

San Francisco State University  
Computer Science Department  
Database Systems  
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# Conceptual Model: iLearn Database System

MILESTONE/VERSION	DATE
M2	07/21/2020
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## Project Description

Every student and teacher should be equipped with online learning sites that should allow students to efficiently log in to their own portals, access all the classes they are and have taken, be able to manipulate and change the data within each class, among all, homework and projects. Each student should also be able to upload files to turn in homework, keep organized of each semester, each class, and each project, or even, lesson, notes, announcements. In essence, the site should become a powerhouse for students and teachers to have their full and utmost capabilities by being a tool that enhances productivity.

In order to have a successful learning site, there needs to be a proficient database system where all necessary information can be stored, accessed, modified, and more. The iLearn Database System's goal is to efficiently and effectively store data regarding a student's online experience with handling each and every class within a semester, or even within their entire college years.

## Use Cases

USE CASE TITLE:	ACCESS CLASSES
ACTORS:	STUDENTS, TEACHERS
DESCRIPTION:	THIS USE CASE BEGINS WHEN A STUDENT OR TEACHER NEEDS TO ACCESS A SPECIFIC CLASS SUCH AS CSC 415. THE STUDENT LOGS IN TO THE WEBSITE, WHERE A LIST OF CLASSES WITHIN THE CURRENT SEMESTER WILL BE LISTED. THIS USE CASE ENDS AFTER THE USER ENTERS THE SPECIFIC PAGE FOR THE CLASS.

USE CASE TITLE:	UPLOAD HOMEWORK
ACTORS:	STUDENTS
DESCRIPTION:	THIS USE CASE BEGINS WHEN A STUDENT ENTERS A SPECIFIC PAGE FOR A CLASS ON THE SITE AND PULLS UP A PAGE WHERE HE/SHE IS ABLE TO UPLOAD A SPECIFIC FILE. THE STUDENT MAY ALSO LEAVE A DESCRIPTION OF THE FILE BEING UPLOADED. AFTER THE FILE HAS BEEN UPLOADED, A TIME AND DATE STAMP WILL BE AVAILABLE FOR REFERENCE AS WELL AS A HYPERLINK TO THE FILE THAT WAS UPLOADED AND A NOTIFICATION IS GIVEN TO THE STUDENT. THE USE CASE ENDS AFTER A FILE HAS BEEN UPLOADED AND NO LONGER ABLE TO CHANGE THE SUBMISSION.

USE CASE TITLE:	POST HOMEWORK
ACTORS:	TEACHERS
DESCRIPTION:	THIS USE CASE BEGINS WHEN A TEACHER ASSIGNS A HOMEWORK THROUGH THE SPECIFIC CLASS PAGE. THE TEACHER NEEDS TO OPEN A LIST OF ACTIONS SPECIFICALLY FOR TEACHERS AND CLICK SUBMISSION PAGE THAT ENABLES THEM TO LABEL THE HW ASSIGNED, PROVIDE A DUE DATE AND DETAILS ON THE ASSIGNMENT. THIS TEST CASE ENDS WHEN

<b>USE CASE TITLE:</b>	ACCESS PREVIOUS CLASSES FROM PREVIOUS SEMESTERS
<b>ACTORS:</b>	STUDENTS, TEACHERS
<b>DESCRIPTION:</b>	THIS USE CASE BEGINS WHEN A STUDENT/TEACHER NEEDS TO ACCESS A CLASS PREVIOUSLY TAKEN/TAUGHT. THE ACTOR WILL BE ABLE TO SEE A LIST OF PREVIOUS SEMESTERS FROM THE BEGINNING OF THEIR TIME WITHIN THE UNIVERSITY. EACH SEMESTER WILL HAVE A LIST OF CLASSES THAT WAS TAKEN WITHIN THE SEMESTER, WHERE THE ACTOR WILL BE ABLE TO CLICK ON IF ENABLED. IF NOT THE ACTOR MAY JUST VIEW THE CLASSES TAKEN PREVIOUSLY AS A REFERENCE. THE USE CASE ENDS WHEN THE ACTOR IS ABLE TO PULL UP THE SPECIFIC CLASS FROM A PREVIOUS SEMESTER OR PLAINLY SEE A SPECIFIC CLASS FROM THE PREVIOUS SEMESTER.

<b>USE CASE TITLE:</b>	CREATE DISCUSSION FORUMS
<b>ACTORS:</b>	STUDENTS,TEACHERS
<b>DESCRIPTION:</b>	THIS USE CASE BEGINS WHEN STUDENTS AND TEACHERS, UNDER A SPECIFIC CLASS PAGE, IS ABLE TO GO TO THE NEWS AND FORUMS LINK, WHERE A STUDENT OR TEACHER OR BOTH, ARE ABLE TO CREATE A NEW FORUM, LABEL IT AND UPDATE IT. EACH FORUM CAN BE UPDATED AND CREATED BY ANY STUDENT OR TEACHER WITHIN THE CLASS. THIS USE CASE ENDS WHEN A TEXT BOX IS POSTED WITH A DATE AND A LABEL OF THE SPECIFIC FORUM CREATED.

# Database Requirements (Business Rules)

## User

1. A user shall be assigned and access only one account
2. A user shall be able to have multiple resources to navigate the website
3. A user shall be able to access the Library from the website
4. A user shall be able to access books through a link within the website
5. A user should be able to view announcements
6. A user shall be able to access electronics through a link within the website
7. A user shall be part of a university
8. A user shall be able to submit forms through the website
9. A user shall be able to access the archive of classes through the website
10. A user shall be able to access the archive of events through the website
11. A user shall be able to edit his/her own forum post one at a time

## Educator

12. An educator shall be able to post multiple announcements
13. An educator shall be able to access previous classes
14. An educator shall be able to create multiple forums
15. An educator shall be able to create multiple discussion posts
16. An educator can only access one class at a time
17. An educator shall have at least one class
18. An educator shall provide at least one homework assignment
19. An educator shall provide at least one test
20. An educator shall provide at least one quiz
21. An educator shall assign one grade per student
22. An educator shall assign many grades
23. An educator shall have many schedules
24. An educator shall teach many classes

## Student

25. A student shall be able to re-upload drafts multiple times while the assignment is not submitted
26. A student shall be able to upload one submission per homework assignment
27. A student shall be able to access previous semesters from when they began going to the university
28. A student shall be able to access previous classes
29. A student shall be able to create multiple forums
30. A student shall be able to create multiple discussion posts
31. A student can only access one class at a time

- 32. A student should be able to take a timed exam at one time
- 33. A student should be able to take a timed quiz at one time
- 34. A student shall take an exam within the time frame provided
- 35. A student is only allowed to open a quiz within a specified date
- 36. A student is only allowed to open an exam within a specific date
- 37. A student shall have a grade per class
- 38. A student shall be able to have one professor per class

#### University

- 39. A university shall have many semesters
- 40. A university shall be part of at least one region
- 41. A university shall have many employees
- 42. A university shall have 0 to many websites
- 43. A university shall have 0 to many libraries

#### Class

- 44. A class shall have at least one educator
- 45. A class shall have at least one subject
- 46. A class shall have many students

#### Website

- 47. A website shall have an archive
- 48. A website shall be managed by at least one developer
- 49. A website shall have many resources

#### Library

- 50. A library shall have many forms of multimedia
- 51. A library shall have at least one computer
- 52. A library shall have at least one tablet
- 53. A library shall have many books

#### Archive

- 54. An archive shall have records of previous semesters
- 55. An archive shall have records of many classes

#### Department

- 56. A department shall create at least one class
- 57. A department shall be part of only one college

#### Book

- 58. A book shall be written by at least one author
- 59. A book shall have one and only one ISBN

# Detailed List of Main Entities, Attributes and Keys

1. User: Strong
  1. Student number: key, numeric
  2. name: composite, alphanumeric
  3. Email address: key, alphanumeric
2. Courses: Strong
  1. name: composite, alphanumeric
  2. id: key, numeric
3. Class: Strong
  1. Subject: composite, alphanumeric
  2. Class number: key, numeric
4. Semesters: Strong
  1. Courses: key, alphanumeric
  2. Name: composite, alphanumeric
  3. Date: multi-value
5. Person: Strong
  1. user\_id: key, numeric
  2. name: composite, alphanumeric
  3. email\_address: multi-value
6. Grades: Strong
  1. Student\_id: key, numeric
  2. Letter assignment: composite, alphanumeric
7. University: Strong
  1. Colleges: composite, alphanumeric
  2. Name: composite, alphanumeric
  3. Address: multi-value
8. Professors: Strong
  1. Id: key, numeric
  2. Name: composite, alphanumeric
  3. department: composite, alphanumeric
9. Homework: Strong
  1. Name: composite, alphanumeric
  2. Date assigned: multi-value
  3. Due date: multi-value
10. Exam: Strong
  1. Topic: composite, alphanumeric
  2. Date assigned: multi-value
  3. Due date: multi-value
  4. Time limit: multi-value, timestamp

11. Quiz: Strong

1. Topic: composite, alphanumeric
2. Date assigned: multi-value
3. Due date: multi-value
4. Time limit: timestamp, multi-value

12. Subject: Strong

1. Name: composite, alphanumeric
2. Participants: composite, alphanumeric
3. department/faculty: composite, alphanumeric

13. Discussion Post: Strong

1. Time created: multi value
2. Content: alphanumeric, composite
3. Date created: multi-value timestamp

14. Library: Strong

1. Time created: multi-value, timestamp
2. Contact: composite, numeric
3. Address: multi-value
4. Hours: numeric, composite

15. Discussion Forum: Strong

1. Posts created: composite, alphanumeric
2. Time Created: multi-value
3. Content: composite, alphanumeric

16. Admin: Strong

1. Name: composite, alphanumeric
2. Login name: composite, alphanumeric
3. Password: multi-value, composite

17. Calendar: Strong

1. Dates: multi-value
2. Events: composite, alphanumeric
3. Student\_id: key, numeric

18. Archive: Strong

1. Name: composite, alphanumeric
2. Courses taken: composite, alphanumeric
3. Upcoming semesters: composite, alphanumeric

19. Forms: Strong

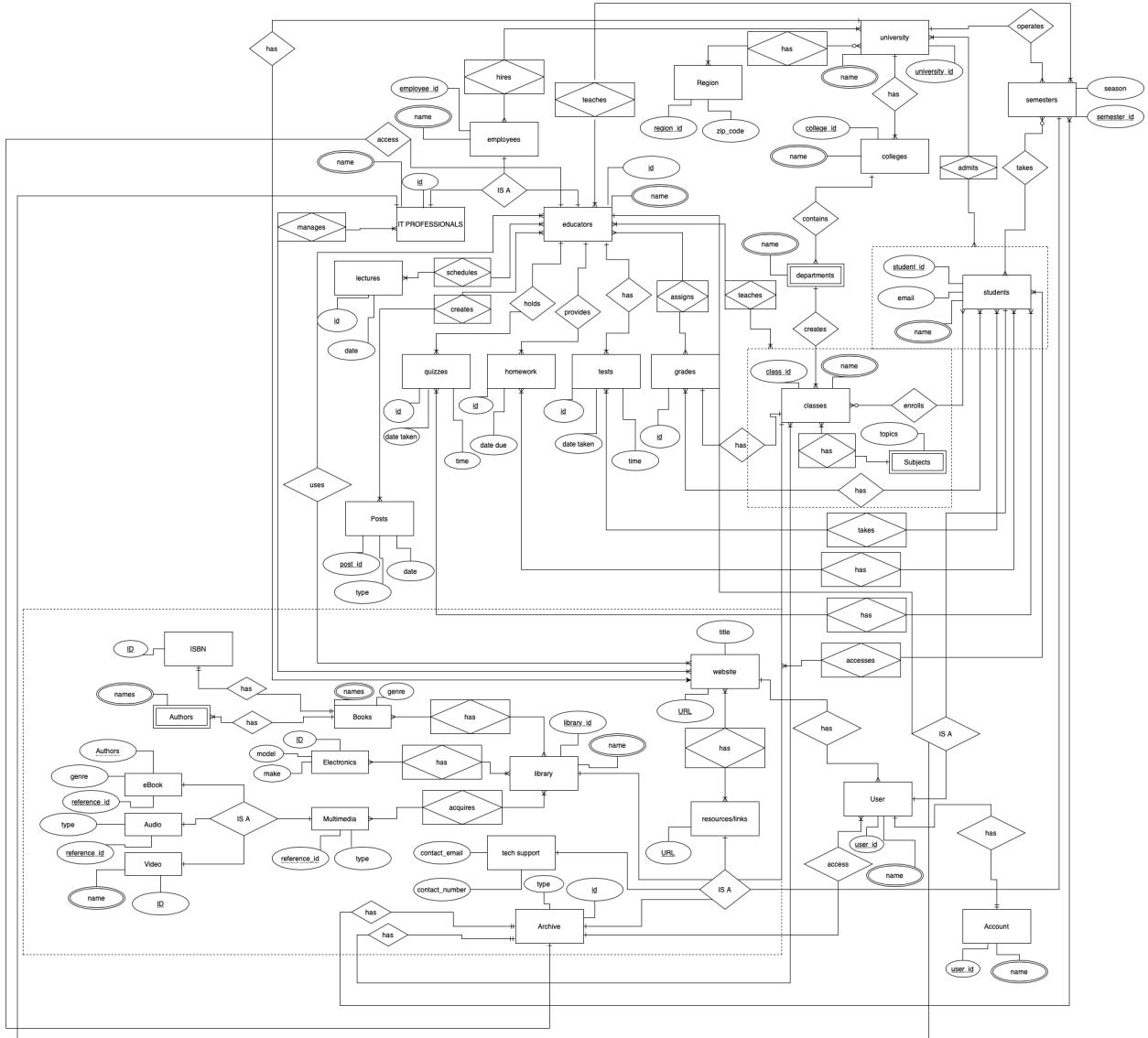
1. Name: alphanumeric
2. Topic: alphanumeric
3. Email: alphanumeric
4. Phone number: numeric
5. Date: alphanumeric

20. Electronics: Strong

1. brand: alphanumeric
2. id: numeric

- 3. Model: alphanumeric
  - 4. type: alphanumeric
21. Books: Strong
- 1. Title: alphanumeric
  - 2. Isbn: numeric
  - 3. Section: alphanumeric
  - 4. Author: alphanumeric
22. Schedules
- 1. Date: composite, numerical
  - 2. Owner: composite, alphanumeric
  - 3. id: numeric
23. Authors
- 1. name: composite, alphanumeric
  - 2. role: alphanumeric
  - 3. Genre: alphanumeric
  - 4. id: numeric
24. Multimedia
- 1. type: alphanumeric
  - 2. id: numeric

# Entity Relationship Diagram

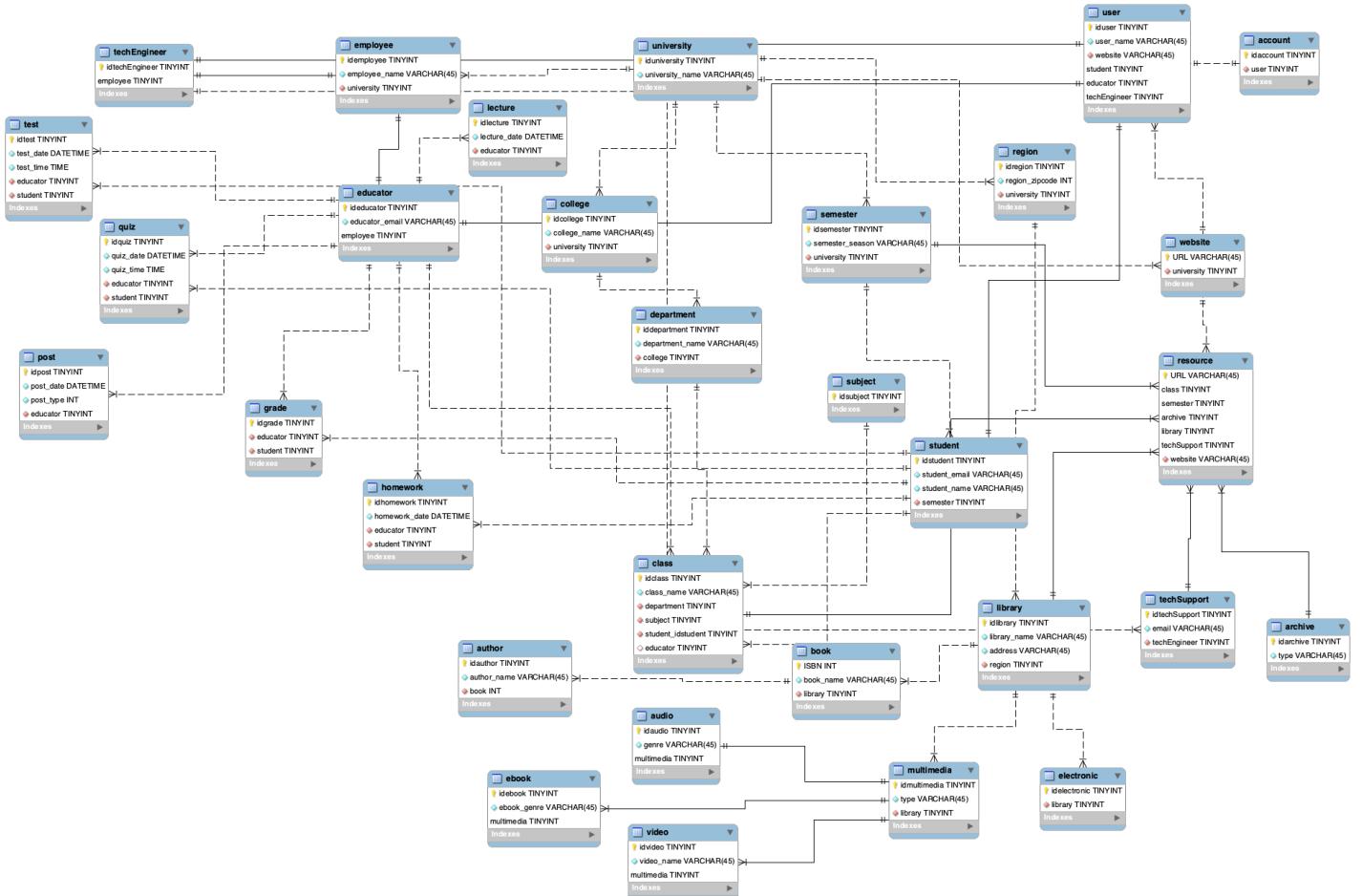


## Testing Table

Rule	Entity A	Relation	Entity B	Cardinality	Pass/ Fail	Error Description
1	User	has	Account	0-1	Fail	No user entity
2	User	Access	Resources	1-M	Fail	No user entity
3	User	Access	Library	1-M	Fail	No user entity
3	User	has	Books	0-M	Fail	No user entity
4	User	has	Announcements	0-M	Fail	No user entity
5	User	Part of	University	1-1	Fail	No user entity
6	User	has	Electronics	0-M	Fail	No user entity
7	User	Submit	Forms	0-M	Fail	No user entity
8	User	has	Class Archive	0-M	Fail	No user entity
9	User	has	Semester Archive	0-M	Fail	No user entity
10	User	edit	Post	0-M	Fail	No user entity
11	Educator	post	Announcements	0-M	Fail	No user entity
12	Educator	access	Class Archive	0-M	Fail	Educator doesn't connect to archives
13	Educator	access	Semester Archive	0-M	Fail	Educator doesn't connect to archives
14	Educator	create	Forum	0-M	Fail	No forum entity
15	Educator	create	discussions	0-M	Fail	No discussion entity
16	Educator	access	Class	1-1	Pass	
17	Educator	has	Class	1-M	Pass	
18	Educator	provide	homework	1-M	Pass	
19	Educator	provide	exam	1-M	Pass	
20	Educator	provide	quiz	1-M	Pass	
21	Educator	assign	Grades	1-M	Pass	
22	Educator	have	schedules	1-M	Pass	
23	Student	upload	Draft	0-M	Fail	No draft entity
24	Student	Takes	Exam	1-M	Pass	

25	Student	takes	quiz	1-m	Pass	
26	Student	takes	homework	1-M	pass	
27	Student	takes	Class	1-M	Pass	
28	University	have	semesters	M-M	Pass	
29	University	Hires	Employees	M-M	Pass	
30	Class	Have	Educator	1-M	Pass	
31	Class	Enrolls	Students	M-M	Pass	
32	resources	Is a	Archive	1-1	Pass	
33	website	Have	Resources	1-M	Pass	
34	Library	Have	Books	M-M	Pass	
35	Library	Have	Electronics	M-M	Pass	
36	Library	Have	Multimedia	M-M	Pass	
37	Archive	Have	Semesters	1-M	Fail	Semesters was an attribute
38	Archive	Have	Classes	1-M	Fail	Classes was an attribute
39	Department	Creates	classes	M-M	Pass	
40	Book	Has	Author	1-M	Pass	
41	Book	has	ISBN	1-1	Fail	ISBN was an attribute

# Database Model



# Forward Engineering

✓ 1	17:07:07	SET @OLD_UNIQUE_CHECKS=@UNIQUE_CHECKS, UNIQUE_CHECKS=0	0 row(s) affected	0.00024 sec
✓ 2	17:07:07	SET @OLD_FOREIGN_KEY_CHECKS=@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0	0 row(s) affected	0.00024 sec
✓ 3	17:07:07	SET @OLD_SQL_MODE=@SQL_MODE, SQL_MODE='ONLY_FULL_GROUP_BY,STRICT_TRANS_TABLES,NO_ZERO_IN_DATE,NO_ZERO_DATE,ERROR_F...	0 row(s) affected	0.00024 sec
✓ 4	17:07:07	DROP TABLE IF EXISTS `university`	0 row(s) affected	0.014 sec
✓ 5	17:07:07	CREATE TABLE IF NOT EXISTS `university` ( `iduniversity` TINYINT NOT NULL, `university_name` VARCHAR(45) NOT NULL, PRIMARY KEY (`idu...`)	0 row(s) affected	0.020 sec
✓ 6	17:07:07	DROP TABLE IF EXISTS `region`	0 row(s) affected	0.0082 sec
✓ 7	17:07:07	CREATE TABLE IF NOT EXISTS `region` ( `idregion` TINYINT NOT NULL, `region_zipcode` INT NOT NULL, `university` TINYINT NOT NULL, PR...	0 row(s) affected	0.014 sec
✓ 8	17:07:07	DROP TABLE IF EXISTS `college`	0 row(s) affected	0.0082 sec
✓ 9	17:07:07	CREATE TABLE IF NOT EXISTS `college` ( `idcollege` TINYINT NOT NULL, `college_name` VARCHAR(45) NOT NULL, `university` TINYINT NOT...	0 row(s) affected	0.013 sec
✓ 10	17:07:07	DROP TABLE IF EXISTS `department`	0 row(s) affected	0.0080 sec
✓ 11	17:07:07	CREATE TABLE IF NOT EXISTS `department` ( `iddpartment` TINYINT NOT NULL, `department_name` VARCHAR(45) NOT NULL, `college` TIN...	0 row(s) affected	0.013 sec
✓ 12	17:07:07	DROP TABLE IF EXISTS `subject`	0 row(s) affected	0.0059 sec
✓ 13	17:07:07	CREATE TABLE IF NOT EXISTS `subject` ( `idssubject` TINYINT NOT NULL, PRIMARY KEY (`idssubject`)) ENGINE = InnoDB	0 row(s) affected	0.010 sec
✓ 14	17:07:07	DROP TABLE IF EXISTS `semester`	0 row(s) affected	0.010 sec
✓ 15	17:07:07	CREATE TABLE IF NOT EXISTS `semester` ( `idssemester` TINYINT NOT NULL, `semester_season` VARCHAR(45) NOT NULL, `university` TINYIN...	0 row(s) affected	0.017 sec
✓ 16	17:07:07	DROP TABLE IF EXISTS `student`	0 row(s) affected	0.017 sec
⚠ 17	17:07:07	CREATE TABLE IF NOT EXISTS `student` ( `idstudent` TINYINT NOT NULL, `student_email` VARCHAR(45) NOT NULL, `student_name` VARCHA...	0 row(s) affected, 1 warning(s): 1681 Integer display...	0.030 sec
✓ 18	17:07:07	DROP TABLE IF EXISTS `employee`	0 row(s) affected	0.0094 sec
✓ 19	17:07:07	CREATE TABLE IF NOT EXISTS `employee` ( `idemployee` TINYINT NOT NULL, `employee_name` VARCHAR(45) NOT NULL, `university` TINYIN...	0 row(s) affected	0.017 sec
✓ 20	17:07:07	DROP TABLE IF EXISTS `educator`	0 row(s) affected	0.020 sec
✓ 21	17:07:07	CREATE TABLE IF NOT EXISTS `educator` ( `ideducator` TINYINT NOT NULL, `educator_email` VARCHAR(45) NOT NULL, `employee` TINYINT...	0 row(s) affected	0.033 sec
✓ 22	17:07:07	DROP TABLE IF EXISTS `class`	0 row(s) affected	0.017 sec
✓ 23	17:07:07	CREATE TABLE IF NOT EXISTS `class` ( `idclass` TINYINT NOT NULL, `class_name` VARCHAR(45) NOT NULL, `department` TINYINT NOT ...	0 row(s) affected	0.025 sec
✓ 24	17:07:07	DROP TABLE IF EXISTS `techEngineer`	0 row(s) affected	0.011 sec
✓ 25	17:07:07	CREATE TABLE IF NOT EXISTS `techEngineer` ( `idtechEngineer` TINYINT NOT NULL, `employee` TINYINT NOT NULL, PRIMARY KEY (`idtechEn...	0 row(s) affected	0.017 sec
✓ 26	17:07:07	DROP TABLE IF EXISTS `lecture`	0 row(s) affected	0.0063 sec
✓ 27	17:07:07	CREATE TABLE IF NOT EXISTS `lecture` ( `idlecture` TINYINT NOT NULL, `lecture_date` DATETIME NOT NULL, `educator` TINYINT NOT NULL,...	0 row(s) affected	0.0100 sec
✓ 28	17:07:07	DROP TABLE IF EXISTS `post`	0 row(s) affected	0.0063 sec
✓ 29	17:07:07	CREATE TABLE IF NOT EXISTS `post` ( `idpost` TINYINT NOT NULL, `post_date` DATETIME NOT NULL, `post_type` INT NOT NULL, `educator`...	0 row(s) affected	0.012 sec
✓ 30	17:07:07	DROP TABLE IF EXISTS `quiz`	0 row(s) affected	0.0096 sec
✓ 31	17:07:07	CREATE TABLE IF NOT EXISTS `quiz` ( `idquiz` TINYINT NOT NULL, `quiz_date` DATETIME NOT NULL, `quiz_time` TIME NOT NULL, `educator`...	0 row(s) affected	0.013 sec
✓ 32	17:07:07	DROP TABLE IF EXISTS `homework`	0 row(s) affected	0.0097 sec
✓ 33	17:07:07	CREATE TABLE IF NOT EXISTS `homework` ( `idhomework` TINYINT NOT NULL, `homework_date` DATETIME NOT NULL, `educator` TINYINT N...	0 row(s) affected	0.014 sec
✓ 34	17:07:07	DROP TABLE IF EXISTS `test`	0 row(s) affected	0.0092 sec
✓ 35	17:07:07	CREATE TABLE IF NOT EXISTS `test` ( `idtest` TINYINT NOT NULL, `test_date` DATETIME NOT NULL, `test_time` TIME NOT NULL, `educator` ...	0 row(s) affected	0.014 sec
✓ 36	17:07:07	DROP TABLE IF EXISTS `grade`	0 row(s) affected	0.0097 sec
✓ 37	17:07:07	CREATE TABLE IF NOT EXISTS `grade` ( `idgrade` TINYINT NOT NULL, `educator` TINYINT NOT NULL, `student` TINYINT NOT NULL, PRIMAR...	0 row(s) affected	0.013 sec
✓ 38	17:07:07	DROP TABLE IF EXISTS `website`	0 row(s) affected	0.011 sec
✓ 39	17:07:07	CREATE TABLE IF NOT EXISTS `website` ( `URL` VARCHAR(45) NOT NULL, `university` TINYINT NOT NULL, PRIMARY KEY (`URL`), INDEX `un...	0 row(s) affected	0.018 sec
✓ 40	17:07:07	DROP TABLE IF EXISTS `user`	0 row(s) affected	0.016 sec
✓ 41	17:07:07	CREATE TABLE IF NOT EXISTS `user` ( `iduser` TINYINT NOT NULL, `user_name` VARCHAR(45) NOT NULL, `website` VARCHAR(45) NOT NUL...	0 row(s) affected	0.049 sec
✓ 42	17:07:07	DROP TABLE IF EXISTS `account`	0 row(s) affected	0.0072 sec
✓ 43	17:07:07	CREATE TABLE IF NOT EXISTS `account` ( `idaccount` TINYINT NOT NULL, `user` TINYINT NOT NULL, PRIMARY KEY (`idaccount`), INDEX `u...	0 row(s) affected	0.010 sec
✓ 44	17:07:08	DROP TABLE IF EXISTS `archive`	0 row(s) affected	0.0066 sec
✓ 45	17:07:08	CREATE TABLE IF NOT EXISTS `archive` ( `idarchive` TINYINT NOT NULL, `type` VARCHAR(45) NOT NULL, PRIMARY KEY (`idarchive`)) ENGIN...	0 row(s) affected	0.011 sec
✓ 46	17:07:08	DROP TABLE IF EXISTS `library`	0 row(s) affected	0.014 sec
✓ 47	17:07:08	CREATE TABLE IF NOT EXISTS `library` ( `idlibrary` TINYINT NOT NULL, `library_name` VARCHAR(45) NOT NULL, `address` VARCHAR(45) NOT ...	0 row(s) affected	0.023 sec
✓ 48	17:07:08	DROP TABLE IF EXISTS `techSupport`	0 row(s) affected	0.0093 sec
✓ 49	17:07:08	CREATE TABLE IF NOT EXISTS `techSupport` ( `idtechSupport` TINYINT NOT NULL, `email` VARCHAR(45) NOT NULL, `techEngineer` TINYINT...	0 row(s) affected	0.015 sec
✓ 50	17:07:08	DROP TABLE IF EXISTS `resource`	0 row(s) affected	0.018 sec
✓ 51	17:07:08	CREATE TABLE IF NOT EXISTS `resource` ( `URL` VARCHAR(45) NOT NULL, `class` TINYINT NOT NULL, `semester` TINYINT NOT NULL, `arc...	0 row(s) affected	0.027 sec
✓ 52	17:07:08	DROP TABLE IF EXISTS `book`	0 row(s) affected	0.0084 sec
✓ 53	17:07:08	CREATE TABLE IF NOT EXISTS `book` ( `ISBN` INT NOT NULL, `book_name` VARCHAR(45) NOT NULL, `library` TINYINT NOT NULL, PRIMARY...	0 row(s) affected	0.016 sec
✓ 54	17:07:08	DROP TABLE IF EXISTS `electronic`	0 row(s) affected	0.0067 sec
✓ 55	17:07:08	CREATE TABLE IF NOT EXISTS `electronic` ( `idelectronic` TINYINT NOT NULL, `library` TINYINT NOT NULL, PRIMARY KEY (`idelectronic`), IN...	0 row(s) affected	0.0091 sec
✓ 56	17:07:08	DROP TABLE IF EXISTS `multimedia`	0 row(s) affected	0.011 sec
✓ 57	17:07:08	CREATE TABLE IF NOT EXISTS `multimedia` ( `idmultimedia` TINYINT NOT NULL, `type` VARCHAR(45) NOT NULL, `library` TINYINT NOT NUL...	0 row(s) affected	0.017 sec
✓ 58	17:07:08	DROP TABLE IF EXISTS `author`	0 row(s) affected	0.0064 sec
✓ 59	17:07:08	CREATE TABLE IF NOT EXISTS `author` ( `idauthor` TINYINT NOT NULL, `author_name` VARCHAR(45) NOT NULL, `book` INT NOT NULL, PR...	0 row(s) affected	0.0092 sec
✓ 60	17:07:08	DROP TABLE IF EXISTS `ebook`	0 row(s) affected	0.0063 sec
✓ 61	17:07:08	CREATE TABLE IF NOT EXISTS `ebook` ( `idebook` TINYINT NOT NULL, `ebook_genre` VARCHAR(45) NOT NULL, `multimedia` TINYINT NOT N...	0 row(s) affected	0.010 sec
✓ 62	17:07:08	DROP TABLE IF EXISTS `audio`	0 row(s) affected	0.0067 sec
✓ 63	17:07:08	CREATE TABLE IF NOT EXISTS `audio` ( `idaudio` TINYINT NOT NULL, `genre` VARCHAR(45) NOT NULL, `multimedia` TINYINT NOT NULL, PR...	0 row(s) affected	0.0099 sec
✓ 64	17:07:08	DROP TABLE IF EXISTS `video`	0 row(s) affected	0.0065 sec
✓ 65	17:07:08	CREATE TABLE IF NOT EXISTS `video` ( `idvideo` TINYINT NOT NULL, `video_name` VARCHAR(45) NOT NULL, `multimedia` TINYINT NOT NUL...	0 row(s) affected	0.0093 sec
✓ 66	17:07:08	SET SQL_MODE=@OLD_SQL_MODE	0 row(s) affected	0.00019 sec
✓ 67	17:07:08	SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_CHECKS	0 row(s) affected	0.00018 sec
✓ 68	17:07:08	SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS	0 row(s) affected	0.00019 sec

# Inserting Data

✓	21:57:13	USE iLearnDB		0 rows(s) affected	0.00017 sec
✓	21:57:13	INSERT INTO university (iduniversity, university_name) VALUES (1,'SAN FRANCISCO STATE UNIVERSITY')		1 row(s) affected	0.00012 sec
✓	21:57:13	INSERT INTO university (iduniversity, university_name) VALUES (2,'SAN FRANCISCO CITY COLLEGE')		1 row(s) affected	0.00012 sec
✓	21:57:13	INSERT INTO university (iduniversity, university_name) VALUES (3,'UNIVERSITY OF SAN FRANCISCO')		1 row(s) affected	0.00045 sec
✓	21:57:13	INSERT INTO website (URL, university) VALUES ('www.sfsu.edu', 1), ('www.wst.edu', 2)		3 row(s) affected	0.00045 sec
✓	21:57:13	INSERT INTO region (idregion, region, zipcode, university) VALUES (1, '94355', 1), (2, '43522', 2), (3, '23455', 3)		3 row(s) affected	0.00011 sec
✓	21:57:13	INSERT INTO library (idlibrary, library_name, address, region) VALUES (1, 'SFCC LIBRARY', '100 ELM ST. SF 94220', 1), (2, 'USF LIBRARY', '100 TOWN ST. SF 95656', 3)		3 row(s) affected	0.0010 sec
✓	21:57:13	INSERT INTO book (ISBN, book_name, library) VALUES (9123, 'hello world', 1), (9122, 'bye world', 1), (1234, 'computer networks', 1)		3 row(s) affected	0.0010 sec
✓	21:57:13	INSERT INTO multimedia (idmultimedia, type, library) VALUES (1, 'ebook', 1), (2, 'video', 1), (3, 'audio', 1)		3 row(s) affected	0.0011 sec
✓	21:57:13	INSERT INTO ebook (idebook, ebook_genre, multimedia) VALUES (1, 'fiction', 1), (2, 'nonfiction', 1), (3, 'biography', 1)		3 row(s) affected	0.00091 sec
✓	21:57:13	INSERT INTO author (idauthor, author_name, book) VALUES (1, 'j.k. rowling', 9123), (2, 'miguel para', 9122), (3, 'rita ann', 1234)		3 row(s) affected	0.00098 sec
✓	21:57:13	INSERT INTO media (idmedia, genre, multimedia) VALUES (1, 'music', 1), (2, 'video', 1), (3, 'clips', 1)		3 row(s) affected	0.00079 sec
✓	21:57:13	INSERT INTO video (idvideo, video, multimedia) VALUES (1, 'Kiss me', 2), (2, 'honest man', 3), (3, 'killing me softly', 2)		3 row(s) affected	0.0011 sec
✓	21:57:13	INSERT INTO semester (idssemester, semester, season, university) VALUES (1, 'FALL', 1), (2, 'SPRING', 1), (3, 'SUMMER', 1)		3 row(s) affected	0.0011 sec
✓	21:57:13	INSERT INTO student (idstudent, student_email, student_name, semester) VALUES (1, 'kabadi@mail.sfsu.edu', 'JOEY CEDO', 1), (3, 'MIGUEL@MAIL.SFSU.EDU', 'MIGUEL CRUZ', 1)		3 row(s) affected	0.0011 sec
✓	21:57:13	INSERT INTO employee (idemployee, employee_type, university) VALUES (1, 'PROFESSOR', 1), (2, 'PROFESSOR', 1), (3, 'TECH ENGINEER', 1), (4, 'TECH ENGINEER', 1)		4 row(s) affected	0.00098 sec
✓	21:57:13	INSERT INTO employee (idemployee, employee_type, university) VALUES (5, 'TECH ENGINEER', 1)		1 row(s) affected	0.00043 sec
✓	21:57:13	INSERT INTO employee (idemployee, employee_type, university) VALUES (6, 'TECH ENGINEER', 1)		1 row(s) affected	0.00043 sec
✓	21:57:13	INSERT INTO educator (ideducator, educator_email, employee) VALUES (1, 'j@mail.sfsu.edu', 1), (2, 'k@mail.sfsu.edu', 2), (3, 'q@mail.sfsu.edu', 3)		3 row(s) affected	0.0013 sec
✓	21:57:13	INSERT INTO electronic (idelectronic, library) VALUES (1, 1), (2, 1), (3, 1), (4, 1)		4 row(s) affected	0.0011 sec
✓	21:57:13	INSERT INTO college (idcollege, college, department, university) VALUES (1, 'BUSINESS', 1), (2, 'ENGINEERING', 1), (3, 'SCIENCES', 1)		3 row(s) affected	0.0009 sec
✓	21:57:13	INSERT INTO department (iddepartment, department_name, college) VALUES (1, 'COMMUNICATIONS', 1), (2, 'COMPUTER SCIENCE', 2), (3, 'BIOLOGY', 3)		3 row(s) affected	0.00098 sec
✓	21:57:13	INSERT INTO subject (idssubject) VALUES (1)		1 row(s) affected	0.00077 sec
✓	21:57:13	INSERT INTO subject (idssubject) VALUES (2)		1 row(s) affected	0.00043 sec
✓	21:57:13	INSERT INTO subject (idssubject) VALUES (3)		1 row(s) affected	0.00041 sec
✓	21:57:13	INSERT INTO class (idclass, class_name, department, subject, student_idstudent, educator) VALUES (1, 'intro to biology', 3, 1, 1), (2, 'intro to mathematics', 2, 2, 3), (3, 'intro to business', 1, 3, 3, 2)		3 row(s) affected	0.0013 sec
✓	21:57:13	INSERT INTO class (idclass, class_name, department, subject, student_idstudent, educator) VALUES (1, 'intro to biology', 3, 1, 1), (2, 'intro to mathematics', 2, 2, 3), (3, 'intro to business', 1, 3, 3, 2)		3 row(s) affected	0.0009 sec
✓	21:57:13	INSERT INTO class (idclass, class_name, department, subject, student_idstudent, educator) VALUES (1, 'intro to biology', 3, 1, 1), (2, 'intro to mathematics', 2, 2, 3), (3, 'intro to business', 1, 3, 3, 2)		3 row(s) affected	0.0011 sec
✓	21:57:13	INSERT INTO techEngineer (idtechEngineer, employee) VALUES (1, 3), (2, 4), (3, 6)		3 row(s) affected	0.00089 sec
✓	21:57:13	INSERT INTO techEngineer (idtechEngineer, employee) VALUES (1, 'k@mail.sfsu.edu', 1), (2, 'lovelearnt', 'www.sfsu.edu', 2, 2, 2), (3, 'byemath', 'www.sfsu.edu', 3, 3, 3)		5 row(s) affected	0.00093 sec
✓	21:57:13	INSERT INTO techSupport (idtechSupport, email, techEngineer) VALUES (1, 'kupsupport@mail.com', 2), (3, 'support@mail.com', 3)		3 row(s) affected	0.00088 sec
✓	21:57:13	INSERT INTO archive (idarchive, type) VALUES (1, 'SEMESTER'), (2, 'LIBRARY'), (3, 'TECH SUPPORT'), (4, 'TECHNOLOGY SUPPORT'), (5, 'UNIVERSITY')		5 row(s) affected	0.00093 sec
✓	21:57:13	INSERT INTO account (idaccount, user) VALUES (1, 1), (2, 1), (3, 1), (4, 1)		3 row(s) affected	0.00088 sec
✓	21:57:13	INSERT INTO grade (idgrade, educator, student) VALUES (1, 1, 1), (2, 1, 2), (3, 1, 3)		3 row(s) affected	0.00089 sec
✓	21:57:13	INSERT INTO resource (URL, class, semester, archive, library, techSupport, website) VALUES ('www.sfsu.edu/LIBRARY', 1, 1, 3, 1, 'www.sfsu.edu'), ('www.sfsu.edu/SEMESTERS', 1, 1, 2, 1, 'www.sfsu.edu'), ('www.sfsu.edu/TECHNO...', 1, 1, 2, 1, 'www.sfsu.edu')		3 row(s) affected	0.0012 sec

# Testing

✓	21:28:17	USE library0			
✓	21:28:17	UPDATE university SET university.name = "STANFORD UNIVERSITY" WHERE university.name = "UNIVERSITY OF SAN FRANCISCO"	0 row(s) affected	0.00013 sec	
✓	21:28:17	DELETE FROM website WHERE URL = "www.usf.edu"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00026 sec	
✓	4	21:28:17	UPDATE website SET URL = "www.stanford.edu" WHERE URL = "www.usf.edu"	0 row(s) affected	0.00014 sec
✓	5	21:28:17	UPDATE region SET region.zipcode = 42312 WHERE region.zipcode = 94365	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00014 sec
✓	6	21:28:17	DELETE FROM library WHERE library.name = "USF LIBRARY"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00013 sec
✓	7	21:28:17	UPDATE library SET library.name = "STANFORD LIBRARY" WHERE library.name = "SFCC LIBRARY"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00015 sec
✓	8	21:28:17	DELETE FROM book WHERE book.name = "hello world"	0 row(s) affected	0.000095 sec
✓	9	21:28:17	UPDATE book SET book.name = "giant panda" WHERE book.name = "bye world"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00017 sec
✓	10	21:28:17	DELETE FROM multimedia WHERE type = "ebook"	0 row(s) affected	0.00011 sec
✓	11	21:28:17	UPDATE multimedia SET type = "film" WHERE type = "video"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00011 sec
✓	12	21:28:17	DELETE FROM ebook WHERE genre = "horror"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.000093 sec
✓	13	21:28:17	UPDATE ebook SET ebook.genre = "sci-fi" WHERE ebook.genre = "fiction"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.000093 sec
✓	14	21:28:17	DELETE FROM author WHERE author.name = "kathy smith"	0 row(s) affected	0.00012 sec
✓	15	21:28:17	UPDATE author SET author.name = "miguel alias" WHERE author.name = "miguel paso"	1 row(s) affected Rows matched: 1 Changed: 1 Warn...	0.00044 sec
✓	16	21:28:17	DELETE FROM audio WHERE genre = "rock"	0 row(s) affected	0.00010 sec
✓	17	21:28:17	UPDATE audio SET genre = "pop" WHERE genre = "soft jazz"	1 row(s) affected Rows matched: 1 Changed: 1 Warn...	0.00070 sec
✓	18	21:28:17	DELETE FROM video WHERE video.name = "kiss me"	0 row(s) affected	0.000067 sec
✓	19	21:28:17	UPDATE video SET video.name = "walking life" WHERE video.name = "killing me softly"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.000083 sec
✓	20	21:28:17	UPDATE semester SET semester_season = "WINTER" WHERE semester_season = "SPRING"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.000092 sec
✓	21	21:28:17	UPDATE student SET student.name = "KELLY TAN" WHERE student.name = "JOEY CEDO"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00011 sec
✓	22	21:28:17	UPDATE employee SET employee.type = "PROFESSOR" WHERE employee.type = "PROFESSOR"	0 row(s) affected Rows matched: 3 Changed: 0 War...	0.00012 sec
✓	23	21:28:17	UPDATE educator SET educator.email = "valentinesf.edu" WHERE educator.email = "k@mail.sfsu...	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00016 sec
✓	24	21:28:17	DELETE FROM electronic WHERE idelectronic = 2	0 row(s) affected	0.00010 sec
✓	25	21:28:17	UPDATE electronic SET idelectronic = 7 WHERE idelectronic = 3	1 row(s) affected Rows matched: 1 Changed: 1 Warn...	0.00066 sec
✓	26	21:28:17	DELETE FROM college WHERE college.name = "PHYSICS"	0 row(s) affected	0.000095 sec
✓	27	21:28:17	UPDATE college SET college.name = "SCIENCE" WHERE college.name = "SCIENCES"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00010 sec
✓	28	21:28:17	UPDATE department SET department.name = "HEALTH SCIENCES" WHERE department.name = "BIOLOGY"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00011 sec
✓	29	21:28:17	UPDATE subject SET idsubject = 4 WHERE idsubject = 3	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00014 sec
✓	30	21:28:17	UPDATE class SET class.name = "MATH 101" WHERE class.name = "Intro to mathematics"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00011 sec
✓	31	21:28:17	DELETE FROM user WHERE user.name = "kproff"	0 row(s) affected	0.00019 sec
✓	32	21:28:17	UPDATE user SET user.name = "greatness" WHERE user.name = "love2learn"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00014 sec
✓	33	21:28:17	UPDATE support SET support.email = "jopsupport@mail.com" WHERE email = "jopsupport@mail.com"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00016 sec
✓	34	21:28:17	DELETE FROM archive WHERE type = "CLASS"	0 row(s) affected	0.00056 sec
✓	35	21:28:17	UPDATE archive SET type = "CLASS" WHERE type = "UNIVERSITY"	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00011 sec
✓	36	21:28:17	DELETE FROM account WHERE idaccount = 1	0 row(s) affected	0.000067 sec
✓	37	21:28:17	UPDATE account SET idaccount = 4 WHERE idaccount = 2	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00011 sec
✓	38	21:28:17	DELETE FROM grade WHERE idgrade = 1	0 row(s) affected	0.000096 sec
✓	39	21:28:17	UPDATE grade SET idgrade = 4 WHERE idgrade = 2	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00011 sec
✓	40	21:28:17	DELETE FROM resource WHERE archive = 3	0 row(s) affected	0.000093 sec
✓	41	21:28:17	UPDATE resource SET class = 2 WHERE class = 1	0 row(s) affected Rows matched: 0 Changed: 0 War...	0.00013 sec

## Testing Table

ENTITY	SQL QUERY	OK/ FAIL	ERROR DESCRIPTION	POSSIBLE SOLUTION
University	DELETE	PASS	N/A	N/A
University	UPDATE	PASS	N/A	N/A
Website	DELETE	PASS	N/A	N/A
Website	UPDATE	PASS	N/A	N/A
Region	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
Region	UPDATE	PASS	N/A	N/A
Library	DELETE	PASS	N/A	N/A
Library	UPDATE	PASS	N/A	N/A
Book	DELETE	PASS	N/A	N/A
Book	UPDATE	PASS	N/A	N/A
Multimedia	DELETE	PASS	N/A	N/A
Multimedia	UPDATE	PASS	N/A	N/A
Ebook	DELETE	PASS	N/A	N/A
Ebook	UPDATE	PASS	N/A	N/A
Author	DELETE	PASS	N/A	N/A
Author	UPDATE	PASS	N/A	N/A
Audio	DELETE	PASS	N/A	N/A
Audio	UPDATE	PASS	N/A	N/A
Video	DELETE	PASS	N/A	N/A
Video	UPDATE	PASS	N/A	N/A
Semester	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
Semester	UPDATE	PASS	N/A	N/A
Student	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
Student	UPDATE	PASS	N/A	N/A
Employee	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
Employee	UPDATE	PASS	N/A	N/A

Educator	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
Educator	UPDATE	PASS	N/A	N/A
Electronic	DELETE	PASS	N/A	N/A
Electronic	UPDATE	PASS	N/A	N/A
College	DELETE	PASS	N/A	N/A
College	UPDATE	PASS	N/A	N/A
Department	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
Department	UPDATE	PASS	N/A	N/A
Subject	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
Subject	UPDATE	PASS	N/A	N/A
Class	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
Class	UPDATE	PASS	N/A	N/A
techEngr.	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
techEngr.	UPDATE	FAIL	Cannot delete or update parent row	Set to on cascade
User	DELETE	PASS	N/A	N/A
User	UPDATE	PASS	N/A	N/A
techSupp.	DELETE	FAIL	Cannot delete or update parent row	Set to on cascade
techSupp.	UPDATE	PASS	N/A	N/A
Archive	DELETE	PASS	N/A	N/A
Archive	UPDATE	PASS	N/A	N/A
Account	DELETE	PASS	N/A	N/A
Account	UPDATE	PASS	N/A	N/A
Grade	DELETE	PASS	N/A	N/A
Grade	UPDATE	PASS	N/A	N/A
Resource	DELETE	PASS	N/A	N/A
Resource	UPDATE	PASS	N/A	N/A