance, Association, Aggregation, Composition, and Association Classes) with correct multiplicity.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Deadline: Nov 13, 2025
- You MUST submit the hardcopy of the assignment during class-time
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department
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Course
+id: string
+title: string
+Credit: int
UniversityMember
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+firstname: string
+lastname: string
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Course Section
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Student
+Sid: uuid
+major: string
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Enroll
+date: date
+Grade: float
faculty
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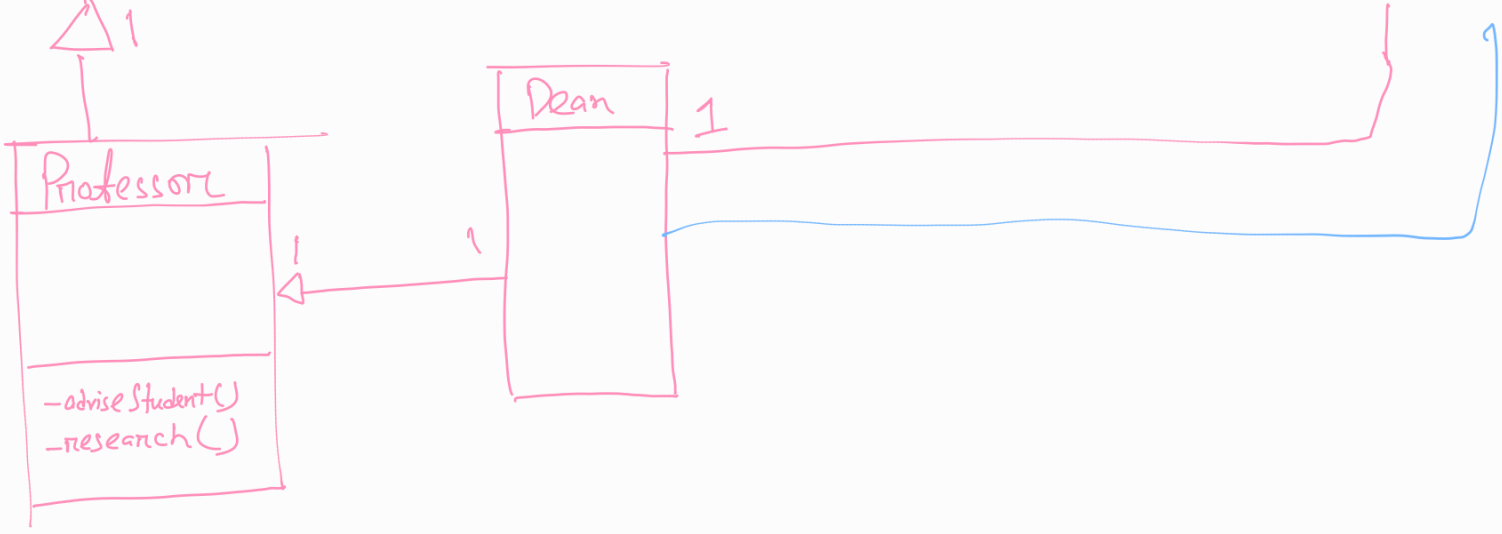
Reports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Professor
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