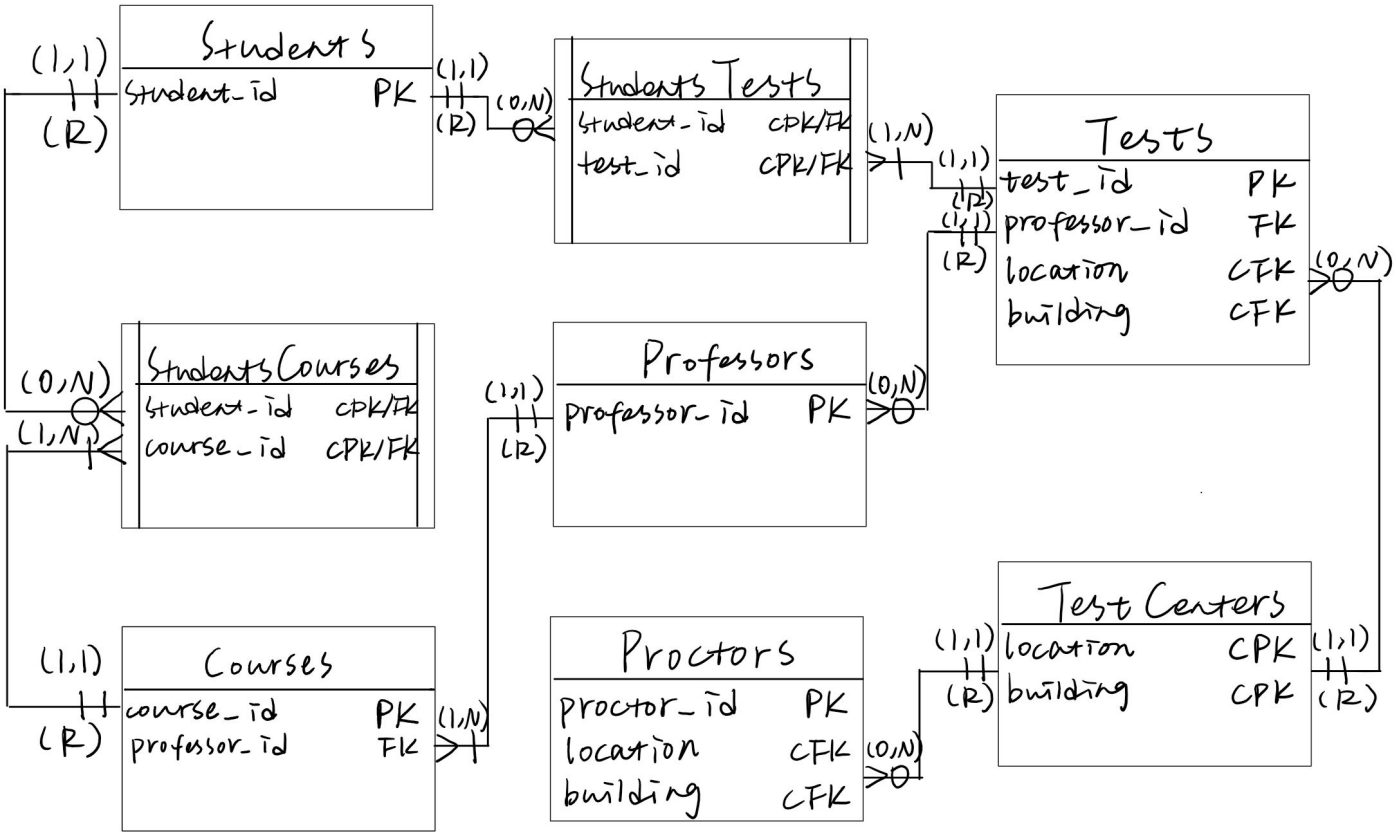
ACME Testing Center's Database Presentation

By Team Heart

E-R Diagram


Students
student_id PK
Students Tests
student_id CPK/FK
test_id CPK/FK
Tests
test_id PK
professor_id FK
location CFK
building CFK
Students Courses
student_id CPK/FK
course_id CPK/FK
Professors
professor_id PK
Courses
course_id PK
professor_id FK
Proctors
proctor_id PK
location CFK
building CFK
Test Centers
location CPK
building CPK
(1,1)
(R)
(0,N)
(1,N)

professors

professor_ID	PK
first_name	
last_name	
email	
phone_number	
university	

- Each professor is given a unique ID by the system.

- Each is assumed an employee of one university.

- Professors can only assign tests to that university’s corresponding test center.

courses

course_ID	PK
professor_ID	FK
subject	
course_number	
section	

- Use of an artificial PK was easier for implementation of foreign keys than a CPK.

- We assume that each distinct class is taught only by one professor.

  - Each professor may have more than one class.

students

student_ID	PK
student_first_name	
student_last_name	
email	
phone _number	

- Students do not have access to the database.

- STUDENTS table holds information for students.

- Prevent professors from assigning tests for students who do not exist.

- Remove input error from test sign up form.

students_courses

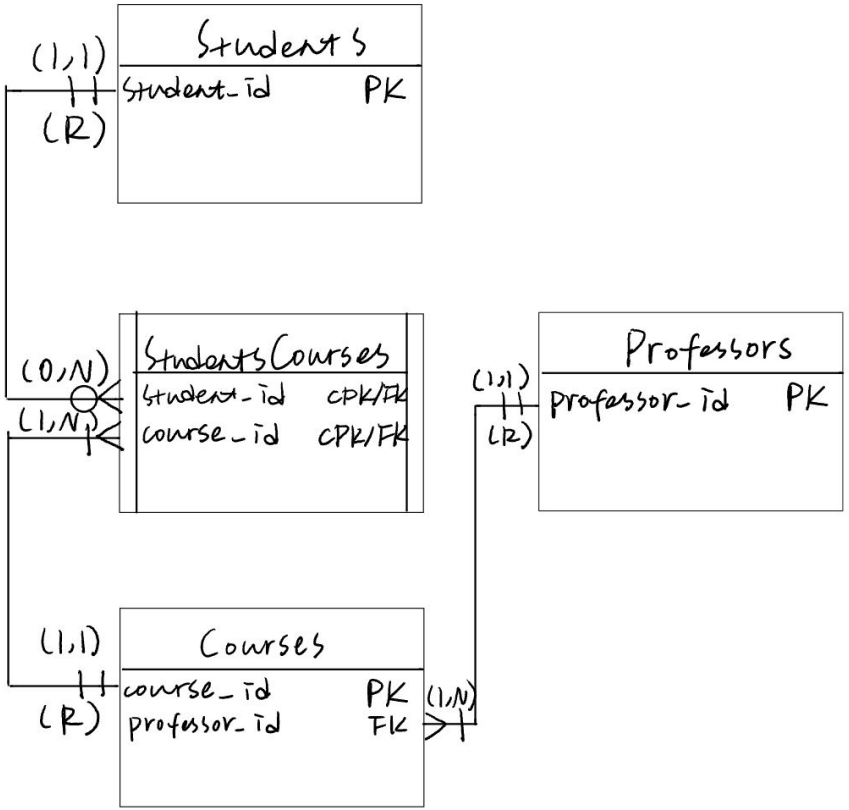
student_ID	FK/CPK
course_ID	FK/CPK

- Links data from STUDENTS and COURSES.

- Used to verify students that professors assign tests to.

- Used to verify courses that professors assign tests for.

Partial E-R Diagram



test_centers

university	CPK
building	CPK
time_open	
time_closed	
days_open	
days_closed	
total_capacity	
number_computers	
number_seats	

- Assume each university will have one test center
- Use of a table for test centers accommodates growth of the company to multiple locations.
- Time and day fields will allow for implementing application-oriented time constraints
- **BR:** Cannot assign more tests for a given time slot than there are seats available.
    - (number_seats, number_computers, total_capacity)
- Seats are stored as a total rather than using unique identifiers
- Tracking seats and computers separately allows necessary distinguishability for testing requirements

proctors

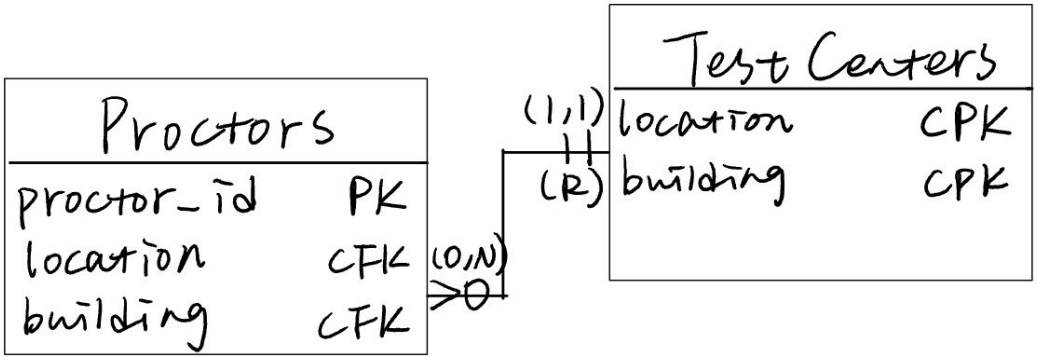
proctorID	PK
university	CFK
building	CFK
first_name	
last_name	
phone	

- Proctors relate strictly to Testing Centers

- **BR:** There must be a proctor on duty in order for any test to be administered.

- Currently assuming that proctors are reliable, do not come and go easily
    - Set weekly schedule
    - Always show up for the entirety of testing session
    - Do not forget to administer or lose tests

Partial E-R Diagram



tests

test_id	PK
professor_id	FK
university	CFK
building	CFK
date	
end_time	
Start_time	
course_number	
subject	
test_file	
test_type	
test_result	
time_in	
time_out	

- Each test is assigned a unique ID.

- Tests is linked to professors and test_centers.

- Includes date, start_time and end_time so that time constraints can be correctly implemented for scheduling.

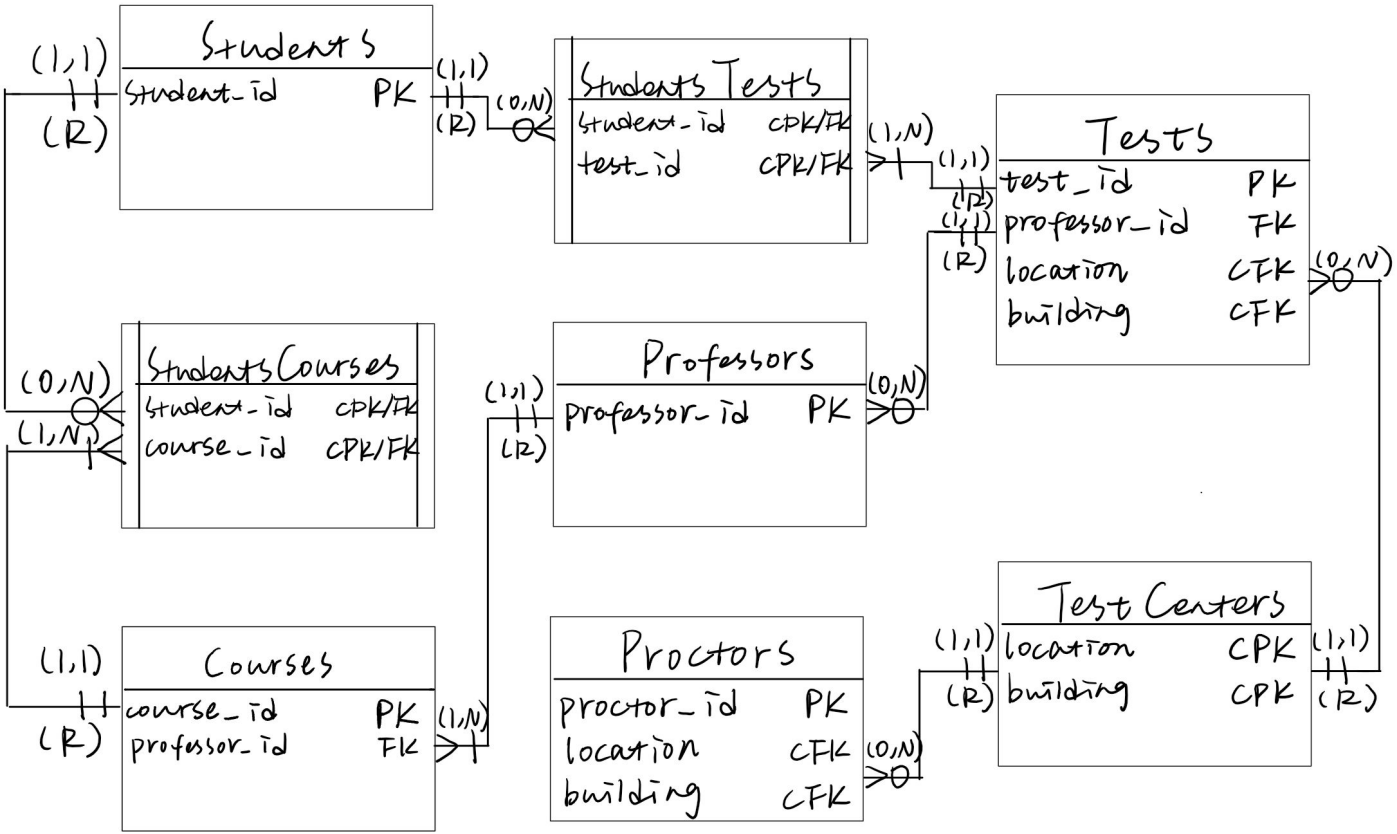
- course_number and subject are for restricting the tests a professor can assign to only their specific class.

- test_file is for storing an optional document attachment.
- Test_type denotes whether it is in paper or electronic. Allows implementation of seat restrictions (computer vs desk).

- test_result is to record whether the student took the test, or skipped it. Will be updated by the proctor.

- Includes in and out time so that students can be clocked.

E-R Diagram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UI Flow Diagram