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Group 45: Team Online Fake University
Project Title: The Online Fake University (TOFU)

Project Step 6: Portfolio

Website URL: <http://flip1.engr.oregonstate.edu:6453/>

Executive Summary

We began our database plan as a web-based database for an online university. As the project progressed, our entities changed based on a variety of factors. These factors included assessing whether an entity was necessary, time constraints and how large we wanted to make our project. The tables we kept were determined through normalization and discussions on how to create a simple but effective database. We made multiple changes to the database based on feedback in the reviews and based on our own opinion as the project went on, which we will highlight in further detail below.

- We began with Students, Enrollments, Classes, Professors and Departments. Through the different iterative steps of the project these later became Students, Professors, Enrollments, EnrollmentDetails, Classes, Departments, Majors, Terms and TermClassDetails. The Terms entity was added during the normalization process to eliminate a partial dependency. As Terms and Classes have an M:M relationship, an additional intersection table was created. A 'User' entity table was added and later removed.
- We made term class details attributes NOT NULL. We were finding that when the values were able to be NULL, an empty value for both attributes could potentially be added, which would not be of any value. So the attribute was updated in the outline, the DDL and the code to be NOT NULL.
- Based on feedback, we added MySQL CASCADE functionality to the professor and department foreign keys in the Classes entity of the DDL file.
 - The ON DELETE SET NULL accounts for setting the values to Null if the attribute was deleted in another entity so the class is not deleted.
 - We added a nullable Between Classes and its foreign keys, Departments and Professors using an UPDATE CASCADE.
- Based on feedback, we connected the professor and department entity after it was suggested in a review so more information about the professors could be gathered for the university to make decisions (as stated in our project outline).
- We've updated the CSS theme to improve readability and overall look.
- Based on feedback, we changed the Enrollments intersection table naming to EnrollmentDetails to match the other intersection table naming convention (TermClassDetails).
- Based on feedback, we changed how we displayed foreign keys from referencing ID numbers to a more user friendly way as well as implemented FK user friendly drop down menus

Project Outline

The Online Fake University (TOFU) is an online university that serves 10,000 students across the world. TOFU has a 5:1 students to professor ratio, 2,000 professors in 10 departments teaching 4000 classes offering 100 different majors. Our web-based database management system tracks the number of students enrolled in each class by storing this information in an enrollment table. In addition, student's majors are tracked within the student table and the professor table tracks information about the department they are associated with. This allows TOFU to have the most up-to-date information on classes, students, professors, departments and enrollments. With this information, TOFU can make informed decisions surrounding classes, which majors to offer and which professors work for which departments. This gives TOFU the required business intelligence to expand on popular classes, remove classes that are least popular, which majors have the most students and which departments need to hire professors.

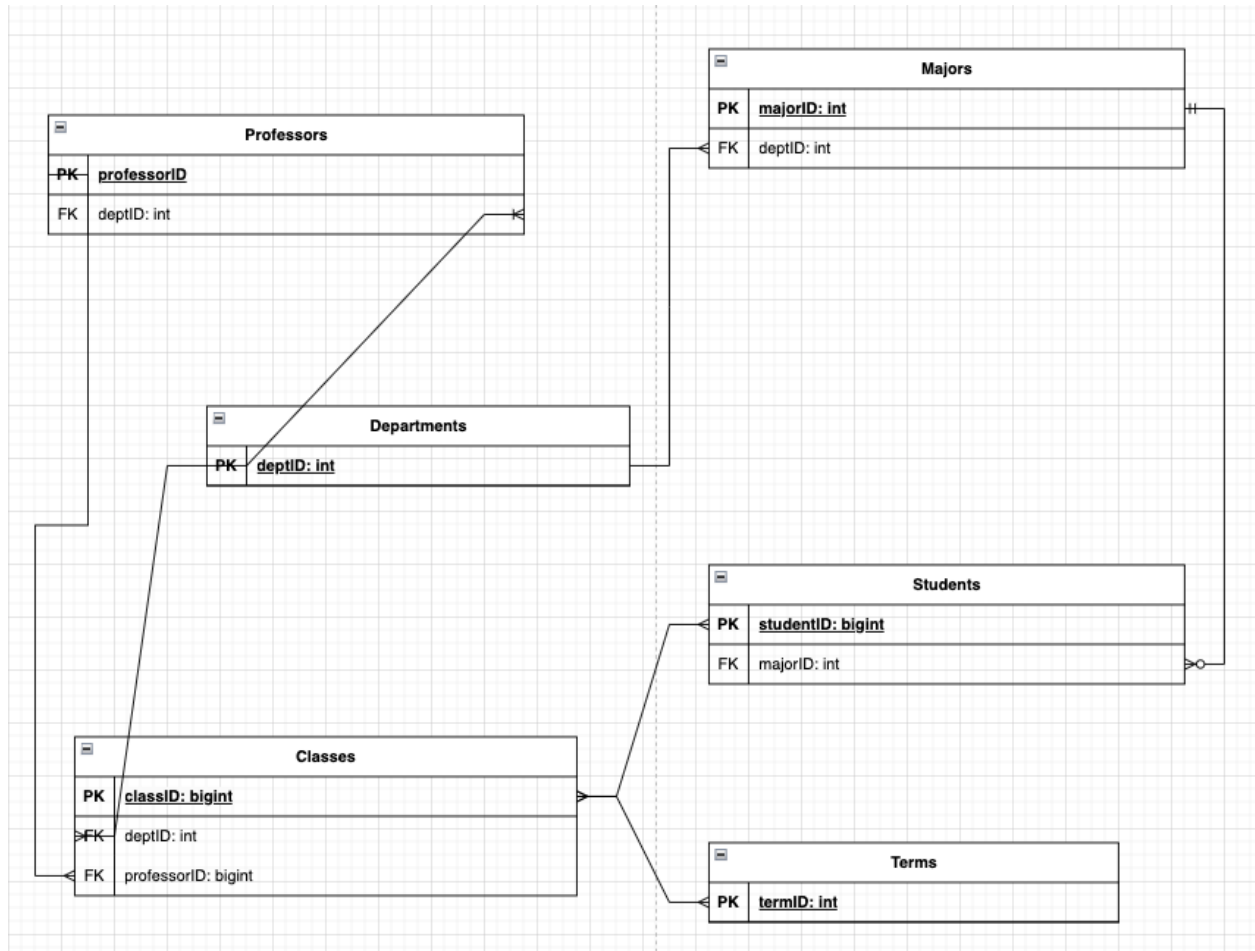
Database Outline

1. **Students:** Records the details of a student that attends "Online Fake University". The student ID will be used as the primary key. It will record the information related to each student that is relevant to enrolling at the university, such as name, and major. It has relationships with the majors, Users, classes, and Enrollments entities.
 - **studentID:** bigint, auto_increment, NOT NULL, **PK**
 - **firstName:** varchar(255), NOT NULL
 - **lastName:** varchar(255), NOT NULL
 - **userName:** varchar(255), NOT NULL
 - **email:** varchar(320), Unique, NOT NULL
 - **majorID:** int, **FK**
 - **Relationship:**
 - 1:M relationship between Students and Enrollments (1 student can be enrolled in many classes) - intersection table
 - M:1 relationship between Students and Majors(many students can be in 1 major)
 - M:M relationship between Students and Classes (many students can be in many classes)
2. **Professors:** Records the details of the professors that teach at the university and what department they teach in. Its primary key is the professor ID. Has relationships with the Enrollments, Departments and Users entities.
 - **professorID:** bigint, auto_increment, NOT NULL, **PK**
 - **firstName:** varchar(255), NOT NULL
 - **lastName:** varchar(255), NOT NULL

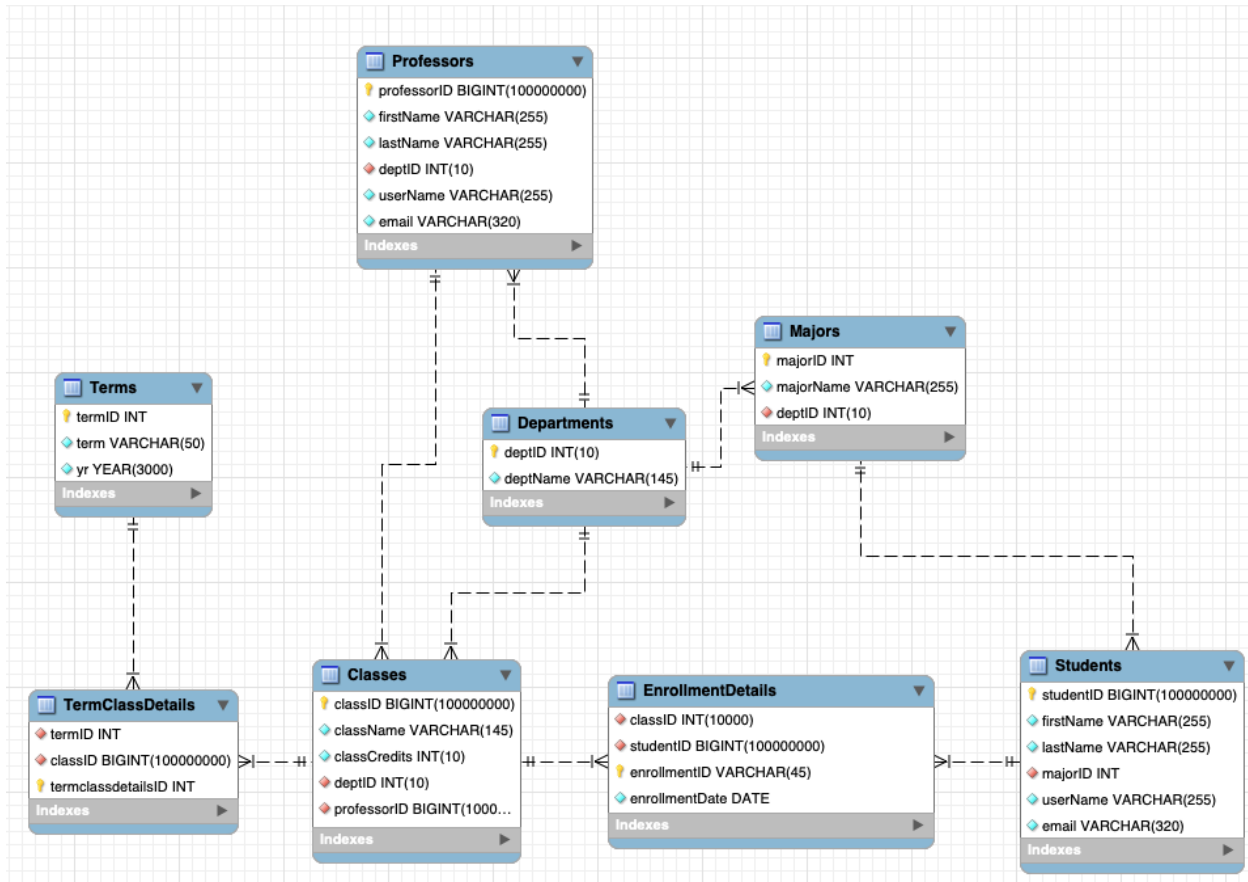
- **userName:** varchar(255), NOT NULL
 - **email:** varchar(320), Unique, NOT NULL
 - **deptID:** int, **FK**
 - **Relationship:**
 - 1:M relationship between Professors and Classes(one professor can teach many Classes)
 - M:1 relationship between Professors and Departments (many professors in 1 department)
3. **EnrollmentDetails:** Records students enrolled in a class and the class ID. The enrollment ID will be used as a primary key. It has a relationship with the Students and Classes entities. **Intersection Table between Students and Classes**
- **enrollmentID:** bigint, auto_increment, NOT NULL, **PK**
 - **enrollmentDate:** date, NOT NULL
 - **studentID:** bigint, NOT NULL, **FK**
 - **classID:** bigint, NOT NULL, **FK**
 - **Relationship:**
 - M:1 relationship with Enrollments and Students (many enrollments to 1 student),
 - M:1 relationship with Enrollments and Classes (many enrollments to 1 class)
4. **Classes:** Records the classes offered at the university with the class ID being the primary key. Also records the name of the class and information relating to the class, such as the name and credits it offers. Its primary key is the class ID. It has relationships with the Enrollments and Departments entities.
- **classID:** bigint, auto_increment, NOT NULL, **PK**
 - **className:** varchar(145), NOT NULL
 - **classCredits:** int(10), NOT NULL
 - **professorID:** bigint, Default NULL, **FK**
 - **deptID:** int, Default NULL, **FK**
 - **Relationship:**
 - M:M relationship with Students (many classes to many students).
 - M:1 relationship between Classes and Departments (many classes in one department)
 - 1:M relationship between classes and Enrollments (1 class to many enrollments)
 - M:M relationship between Terms and Classes (one term can have many classes)
5. **TermClassDetails:** Records the terms that classes are offered in. The primary key is termsClassesID. **Intersection Table between Terms and Classes**
- **termclassdetailsID:** int, auto_increment, NOT NULL, **PK**

- **termID:** int, **FK**, NOT NULL
 - **classID:** bigint, **FK**, NOT NULL
 - **Relationships:**
 - M:1 relationship with Classes and termClassDetails (many classes to 1 term)
 - M:1 relationship with Terms and termClassDetails (many terms to 1 class)
6. **Terms:** Records the term and year that a class is offered. Its primary key is termID, it has a relationship with classes.
- **termID:** int, auto_increment, NOT NULL, **PK**
 - **term:** varchar(50), NOT NULL
 - **yr:** year(3000), NOT NULL
 - **Relationships:**
 - M:M relationship between Terms and Classes (one term can have many classes)
7. **Departments:** Records the different departments within the university and the names of the departments. Its primary key is the department ID. It has relationships with the Classes, Students and Professors entities.
- **deptID:** int(10), auto_increment, NOT NULL, **PK**
 - **deptName:** varchar(145), NOT NULL
 - **Relationship:**
 - 1:M relationship between Departments and Classes (one department with many classes)
 - 1:M relationship between Departments and Majors (one department with many students)
 - 1:M relationship between Departments and Professors (one department with many professors)
8. **Majors:** Records the current Majors offered at TOFU. Its primary key is the majorID, it has relationships with students and departments.
- **majorID:** int, auto_increment, **PK**
 - **majorName:** varchar(255), NOT NULL
 - **deptID:** int, **FK**
 - **Relationships:**
 - M:1 relationship between departments and majors(one department can have many majors)
 - 1:M relationship between major and students (one major can have many students)

Entity-Relationship Diagram



Schema Diagram



Sample Data












Students

<div><div><div>←</div><div>T</div><div>→</div></div><div></div></div>				studentID	firstName	lastName	userName	email	majorID
<div><div><div><div></div></div></div><div><div><div></div></div><div>Edit</div></div><div><div><div></div></div><div>Copy</div></div><div><div><div></div></div><div>Delete</div></div></div>	1	Lucy	Sulton	sultonl	lucy.sutton@TOFU.edu	1			
<div><div><div><div></div></div></div><div><div><div></div></div><div>Edit</div></div><div><div><div></div></div><div>Copy</div></div><div><div><div></div></div><div>Delete</div></div></div>	2	Maelya	Meyer	meyerma	maelya.meyer@TOFU.edu	3			
<div><div><div><div></div></div></div><div><div><div></div></div><div>Edit</div></div><div><div><div></div></div><div>Copy</div></div><div><div><div></div></div><div>Delete</div></div></div>	3	Jamie	Cooper	cooperj	jamie.cooper@TOFU.edu	5			
<div><div><div><div></div></div></div><div><div><div></div></div><div>Edit</div></div><div><div><div></div></div><div>Copy</div></div><div><div><div></div></div><div>Delete</div></div></div>	4	Christine	Smits	smitsch	christine.smits@TOFU.edu	5			
<div><div><div><div></div></div></div><div><div><div></div></div><div>Edit</div></div><div><div><div></div></div><div>Copy</div></div><div><div><div></div></div><div>Delete</div></div></div>	5	Katerine	Thomas	thomask	katerine.thomas@TOFU.edu	1			
<div><div><div><div></div></div></div><div><div><div></div></div><div>Edit</div></div><div><div><div></div></div><div>Copy</div></div><div><div><div></div></div><div>Delete</div></div></div>	6	Lucas	Rubio	rubioluc	lucas.rubio@TOFU.edu	1			




















EnrollmentDetails

<div><div><div></div><div></div><div></div></div><div></div></div>				enrollmentID	enrollmentDate	studentID	classID
<div><div></div><div></div></div>	<div><div></div><div></div></div> Edit	<div><div></div><div></div></div> Copy	<div><div></div><div></div></div> Delete	1	2024-05-06	6	1
<div><div></div><div></div></div>	<div><div></div><div></div></div> Edit	<div><div></div><div></div></div> Copy	<div><div></div><div></div></div> Delete	2	2024-05-07	5	1
<div><div></div><div></div></div>	<div><div></div><div></div></div> Edit	<div><div></div><div></div></div> Copy	<div><div></div><div></div></div> Delete	3	2024-05-08	4	5
<div><div></div><div></div></div>	<div><div></div><div></div></div> Edit	<div><div></div><div></div></div> Copy	<div><div></div><div></div></div> Delete	4	2024-05-09	3	5
<div><div></div><div></div></div>	<div><div></div><div></div></div> Edit	<div><div></div><div></div></div> Copy	<div><div></div><div></div></div> Delete	5	2024-05-10	2	4
<div><div></div><div></div></div>	<div><div></div><div></div></div> Edit	<div><div></div><div></div></div> Copy	<div><div></div><div></div></div> Delete	6	2024-05-11	1	2
<div><div></div><div></div></div>	<div><div></div><div></div></div> Edit	<div><div></div><div></div></div> Copy	<div><div></div><div></div></div> Delete	7	2024-05-12	1	1




















Professors

<div>← ↩</div>				professorID	firstName	lastName	userName	email	deptID
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	Andrew	Dennis	dennisa	andrew.denis@TOFU.edu	2
<input type="checkbox"/>	 Edit	 Copy	 Delete	2	Hannah	Wright	wrighth	hannah.wright@TOFU.edu	3
<input type="checkbox"/>	 Edit	 Copy	 Delete	3	Thomas	Evans	evanstho	thomas.evans@TOFU.edu	5
<input type="checkbox"/>	 Edit	 Copy	 Delete	4	Beth	Davis	davisbe	beth.davis@TOFU.edu	6
<input type="checkbox"/>	 Edit	 Copy	 Delete	5	Jordan	Jenkins	jenkinsj	jordan.jenkins@TOFU.edu	1
<input type="checkbox"/>	 Edit	 Copy	 Delete	6	Hugo	Green	greenhu	hugo.green@TOFU.edu	4




















Classes

		classID	className	classCredits	professorID	deptID
<input type="checkbox"/>	 Edit  Copy  Delete	1	Organic Chemistry I	4	5	1
<input type="checkbox"/>	 Edit  Copy  Delete	2	Quantum Mechanics	4	1	2
<input type="checkbox"/>	 Edit  Copy  Delete	3	Poets: Poetry and Everything	3	2	3
<input type="checkbox"/>	 Edit  Copy  Delete	4	Contemporary Art History	3	6	4
<input type="checkbox"/>	 Edit  Copy  Delete	5	Intro to Computer Science	4	3	5
<input type="checkbox"/>	 Edit  Copy  Delete	6	History of Jazz	2	4	6



















Departments

		deptID	deptName
<input type="checkbox"/>	 Edit  Copy  Delete	1	Chemistry
<input type="checkbox"/>	 Edit  Copy  Delete	2	Physics
<input type="checkbox"/>	 Edit  Copy  Delete	3	English
<input type="checkbox"/>	 Edit  Copy  Delete	4	Art History
<input type="checkbox"/>	 Edit  Copy  Delete	5	Electrical Engineering and Computer Science
<input type="checkbox"/>	 Edit  Copy  Delete	6	Music

Majors

		majorID	majorName	deptID
<input type="checkbox"/>	 Edit  Copy  Delete	1	Chemical Engineering	1
<input type="checkbox"/>	 Edit  Copy  Delete	2	Chemistry	1
<input type="checkbox"/>	 Edit  Copy  Delete	3	English Literature	3
<input type="checkbox"/>	 Edit  Copy  Delete	4	Creative Writing	3
<input type="checkbox"/>	 Edit  Copy  Delete	5	Computer Science	5
<input type="checkbox"/>	 Edit  Copy  Delete	6	Electrical Engineering	5

Terms

<div><div><div><div></div><div></div><div></div></div><div></div><div></div></div></div>					termID	term	yr		
<input type="checkbox"/>		Edit		Copy		Delete	1	Winter	2023
<input type="checkbox"/>		Edit		Copy		Delete	2	Spring	2023
<input type="checkbox"/>		Edit		Copy		Delete	3	Summer	2023
<input type="checkbox"/>		Edit		Copy		Delete	4	Fall	2023
<input type="checkbox"/>		Edit		Copy		Delete	5	Winter	2024
<input type="checkbox"/>		Edit		Copy		Delete	6	Spring	2024

TermClassDetails

<div><div><div><div></div><div></div><div></div></div><div></div><div></div></div></div>					termclassdetailsID	termID	classID
<div><div><div></div></div></div>	<div><div><div></div></div><div>Edit</div></div>	<div><div><div></div></div><div>Copy</div></div>	<div><div><div></div></div><div>Delete</div></div>	1	1	1	
<div><div><div></div></div></div>	<div><div><div></div></div><div>Edit</div></div>	<div><div><div></div></div><div>Copy</div></div>	<div><div><div></div></div><div>Delete</div></div>	2	1	2	
<div><div><div></div></div></div>	<div><div><div></div></div><div>Edit</div></div>	<div><div><div></div></div><div>Copy</div></div>	<div><div><div></div></div><div>Delete</div></div>	3	2	3	
<div><div><div></div></div></div>	<div><div><div></div></div><div>Edit</div></div>	<div><div><div></div></div><div>Copy</div></div>	<div><div><div></div></div><div>Delete</div></div>	4	2	4	
<div><div><div></div></div></div>	<div><div><div></div></div><div>Edit</div></div>	<div><div><div></div></div><div>Copy</div></div>	<div><div><div></div></div><div>Delete</div></div>	5	3	5	
<div><div><div></div></div></div>	<div><div><div></div></div><div>Edit</div></div>	<div><div><div></div></div><div>Copy</div></div>	<div><div><div></div></div><div>Delete</div></div>	6	3	6	

Screen Captures

Students(Create, Read, Delete)

- Create
 - Fk user friendly
- Read
- Delete

Read **Students** **Delete**

studentID	FirstName	LastName	Username	Email	Major	Delete
1	Lucy	Sutton	suttonl	lucy.sutton@TOFU.edu	Chemical Engineering	Delete Student
2	Maelya	Meyer	meyerma	maelya.meyer@TOFU.edu	English Literature	Delete Student
4	Christine	Smits	smitsch	christine.smits@TOFU.edu	Computer Science	Delete Student
5	Katerine	Thomas	thomask	katerine.thomas@TOFU.edu	Chemical Engineering	Delete Student
6	Lucas	Rubio	rubioluc	lucas.rubio@TOFU.edu	Chemical Engineering	Delete Student

Add Student

To add a new student, please enter their information below and click 'Submit'!

First Name: Last Name: Username: Email: Major: **Create**

Professors(Create, Read, Delete)

- Create
 - FK USER friendly
- Read
- Delete

Read **Professors** **Delete**

professorID	FirstName	LastName	Username	Email	Department	Delete
1	Andrew	Dennis	dennisa	andrew.denis@TOFU.edu	Physics	Delete Professor
2	Hannah	Wright	wrightH	hannah.wright@TOFU.edu	English	Delete Professor
3	Thomas	Evans	evanstho	thomas.evans@TOFU.edu	Electrical Engineering and Computer Science	Delete Professor
4	Beth	Davis	davisbe	beth.davis@TOFU.edu	Music	Delete Professor
5	Jordan	Jenkins	jenkinsj	jordan.jenkins@TOFU.edu	Chemistry	Delete Professor
6	Hugo	Green	greenhu	hugo.green@TOFU.edu	Art History	Delete Professor

Add Professor

To add a new Professor, please enter their information below and click 'Submit'!

First Name: Last Name: Username: Email: Department: **Create**

EnrollmentDetails(Create, Read, Delete)

- Create
 - FK USER Friendly
- Read
- Delete

Read

Enrollment Details

Delete

enrollmentID	EnrollmentDate	Student	Class	Delete
3	Wed May 08 2024 00:00:00 GMT-0700 (Pacific Daylight Time)	Christine Smits	Intro to Computer Science	Delete Enrollment Details
5	Fri May 10 2024 00:00:00 GMT-0700 (Pacific Daylight Time)	Maelya Meyer	Contemporary Art History	Delete Enrollment Details

Add Enrollment Detail

To add a new enrollment Detail, please enter their information below and click 'Submit'!

Enrollment Date:

Student Name:

Full name:

Create

Add Enrollment Detail

Classes(CREATE/READ/UPDATE/DELETE):

- Create
- Read
- Update:
 - Updates M:N relationship: updates Class in TermClassDetails
 - Updates two nullable FKs (professor and department)
- Delete: M:N Delete: Deletes entry in TermClassDetails

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Classes

Read

Class ID	Class Name	Class Credits	Professor	Department	Delete
1	Organic Chemistry I	4	Jordan Jenkins	Chemistry	Delete Class
2	Quantum Mechanics	4	Andrew Dennis	Physics	Delete Class
3	Poets: Poetry and Everything	3	Hannah Wright	English	Delete Class
4	Contemporary Art History	3	Hugo Green	Art History	Delete Class
5	Intro to Computer Science	4	Thomas Evans	Electrical Engineering and Computer Science	Delete Class
6	History of Jazz	2	Beth Davis	Music	Delete Class

M:N Deletes entry in TermClassDetails

Add a class

To add a new class, please enter the information below and click 'Add Class'

Class Name: Class Credits: Professor ID: Department ID:

Create

Updating A Class

To update a specific class, please enter the information below and click "Update Class"

Class ID: Class Name: Class Credits: Professor: Department:

Update M:N relationship: updating Class will update it in TermClassDetails

Update: two Nullable FKs (Professor and Department)

Departments (CREATE/READ)

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Departments

Read

Department ID	Department Name
1	Chemistry
2	Physics
3	English
4	Art History
5	Electrical Engineering and Computer Science
6	Music

Add a Department

To add a new department, please enter the information below and click 'Add Department'

Department Name: [Add Department](#) [Create](#)

Terms(CREATE/READ)

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Terms

Read

Term ID	Term	Year
1	Winter	2023
2	Spring	2023
3	Summer	2023
4	Fall	2023
5	Winter	2024
6	Spring	2024

Add a Term

To add a new term, please enter the information below and click 'Add Term'

Term: Year: [Add Term](#) [Create](#)

Majors (CREATE/READ)

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Majors

READ

Major ID	Major Name	Department
1	Chemical Engineering	Chemistry
2	Chemistry	Chemistry
3	English Literature	English
4	Creative Writing	English
5	Computer Science	Electrical Engineering and Computer Science
6	Electrical Engineering	Electrical Engineering and Computer Science

Adding a Major

To add a new major, please enter their information below and click 'Add Major'

Major Name: Department ID: [Add Major](#) [CREATE](#)

TermClassDetails(CREATE/READ)

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Term Class Details

Read

Term Class Details ID	Term	Class
1	Winter 2023	Organic Chemistry I
2	Winter 2023	Quantum Mechanics
3	Spring 2023	Poets: Poetry and Everything
4	Spring 2023	Contemporary Art History
5	Summer 2023	Intro to Computer Science
6	Summer 2023	History of Jazz

Adding Term Class Details

To add a new term class detail, please enter their information below and click 'Add Term Class Detail'

Term: Class: [New Term Class Detail](#) [Create](#)

