APPLICATIONS OF DATABASE MANAGEMENT SYSTEMS

Student Information System & Lecture Management System Database Design

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Contents

Requirement Analysis

In this work, I design student information system and lecture management system database.

Student Information System Requirements

- There are persons' who have a relation with institution personal information. These persons can be separated among themselves like staff and student and they can have different attributes that needs to be kept.
- There are departments in institution and these departments have lectures.
- Lectures can have credit, lecture type, theorical and practical lectures hours. Lecture type can be compulsory, elective and vocational elective.
- Lectures may have different specifications in different semesters. These specifications can be quota, staff, location, letter grades. Lectures can be given different staffs in different semesters.
- Lectures can have different grade types and grade percentage like midterm, final, homework, project, etc.
- Students can enroll in more than one department and they can have advisor staff from these departments.
- Students can enroll lectures that are available current semester.
- Students can have grades and attendance information for the lectures they enrolled.
- Students can have internship information.
- There are messages and these messages have a content, sender and receivers.

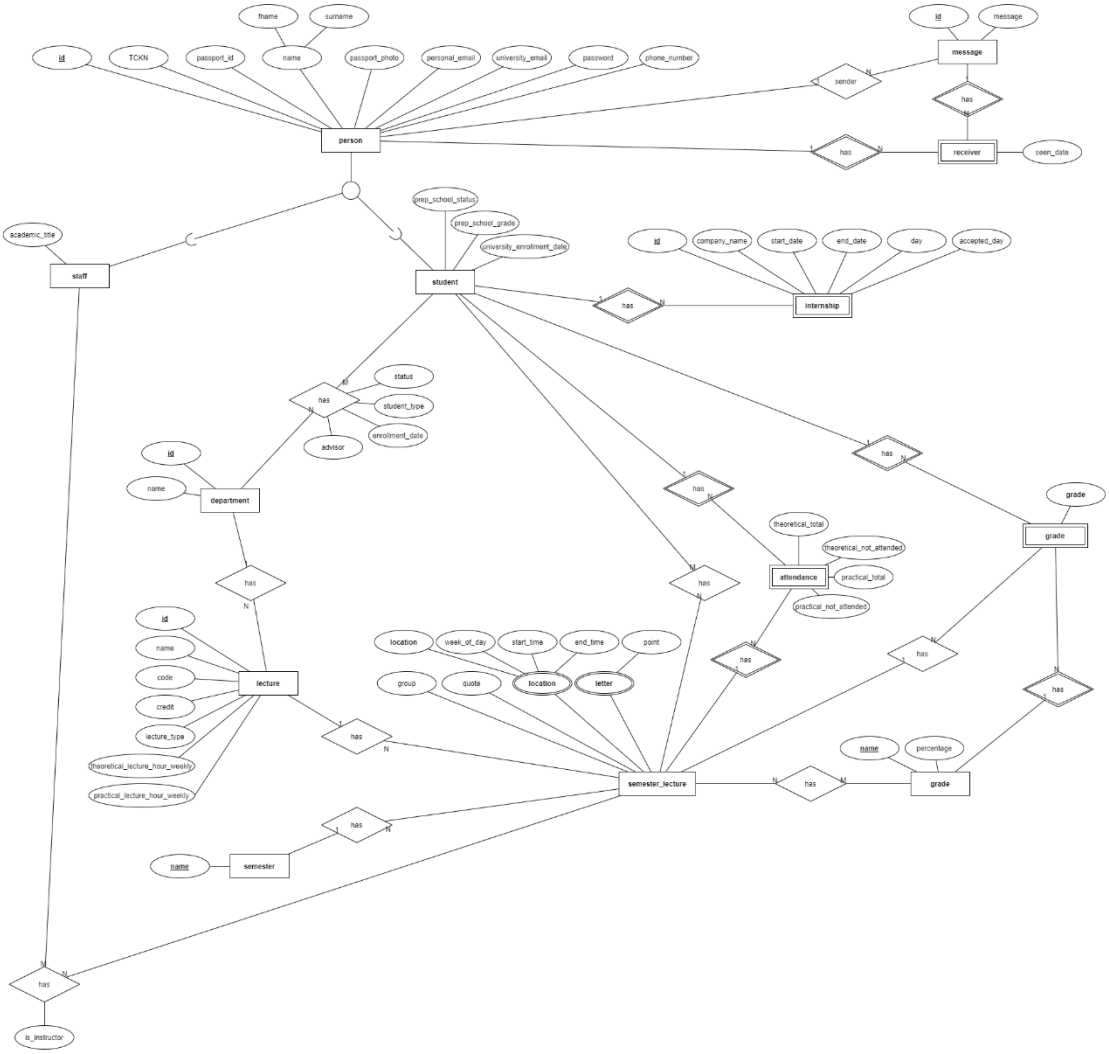
Lecture Management System Requirements

This part is related with lectures that is available in current semester.

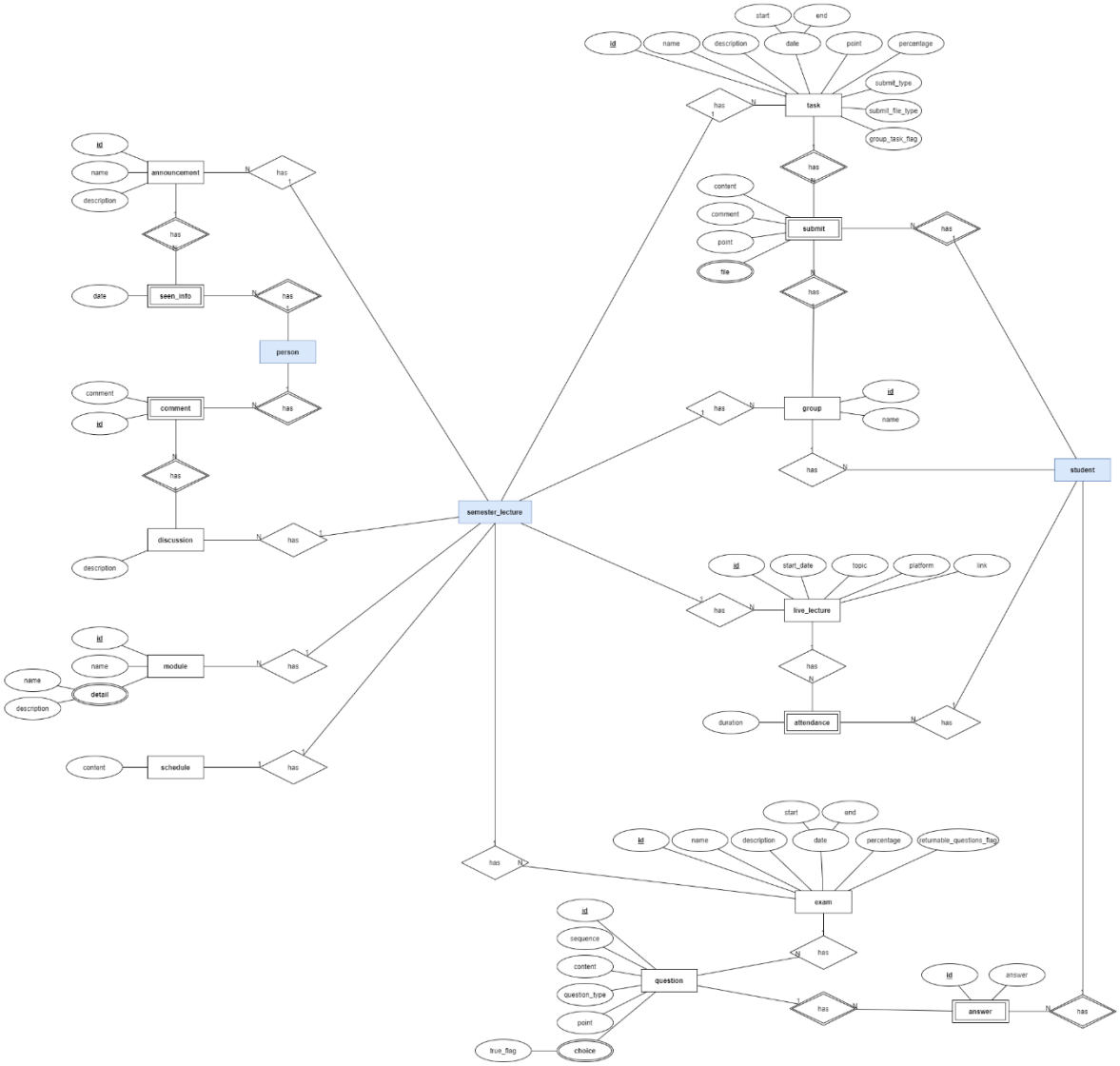
- Lectures can have announcements and these announcements can have information that is related which persons see that announcement.
- Lectures can have discussions. Discussion contains a content and persons can write comments about that.
- Lectures can have modules and these modules contains different subjects. For example, there is a module named week1 and week1 module contains week1 slide and week1 lab material.
- Lectures can have a schedule.
- Lectures can have tasks. Tasks can have start and end dates. Tasks can have submission type like uploading file or html content.
- Task can have point value and percentage value. Percentage value is needful to calculate effect on total score.
- Tasks can assign as group task or individual task.
- Students who have a task can submit a submission for a task. Submission can contain html content or files. Student can write comment to a submission.
- A student can submit a submission on behalf of the group or own.
- Lecture can have groups that contain some of students.
- Lecture can have live lectures information. These live lectures information contains start date, platform and link.
- Live lectures can have attendance information.
- Lectures can have exams and exams can have percentage value, start and end date.
- Exams can have questions. Questions have a type like radio, checkbox, html content or file upload.
- Questions can have choices and these choices can have a true flag that indicate is it true or not.
- Questions can have answers that are submitted by a student. Answer can be file, html content or one or more choices.

EER Model

Student Information Systems

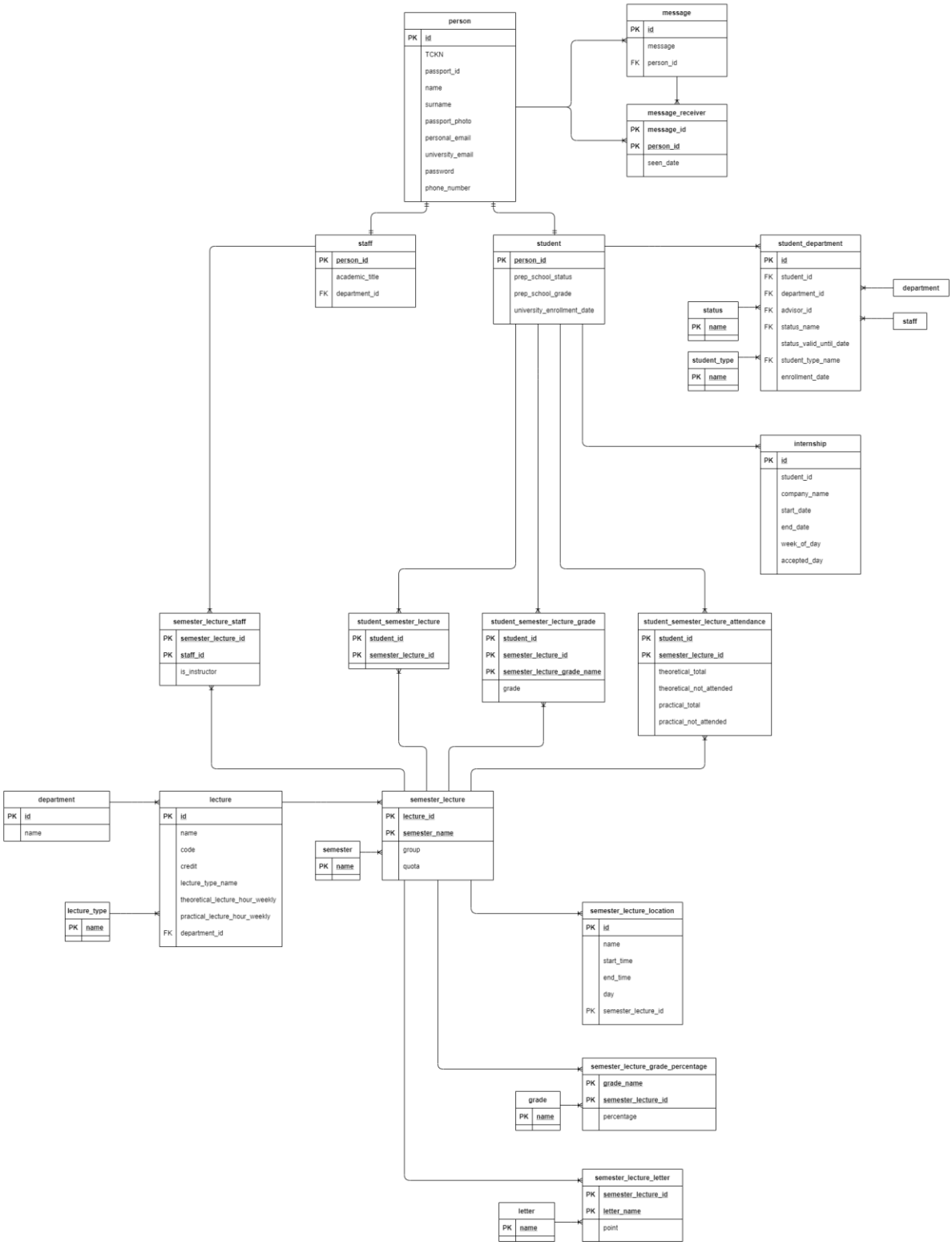


Lecture Management System

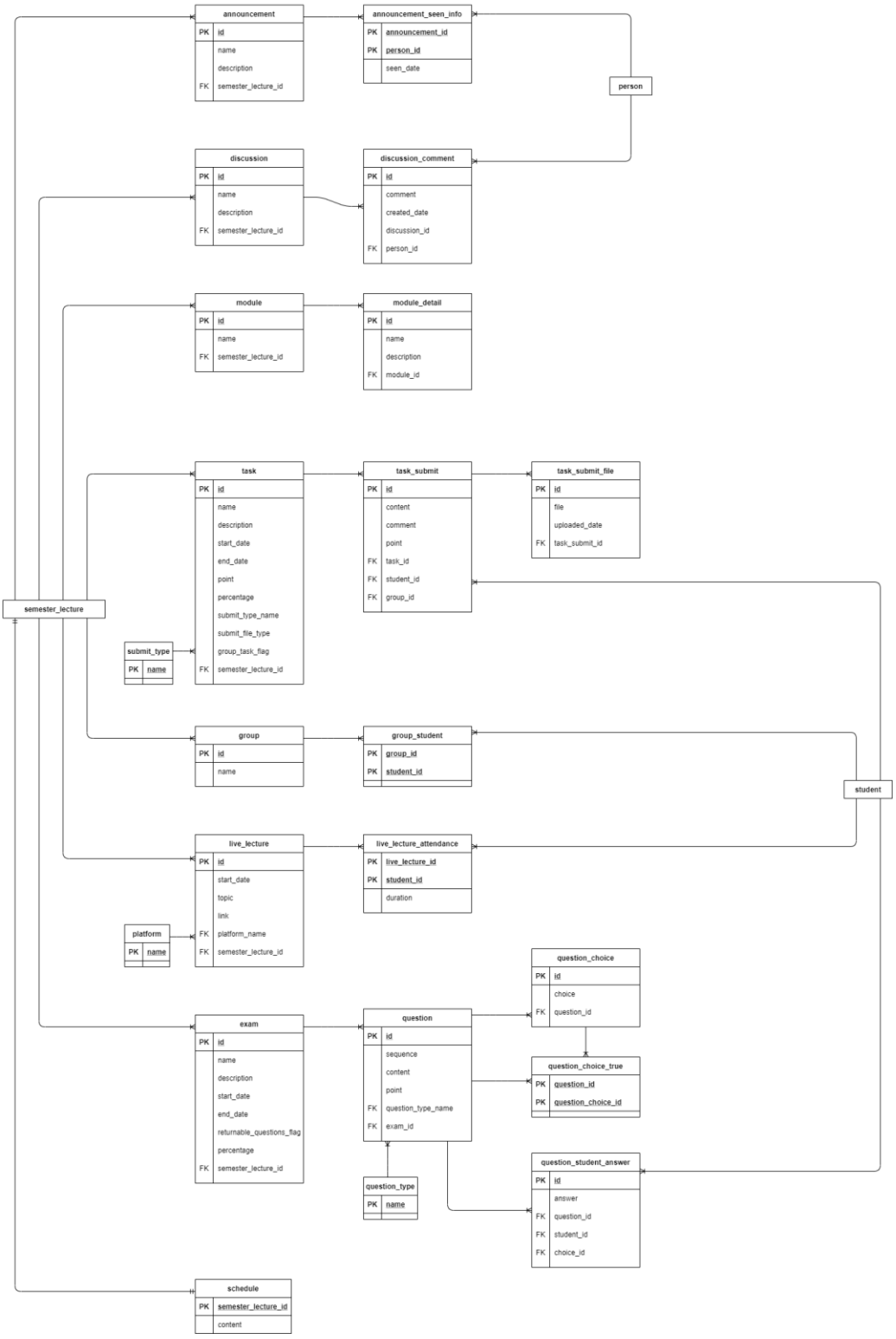


EER Mapping

Student Information Systems



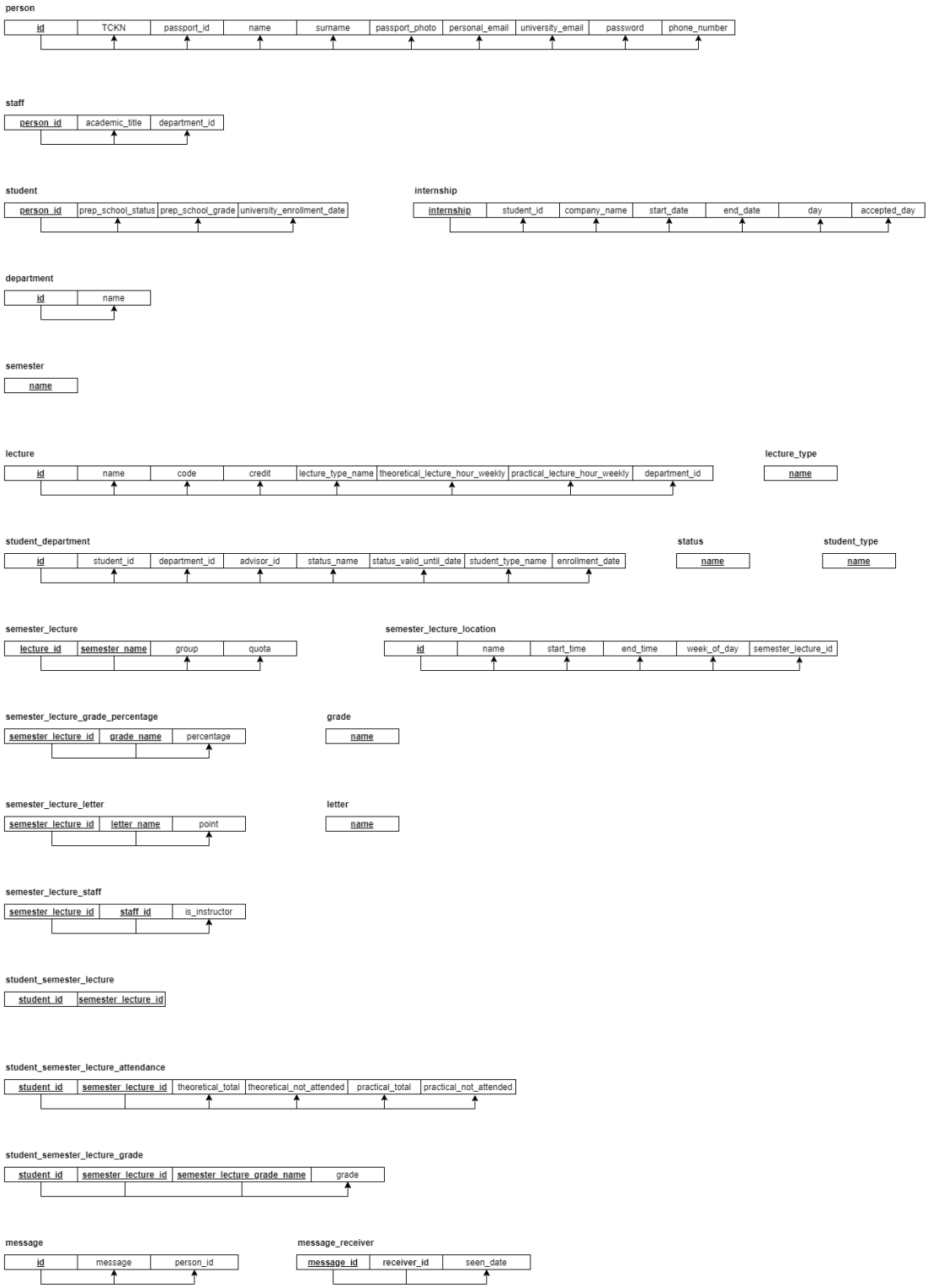
Lecture Management System



Normalization

In this part, I show dependencies between entities' attributes. Tables are designed so that there is no repetitive data (NF-1). All tables have candidate keys (NF-2). There is no table that contains transitively dependent attribute (NF-3). All candidate keys unique primary keys (BCNF).

Student Information Systems



Lecture Management System