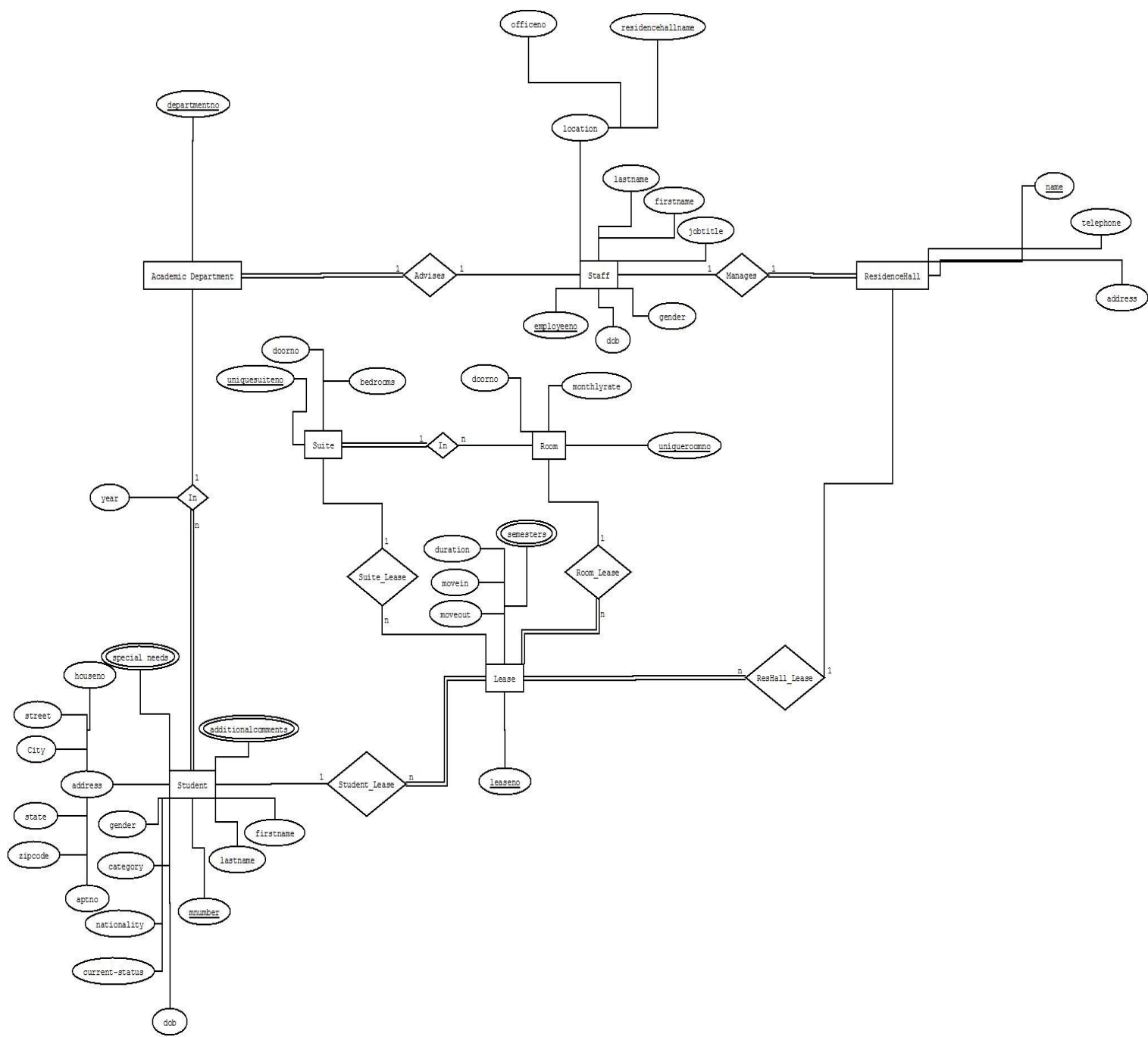


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Professor Dey  
Database Design  
7/22/2018

## Database Project Part 1

# ERD Diagram



# Design Decisions and Assumptions

## Entity Category

- ResidenceHall is an entity instead of being an attribute of the Room entity.
- Suite is an entity instead of being an attribute of the Room entity
- Lease is an entity instead of being a relationship

## Attributes Category

- Special Needs is a multi-set attribute of Student
- AdditionalComments is a multi-set attribute of Student
- Name is the unique identifier for ResidenceHall
- Semesters is a multi-set attribute of Lease

## Relationship Category

- If there is a student, then that student must be in 1 academic department (Student has total participation in the relationship with AcademicDepartment).
- If there is an AcademicDepartment, then that AcademicDepartment must have a staff member as its advisor (total participation in the relationship with staff).
- If there is a ResidenceHall, then that ResidenceHall must be managed by one staff member (total participation in the relationship with staff)
- If there is a lease, then there must be one Student, Room, and ResidenceHall as to which that lease is attributed (Total participation in the relationship with Student, ResidenceHall, and Room).
- If there is a suite, then there must be one Room as to which that suite is a part of (Total participation in the relationship with Room)
- A staff member can only act as the academic advisor for one department (1:1)
- A staff member can only act as the hall manager for one residence hall (1:1)

## Miscellaneous category

- We also decided to keep the residence hall location for the staff member as an attribute of the staff compound attribute location.
- We decided to put Lease as its own entity, rather than making it a quaternary relationship with Student, Room, Suite, and ResidenceHall (as we originally decided to do). This way the relationships between Lease and those three attributes are not only cleaner, but allow for total participation of the correct entities.

# Log

Names:

Joe Hirschfeld, Kyle Cullion

Time, Location, Duration:

14:45, Langsam Library, Friday, July 13, 2.5 hours

Topics of Discussion:

Breaking down problem (Setting entities, attributes, relationships)

Action Items:

Kyle - ERD: Design Entity Relationship Diagrams

Joe - RDB: Translation of ERD into relational schema

Names:

Joe Hirschfeld, Kyle Cullion

Time, Location, Duration:

11:30, Langsam Library, Tuesday, July 17, 3 hours

Topics of Discussion:

Finalizing Designs

Action Items:

Kyle - ERD finalization: Add in final enhancements discussed to ERD

Joe - RDB finalization: Add in final enhancements to RDB schema (Check normalization, etc.)

**Total Hours: 5.5 Hours**

## RDB Translation:

**Student**(MNumber, DepartmentNo, Firstname, Lastname, Dob, Gender, Category, Nationality, Current\_Status, AptNo, HouseNo, Street, City, State, Zipcode, Year)

- DepartmentNo is a foreign key to **AcademicDepartment**

**SpecialNeeds**(MNumber, Needs)

- MNumber is a foreign key to **Student**

**AdditionalComments**(MNumber, Comments)

- MNumber is a foreign key to **Student**

**AcademicDepartment**(Department#, EmployeeNoAdvisor)

- EmployeeNoAdvisor is a foreign key to **Staff**

**Staff** (EmployeeNo, FirstName, LastName, Gender, Jobtitle, DOB, ResidenceHallName, OfficeNo)

**ResidenceHall**(Name, EmployeeNoManager, Telephone, Address)

- EmployeeNoManager is a foreign key to **Staff**

**Room**(UniqueRoomNo, UniqueSuiteNo, DoorNo, Monthly\_Rate)

- Suite\_UniqueNumber is a foreign key to **Suite**

**Suite**(UniqueSuiteNo, DoorNo, Bedrooms)

**Lease**(LeaseNo, MNumber, UniqueSuiteNo, UniqueRoomNo, ResidenceHallName, MoveOut, MoveIn, Duration)

- MNumber is a foreign key to **Student**
- Suite\_UniqueNumber is a foreign key to **Suite**
- Room\_UniqueNumber is a foreign key to **Room**
- ResidenceHall\_Name is a foreign key to **ResidenceHall**

**Semesters**(LeaseNo, Semester)

- LeaseNo is a foreign key to **Lease**