Assignment 4

Database Normalization

Table 1: Organizer

1st Normal Form:

- It has primary key organiser_id with minimal attributes.
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The organizer table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form
- All non-key attributes are fully dependent on Primary key Organiser_id.

The Organizer table is in 2nd Normal form.

3rd Normal Form:

- It is in the 2nd Normal Form.
- It has no transitive dependencies.

The Organizer is in 3rd Normal form.

Therefore, the organizer table is **Normalized.**

After Normalization:

Organiser

PK	<u>organiser_id int NOT NULL</u>
	first_name varchar
	last_name varchar
	email varchar
	contact_number int
FK	club_id int

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

organiser_id	first_name	last_name	email	contact_number	club_id
2489	Subhash	rajaseelan	apmcatneu@gmail.com	789	3435
2490	Aditya	gopal	gsg@northeastern.edu	790	3436
2491	Bobby	dubel	nuhoc.info@gmail.com	791	3437
2492	sakshi	chogule	nu.sankriti@gmail.com	792	3438
2493	clarese	hill	artcreativetherapy@northeastern.eduNortheas...	793	3439

organiser 2 ✕

Table 2: User

User

PK	twitter_handle varchar
	name varchar
	follower_count int
	following_count int
	Join_date Date

1st Normal Form:

- It has primary key twitter_handle with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The user table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key twitter_handle.
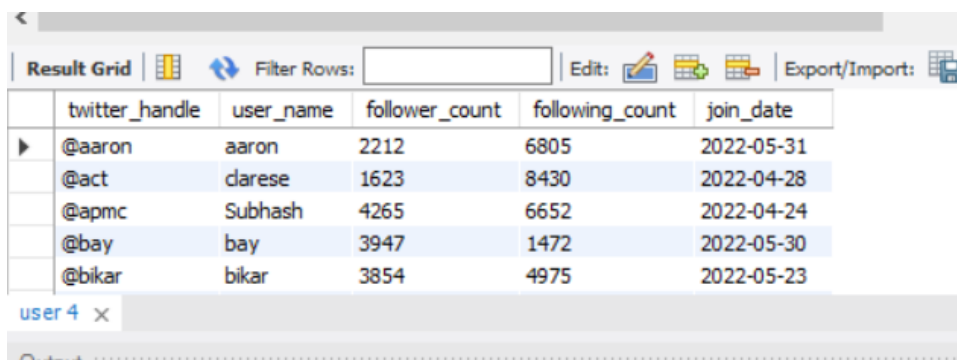
The user table is in 2nd Normal form.

3rd Normal Form:

- It is in the 2nd Normal Form.
- It has no transitive dependencies.

The user table is in the 3rd Normal form.

Therefore, the user table is **Normalized.**

After Normalization:

twitter_handle	user_name	follower_count	following_count	join_date
@aaron	aaron	2212	6805	2022-05-31
@act	clarese	1623	8430	2022-04-28
@apmc	Subhash	4265	6652	2022-04-24
@bay	bay	3947	1472	2022-05-30
@bikar	bikar	3854	4975	2022-05-23

user 4 ✕

Table 3: Clubs

	Clubs
PK	club_id int NOT NULL
	club_name varchar
	club_contact int
	club_email varchar
	club_location varchar
FK	Twitter_handle varchar
FK	Organiser_id int

1st Normal Form:

- It has primary key club_id with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups

The club's table is in 1st Normal form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key club_id.

The club's table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has transitive dependencies.

It is not in 3rd Normal form because twitter handle and organiser_id depend on each other.

To normalize, the table is divided into two more tables, that is **Clubs** and **ClubUsers** tables.

The club's table is in 3rd Normal form.

Therefore, the clubs table is **Normalized.**

After Normalization:

club_id	club_name	club_contact	club_email	club_location
3435	Aspiring Products Managers club	9528734606	apmcatneu@gmail.com	Northeastern
3436	Graduate Student Government	9421776385	gsg@northeastern.edu	Northeastern
3437	Northeastern universtiy Huskiers and outing club	9645151064	nuhoc.info@gmail.com	Northeastern
3438	Sanskriti	9277131497	nu.sankriti@gmail.com	Northeastern
3439	Art and creative Therapy	9939787302	artcreativetherapy@northeastern.eduNortheas...	Northeastern
3440	Chinese markets club	9575396435	cmc.neu@gmail.com	Northeastern
3441	Fintech Initiative	9034931551	nufintech@gmail.com	Northeastern
3442	Game studio club	9154789222	gamestudioclub@northeastern.edu	Northeastern
3443	Health Humanities club	9187185734	hhc@northeastern.edu	Northeastern

clubs 5 ×

Table 4: ClubUsers table

1st Normal Form:

- It has primary key cu_id with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The ClubUsers table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key cu_id.
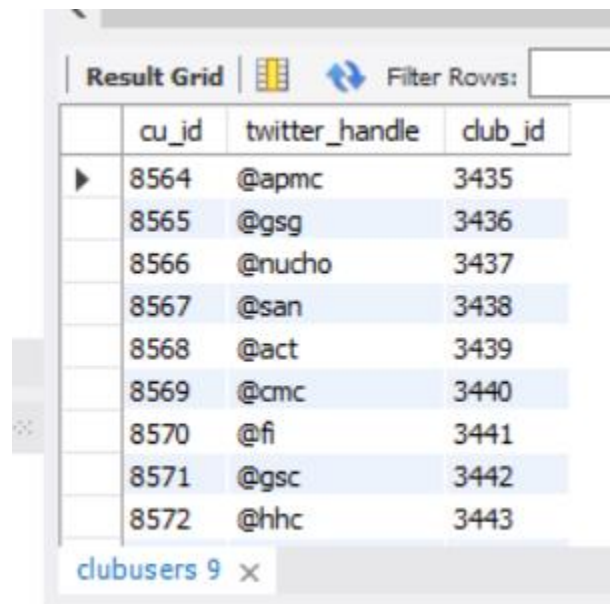
The ClubUsers table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has no transitive dependencies.

The ClubUsers table is in 3rd Normal form.

Therefore, the ClubUsers table is **Normalized.**

After Normalization:

Table 5: Events

1st Normal Form:

- It has primary key event_id with minimal attributes

- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The Events table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key event_id.

The Events table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has no transitive dependencies.

The Events table is in 3rd Normal form.

Therefore, the Events table is **Normalized.**

After Normalization:

event_id	event_title	event_date	event_time	location_id	event_price	event_type_id	event_theme	status_id	event_perks	c
89798	Phi's Delta epsilon's cookies for kids	2022-08-12	12:30:00	L4567	50	ET6777	food	S5656	free cookies	3
89799	roxbury robotics fall showcase	2022-08-13	13:30:00	L4568	30	ET6778	education	S5657	robots show	3
89800	SODA x brigham blood drive	2022-08-14	14:30:00	L4569	15	ET6779	donation	S5658	free food	3
89801	APO pledge project insomnia cookies sale fundr...	2022-08-15	15:30:00	L4570	35	ET6780	fundraiser	S5659	thanksgiving	3
89802	nu stage presents:seussical	2022-08-16	16:30:00	L4571	70	ET6781	casual	S5660	free goodies	3
89803	Kasa mochi donuts fundraiser	2022-08-17	17:30:00	L4572	25	ET6782	food	S5661	free cookies	3
89804	krispy kreme fundraiser	2022-08-18	18:30:00	L4573	10	ET6783	food	S5662	robots show	3
89805	Green line presents: december local showcase	2022-08-19	19:30:00	L4574	15	ET6784	showcase	S5663	free food	3

events 10 ×

Table 6: Event Status

Event_Status	
PK	status_id int NOT NULL
	Event_status

1st Normal Form:

- It has primary key status id with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).

- There are no repeating groups.

The Event_status table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key status id.

The Event_status table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has no transitive dependencies.

The Event_status table is in 3rd Normal form.

Therefore, the Event_status table is **Normalized.**

After Normalization:

status_id	Event_status
S5656	Completed
S5657	Upcoming
S5658	Completed
S5659	Completed

Table 7: Admin account

Admin Account
twitter_handle varchar
password varchar

1st Normal Form:

- It has no primary key

The admin account table is not in 1st Normal Form.

To remove the redundancy, the table is removed and incorporated into **the User** table.

Table 8: Payments

1st Normal Form:

- It has primary key payment_id with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The Payments table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key payment_id.

The Payments table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has no transitive dependencies.

The Payments table is in 3rd Normal form.

Therefore, the Payments table is **Normalized.**

After Normalization:

Table 9: location

1st Normal Form:

- It has primary key location_id with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The Location table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key location_id.

The Location table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has transitive dependencies.

The Location table is not in 3rd Normal form because postal code and city depend on each other.

Hence, the table is divided into two more tables **location** and **Postal code**.

	Location
PK	location_id int NOT NULL
	street varchar
	city varchar
	state varchar
	country varchar
FK	postal_code int

	Postal_code
PK	Postal_code int NOT NULL
	city

Now, the location table is in 3rd Normal Form.

Therefore, the location table is **Normalized**.

After Normalization:

	Location
PK	location_id int NOT NULL
	street varchar
	state varchar
	country varchar
FK	postal_code int

Result Grid	Filter Rows:		Edit:	Export

	location_id	street	state	country	PostalCode
▶	L4567	Afterhours	MA	US	2115
	L4568	Centennail	MA	US	2116
	L4569	curry student center inner quad	MA	US	2117
	L4570	Robinson quad	MA	US	2118
	L4571	curry cross roads	MA	US	2119
	L4572	curry cross roads	MA	US	2120
	L4573	blackman auditorium	MA	US	2121
	L4574	East village	MA	US	2122
	L4575	340 curry	MA	US	2123

location 13 ×

Table 10: Postal code

	Postal_code
PK	Postal_code int NOT NULL
	city

1st Normal Form:

- It has primary key postal code with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The Postal code table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key postal code.

The Postal code table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has no transitive dependencies.

The Postal code table is in 3rd Normal form.

Therefore, the Postal code table is **Normalized.**

After Normalization:

	Postalcode	city
▶	2115	Boston
	2116	Boston
	2117	Boston
	2118	Boston
	2119	Boston

Table 11: Tweets

	Tweets
PK	<u>tweet_id int NOT NULL</u>
FK	twitter_handle varchar
	tweet_text varchar
	created_at DateTime
	hashtags varchar

1st Normal Form:

- It has primary key tweet_Id with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The tweets table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key tweet_id.

The tweets table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has no transitive dependencies.

The tweets table is in 3rd Normal form.

Therefore, the tweets table is **Normalized.**

After Normalization:

tweet_id	twitter_handle	tweet_text	created_at	hashtags
1591152362	@apmc	2 tickets	2022-12-12	op
1591152363	@gsg	1 ticket for food	2008-11-11	op
1591152364	@nucho	ticket for dance	2008-11-11	op
1591152365	@san	ticket for music	2008-11-11	op
1591152366	@act	ticket for food	2008-11-11	op
1591152367	@cmc	2 tickets	2008-11-11	op
1591152368	@fi	1 ticket for food	2008-11-11	op
1591152369	@gsc	ticket for dance	2008-11-11	op
1591152370	@hhc	ticket for music	2008-11-11	op

Table 12: Event type

Event Type	
PK	event_type_id int NOT NULL
	event_type_name varchar

1st Normal Form:

- It has primary key event_type_id with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The Event type table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key event_type_id.

The Event type table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has no transitive dependencies.

The Event type table is in 3rd Normal form.

Therefore, the event type table is **Normalized.**

After Normalization:

event_type_id	event_type_name
ET6777	Educational
ET6778	Dance
ET6779	Dance
ET6780	Music
ET6781	Music
ET6782	Sports
ET6783	Stand up comedy
ET6784	Stand up comedy

Table 13: Twitter order

	Twitter Order
PK	twitter_order_id int NOT NULL
FK	tweet_id int

1st Normal Form:

- It has primary key twitter_order_id with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The Twitter order table is in 1st Normal Form.

2nd Normal Form:

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key twitter_order_id.

The Twitter order table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has no transitive dependencies.

The Twitter order table is in 3rd Normal form.

Therefore, the Twitter order table is **Normalized.**

<u>After Normalization:</u>

twitter_order_id	tweet_id
6795	1591152362
6796	1591152363
6797	1591152364
6798	1591152365
6799	1591152366
6800	1591152367
6801	1591152368
6802	1591152369
6803	1591152370

Table 14: Event tickets

Event_Tickets	
PK	ticket_id int NOT NULL
	ticket_cost varchar
FK	event_id int
FK	twitter_order_id int

<u>1st Normal Form:</u>

- It has primary key ticket_id with minimal attributes
- The values in each column of a table are atomic (No multi-value attributes are present).
- There are no repeating groups.

The Event tickets table is in 1st Normal Form.

<u>2nd Normal Form:</u>

- It is in 1st Normal form.
- All non-key attributes are fully dependent on Primary key ticket_Id.

The Event tickets table is in 2nd Normal form.

3rd Normal Form:

- It is in 2nd Normal Form.
- It has no transitive dependencies.

The Event tickets table is in 3rd Normal form.

Therefore, the Event tickets table is **Normalized.**

After Normalization:

ticket_id	ticket_cost	event_id	twitter_order_id
5656	50	89798	6795
5657	30	89799	6796
5658	15	89800	6797
5659	35	89801	6798
5660	70	89802	6799
5661	25	89803	6800
5662	10	89804	6801
5663	15	89805	6802

Normalized ERD:

Events

PK	event_id int NOT NULL
	event_title varchar
FK	location_id int
	event_date date
	event_time time
	event_duration int
	event_price int
FK	event_type_id int
	event_theme varchar
FK	status_id int
	event_perks varchar
FK	Club_id int

Clubs

PK	club_id int NOT NULL
	club_name varchar
	club_contact int
	club_email varchar
	club_location varchar

ClubUsers

PK	Cu_id int NOT NULL
FK	twitter_handle varchar
FK	club_id int

Event_Status

PK	status_id int NOT NULL
	Event_status

User

PK	twitter_handle varchar
	name varchar
	follower_count int
	following_count int
	Join_date Date

Organiser

PK	organiser_id int NOT NULL
	first_name varchar
	last_name varchar
	email varchar
	contact_number int
FK	club_id int

Payments

PK	payments_id int NOT NULL
	paid_on DateTime
	total_amount varchar
	payment_details varchar
FK	event_id int
FK	twitter_handle varchar

Location

PK	location_id int NOT NULL
	street varchar
	state varchar
	country varchar
FK	postal_code int

Event_Tickets

PK	ticket_id int NOT NULL
	ticket_cost varchar
FK	event_id int
FK	twitter_order_id int

Twitter Order

PK	twitter_order_id int NOT NULL
FK	tweet_id int

Postal_code

PK	Postal_code int NOT NULL
	city

Tweets

PK	tweet_id int NOT NULL
FK	twitter_handle varchar
	tweet_text varchar
	created_at DateTime
	hashtags varchar

Event Type

PK	event_type_id int NOT NULL
	event_type_name varchar