

REPORT

1. A) database server:

Database server

- Server: Localhost via UNIX socket
- Server type: MariaDB
- Server connection: SSL is not being used ⓘ
- Server version: 10.4.28–MariaDB – Source distribution
- Protocol version: 10
- User: root@localhost
- Server charset: UTF–8 Unicode (utf8mb4)

Web server

- Apache/2.4.56 (Unix) OpenSSL/1.1.1t PHP/8.2.4 mod_perl/2.0.12 Perl/v5.34.1
- Database client version: libmysql – mysqlnd 8.2.4
- PHP extension: mysqli ⓘ curl ⓘ mbstring ⓘ
- PHP version: 8.2.4

All query runs on the web version of XAMPP

2. A) Table schema

* Our schema design has been modified due to changes in overall structure and design. The schemas shown in this report are the updated tables in our current design.

DESC Course;

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

Extra options

Field	Type	Null	Key	Default	Extra
course_id	varchar(30)	NO	PRI	NULL	
title	varchar(100)	NO		NULL	
credits	int(1)	NO		NULL	
course_description	text	YES		NULL	
prerequisites	text	YES		NULL	

DESC Instructor;

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

Extra options

Field	Type	Null	Key	Default	Extra
instructor_id	int(11)	NO	PRI	NULL	
first_name	varchar(100)	NO		NULL	
last_name	varchar(100)	NO		NULL	

DESC Section;

[\[Edit inline \]](#) [\[Edit \]](#) [\[Create PHP code \]](#)

Extra options

Field	Type	Null	Key	Default	Extra
section_id	int(11)	NO	PRI	NULL	
course_id	varchar(30)	NO	MUL	NULL	
instructor_id	int(11)	NO	MUL	NULL	
section_type	enum('Lecture','Lab')	NO		NULL	
campus	enum('Washington Square','Brooklyn Campus')	NO		NULL	

DESC Meeting_Time;

[\[Edit inline \]](#) [\[Edit \]](#) [\[Create PHP code \]](#)

Extra options

Field	Type	Null	Key	Default	Extra
meeting_id	int(11)	NO	PRI	NULL	
section_id	int(11)	YES	MUL	NULL	
day_of_week	enum('M','T','W','TR','F','TBA')	NO		NULL	
start_time	time	YES		NULL	
end_time	time	YES		NULL	
meeting_location	varchar(40)	YES		NULL	

DESC Users;

[\[Edit inline \]](#) [\[Edit \]](#) [\[Create PHP code \]](#)

Extra options

Field	Type	Null	Key	Default	Extra
user_id	int(11)	NO	PRI	NULL	auto_increment
username	varchar(20)	NO		NULL	
password_hash	varchar(255)	NO		NULL	

DESC User_Selection;

[\[Edit inline \]](#) [\[Edit \]](#) [\[Create PHP code \]](#)

Extra options

Field	Type	Null	Key	Default	Extra
user_id	int(11)	NO	PRI	NULL	
course_id	varchar(30)	NO	PRI	NULL	
instructor_id	int(11)	NO	PRI	NULL	

DESC Review;

[\[Edit inline \]](#) [\[Edit \]](#) [\[Create PHP code \]](#)

Extra options

Field	Type	Null	Key	Default	Extra
user_id	int(11)	NO	PRI	NULL	
course_id	varchar(30)	NO	PRI	NULL	
instructor_id	int(11)	NO	PRI	NULL	
rating	int(11)	NO		NULL	
comment	text	YES		NULL	
created_at	timestamp	NO		current_timestamp()	on update current_timestamp()

DESC Course_Instructor;

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

Extra options

Field	Type	Null	Key	Default	Extra
course_id	varchar(30)	NO	PRI	NULL	
instructor_id	int(11)	NO	PRI	NULL	
review_sum	int(11)	YES		0	
review_count	int(11)	YES		0	

Query results operations

B)

SELECT Count(*) FROM Course;

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 Filter rows:

Extra options

Count(*)

12

SELECT COUNT(*) FROM Instructor;

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

Extra options

COUNT(*)

13

SELECT COUNT(*) FROM Section;

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

Extra options

COUNT(*)

15

```
SELECT COUNT(*) FROM Meeting_Time;
```

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Extra options

COUNT(*)

19

```
SELECT COUNT(*) FROM Users;
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

Extra options

COUNT(*)

18

```
SELECT COUNT(*) FROM User_Selection;
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

Extra options

COUNT(*)

18

```
SELECT COUNT(*) FROM Review;
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

Extra options

COUNT(*)

18

```
SELECT COUNT(*) FROM Course_Instructor;
```

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Extra options

COUNT(*)

10

3.

SELECT * FROM Course;

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☒ Show all | Number of rows: All | Filter rows: Search this table | Sort by key: None

Extra options

	course_id	title	credits	course_description	prerequisites
<input type="checkbox"/> Edit Copy Delete	CS-UY 2204 ECE-UY 2204	Digital Logic and State Machine Design	4	This course covers combinational and sequential di...	CS-UY 1114(C- at least)or CS-UY 1133(C- at least)
<input type="checkbox"/> Edit Copy Delete	CS-UY 3224 CS-UY 3224G	Intro to Operating Systems	4	This course studies the fundamental concepts and p...	Prerequisites for Brooklyn Students: CS-UY 2214 AN...
<input type="checkbox"/> Edit Copy Delete	CS-UY 4543	Human Computer Interaction	3	Designing a successful interactive experience or s...	None
<input type="checkbox"/> Edit Copy Delete	CS-UY 4793 CS-UY 4793G	Computer Networking	3	This course takes a top-down approach to computer ...	Prerequisite for Brooklyn Students: (CS-UY 2134 or...
<input type="checkbox"/> Edit Copy Delete	CSCI-UA 101	Intro to Computer Science	4	Foundational course on cs.	NULL
<input type="checkbox"/> Edit Copy Delete	CSCI-UA 102	Data Structures	4	Arrays, linked lists, trees, graphs.	CSCI-UA 101
<input type="checkbox"/> Edit Copy Delete	CSCI-UA 430	Agile Software Development and DevOps	4	Agile software development has come to describe a ...	CSCI-UA 201
<input type="checkbox"/> Edit Copy Delete	CSCI-UA 469	Natural Language Processing	4	Natural Language Processing applies computational ...	NULL
<input type="checkbox"/> Edit Copy Delete	CSCI-UA 475	Predictive Analytics	4	Predictive analytics is the art and science of ext...	NULL
<input type="checkbox"/> Edit Copy Delete	ECE-UY 1002	Introduction to Electrical and Computer Engineerin...	2	This course introduces numerous subject areas in E...	First-year standing
<input type="checkbox"/> Edit Copy Delete	ECE-UY 345X	Undergraduate Research in Electrical and Computer ...	1	The student will conduct research with the guidanc...	Contact rtoth@nyu.edu for permission
<input type="checkbox"/> Edit Copy Delete	MATH-UA 121	Calculus I	4	Limits, derivatives, and integrals.	NULL

Console

Press Ctrl+Enter to execute queries

Bookmarks Options History Clear

SELECT * FROM Instructor;

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☒ Show all | Number of rows: All | Filter rows: Search this table | Sort by key: None

Extra options

	instructor_id	first_name	last_name
<input type="checkbox"/> Edit Copy Delete	28934	Azeez	Bhavnagarwala
<input type="checkbox"/> Edit Copy Delete	32241	Gustavo	Sandoval
<input type="checkbox"/> Edit Copy Delete	38394	TBD	TBD
<input type="checkbox"/> Edit Copy Delete	39493	Matthew	Campisi
<input type="checkbox"/> Edit Copy Delete	45431	Raymond	Lutzky
<input type="checkbox"/> Edit Copy Delete	45432	Nitesh	Goyal
<input type="checkbox"/> Edit Copy Delete	47931	Lucas	O'Rourke
<input type="checkbox"/> Edit Copy Delete	142857142	Amos	Bloomberg
<input type="checkbox"/> Edit Copy Delete	142890983	Michael Joseph	Stahl
<input type="checkbox"/> Edit Copy Delete	213094198	David	Daniels
<input type="checkbox"/> Edit Copy Delete	285714285	Ahmad	Emad
<input type="checkbox"/> Edit Copy Delete	391689143	Yitzchak	Schwartz
<input type="checkbox"/> Edit Copy Delete	428571428	Adam	Meyers

SELECT * FROM Section;

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all

Number of rows:

25














































Filter rows:

Search this table

Sort by key:

None

Extra options

				section_id	course_id	instructor_id	section_type	campus
<input type="checkbox"/>	 Edit	 Copy	 Delete	12239	CS-UY 2204 ECE-UY 2204	28934	Lab	Brooklyn Campus
<input type="checkbox"/>	 Edit	 Copy	 Delete	12240	CS-UY 2204 ECE-UY 2204	28934	Lab	Brooklyn Campus
<input type="checkbox"/>	 Edit	 Copy	 Delete	12241	CS-UY 2204 ECE-UY 2204	28934	Lab	Brooklyn Campus
<input type="checkbox"/>	 Edit	 Copy	 Delete	12243	CS-UY 2204 ECE-UY 2204	28934	Lecture	Brooklyn Campus
<input type="checkbox"/>	 Edit	 Copy	 Delete	12275	ECE-UY 1002	39493	Lecture	Brooklyn Campus
<input type="checkbox"/>	 Edit	 Copy	 Delete	111111	CSCI-UA 430	142857142	Lecture	Washington Square
<input type="checkbox"/>	 Edit	 Copy	 Delete	134867	CSCI-UA 101	142890983	Lab	Washington Square
<input type="checkbox"/>	 Edit	 Copy	 Delete	222222	CSCI-UA 469	428571428	Lecture	Washington Square
<input type="checkbox"/>	 Edit	 Copy	 Delete	222223	CSCI-UA 469	428571428	Lecture	Washington Square
<input type="checkbox"/>	 Edit	 Copy	 Delete	310947	CSCI-UA 101	213094198	Lecture	Washington Square
<input type="checkbox"/>	 Edit	 Copy	 Delete	322411	CS-UY 3224 CS-UY 3224G	32241	Lecture	Brooklyn Campus
<input type="checkbox"/>	 Edit	 Copy	 Delete	454311	CS-UY 4543	45431	Lecture	Brooklyn Campus
<input type="checkbox"/>	 Edit	 Copy	 Delete	454312	CS-UY 4543	45432	Lecture	Brooklyn Campus
<input type="checkbox"/>	 Edit	 Copy	 Delete	458299	CSCI-UA 101	391689143	Lecture	Washington Square
<input type="checkbox"/>	 Edit	 Copy	 Delete	479311	CS-UY 4793 CS-UY 4793G	47931	Lecture	Brooklyn Campus

SELECT * FROM Section;

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all

Number of rows:

25

Filter rows:

Search this table

Sort by key:

None

Extra options

				section_id	course_id	instructor_id	section_type	campus
<input type="checkbox"/>	Edit	Copy	Delete	12239	CS-UY 2204 ECE-UY 2204	28934	Lab	Brooklyn Campus
<input type="checkbox"/>	Edit	Copy	Delete	12240	CS-UY 2204 ECE-UY 2204	28934	Lab	Brooklyn Campus
<input type="checkbox"/>	Edit	Copy	Delete	12241	CS-UY 2204 ECE-UY 2204	28934	Lab	Brooklyn Campus
<input type="checkbox"/>	Edit	Copy	Delete	12243	CS-UY 2204 ECE-UY 2204	28934	Lecture	Brooklyn Campus
<input type="checkbox"/>	Edit	Copy	Delete	12275	ECE-UY 1002	39493	Lecture	Brooklyn Campus
<input type="checkbox"/>	Edit	Copy	Delete	111111	CSCI-UA 430	142857142	Lecture	Washington Square
<input type="checkbox"/>	Edit	Copy	Delete	134867	CSCI-UA 101	142890983	Lab	Washington Square
<input type="checkbox"/>	Edit	Copy	Delete	222222	CSCI-UA 469	428571428	Lecture	Washington Square
<input type="checkbox"/>	Edit	Copy	Delete	222223	CSCI-UA 469	428571428	Lecture	Washington Square
<input type="checkbox"/>	Edit	Copy	Delete	310947	CSCI-UA 101	213094198	Lecture	Washington Square
<input type="checkbox"/>	Edit	Copy	Delete	322411	CS-UY 3224 CS-UY 3224G	32241	Lecture	Brooklyn Campus
<input type="checkbox"/>	Edit	Copy	Delete	454311	CS-UY 4543	45431	Lecture	Brooklyn Campus
<input type="checkbox"/>	Edit	Copy	Delete	454312	CS-UY 4543	45432	Lecture	Brooklyn Campus
<input type="checkbox"/>	Edit	Copy	Delete	458299	CSCI-UA 101	391689143	Lecture	Washington Square
<input type="checkbox"/>	Edit	Copy	Delete	479311	CS-UY 4793 CS-UY 4793G	47931	Lecture	Brooklyn Campus

<input type="checkbox"/>	Edit	Copy	Delete	4793112	479311 W	17:00:00	18:20:00	2 MetroTech Center Room 801
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SELECT * FROM Users;

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: | Filter rows: | Sort by key:

Extra options

			user_id	username	password_hash	
<input type="checkbox"/>	Edit	Copy	Delete	83873	vickyA	344a0796ca0712be797c8bc103ea12a6
<input type="checkbox"/>	Edit	Copy	Delete	83874	vickyB	102ff968587291ba27ef40cac6e8b65f
<input type="checkbox"/>	Edit	Copy	Delete	83875	vickyC	505b2486f7317215f28da6c419bbdeb1
<input type="checkbox"/>	Edit	Copy	Delete	83876	aronD	c81b9e830f6a29f82631626f376451e5
<input type="checkbox"/>	Edit	Copy	Delete	83877	aronE	e8f3b2a5d1c4f9e0b7a6d5c4b3a2d1e0
<input type="checkbox"/>	Edit	Copy	Delete	83878	aronF	a1b2c3d4e5f678901234567890abcdef
<input type="checkbox"/>	Edit	Copy	Delete	83879	aronG	1f3e7c2d9a6b58e4f0d9c8b7a6e5f4d3
<input type="checkbox"/>	Edit	Copy	Delete	83880	aronH	2e4d8a1c6b9e0f5d7a8b9c0d1e2f3a4b
<input type="checkbox"/>	Edit	Copy	Delete	83881	aronI	3a5c9b2d7e0f1a6d8b9c0e1f2a3b4c5d
<input type="checkbox"/>	Edit	Copy	Delete	83882	aronJ	d4e2f1c3b5a90786543210fedcba9876
<input type="checkbox"/>	Edit	Copy	Delete	83883	aronK	a7b8c9d0e1f2345678901234567890ab
<input type="checkbox"/>	Edit	Copy	Delete	83884	aronL	f0e9d8c7b6a543210123456789abcdef
<input type="checkbox"/>	Edit	Copy	Delete	1111111	sky_dragon	Skydragon4321?!
<input type="checkbox"/>	Edit	Copy	Delete	12394712	alice	alice1234!
<input type="checkbox"/>	Edit	Copy	Delete	2222222	flame_demon	Flamedemon4321?
<input type="checkbox"/>	Edit	Copy	Delete	3333333	guy	guy4321?
<input type="checkbox"/>	Edit	Copy	Delete	34597234	lisa	lisa1234!
<input type="checkbox"/>	Edit	Copy	Delete	43529843	sam	sam1234!

SELECT * FROM User_Selection;

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: | Filter rows: | Sort by key:

Extra options

				user_id	course_id	instructor_id
<input type="checkbox"/>				83873	CS-UY 2204 ECE-UY 2204	28934
<input type="checkbox"/>				83873	ECE-UY 1002	39493
<input type="checkbox"/>				83874	ECE-UY 345X	38394
<input type="checkbox"/>				83876	CS-UY 4543	45432
<input type="checkbox"/>				83877	ECE-UY 1002	39493
<input type="checkbox"/>				83878	CS-UY 2204 ECE-UY 2204	28934
<input type="checkbox"/>				83879	CS-UY 3224 CS-UY 3224G	32241
<input type="checkbox"/>				83880	CS-UY 3224 CS-UY 3224G	32241
<input type="checkbox"/>				83881	CS-UY 3224 CS-UY 3224G	32241
<input type="checkbox"/>				83882	CS-UY 4793 CS-UY 4793G	47931
<input type="checkbox"/>				83883	CS-UY 4793 CS-UY 4793G	47931
<input type="checkbox"/>				83884	CS-UY 4793 CS-UY 4793G	47931
<input type="checkbox"/>				1111111	CSCI-UA 430	142857142
<input type="checkbox"/>				12394712	CSCI-UA 101	213094198
<input type="checkbox"/>				2222222	CSCI-UA 430	142857142
<input type="checkbox"/>				2222222	CSCI-UA 469	428571428
<input type="checkbox"/>				34597234	MATH-UA 121	391689143
<input type="checkbox"/>				43529843	CSCI-UA 102	142890983

SELECT * FROM Review;

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Extra options

		user_id	course_id	instructor_id	rating	comment	created_at
<input type="checkbox"/>	Edit Copy Delete	83873	CS-UY 2204 ECE-UY 2204	28934	5	I like this course	2025-11-07 11:59:00
<input type="checkbox"/>	Edit Copy Delete	83873	ECE-UY 1002	39493	3	nice course, but hard	2025-11-07 10:32:00
<input type="checkbox"/>	Edit Copy Delete	83874	CS-UY 2204 ECE-UY 2204	28934	1	terrible	2025-11-07 09:59:00
<input type="checkbox"/>	Edit Copy Delete	83876	CS-UY 4543	45432	4	The online component was flexible.	2025-01-25 15:00:00
<input type="checkbox"/>	Edit Copy Delete	83877	ECE-UY 1002	39493	5	Very engaging instructor.	2025-02-10 09:00:00
<input type="checkbox"/>	Edit Copy Delete	83878	CS-UY 2204 ECE-UY 2204	28934	3	Solid material.	2025-02-15 14:00:00
<input type="checkbox"/>	Edit Copy Delete	83879	CS-UY 3224 CS-UY 3224G	32241	5	Excellent content.	2025-03-01 10:00:00
<input type="checkbox"/>	Edit Copy Delete	83880	CS-UY 3224 CS-UY 3224G	32241	2	The pace was too fast.	2025-03-05 14:30:00
<input type="checkbox"/>	Edit Copy Delete	83881	CS-UY 3224 CS-UY 3224G	32241	4	Requires a lot of background knowledge.	2025-03-10 16:00:00
<input type="checkbox"/>	Edit Copy Delete	83882	CS-UY 4793 CS-UY 4793G	47931	5	The networking labs were insightful.	2025-04-01 11:30:00
<input type="checkbox"/>	Edit Copy Delete	83883	CS-UY 4793 CS-UY 4793G	47931	4	Instructor explained TCP congestion control very c...	2025-04-05 09:00:00
<input type="checkbox"/>	Edit Copy Delete	83884	CS-UY 4793 CS-UY 4793G	47931	3	The theory felt a bit heavy at times.	2025-04-10 15:45:00
<input type="checkbox"/>	Edit Copy Delete	1111111	CSCI-UA 101	213094198	5	This course is very good. Would recommend	2025-05-15 09:30:00
<input type="checkbox"/>	Edit Copy Delete	12394712	CSCI-UA 101	213094198	5	amazing and helpful.	2023-05-15 09:30:00
<input type="checkbox"/>	Edit Copy Delete	22222222	MATH-UA 121	142890983	1	Terrible. A tremendous waste of time.	2025-05-16 14:22:00
<input type="checkbox"/>	Edit Copy Delete	33333333	CSCI-UA 469	428571428	4	Decent course. I learned a lot..	2025-10-20 11:00:00
<input type="checkbox"/>	Edit Copy Delete	34597234	CSCI-UA 102	391689143	4	challenging but rewarding, professor was very supp...	2023-12-20 11:00:00
<input type="checkbox"/>	Edit Copy Delete	43529843	MATH-UA 121	142890983	4	great lecturer, exams are tough.	2023-05-16 14:22:00

Console Bookmarks Options History Clear

SELECT * FROM Course_Instructor;

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Extra options

		course_id	instructor_id	review_sum	review_count
<input type="checkbox"/>	Edit Copy Delete	CS-UY 2204 ECE-UY 2204	28934	9	3
<input type="checkbox"/>	Edit Copy Delete	CS-UY 3224 CS-UY 3224G	32241	11	3
<input type="checkbox"/>	Edit Copy Delete	CS-UY 4543	45432	4	1
<input type="checkbox"/>	Edit Copy Delete	CS-UY 4793 CS-UY 4793G	47931	12	3
<input type="checkbox"/>	Edit Copy Delete	CSCI-UA 101	213094198	10	2
<input type="checkbox"/>	Edit Copy Delete	CSCI-UA 102	391689143	4	1
<input type="checkbox"/>	Edit Copy Delete	CSCI-UA 430	142857142	9	2
<input type="checkbox"/>	Edit Copy Delete	CSCI-UA 469	428571428	4	1
<input type="checkbox"/>	Edit Copy Delete	ECE-UY 1002	39493	8	2
<input type="checkbox"/>	Edit Copy Delete	MATH-UA 121	142890983	5	2

↑ ☐ Check all With selected: Edit Copy Delete Export

4. Commands

A)

```
--CREATE table
create Table Course(
course_id VARCHAR(30),
```



```
title VARCHAR(100) NOT NULL,  
  
credits INT(1) NOT NULL,  
  
course_description TEXT,  
  
prerequisites TEXT,  
  
Primary Key (course_id)  
  
);  
  
CREATE TABLE Instructor (  
  
instructor_id INT PRIMARY KEY,  
  
first_name VARCHAR(100) NOT NULL,  
  
last_name VARCHAR(100) NOT NULL  
  
);
```

```
create Table Section(  
  
section_id INT,  
  
course_id VARCHAR(30) NOT NULL,  
  
instructor_id INT NOT NULL,  
  
section_type ENUM('Lecture', 'Lab') NOT NULL,  
  
campus ENUM('Washington Square', 'Brooklyn Campus') NOT NULL,  
  
Primary Key (section_id),  
  
FOREIGN KEY (course_id) REFERENCES Course(course_id),  
  
FOREIGN KEY (instructor_id) REFERENCES Instructor(instructor_id)  
  
);
```

```
CREATE TABLE Users (  
  
user_id INT AUTO_INCREMENT NOT NULL,  
  
username VARCHAR(20) NOT NULL,  
  
password_hash VARCHAR(255) NOT NULL,  
  
PRIMARY KEY(user_id)  
  
);
```

```
CREATE TABLE Review (  
  
user_id INT,  
  
course_id VARCHAR(30),  
  
instructor_id INT,  
  
rating INT NOT NULL CHECK (rating >= 0 AND rating <= 5),  
  
comment TEXT,  
  
created_at TIMESTAMP NOT NULL,  
  
PRIMARY KEY (user_id, course_id, instructor_id),  
  
FOREIGN KEY(user_id) REFERENCES Users(user_id)  
  
);
```

```
CREATE TABLE User_Selection (  
  
user_id INT,  
  
course_id VARCHAR(30),  
  
instructor_id INT,  
  
FOREIGN KEY(user_id) REFERENCES Users(user_id),
```

```
FOREIGN KEY(course_id) REFERENCES Course(course_id),  
  
FOREIGN KEY(instructor_id) REFERENCES Instructor(instructor_id),  
  
PRIMARY KEY (user_id, course_id, instructor_id)  
  
);
```

```
create Table Meeting_Time(  
  
meeting_id INT,  
  
section_id INT,  
  
day_of_week ENUM('M', 'T', 'W', 'TR', 'F', 'TBA') NOT NULL,  
  
start_time TIME,  
  
end_time TIME,  
  
meeting_location VARCHAR(40),  
  
Primary Key (meeting_id),  
  
FOREIGN KEY (section_id) REFERENCES Section(section_id)  
  
);
```

```
-- new Table to track average review
```

```
create Table Course_Instructor(  
  
course_id VARCHAR(30),  
  
instructor_id INT,  
  
review_sum INT DEFAULT 0,  
  
review_count INT DEFAULT 0,
```

```
PRIMARY KEY (course_id, instructor_id),  
  
FOREIGN KEY (course_id, instructor_id)  
)
```

```
--INSERT DATA  
  
INSERT INTO Users (user_id, username, password_hash) VALUES  
  
(12394712, 'alice', 'alice1234!'),  
  
(43529843, 'sam', 'sam1234!'),  
  
(34597234, 'lisa', 'lisa1234!');
```

```
INSERT INTO Instructor (instructor_id, first_name, last_name) VALUES  
  
(213094198, 'David', 'Daniels'),  
  
(142890983, 'Michael Joseph', 'Stahl'),  
  
(391689143, 'Yitzchak', 'Schwartz');
```

```
INSERT INTO Course (course_id, title, credits, course_description,  
prerequisites) VALUES  
  
( 'CSCI-UA 101', 'Intro to Computer Science', 4, 'Foundational course on cs.',  
NULL),  
  
( 'CSCI-UA 102', 'Data Structures', 4, 'Arrays, linked lists, trees, graphs.',  
'CSCI-UA 101'),  
  
( 'MATH-UA 121', 'Calculus I', 4, 'Limits, derivatives, and integrals.', NULL);
```

```
INSERT INTO Section (section_id, course_id, instructor_id, section_type, campus) VALUES
```

```
(310947, 'CSCI-UA 101', 213094198, 'Lecture', 'Washington Square'),
```

```
(134867, 'CSCI-UA 101', 142890983, 'Lab', 'Washington Square'),
```

```
(458299, 'CSCI-UA 101', 391689143, 'Lecture', 'Washington Square');
```

```
INSERT INTO Meeting_Time (meeting_id, section_id, day_of_week, start_time, end_time, meeting_location) VALUES
```

```
(3001, 310947, 'W', '11:00:00', '12:15:00', 'SILV 406'),
```

```
(3002, 134867, 'W', '12:30:00', '13:45:00', 'TISC LC3'),
```

```
(3003, 458299, 'TR', '08:00:00', '09:15:00', 'SILV 206');
```

```
INSERT INTO User_Selection (user_id, course_id, instructor_id) VALUES
```

```
(12394712, 'CSCI-UA 101', 213094198),
```

```
(43529843, 'CSCI-UA 102', 142890983),
```

```
(34597234, 'MATH-UA 121', 391689143);
```

```
INSERT INTO Review (user_id, course_id, instructor_id, rating, comment, created_at) VALUES
```

```
(12394712, 'CSCI-UA 101', 213094198, 5, 'amazing and helpful.', '2023-05-15 09:30:00'),
```

```
(43529843, 'MATH-UA 121', 142890983, 4, 'great lecturer, exams are tough.', '2023-05-16 14:22:00'),
```

```
(34597234, 'CSCI-UA 102', 391689143, 4, 'challenging but rewarding,  
professor was very supportive.', '2023-12-20 11:00:00');
```

```
INSERT INTO Users (user_id, username, password_hash) VALUES  
(11111111, 'sky_dragon', 'Skydragon4321?!'),  
(22222222, 'flame_demon', 'Flamedemon4321?'),  
(33333333, 'guy', 'guy4321?');
```

```
INSERT INTO Instructor (instructor_id, first_name, last_name) VALUES  
(142857142, 'Amos', 'Bloomberg'),  
(428571428, 'Adam', 'Meyers'),  
(285714285, 'Ahmad', 'Emad');
```

```
INSERT INTO Course (course_id, title, credits, course_description,  
prerequisites) VALUES  
( 'CSCI-UA 430', 'Agile Software Development and DevOps', 4, "Agile software  
development has come to describe a specific approach and toolset that allow  
for the requirements of a software project to change as a project progresses  
without disrupting schedules, budgets, and responsibilities. The field of  
DevOps, a portmanteau of development and operations has introduced  
further processes and infrastructure to automate many of the tasks required in  
such development. Together, Agile's methodology and DevOps' automation  
have increased the speed, robustness, and scalability with which software is  
developed today. Upon completion of this course, students will understand the
```


core methodologies, technologies, and tools used in the software industry today.", 'CSCI-UA 201'),

('CSCI-UA 469', 'Natural Language Processing', 4, 'Natural Language Processing applies computational and linguistic knowledge to the processing of natural languages (English, Chinese, Spanish, Japanese). Applications include: machine translation, information extraction, information retrieval, and others. On the one hand, the class will include the modeling and representation of linguistic phenomena. On the other, it will cover methods for applying this knowledge using both manual rules and machine learning. Sample topics include: formal languages, hidden Markov models, part of speech tagging, vector-based methods, shallow and full parsing, semantic role labeling, information extraction and machine translation. Students will complete programming assignments (POS-tagging, Information Extraction, etc.) and group final projects.', [NULL](#)),

('CSCI-UA 475', 'Predictive Analytics ', 4, 'Predictive analytics is the art and science of extracting useful information from historical data and present data for the purpose of predicting future trends. In this course, students will be introduced to the phases of the analytics life-cycle and will gain an understanding of a variety of tools and machine learning algorithms for analyzing data and discovering forward insights. Several techniques will be introduced including: data preprocessing techniques, data reduction

algorithms, data clustering algorithms, data classification algorithms, uplifting algorithms, association rules, data mining algorithms, recommender systems, and more. This course aims to provide students with skills of the new generation of data scientists that will allow them to structure, analyze and derive useful insights from data that could help make better decisions.',
NULL);

```
INSERT INTO Section (section_id, course_id, instructor_id, section_type,
campus) VALUES
(111111, 'CSCI-UA 430', 142857142, 'Lecture', 'Washington Square'),
(222222, 'CSCI-UA 469', 428571428, 'Lecture', 'Washington Square'),
(222223, 'CSCI-UA 469', 428571428, 'Lecture', 'Washington Square');
```

```
INSERT INTO Meeting_Time (meeting_id, section_id, day_of_week,
start_time, end_time, meeting_location) VALUES
(1001, 111111, 'TR', '12:30:00', '13:45:00', 'Online'),
(1002, 222222, 'TR', '11:00:00', '12:15:00', 'Silv 405'),
(1003, 222223, 'TR', '14:00:00', '15:15:00', 'Silv 408');
```

```
INSERT INTO User_Selection (user_id, course_id, instructor_id) VALUES
(22222222, 'CSCI-UA 469', 428571428),
(22222222, 'CSCI-UA 430', 142857142),
(11111111, 'CSCI-UA 430', 142857142);
```

```
INSERT INTO Review (user_id, course_id, instructor_id, rating, comment,
created_at) VALUES
(11111111, 'CSCI-UA 101', 213094198, 5, 'This course is very good. Would
recommend', '2025-05-15 09:30:00'),
(22222222, 'MATH-UA 121', 142890983, 1, 'Terrible. A tremendous waste of
time.', '2025-05-16 14:22:00'),
(33333333, 'CSCI-UA 469', 428571428, 4, 'Decent course. I learned a lot.',
'2025-10-20 11:00:00');
```

```
INSERT INTO Course (course_id, title, credits, course_description,
prerequisites)
VALUES
('CS-UY 2204 | ECE-UY 2204', 'Digital Logic and State Machine Design', 4,
'This course covers combinational and sequential digital circuits. Topics:
Introduction to digital systems. Number systems and binary arithmetic.
Switching algebra and logic design. Error detection and correction.
Combinational integrated circuits, including adders. Timing hazards.
Sequential circuits, flipflops, state diagrams and synchronous machine
synthesis. Programmable Logic Devices, PLA, PAL and FPGA. Finite-state
machine design. Memory elements. ', 'CS-UY 1114(C- at least)or CS-UY
1133(C- at least)'),
('ECE-UY 345X', 'Undergraduate Research in Electrical and Computer
Engineering', 1, 'The student will conduct research with the guidance of a
```

faculty member. A written report is required. This course may be repeated for up to a maximum of 6 credits.', 'Contact rtoth@nyu.edu for permission'), ('ECE-UY 1002', 'Introduction to Electrical and Computer Engineering', 2, 'This course introduces numerous subject areas in Electrical and Computer Engineering (power systems, electronics, computer networking, microprocessors, digital logic, embedded systems, communications, feedback control, and signal processing). ', 'First-year standing');

```
INSERT INTO Instructor (instructor_id, first_name, last_name)
```

```
VALUES
```

```
(28934, 'Azeez', 'Bhavnagarwala'),
```

```
(38394, 'TBD', 'TBD'),
```

```
(39493, 'Matthew', 'Campisi');
```

```
INSERT INTO Section (section_id, course_id, instructor_id, section_type, campus)
```

```
VALUES
```

```
(12243, 'CS-UY 2204 | ECE-UY 2204', 28934, 'Lecture', 'Brooklyn Campus'),
```

```
(12239, 'CS-UY 2204 | ECE-UY 2204', 28934, 'Lab', 'Brooklyn Campus'),
```

```
(12240, 'CS-UY 2204 | ECE-UY 2204', 28934, 'Lab', 'Brooklyn Campus'),
```

```
(12241, 'CS-UY 2204 | ECE-UY 2204', 28934, 'Lab', 'Brooklyn Campus'),
```

```
(12275, 'ECE-UY 1002', 39493, 'Lecture', 'Brooklyn Campus');
```

```
INSERT INTO Meeting_Time (meeting_id, section_id, day_of_week,
start_time, end_time, meeting_location)
VALUES
(73483, 12243, 'T', '14:00:00', '15:50:00', 'Jacobs Hall 6 Metrotech RM 474'),
(273984, 12243, 'T', '14:00:00', '15:50:00', 'Jacobs Hall 6 Metrotech RM 474'),
(172384, 12239, 'W', '14:00:00', '16:50:00', 'Jacobs Hall 6 Metrotech RM 227'),
(238949, 12240, 'TR', '17:00:00', '19:50:00', 'Jacobs Hall 6 Metrotech RM
227'),
(738648, 12241, 'F', '14:00:00', '16:50:00', 'Jacobs Hall 6 Metrotech RM 227'),
(253673, 12275, 'T', '14:00:00', '15:20:00', '5 MetroTech Center Room AUD'),
(253674, 12275, 'TR', '14:00:00', '15:20:00', '5 MetroTech Center Room
AUD');
```

```
INSERT INTO Users (user_id, username, password_hash)
VALUES
(83873, 'vickyA', '344a0796ca0712be797c8bc103ea12a6'),
(83874, 'vickyB', '102ff968587291ba27ef40cac6e8b65f'),
(83875, 'vickyC', '505b2486f7317215f28da6c419bbdeb1');
```

```
INSERT INTO User_Selection (user_id, course_id, instructor_id)
VALUES
(83873, 'CS-UY 2204 | ECE-UY 2204', 28934),
(83873, 'ECE-UY 1002', 39493),
```

```
(83874, 'ECE-UY 345X', 38394);
```

```
INSERT INTO Review (user_id, course_id, instructor_id, rating, comment,
created_at)
VALUES
(83873, 'CS-UY 2204 | ECE-UY 2204', 28934, 5, 'I like this course', '2025-11-
07 11:59:00'),
(83874, 'CS-UY 2204 | ECE-UY 2204', 28934, 1, 'terrible', '2025-11-07
09:59:00'),
(83873, 'ECE-UY 1002', 39493, 3, 'nice course, but hard', '2025-11-07
10:32:00');
```

```
INSERT INTO Course (course_id, title, credits, course_description,
prerequisites)
VALUES
('CS-UY 4543', 'Human Computer Interaction', 3,
'Designing a successful interactive experience or software system takes more
than technical savvy and vision--it also requires a deep understanding of how
to serve people"s needs and desires through the experience of the system,
and knowledge about how to weave this understanding into the development
process. This course introduces key topics and methods for creating and
evaluating human-computer interfaces/digital user experiences. Students
apply these practices to a system of their choosing. (I encourage application
```


to prototype systems that students are currently working on in other contexts, at any stage of development). The course builds toward a final write-up and presentation in which students detail how they tackled HCI/user experience design and evaluation of their system, and results from their investigations. Some experience creating/participating in the production of interactive experiences/software is recommended.', 'None'
);

```
INSERT INTO Instructor (instructor_id, first_name, last_name)
VALUES
(45431, 'Raymond', 'Lutzky'),
(45432, 'Nitesh', 'Goyal');
```

```
INSERT INTO Section (section_id, course_id, instructor_id, section_type,
campus)
VALUES
(454311, 'CS-UY 4543', 45431, 'Lecture', 'Brooklyn Campus'),
(454312, 'CS-UY 4543', 45432, 'Lecture', 'Brooklyn Campus');
```

```
INSERT INTO Meeting_Time (meeting_id, section_id, day_of_week,
start_time, end_time, meeting_location)
VALUES
```

```
(4543111, 454311, 'TBA', NULL, NULL, 'Online'),  
  
(4543121, 454312, 'W', '17:00:00', '19:30:00', 'Jacobs Hall, 6 Metrotech Room  
674');
```

```
INSERT INTO Users (user_id, username, password_hash)  
  
VALUES  
  
(83876, 'aronD', 'c81b9e830f6a29f82631626f376451e5'),  
  
(83877, 'aronE', 'e8f3b2a5d1c4f9e0b7a6d5c4b3a2d1e0'),  
  
(83878, 'aronF', 'a1b2c3d4e5f678901234567890abcdef');
```

```
INSERT INTO User_Selection (user_id, course_id, instructor_id)  
  
VALUES  
  
(83876, 'CS-UY 4543', 45432),  
  
(83877, 'ECE-UY 1002', 39493),  
  
(83878, 'CS-UY 2204 | ECE-UY 2204', 28934);
```

```
INSERT INTO Review (user_id, course_id, instructor_id, rating, comment,  
created_at)  
  
VALUES  
  
(83876, 'CS-UY 4543', 45432, 4, 'The online component was flexible.', '2025-  
01-25 15:00:00'),  
  
(83877, 'ECE-UY 1002', 39493, 5, 'Very engaging instructor.', '2025-02-10  
09:00:00'),
```

```
(83878, 'CS-UY 2204 | ECE-UY 2204', 28934, 3, 'Solid material.', '2025-02-15  
14:00:00');
```

```
INSERT INTO Course (course_id, title, credits, course_description,  
prerequisites)  
  
VALUES  
  
('CS-UY 3224 | CS-UY 3224G', 'Intro to Operating Systems', 4,  
  
'This course studies the fundamental concepts and principles of operating  
systems. Batch, spooling and multiprogramming systems are introduced. The  
parts of an operating system are described in terms of their functions,  
structure and implementation. Basic policies for allocating resources are  
discussed.',  
  
'Prerequisites for Brooklyn Students: CS-UY 2214 AND (CS-UY 2134 or CS-  
UY 1134) AND (CS-UY 2124 or CS-UY 1124) (C- or better). | Prerequisite for  
Abu Dhabi Students: (ENGR-UH 3510 or CS-UH 1050) (C- or better) AND  
(CS-UH 2010 or ENGR-UH 3511) | Prerequisites for Shanghai Students:  
CSCI-SHU 210 (C- or better) AND CENG-SHU 202'  
  
);
```

```
INSERT INTO Users (user_id, username, password_hash)  
  
VALUES  
  
(83879, 'aronG', '1f3e7c2d9a6b58e4f0d9c8b7a6e5f4d3'),
```

```
(83880, 'aronH', '2e4d8a1c6b9e0f5d7a8b9c0d1e2f3a4b'),  
(83881, 'aronI', '3a5c9b2d7e0f1a6d8b9c0e1f2a3b4c5d');
```

```
INSERT INTO User_Selection (user_id, course_id, instructor_id)  
VALUES
```

```
(83879, 'CS-UY 3224 | CS-UY 3224G', 32241),  
(83880, 'CS-UY 3224 | CS-UY 3224G', 32241),  
(83881, 'CS-UY 3224 | CS-UY 3224G', 32241);
```

```
INSERT INTO Review (user_id, course_id, instructor_id, rating, comment,  
created_at)
```

```
VALUES
```

```
(83879, 'CS-UY 3224 | CS-UY 3224G', 32241, 5, 'Excellent content.', '2025-  
03-01 10:00:00'),  
(83880, 'CS-UY 3224 | CS-UY 3224G', 32241, 2, 'The pace was too fast.',  
'2025-03-05 14:30:00'),  
(83881, 'CS-UY 3224 | CS-UY 3224G', 32241, 4, 'Requires a lot of  
background knowledge.', '2025-03-10 16:00:00');
```

```
INSERT INTO Course (course_id, title, credits, course_description,  
prerequisites)
```

```
VALUES
```

```
('CS-UY 4793 | CS-UY 4793G', 'Computer Networking', 3,
```

'This course takes a top-down approach to computer networking. After an overview of computer networks and the Internet, the course covers the application layer, transport layer, network layer and link layers. Topics at the application layer include client-server architectures, P2P architectures, DNS and HTTP and Web applications. Topics at the transport layer include multiplexing, connectionless transport and UDP, principles of reliable data transfer, connection-oriented transport and TCP and TCP congestion control. Topics at the network layer include forwarding, router architecture, the IP protocol and routing protocols including OSPF and BGP. Topics at the link layer include multiple-access protocols, ALOHA, CSMA/CD, Ethernet, CSMA/CA, wireless 802.11 networks and link-layer switches. The course includes simple quantitative delay and throughput modeling, socket programming and network application development and Ethereal labs.',

'Prerequisite for Brooklyn Students: (CS-UY 2134 or CS-UY 1134) and (CS-UY 2124 or CS-UY 1124) (C- or better) | Prerequisite for Abu Dhabi Students: ENGR-UH 3510 or CS-UH 1050 (C- or better) | Prerequisite for Shanghai Students: CSCI-SHU 210 (C- or better)'

);

```
INSERT INTO Instructor (instructor_id, first_name, last_name)
VALUES
(47931, 'Lucas', 'O'Rourke');
```

```
INSERT INTO Section (section_id, course_id, instructor_id, section_type,
campus)
VALUES
(479311, 'CS-UY 4793 | CS-UY 4793G', 47931, 'Lecture', 'Brooklyn Campus');
```

```
INSERT INTO Meeting_Time (meeting_id, section_id, day_of_week,
start_time, end_time, meeting_location)
VALUES
(4793111, 479311, 'M', '17:00:00', '18:20:00', '2 MetroTech Center Room
801'),
(4793112, 479311, 'W', '17:00:00', '18:20:00', '2 MetroTech Center Room
801');
```

```
INSERT INTO Users (user_id, username, password_hash)
VALUES
(83882, 'aronJ', 'd4e2f1c3b5a90786543210fedcba9876'),
(83883, 'aronK', 'a7b8c9d0e1f2345678901234567890ab'),
(83884, 'aronL', 'f0e9d8c7b6a543210123456789abcdef');
```

```
INSERT INTO User_Selection (user_id, course_id, instructor_id)
VALUES
(83882, 'CS-UY 4793 | CS-UY 4793G', 47931),
(83883, 'CS-UY 4793 | CS-UY 4793G', 47931),
```



```
(83884, 'CS-UY 4793 | CS-UY 4793G', 47931);
```

```
INSERT INTO Review (user_id, course_id, instructor_id, rating, comment,  
created_at)
```

```
VALUES
```

```
(83882, 'CS-UY 4793 | CS-UY 4793G', 47931, 5, 'The networking labs were  
insightful.', '2025-04-01 11:30:00'),
```

```
(83883, 'CS-UY 4793 | CS-UY 4793G', 47931, 4, 'Instructor explained TCP  
congestion control very clearly.', '2025-04-05 09:00:00'),
```

```
(83884, 'CS-UY 4793 | CS-UY 4793G', 47931, 3, 'The theory felt a bit heavy  
at times.', '2025-04-10 15:45:00');
```

```
INSERT INTO Review (user_id, course_id, instructor_id, rating, comment,  
created_at)
```

```
VALUES
```

```
(83882, 'CSCI-UA 430', 142857142, 5, 'generous in grade, nice prof', '2025-  
05-01 18:30:00'),
```

```
(83883, 'CSCI-UA 430', 142857142, 4, 'somewhat okay', '2025-03-05  
08:20:00');
```

B)

```
DELIMITER $$

CREATE OR REPLACE PROCEDURE RegisterNewUser(

IN input_username VARCHAR(20),

IN input_password_hash VARCHAR(255)

)

BEGIN

IF EXISTS (SELECT 1 FROM User WHERE username = input_username)

THEN

SIGNAL SQLSTATE '45000' SET MESSAGE_TEXT = 'Username already

exists.';

ELSE

INSERT INTO Users (username, password_hash)

VALUES (input_username, input_password_hash);
```

```
SELECT LAST_INSERT_ID() AS new_user_id;

END IF;

END $$
```

```
DELIMITER ;
```

```
DELIMITER $$
```

```
CREATE OR REPLACE PROCEDURE CheckUserLogin(
```

```
IN input_username VARCHAR(20),  
  
IN input_password_hash VARCHAR(255)  
  
)  
  
BEGIN
```

```
DECLARE found_user_id INT;  
  
SELECT user_id INTO found_user_id  
  
FROM Users  
  
WHERE username = input_username AND password_hash =  
  
input_password_hash  
  
LIMIT 1;  
  
SELECT found_user_id AS authenticated_user_id;
```

```
END $$
```

```
DELIMITER ;
```

```
DELIMITER $$
```

```
CREATE OR REPLACE PROCEDURE AddUserSelection(  
  
IN p_user_id INT,  
  
IN p_course_id VARCHAR(30),  
  
IN p_instructor_id INT
```

```
)  
  
BEGIN  
  
DECLARE existing_count INT DEFAULT 0;
```

```
SELECT COUNT(*)  
  
INTO existing_count  
  
FROM User_Selection  
  
WHERE user_id = p_user_id  
  
AND course_id = p_course_id  
  
AND instructor_id = p_instructor_id;
```

```
IF existing_count = 0 THEN  
  
INSERT INTO User_Selection (user_id, course_id, instructor_id)  
  
VALUES (p_user_id, p_course_id, p_instructor_id);
```

```
SELECT 'Successful' AS result;  
  
ELSE  
  
SELECT 'Already exist' AS result;  
  
END IF;  
  
END $$
```

```
DELIMITER ;
```

```
DELIMITER $$
```

```
DELIMITER $$
```

```
CREATE OR REPLACE PROCEDURE RemoveUserSelection(  
    IN p_user_id INT,  
    IN p_course_id VARCHAR(30),  
    IN p_instructor_id INT  
)  
  
BEGIN  
  
    DECLARE existing_count INT DEFAULT 0;
```

```
    SELECT COUNT(*)  
    INTO existing_count  
    FROM User_Selection  
    WHERE user_id = p_user_id  
    AND course_id = p_course_id  
    AND instructor_id = p_instructor_id;
```

```
    IF existing_count > 0 THEN  
  
        DELETE FROM User_Selection  
        WHERE user_id = p_user_id  
        AND course_id = p_course_id  
        AND instructor_id = p_instructor_id;  
  
        SELECT 'Successful';  
    ELSE
```

```
SELECT 'Not Found';
```

```
END IF;
```

```
END$$
```

```
CREATE OR REPLACE PROCEDURE SearchReview(
```

```
IN course_id VARCHAR(30),
```

```
IN instructor_id INT
```

```
)
```

```
BEGIN
```

```
SELECT
```

```
r.rating,
```

```
r.comment,
```

```
r.created_at,
```

```
(
```

```
SELECT title
```

```
FROM Course c
```

```
WHERE c.course_id = r.course_id
```

```
) AS title,
```

```
(
```

```
SELECT credits
```

```
FROM Course c
```

```
WHERE c.course_id = r.course_id
```



```

) AS credits,

(

SELECT course_description

FROM Course c

WHERE c.course_id = r.course_id

) AS course_description,

(

SELECT CONCAT(i.first_name, ' ', i.last_name)

FROM Instructor i

WHERE i.instructor_id = r.instructor_id

) AS instructor_name

FROM Review r

WHERE r.course_id = p_course_id

AND r.instructor_id = p_instructor_id

ORDER BY r.created_at DESC;

END$$

```

```

DELIMITER ;

```

```

DELIMITER $$

```

```

CREATE OR REPLACE PROCEDURE PostReview(

IN user_id INT,

```

```
IN course_id VARCHAR(30),

IN instructor_id INT,

IN rating INT,

IN comment TEXT,

IN created_at TIMESTAMP

)

BEGIN

INSERT INTO Review (user_id, course_id, instructor_id, rating, comment,

created_at)

VALUES (user_id, course_id, instructor_id, rating, comment, created_at);

END$$
```

```
DELIMITER ;
```

```
DELIMITER $$
```

```
CREATE OR REPLACE PROCEDURE SearchCourse(

IN u_course_id VARCHAR(30),

IN u_course_title VARCHAR(255),

IN u_instructor_name VARCHAR(200)

)

BEGIN

SELECT
```

```
c.title,  
  
c.credits,  
  
c.course_description,  
  
c.prerequisites,  
  
s.section_type,  
  
s.campus,  
  
m.day_of_week,  
  
m.start_time,  
  
m.end_time,  
  
m.meeting_location,  
  
i.first_name,  
  
i.last_name  
  
FROM Course c  
  
INNER JOIN Section s ON c.course_id = s.course_id  
  
INNER JOIN Instructor i ON s.instructor_id = i.instructor_id  
  
INNER JOIN Meeting_Time m ON s.section_id = m.section_id  
  
WHERE (u_course_id IS NULL OR u_course_id = " OR c.course_id LIKE  
  
CONCAT('%', u_course_id, '%'))  
  
AND (u_course_title IS NULL OR u_course_title = " OR c.title LIKE  
  
CONCAT('%', u_course_title, '%'))
```

```
AND (u_instructor_name IS NULL OR u_instructor_name = " OR  
CONCAT(i.first_name, ' ', i.last_name) LIKE CONCAT('%', u_instructor_name,  
'%'))  
ORDER BY c.course_id, i.instructor_id, s.section_id, m.day_of_week;  
END$$
```

```
DELIMITER ;
```

Using of Trigger:

```
DELIMITER $$  
  
CREATE OR REPLACE TRIGGER review_insert_upsert_trigger  
AFTER INSERT ON review  
FOR EACH ROW  
BEGIN  
INSERT INTO course_instructor  
(course_id, instructor_id, review_sum, review_count)  
VALUES  
(NEW.course_id, NEW.instructor_id, NEW.rating, 1)  
ON DUPLICATE KEY UPDATE  
review_sum = review_sum + NEW.rating,  
review_count = review_count + 1;  
END$$
```

DELIMITER ;