Eashrak Zubair
Brian Ruiz

DBMS Project, Phase 2

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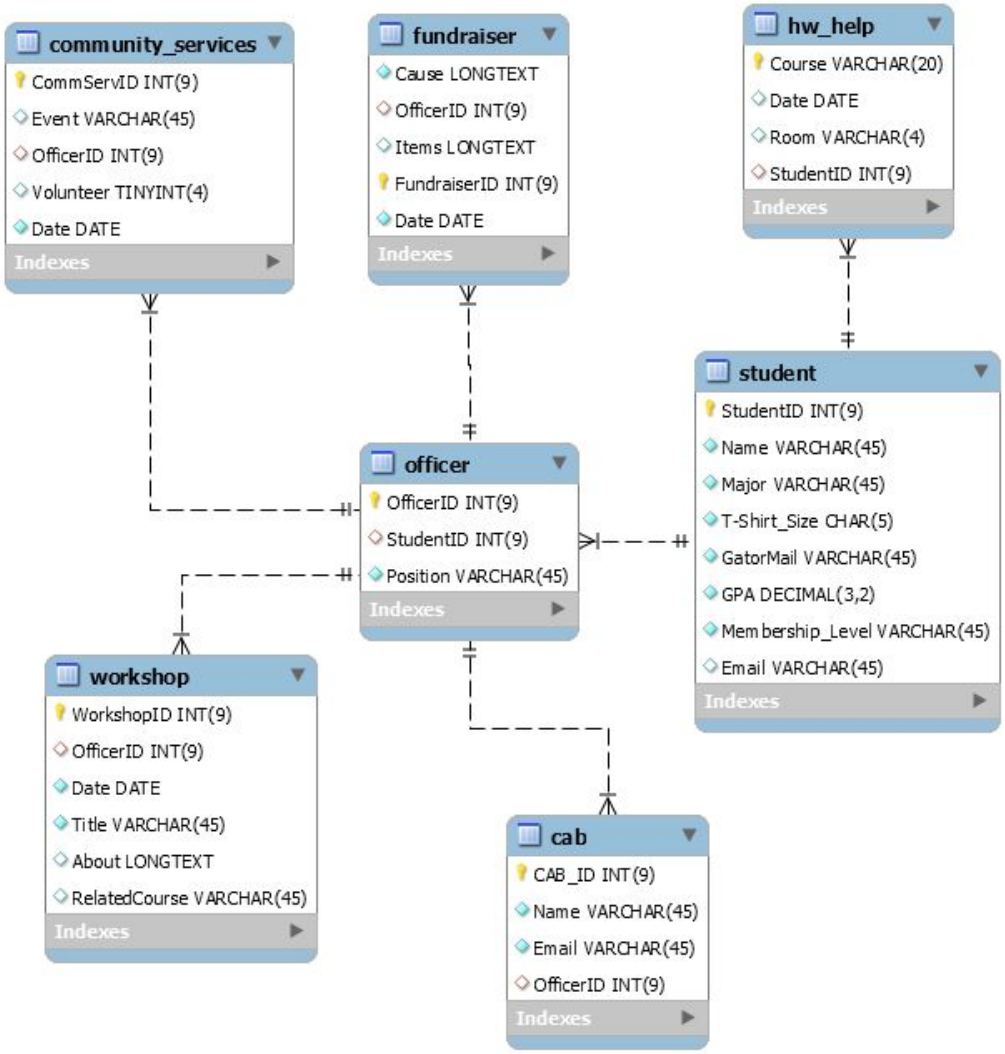
1. ER Diagram

Below you may find a description of each of our corresponding entities --including a list of the entity attributes, and the primary key--, and each relationship with its multiplicities.



2. Relational Model

Using the method for translating an E/R diagram to relations, we've produced a set of tables for the database design. For each table contains specific attributes, domains, required data constraints, default values, primary key, candidate keys, foreign keys and the tables which the foreign keys are reference.

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Brian Ruiz

CAB (Campus Activities Board)

cab - Table

Table Name: cab

Charset/Collation: latin1 latin1_bin

Comments:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G
CAB_ID	INT(9)	☑	☑	☐	☐	☐	☐	☐	☐
Name	VARCHAR(45)	☐	☑	☐	☐	☐	☐	☐	☐
Email	VARCHAR(45)	☐	☑	☐	☐	☐	☐	☐	☐
OfficerID	INT(9)	☐	☐	☐	☐	☐	☐	☐	☐

Primary Key = CAB_ID
Foreign Key = OfficerID

cab - Table

Table Name: cab Schema: acmuhd-db

Charset/Collation: latin1 latin1_bin Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table
OfficerFK	`acmuhd-db`.`officer`

Column	Referenced Column
☐ CAB_ID	
☐ Name	
☐ Email	
☑ OfficerID	OfficerID

Columns Indexes Foreign Keys Triggers Partitioning Options

cab - Table

Table Name: cab Schema: acmuhd-db

Charset/Collation: latin1 latin1_bin Engine: InnoDB

Comments:

Index Name	Type
PRIMARY	PRIMARY
OfficerFK	INDEX

Index Columns

Column	#	Order	Length

Columns Indexes Foreign Keys Triggers Partitioning Options

Eashrak Zubair
Brian Ruiz

Student

student - Table

Table Name: student

Charset/Collation: latin1 latin1_bin

Comments:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
StudentID	INT(9)	☑	☑	☐	☐	☐	☐	☐	☐	
Name	VARCHAR(45)	☐	☑	☐	☐	☐	☐	☐	☐	
Major	VARCHAR(45)	☐	☑	☐	☐	☐	☐	☐	☐	
T-Shirt_Size	CHAR(5)	☐	☑	☐	☐	☐	☐	☐	☐	
GatorMail	VARCHAR(45)	☐	☑	☐	☐	☐	☐	☐	☐	
GPA	DECIMAL(3,2)	☐	☑	☐	☐	☐	☐	☐	☐	
Membership_Level	VARCHAR(45)	☐	☑	☐	☐	☐	☐	☐	☐	
Email	VARCHAR(45)	☐	☐	☐	☐	☐	☐	☐	☐	NULL

Primary Key = StudentID

student - Table

Table Name: student Schema: acmuhd-db

Charset/Collation: latin1 latin1_bin Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table

Column	Referenced Column

Columns Indexes Foreign Keys Triggers Partitioning Options

student - Table

Table Name: student Schema: acmuhd-db

Charset/Collation: latin1 latin1_bin Engine: InnoDB

Comments:

Index Name	Type
PRIMARY	PRIMARY

Index Columns

Column	#	Order	Length

Columns Indexes Foreign Keys Triggers Partitioning Options

Eashrak Zubair
Brian Ruiz

Officer

officer - Table

Table Name: officer

Charset/Collation: latin1 latin1_bin

Comments:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
OfficerID	INT(9)	☑	☑	☐	☐	☐	☐	☐	☐	
StudentID	INT(9)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
Position	VARCHAR(45)	☐	☑	☐	☐	☐	☐	☐	☐	

Primary Key = OfficerID
Foreign Key = StudentID

officer - Table

Table Name: officer Schema: acmuhd-db

Charset/Collation: latin1 latin1_bin Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table
StudentID_FK1	`acmuhd-db`.`student`

Column	Referenced Column
☐ OfficerID	
☑ StudentID	StudentID
☐ Position	

Foreign Key Options

On Update: CASCADE

On Delete: CASCADE

Foreign Key Comment

Columns Indexes Foreign Keys Triggers Partitioning Options

officer - Table

Table Name: officer Schema: acmuhd-db

Charset/Collation: latin1 latin1_bin Engine: InnoDB

Comments:

Index Name	Type
PRIMARY	PRIMARY
StudentID_FK1	INDEX

Index Columns

Column	#	Order	Length

Columns Indexes Foreign Keys Triggers Partitioning Options

Eashrak Zubair
Brian Ruiz

Workshop

workshop - Table

Table Name: workshop

Charset/Collation: latin1 latin1_bin

Comments:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
WorkshopID	INT(9)	☑	☑	☐	☐	☐	☐	☐	☐	
OfficerID	INT(9)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
Date	DATE	☐	☑	☐	☐	☐	☐	☐	☐	
Title	VARCHAR(45)	☐	☑	☐	☐	☐	☐	☐	☐	
About	LONGTEXT	☐	☐	☐	☐	☐	☐	☐	☐	NULL
RelatedCourse	VARCHAR(45)	☐	☐	☐	☐	☐	☐	☐	☐	NULL

Primary Key = WorkshopID
Foreign Key = OfficerID

workshop - Table

Table Name: workshop Schema: acmuhd-db

Charset/Collation: latin1 latin1_bin Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table
OfficerID_FK1	`acmuhd-db`.`officer`

Column	Referenced Column
☐ WorkshopID	
☑ OfficerID	OfficerID
☐ Date	
☐ Title	
☐ About	
☐ RelatedCourse	

Foreign Key Options

On Update: CASCADE

On Delete: CASCADE

Foreign Key Comment

Columns Indexes Foreign Keys Triggers Partitioning Options

workshop - Table

Table Name: workshop Schema: acmuhd-db

Charset/Collation: latin1 latin1_bin Engine: InnoDB

Comments:

Index Name	Type
PRIMARY	PRIMARY
OfficerID_FK	INDEX

Index Columns

Column	#	Order	Length

Columns Indexes Foreign Keys Triggers Partitioning Options

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Brian Ruiz

Homework Help

hw_help - Table

Table Name: hw_help

Charset/Collation: latin1 latin1_bin

Comments:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
Course	VARCHAR(20)	☑	☑	☐	☐	☐	☐	☐	☐	
Date	DATE	☐	☐	☐	☐	☐	☐	☐	☐	NULL
Room	VARCHAR(4)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
StudentID	INT(9)	☐	☐	☐	☐	☐	☐	☐	☐	NULL

Primary Key = Course
Foreign Key = StudentID

hw_help - Table

Table Name: hw_help Schema: acmuhd-db

Charset/Collation: latin1 latin1_bin Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table
StudentID_FK2	`acmuhd-db`.`student`

Column	Referenced Column
☐	
☐ Date	
☐ Room	
☐ StudentID	

Foreign Key Options
On Update: CASCADE
On Delete: CASCADE
Foreign Key Comment

Columns Indexes Foreign Keys Triggers Partitioning Options

Eashrak Zubair
Brian Ruiz

hw_help - Table

Table Name: hw_help
Schema: acmuhd-db
Charset/Collation: latin1 latin1_bin
Engine: InnoDB
Comments:

Index Name	Type
PRIMARY	PRIMARY
StudentID_FK2	INDEX

Index Columns

Column	#	Order	Length

Columns Indexes Foreign Keys Triggers Partitioning Options

Community Services

community_services - Table

Table Name: community_services
Charset/Collation: latin1 latin1_bin
Comments:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
CommServID	INT(9)	☑	☑	☐	☐	☐	☐	☐	☐	
CoEvent	VARCHAR(45)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
OfficerID	INT(9)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
Volunteer	TINYINT(4)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
Date	DATE	☐	☑	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	

Primary Key = CommServID
Foreign Key = OfficerID

community_services - Table

Table Name: community_services
Schema: acmuhd-db
Charset/Collation: latin1 latin1_bin
Engine: InnoDB
Comments:

Foreign Key Name	Referenced Table
OfficerID_FK3	`acmuhd-db`.`officer`

Column	Referenced Column
☐ CommServID	
☐ CoEvent	
☑ OfficerID	OfficerID
☐ Volunteer	
☐ Date	

Foreign Key Options
On Update: CASCADE
On Delete: CASCADE
Foreign Key Comment

Columns Indexes Foreign Keys Triggers Partitioning Options

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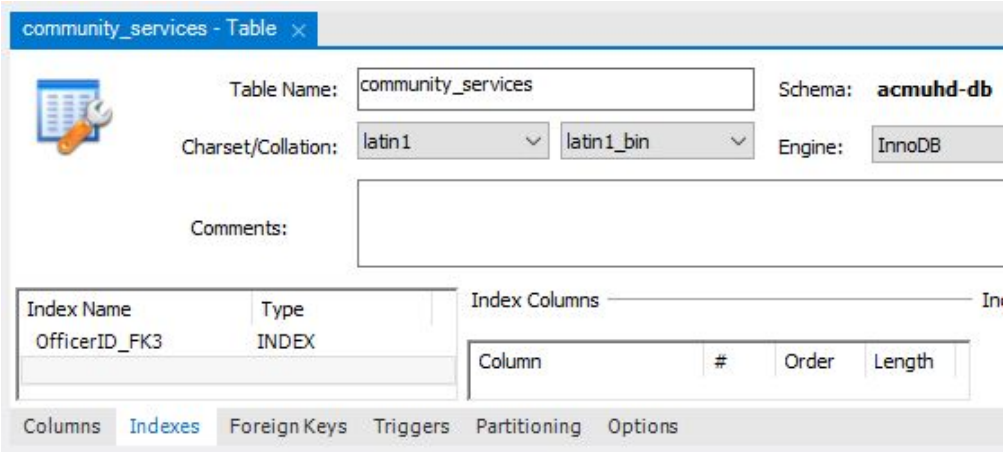
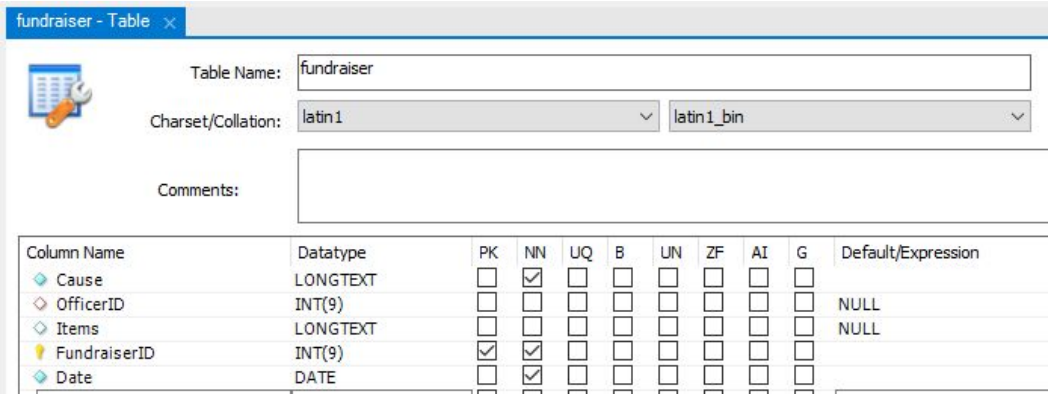
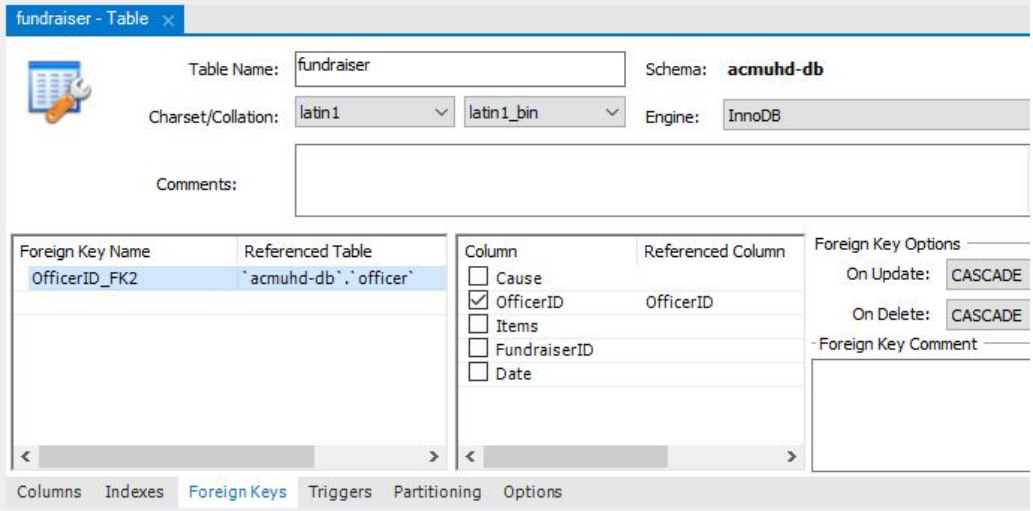


Fundraiser



Primary Key = FundraiserID
Foreign Key = OfficerID



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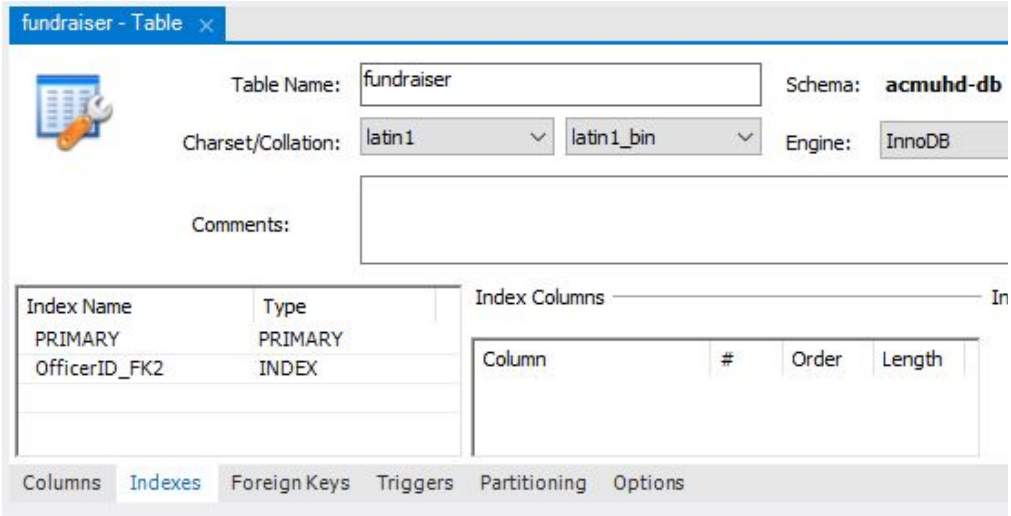


3. Database Functionalities and User Interface

Actors

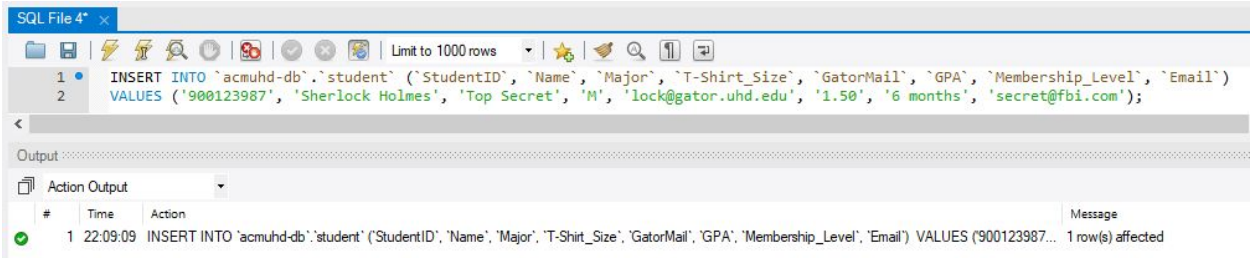
1. Officers
2. Students
3. CAB (Campus Activities Board)

Use Case: A CAB user can **insert** Student information into the *student* table in the database.

Table before the info is inserted:

StudentID	Name	Major	T-Shirt_Size	GatorMail	GPA	Membership_Level	Email
900111111	Moises Nunez	Geology	XL	moises@gator.uhd.edu	2.57	ALUM	nunez@moi.com
900123456	Brian Ruiz	Art History	M	brianruiz@gator.uhd.edu	4.00	12 months	brian@ruizy.com
900124276	John Doe	Astrology	S	john@gator.uhd.edu	3.23	6 months	bravo@johnny.com
900151208	Jane Lily	Law	L	jenna@gator.uhd.edu	2.86	Alum	jlil@uhd.edu
900377539	Eashrak Zubair	CS	L	zubaire2@gator.uhd.edu	4.00	12 months	zeashrak@gmail.com
900654321	Omer Mir	Fashion	L	omer@gator.uhd.edu	1.02	12 months	monsieur@omer.com

SQL Query:



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Brian Ruiz

Table after the info is inserted:

StudentID	Name	Major	T-Shirt_Size	GatorMail	GPA	Membership_Level	Email
900111111	Moises Nunez	Geology	XL	moises@gator.uhd.edu	2.57	ALUM	nunez@moi.com
900123456	Brian Ruiz	Art History	M	brianruiz@gator.uhd.edu	4.00	12 months	brian@ruizy.com
900123987	Sherlock Holmes	Top Secret	M	lock@gator.uhd.edu	1.50	6 months	secret@fbi.com
900124276	John Doe	Astrology	S	john@gator.uhd.edu	3.23	6 months	bravo@johnny.com
900151208	Jane Lily	Law	L	jenna@gator.uhd.edu	2.86	Alum	jlil@uhd.edu
900377539	Eashrak Zubair	CS	L	zubaire2@gator.uhd.edu	4.00	12 months	zeashrak@gmail.com
900654321	Omer Mir	Fashion	L	omer@gator.uhd.edu	1.02	12 months	monsieur@omer.com

Use Case: A CAB user can **delete** Student information from the *student* table in the database.

Table:

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

StudentID	Name	Major	T-Shirt_Size	GatorMail	GPA	Membership_Level	Email
900111111	Moises Nunez	Geology	XL	moises@gator.uhd.edu	2.57	ALUM	nunez@moi.com
900123456	Brian Ruiz	Art History	M	brianruiz@gator.uhd.edu	4.00	12 months	brian@ruizy.com
900123987	Sherlock Holmes	Top Secret	M	lock@gator.uhd.edu	1.50	6 months	secret@fbi.com
900124276	John Doe	Astrology	S	john@gator.uhd.edu	3.23	6 months	bravo@johnny.com
900151208	Jane Lily	Law	L	jenna@gator.uhd.edu	2.86	Alum	jlil@uhd.edu
900377539	Eashrak Zubair	CS	L	zubaire2@gator.uhd.edu	4.00	12 months	zeashrak@gmail.com
900654321	Omer Mir	Fashion	L	omer@gator.uhd.edu	1.02	12 months	monsieur@omer.com

Highlighted row to be deleted

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

StudentID	Name	Major	T-Shirt_Size	GatorMail	GPA	Membership_Level	Email
900111111	Moises Nunez	Geology	XL	moises@gator.uhd.edu	2.57	ALUM	nunez@moi.com
900123456	Brian Ruiz	Art History	M	brianruiz@gator.uhd.edu	4.00	12 months	brian@ruizy.com
900123987	Sherlock Holmes	Top Secret	M	lock@gator.uhd.edu	1.50	6 months	secret@fbi.com
900124276	John Doe	Astrology	S	john@gator.uhd.edu	3.23	6 months	bravo@johnny.com
900151208	Jane Lily	Law	L	jenna@gator.uhd.edu	2.86	Alum	jlil@uhd.edu
900377539	Eashrak Zubair	CS	L	zubaire2@gator.uhd.edu	4.00	12 months	zeashrak@gmail.com
900654321	Omer Mir	Fashion	L	omer@gator.uhd.edu	1.02	12 months	monsieur@omer.com

SQL Query:

Query 1 | Limit to 1000 rows

```
DELETE FROM `acmuhd-db`.`student`
WHERE (`StudentID` = '900124276');
```

Output

Action Output

#	Time	Action	Message
1	22:18:01	DELETE FROM `acmuhd-db`.`student` WHERE (`StudentID` = '900124276')	1 row(s) affected

Table after the info is deleted:

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StudentID	Name	Major	T-Shirt_Size	GatorMail	GPA	Membership_Level	Email
900111111	Moises Nunez	Geology	XL	moises@gator.uhd.edu	2.57	ALUM	nunez@moi.com
900123456	Brian Ruiz	Art History	M	brianruiz@gator.uhd.edu	4.00	12 months	brian@ruizy.com
900123987	Sherlock Holmes	Top Secret	M	lock@gator.uhd.edu	1.50	6 months	secret@fbi.com
900151208	Jane Lily	Law	L	jenna@gator.uhd.edu	2.86	Alum	jlil@uhd.edu
900377539	Eashrak Zubair	CS	L	zubaire2@gator.uhd.edu	4.00	12 months	zeashrak@gmail.com
900654321	Omer Mir	Fashion	L	omer@gator.uhd.edu	1.02	12 months	monsieur@omer.com

student 1

Output

Action Output

#	Time	Action	Message
1	22:18:01	DELETE FROM `acmuhd-db`.`student` WHERE (`StudentID` = '900124276')	1 row(s) affected

Use Case: A CAB user can **update** Student information on the *student* table in the database.

Table:

StudentID	Name	Major	T-Shirt_Size	GatorMail	GPA	Membership_Level	Email
900111111	Moises Nunez	Geology	XL	moises@gator.uhd.edu	2.57	ALUM	nunez@moi.com
900123456	Brian Ruiz	Art History	M	brianruiz@gator.uhd.edu	4.00	12 months	brian@ruizy.com
900123987	Sherlock Holmes	Top Secret	M	lock@gator.uhd.edu	1.50	6 months	secret@fbi.com
900151208	Jane Lily	Law	L	jenna@gator.uhd.edu	2.86	Alum	jlil@uhd.edu
900377539	Eashrak Zubair	CS	L	zubaire2@gator.uhd.edu	4.00	12 months	zeashrak@gmail.com
900654321	Omer Mir	Fashion	L	omer@gator.uhd.edu	1.02	12 months	monsieur@omer.com

Highlighted row to be updated

StudentID	Name	Major	T-Shirt_Size	GatorMail	GPA	Membership_Level	Email
900111111	Moises Nunez	Geology	XL	moises@gator.uhd.edu	2.57	ALUM	nunez@moi.com
900123456	Brian Ruiz	Art History	M	brianruiz@gator.uhd.edu	4.00	12 months	brian@ruizy.com
900123987	Sherlock Holmes	Top Secret	M	lock@gator.uhd.edu	1.50	6 months	secret@fbi.com
900151208	Jane Lily	Law	L	jenna@gator.uhd.edu	2.86	Alum	jlil@uhd.edu
900377539	Eashrak Zubair	CS	L	zubaire2@gator.uhd.edu	4.00	12 months	zeashrak@gmail.com
900654321	Omer Mir	Fashion	L	omer@gator.uhd.edu	1.02	12 months	monsieur@omer.com

SQL Query:

Query 1

Limit to 1000 rows

```
UPDATE `acmuhd-db`.`student` SET `T-Shirt_Size` = 'M'
WHERE (`StudentID` = '900151208');
```

Output

Action Output

#	Time	Action	Message
1	22:32:20	UPDATE 'acmuhd-db'.'student' SET 'T-Shirt_Size' = 'M' WHERE ('StudentID' = '900151208')	1 row(s) affected Rows matched: 1 Changed: 1 Warnings: 0

Table after the info is updated:

StudentID	Name	Major	T-Shirt_Size	GatorMail	GPA	Membership_Level	Email
900111111	Moises Nunez	Geology	XL	moises@gator.uhd.edu	2.57	ALUM	nunez@moi.com
900123456	Brian Ruiz	Art History	M	brianruiz@gator.uhd.edu	4.00	12 months	brian@ruizy.com
900123987	Sherlock Holmes	Top Secret	M	lock@gator.uhd.edu	1.50	6 months	secret@fbi.com
900151208	Jane Lily	Law	M	jenna@gator.uhd.edu	2.86	Alum	jlil@uhd.edu
900377539	Eashrak Zubair	CS	L	zubaire2@gator.uhd.edu	4.00	12 months	zeashrak@gmail.com
900654321	Omer Mir	Fashion	L	omer@gator.uhd.edu	1.02	12 months	monsieur@omer.com

student 1

Output

Action Output

#	Time	Action	Message
1	22:32:20	UPDATE 'acmuhd-db'.'student' SET 'T-Shirt_Size' = 'M' WHERE ('StudentID' = '900151208')	1 row(s) affected Rows matched: 1 Changed: 1 Warnings: 0

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Brian Ruiz

Use Case: A CAB user can **insert** Officer information into the *officer* table in the database.

Table before the info is inserted:

Result Grid | Filter Rows:

OfficerID	StudentID	Position
0	900377539	WebMaster
1	900123456	UX/UI Master

SQL Query:

SQL File 4* | Limit to 1000 rows

```
INSERT INTO `acmuhd-db`.`officer` (`OfficerID`, `StudentID`, `Position`)
VALUES ('2', '900654321', 'President');
```

Output

Action Output

#	Time	Action	Message
1	17:47:59	INSERT INTO `acmuhd-db`.`officer` (`OfficerID`, `StudentID`, `Position`) VALUES ('2', '900654321', 'President')	1 row(s) affected

Table after the info is inserted:

Result Grid | Filter Rows:

OfficerID	StudentID	Position
0	900377539	WebMaster
1	900123456	UX/UI Master
2	900654321	President

Use Case: A CAB user can **delete** Officer information from the *officer* table in the database.

Table:

OfficerID	StudentID	Position
0	900377539	WebMaster
1	900123456	UX/UI Master
2	900654321	President
3	900151208	Historian

Highlighted row to be deleted

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	OfficerID	StudentID	Position
▶	0	900377539	WebMaster
	1	900123456	UX/UI Master
	2	900654321	President
	3	900151208	Historian

SQL Query:

SQL File 4*

Limit to 1000 rows

```
DELETE FROM `acmuhd-db`.`officer`
WHERE (`OfficerID` = '3');
```

Output

Action Output

#	Time	Action	Message
1	17:54:01	DELETE FROM `acmuhd-db`.`officer` WHERE (`OfficerID` = '3')	1 row(s) affected

Table after the info is deleted:

	OfficerID	StudentID	Position
▶	0	900377539	WebMaster
	1	900123456	UX/UI Master
	2	900654321	President

officer 1

Output

Action Output

#	Time	Action	Message
1	17:54:01	DELETE FROM `acmuhd-db`.`officer` WHERE (`OfficerID` = '3')	1 row(s) affected

Use Case: A CAB user can **update** Student information on the *student* table in the database.

Table:

	OfficerID	StudentID	Position
▶	0	900377539	WebMaster
	1	900123456	UX/UI Master
	2	900654321	President

Highlighted row to be updated

	OfficerID	StudentID	Position
▶	0	900377539	WebMaster
	1	900123456	UX/UI Master
	2	900654321	President

SQL Query:

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Query 1

Limit to 1000 rows

```
UPDATE `acmuhd-db`.`officer`
    SET `OfficerID` = '7'
    WHERE (`OfficerID` = '0');
```

Output

Action Output

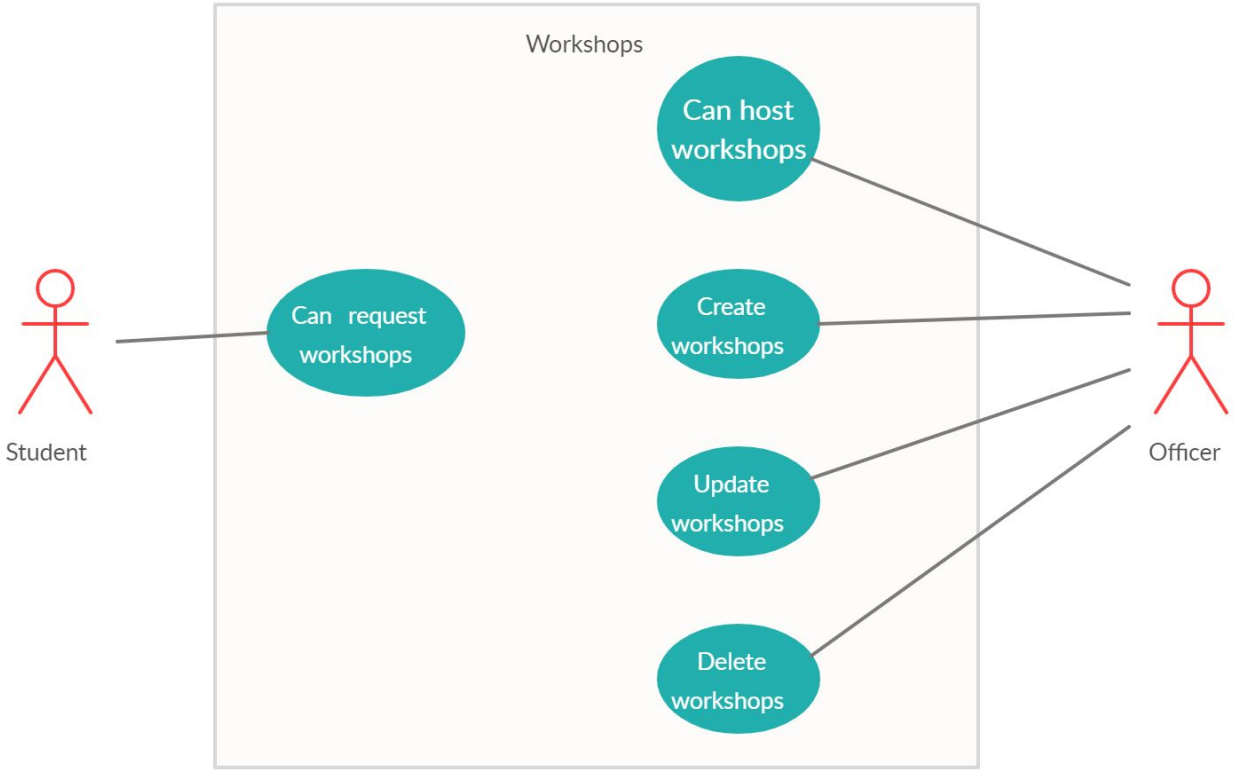
#	Time	Action	Message
1	17:57:25	UPDATE `acmuhd-db`.`officer` SET `OfficerID` = '7' WHERE (`OfficerID` = '0')	1 row(s) affected Rows matched: 1 Changed: 1 Warnings: 0

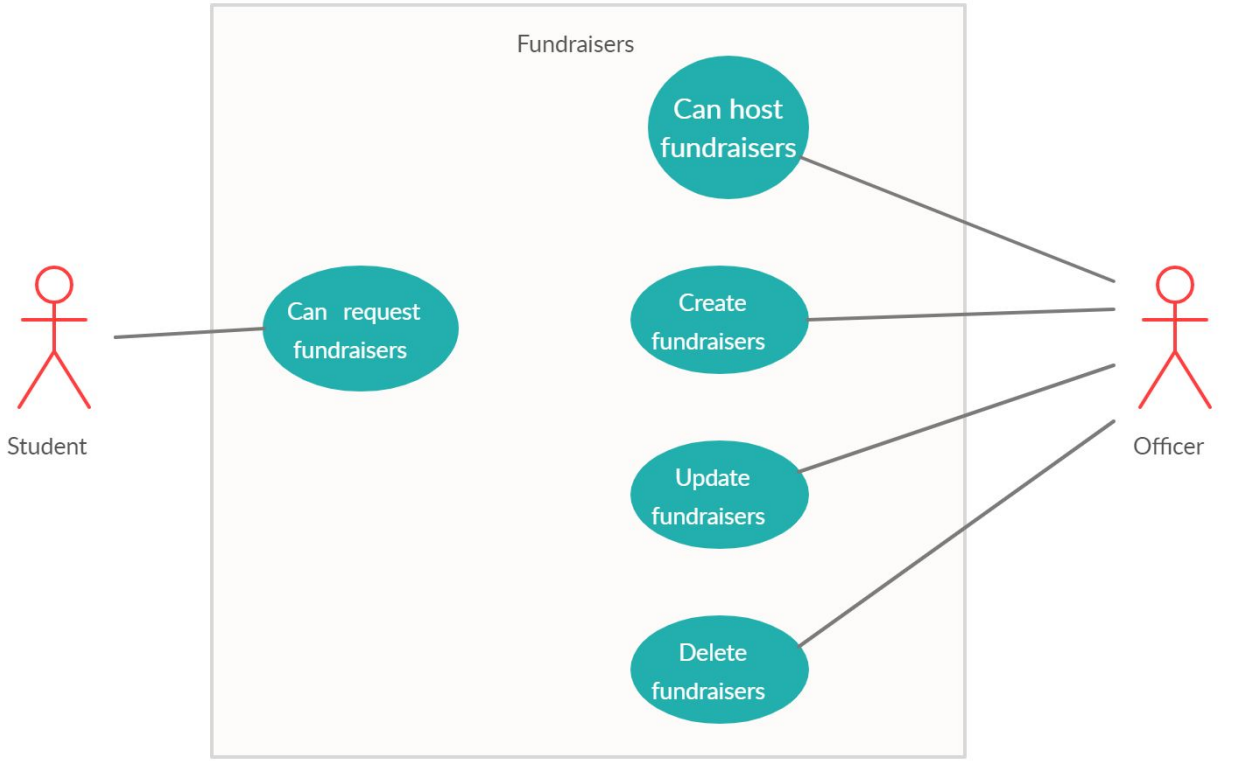
Table after the info is updated:

OfficerID	StudentID	Position
1	900123456	UX/UI Master
2	900654321	President
7	900377539	WebMaster

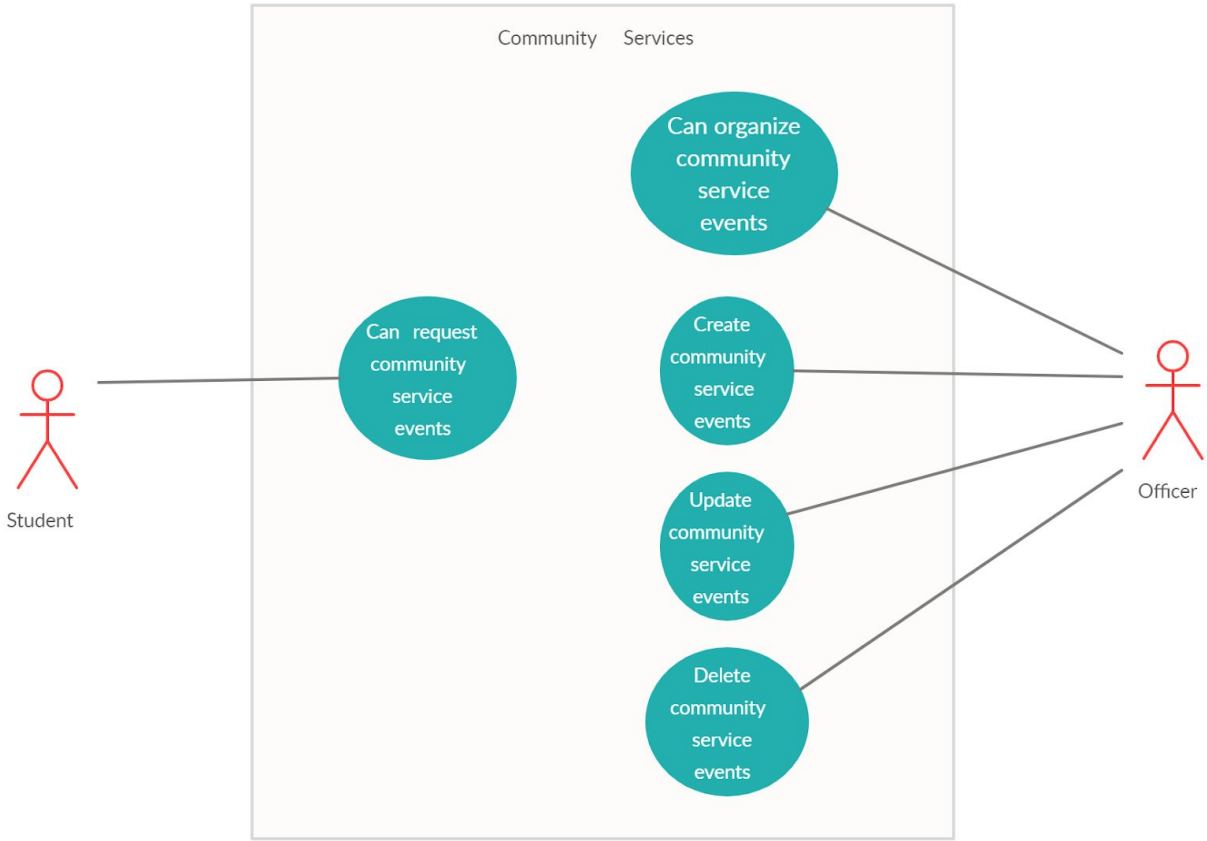
UML Overview:

Eashrak Zubair
Brian Ruiz



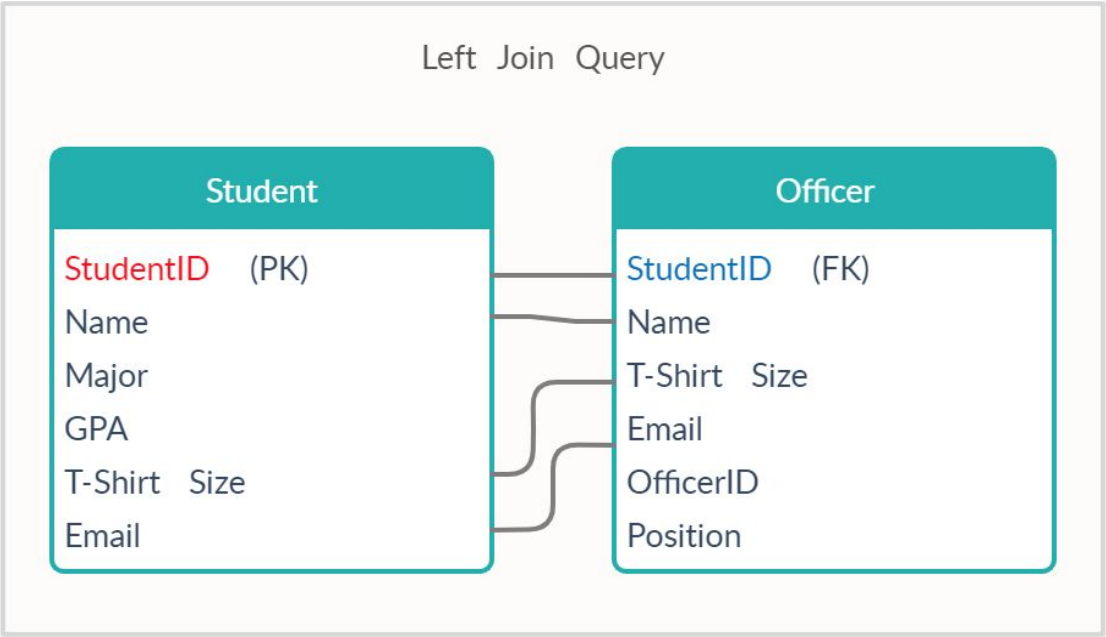


Eashrak Zubair
Brian Ruiz



Joint Query

Eashrak Zubair
Brian Ruiz



Query 1

Limit to 1000 rows

```
SELECT
    student.StudentID,
    officer.OfficerID,
    officer.Position,
    student.Name,
    student.Email,
    student.Major
FROM
     officer
LEFT JOIN
    student
ON
    officer.StudentID = student.StudentID;
```

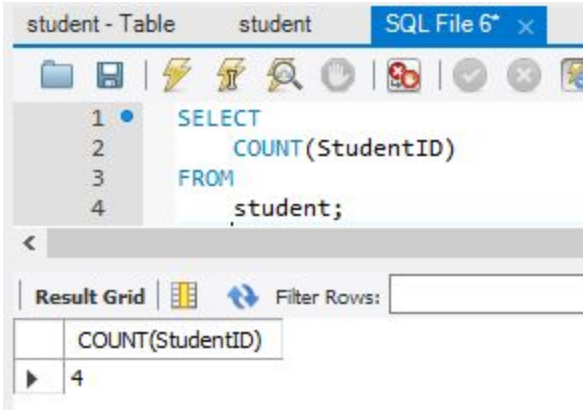
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

StudentID	OfficerID	Position	Name	Email	Major
900123456	1	UX/UI Master	Brian Ruiz	brian@ruizy.com	Art History
900654321	2	President	Omer Mir	monsieur@omer.com	Fashion
900377539	7	WebMaster	Eashrak Zubair	zeashrak@gmail.com	CS

Aggregate Query

Eashrak Zubair
Brian Ruiz

StudentID	Name	Major	T-Shirt_Size	GatorMail	GPA	Membership_Level	Email
900111111	Moises Nunez	Geology	XL	moises@gator.uhd.edu	2.57	ALUM	nunez@moi.com
900123456	Brian Ruiz	Art History	M	brianruiz@gator.uhd.edu	4.00	12 months	brian@ruizy.com
900377539	Eashrak Zubair	CS	L	zubaire2@gator.uhd.edu	4.00	12 months	zeashrak@gmail.com
900654321	Omer Mir	Fashion	L	omer@gator.uhd.edu	1.02	12 months	monsieur@omer.com



4) Database prototype

A. The platforms / developer tools we have opted to go with for the preliminary design and implementation of our project include: *MySQL Workbench, and XAMPP*. The primary reasons we have elected the aforementioned are because the are both open-source and friendly for cross-platform development. Additionally, and congruently with being open-source, is that there exists abundant documentation available, feasible to integrate, and ease of use for new users due to its robust GUI. Furthermore we are using web-base platfrom *LucidChart* for our E/R Diagrams. And, *Creately's* online diagram building tool for implementation of the corresponding UMLs.

B. We intend to populate the database through the Web GUI after connecting it to the backend. Though, in the case that there appears to be some discrepancy, we will resort to manually Insertion, Deletion, and Updating our database via SQL. Furthermore, the data will come directly from the real-world *ACM UHD Chapter*. We will acquire the clubs member information for our database, upon having permission from respective club administrators. In further detail, the collected data consists of details regarding the club's officers, real organized

public events --i.e. workshops, panels--, community service events, and fundraisers, to name a few.

5) Peer Task(s) Distribution, and Timeline

The major tasks looking-forward to be completed include…

	11/8/19	**11/14/19**	**11/17/19**	**11/21/19**	**11/25/19**	**12/3/19***
Eashrak Zubair	Complete populating database tables	Assist initial development of Web GUI	Start connecting the DB to the Web component	Perform tests on different use cases	Add additional web features	Final Testing for product delivery
Brian Ruiz	Begin GUI design & development	Implement Login screen respective entities	Finish developing the Web component	Test DB functions (Insert/ Delete/ Update)	Verify and validify existing web features	Final Testing for product delivery

End.