Kevin Turkington
CS340
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Final Project

Overview:
This project is simply a outline of a university universe. It models the relationship between departments to buildings, buildings to classes, departments to classes, and classes to students.

Db Outline:
On a more detailed description, a single department can be associated with any number of buildings a one to many relationship. Buildings as previously stated can be associated with only one department, but are also associated with many classes (again one to many relationship). Classes have a total of three different types of relationships, it can be associated to a single department and building. For example 'introduction to databases' is associated to the computer science department and the 'Ecampus' building in the real world. Classes also contain a many to many relationship with students, however a student can only enroll in a class once. And Finally students contain only one relationship the many to many relationship as previously stated with classes.

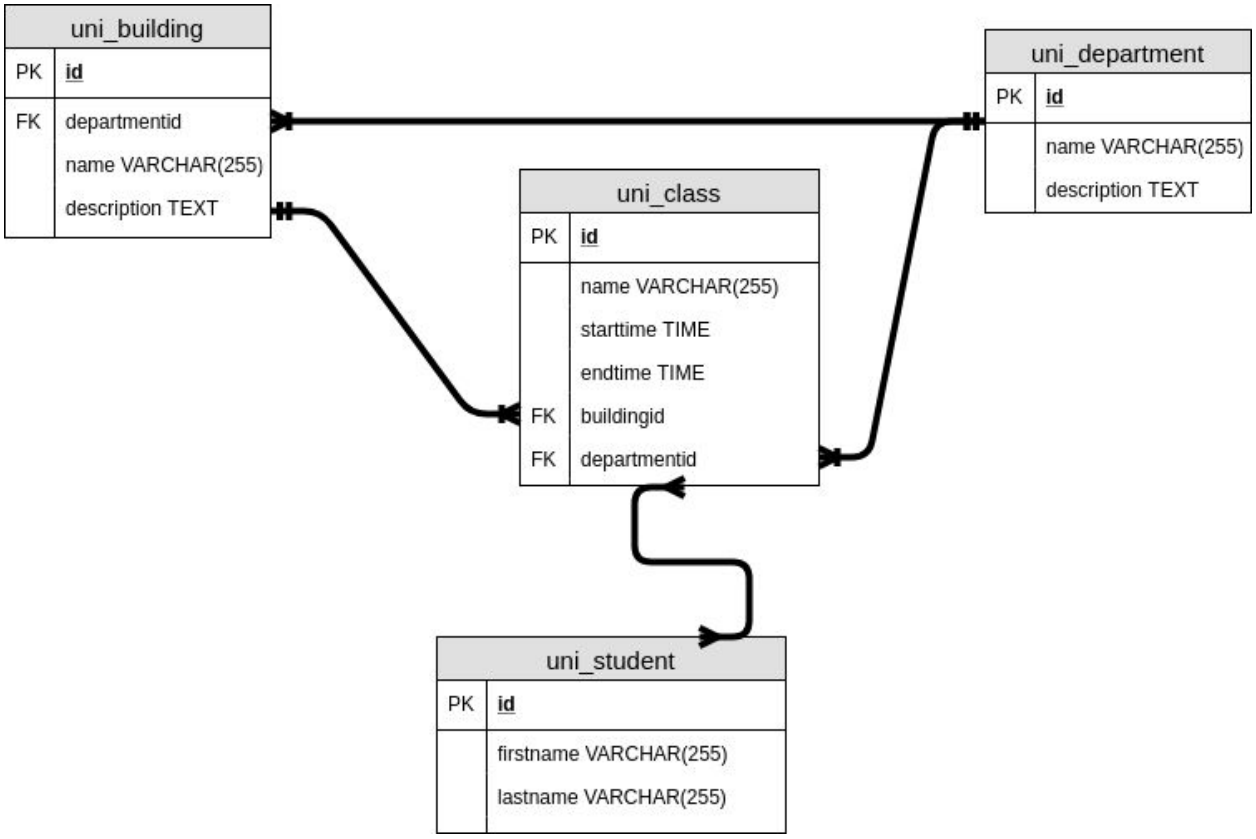
Build Instructions:

1. git clone git@github.com:zainkai/university_app.git
2. cd university_app
3. npm install
4. cd src/db
5. mkdir protected
6. cd protected
7. touch dbcon-dev.ts
8. vim dbcon-dev.ts

```
import * as mysql from 'mysql';
export const pool = mysql.createPool({
        connectionLimit : 10,
         host           : 'mysql.eecs.oregonstate.edu',
        user            : 'cs340_yourengrusername',
        password        : 'last-4-digits-of-your-osu-id',
        database        : 'cs340_yourengrusername'
});
```

9. npm run build-all
10. npm run start

ER diagram:



Db Schema:

*These can be found in dbModel.

```
CREATE TABLE `uni_department` (
  `id` INT AUTO_INCREMENT PRIMARY KEY,
  `name` VARCHAR(255) NOT NULL,
  `description` TEXT,
  CONSTRAINT UNIQUE (`name`)
) ENGINE=InnoDB;
```

```
CREATE TABLE `uni_building` (
  `id` INT AUTO_INCREMENT PRIMARY KEY,
  `departmentid` INT NOT NULL,
  `name` VARCHAR(255) NOT NULL,
  `description` TEXT,
  FOREIGN KEY(`departmentid`) REFERENCES `uni_department`(`id`),
  CONSTRAINT UNIQUE (`name`)
) ENGINE=InnoDB;

CREATE TABLE `uni_class` (
  `id` INT AUTO_INCREMENT PRIMARY KEY,
  `name` VARCHAR(255) NOT NULL,
  `starttime` TIME,
  `endtime` TIME,
  `buildingid` INT NOT NULL,
  `departmentid` INT NOT NULL,
  FOREIGN KEY(`buildingid`) REFERENCES `uni_building`(`id`),
  FOREIGN KEY(`departmentid`) REFERENCES `uni_department`(`id`)
) ENGINE=InnoDB;

CREATE TABLE `uni_student` (
  `id` INT AUTO_INCREMENT PRIMARY KEY,
  `firstname` VARCHAR(255) NOT NULL,
  `lastname` VARCHAR(255) NOT NULL,
  CONSTRAINT `fullname` UNIQUE (`firstname`,`lastname`)
) ENGINE=InnoDB;

CREATE TABLE `uni_class_enrollment` (
  `id` INT AUTO_INCREMENT PRIMARY KEY,
  `studentid` INT NOT NULL,
  `classid` INT NOT NULL,
  FOREIGN KEY(`studentid`) REFERENCES `uni_student`(`id`),
  FOREIGN KEY(`classid`) REFERENCES `uni_class`(`id`),
  CONSTRAINT UNIQUE (`studentid`,`classid`)
) ENGINE=InnoDB;
```

Db Queries:

Departments:

```
--Get a specific department
SELECT * FROM uni_department
WHERE id=[department id]

--Get all departments
SELECT * FROM uni_department

--Add a new department
INSERT INTO uni_department (name,description)
        values ([Department Name],
              [Department Desc]
        );

--Get only he id and name of a department
SELECT id,name FROM uni_department`
```

Buildings:

```
--Get a specifc building
SELECT b.id, b.departmentid, b.name, b.description, d.name AS departmentName
        FROM uni_building b
        INNER JOIN uni_department d ON b.departmentid=d.id
WHERE b.id=[building id]


--Get all buildings
SELECT b.id, b.departmentid, b.name, b.description, d.name AS departmentName
        FROM uni_building b
        INNER JOIN uni_department d ON b.departmentid=d.id
```

--Add a new building

```
INSERT INTO uni_building (name,description,departmentid)
        values ([Name],
                [description],
                [associated department id]
        );
```

--Get only building name and id

```
SELECT id,name FROM uni_building
```

Class:

--Get a specific class

```
SELECT c.id, c.name,
        c.starttime, c.endtime,
        c.buildingid, c.departmentid,
        d.name AS departmentName, b.name AS buildingName

        FROM uni_class c
        INNER JOIN uni_department d ON c.departmentid=d.id
        INNER JOIN uni_building b ON c.buildingid=b.id
WHERE c.id=[Class id]
```

--Get all classes

```
SELECT c.id, c.name,
        c.starttime, c.endtime,
        c.buildingid, c.departmentid,
        d.name AS departmentName, b.name AS buildingName

        FROM uni_class c
        INNER JOIN uni_department d ON c.departmentid=d.id
        INNER JOIN uni_building b ON c.buildingid=b.id
```

--Add a new class

```
INSERT INTO uni_class (name,starttime,endtime,buildingid,departmentid)
        values ([name of class],
            [start time (currently unused)],
            [end time (currently unused)],
            [associated building id],
            [associated department id]
        );
```

--Get all class names and ids.

```
SELECT id,name FROM uni_class
```

Student:

--Get a specific student

```
SELECT *,
        (SELECT COUNT(id) FROM uni_class_enrollment WHERE studentid=s.id) AS
classCount
      FROM uni_student s
WHERE id=[student id]
```

--Get all students

```
SELECT *,
        (SELECT COUNT(id) FROM uni_class_enrollment WHERE studentid=s.id) AS
classCount
FROM uni_student s
```

--Add a new student

```
INSERT INTO uni_student (firstname,lastname)
        values(
           [first name},
           [last name]
        );
```

--Update a specific students infromation

```
UPDATE uni_student
        SET firstname=[new student first name],
           lastname=[new student last name]
```

```
WHERE id=[student id]

--Delete a specific student
DELETE FROM uni_student WHERE id=[student id]
```

Enrollments:

```
--Get a specific students enrollments
SELECT ce.studentid AS studentid, ce.classid AS classid,
        s.firstname AS studentFirstName, s.lastname AS studentLastName,
        c.name AS className,ce.id AS id
    FROM uni_class_enrollment ce
        INNER JOIN uni_class c ON ce.classid=c.id
        INNER JOIN uni_student s ON ce.studentid=s.id
WHERE s.id=[student id]

--Get all enrollments
SELECT ce.studentid AS studentid, ce.classid AS classid,
        s.firstname AS studentFirstName, s.lastname AS studentLastName,
        c.name AS className,ce.id AS id
    FROM uni_class_enrollment ce
        INNER JOIN uni_class c ON ce.classid=c.id
        INNER JOIN uni_student s ON ce.studentid=s.id

--Add a new enrollment
INSERT INTO uni_class_enrollment (studentid,classid)
        values(
            [student id],
            [class id]
        );

--Delete an enrollment by id
DELETE FROM uni_class_enrollment WHERE id=[enrollment id]

--Delete all of a students specific enrollments
DELETE FROM uni_class_enrollment WHERE studentid=[student id]
```