

CPSC 304 Project Cover Page

Milestone #: 4

Date: December 1, 2023

Group Number: 111

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your email address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

Summary:

Our team intends on creating a deck building database for a card game for our project, in which players can look up decks they can build, and find the cards necessary for that deck. They can also see the listings for those cards and where they are sold, as well as who are the artists that created that card.

Description:

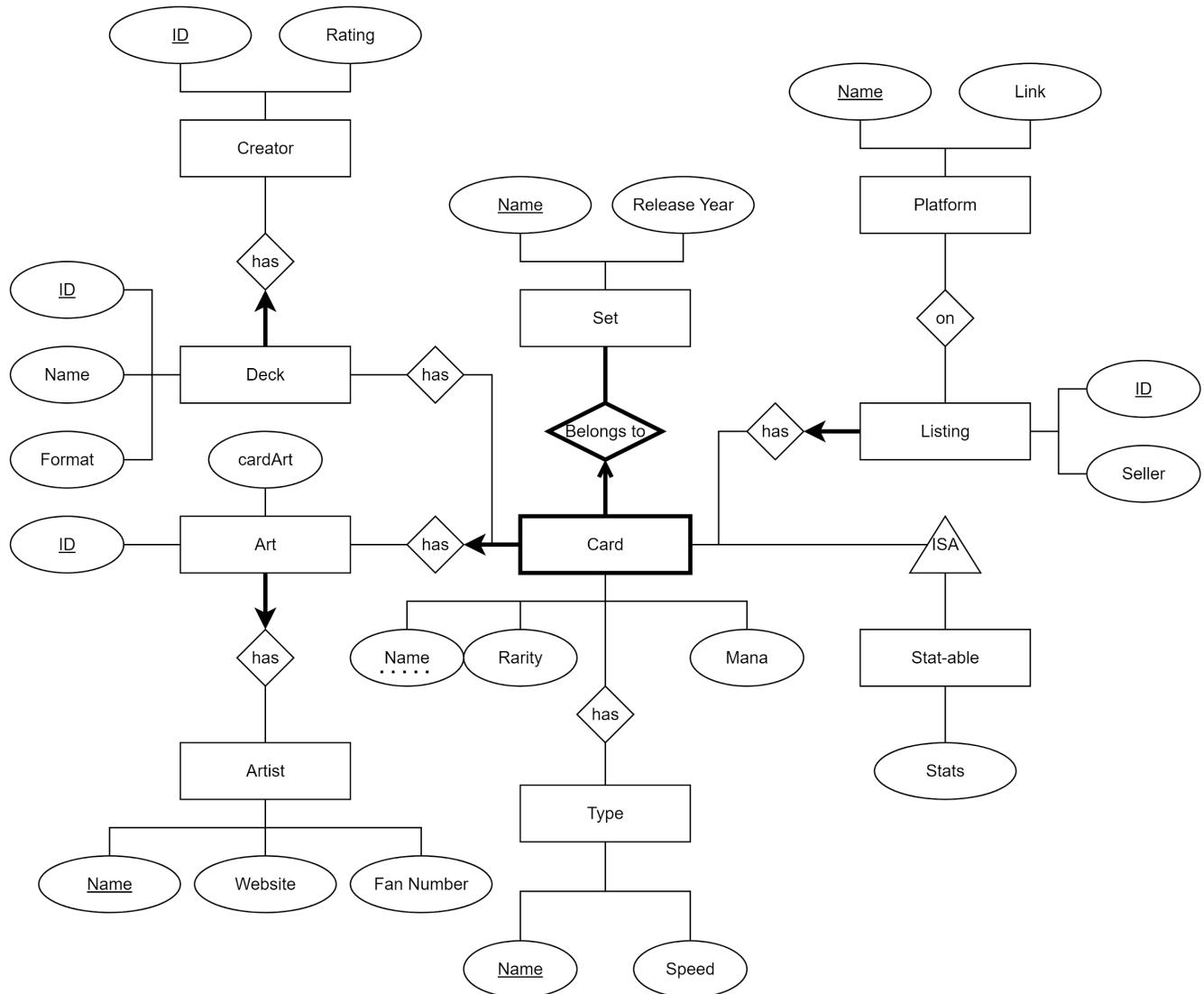
Our final project is a website that allows users to create and view decks for the popular tabletop card game: Magic The Gathering. After signing in, users can create decks, and put cards into that deck. Users can also update the name and formats of their decks, or delete these decks if they so choose.

Users can also look at decks that other creators have made, which involves other functions such as looking for specific creators, or finding trends among these creators.

ER Diagram:

We have fixed the ER diagram so that it properly reflects that Card is a weak entity of Set.

The main change we created was adding the link to the art as an attribute of Art, this allows us to actually include the piece of art being referenced in our database. Checking for fair use policies set by wizards of the coast, we downloaded the images and stored them on our google drive, and the link will be referencing their link on the google drive.



Schema:

The main change that we created was in updating card_of_art and drew_art to be merged together, as we did not realise that is a way we could handle the one to many chain that was created when we factored everything into BCNF.

We fixed the issues in the past assignments where we may have forgotten to label some things as foreign or primary keys.

During testing we also realised that setName needs to be able to have lengths up to 64 chars.

Below are the schemas as well as the tables we have created with the setup SQL file related to the given table.

Relational Schema (Bold = FK, Underline = PK):

Platform (platformName: char[64], platformLink: char[256])

WHERE		ORDER BY	
	PLATFORMNAME		PLATFORMLINK
1	MTGGoldfish		https://www.mtggoldfish.com/
2	401 Games		https://store.401games.ca/
3	TCGplayer		https://www.tcgplayer.com/
4	Card Kingdom		https://www.cardkingdom.com/
5	Face to Face Games		https://www.facetoffacegames.com/

Listings_On_Platform (platformName: char[64], listingID: integer)

	PLATFORMNAME	LISTINGID
1	401 Games	689028
2	Card Kingdom	567164
3	Face to Face Games	896019
4	MTGGoldfish	211965
5	TCGplayer	171228

Card_Listing (listingID: integer, seller: char[32], artID: integer NOT NULL, setName: char[32] NOT NULL)

	LISTINGID	SELLER	ARTID	SETNAME
1	211965	Pedram	872019	March of the Machine
2	689028	Alkiviadis	550603	Commander 2016
3	171228	Sham'a	921559	Dominaria Remastered
4	567164	Hel	687437	Eventide
5	896019	Ultán	621525	Wilds of Eldraine

Artist (artistName: char[32], artistSite: char[256], fanNumber: integer)

	WHERE	ORDER BY	
	ARTISTNAME	ARTISTSITE	FANNUMBER
1	Kekai Kotaki	http://www.kekaiart.com/	7670
2	Ryan Alexander Lee	https://www.ryanleeart.com/	91656
3	Jim Nelson	https://jimnelsonart.com/	926
4	Dave Allsop	https://www.artstation.com/daveallsop	4507
5	Vincent Christiaens	https://vincentchristiaens.pb.ononline/	5810
6	Justyna Dura	https://www.artstation.com/justynadura	10278
7	L J Koh	https://www.artstation.com/kheljay	4126
8	Michael Bierek	https://www.artstation.com/michael-bierek	3516
9	James Ryman	https://jamesryman.bigcartel.com/	10438
10	Daarken	https://www.daarken.com/	71293
11	Livia Prima	https://www.artstation.com/dopaprime	41978

Card_With_Drawn_Art (cardName: char[64], cardArt: char[128], artID: integer,

artistName: char[32] NOT NULL)

	WHERE	ORDER BY			
	CARDNAME	CARDART	ARTID	ARTISTNAME	
1	Invasion of Kamigawa	https://drive.google.com/file/d/1T2RUbzMrLEEAJrg9D-QTC...	872019	Kekai Kotaki	
2	Realmbreaker, the Invasion Tree	https://drive.google.com/file/d/1oYVnhGPm_Q3oHRhNYdC-N...	781273	Kekai Kotaki	
3	Decimate	https://drive.google.com/file/d/1ZS-tgvpSPdk7WTwESWeIB...	301982	Kekai Kotaki	
4	Commander's Sphere	https://drive.google.com/file/d/1NK6AwVNrjR9pp8moXzBK8...	550603	Ryan Alexander Lee	
5	Obsessive Search	https://drive.google.com/file/d/1MqE0qGGNETwXzz4n0_3Hb...	921559	Jim Nelson	
6	Slippery Bogle	https://drive.google.com/file/d/15ixq9yuakLx6m00UBklKZ...	687437	Dave Allsop	
7	Plunge into Winter	https://drive.google.com/file/d/17vfMQTV32UL5DnFiUJbt7...	621525	Vincent Christiaens	
8	Commander's Sphere	https://drive.google.com/file/d/1CEm6_rEJ4ofuov0sd-txl...	109274	Justyna Dura	
9	Sol Ring	https://drive.google.com/file/d/1DHS2rLhQR_SsMtP6Ng7NP...	137981	L J Koh	
10	Sol Ring	https://drive.google.com/file/d/1oYVnhGPm_Q3oHRhNYdC-N...	493175	Michael Bierek	
11	Cartel Aristocrat	https://drive.google.com/file/d/136xja4pkqGxIzVERdMRFg...	943789	James Ryman	
12	Belakor, the Dark Master	https://drive.google.com/file/d/1Sgb6VXXI95gTH3ewPMdKP...	666666	Daarken	
13	Raphael, Fiendish Savior	https://drive.google.com/file/d/1D4BN76Gby20-Ih6GAWszK...	999999	Livia Prima	

Components_Of_Card(setName: char[32], artID: integer, rarity: char[1], mana: integer, stats: char[7])

	WHERE SETNAME	ORDER BY ARTID	RARITY	MANA	STATS
1	March of the Machine	872019	U	4	<null>
2	March of the Machine	781273	R	3	<null>
3	Commander 2016	550603	C	3	<null>
4	Dominaria Remastered	921559	C	1	<null>
5	Dominaria Remastered	493175	U	1	<null>
6	Dominaria Remastered	301982	R	4	<null>
7	Eventide	687437	C	1	1/1
8	Wilds of Eldraine	621525	C	2	<null>
9	Lord of the Rings Commander	109274	C	3	<null>
10	Lord of the Rings Commander	137981	U	1	<null>
11	Wilds of Eldraine	493175	U	1	<null>
12	GateCrash	943789	U	2	2/2
13	Warhammer 40000 Commander	666666	M	6	6/5
14	Commander Legends: Battle for Baldurs Gate	999999	R	5	4/4

Set (setName: char[64], releaseYear: integer)

	WHERE SETNAME	ORDER BY RELEASEYEAR
1	March of the Machine	2023
2	Commander 2016	2016
3	Dominaria Remastered	2023
4	Eventide	2008
5	Wilds of Eldraine	2023
6	Lord of the Rings Commander	2023
7	Commander Legends: Battle for Baldurs Gate	2022
8	Warhammer 40000 Commander	2022
9	GateCrash	2013

Types_of_Card (typeName: char[8], artID: char[64], setName: char[32])

	ARTID	SETNAME	TYPE NAME
1	109274	Lord of the Rings Commander	Artifact
2	137981	Lord of the Rings Commander	Artifact
3	301982	Dominaria Remastered	Sorcery
4	493175	Dominaria Remastered	Artifact
5	493175	Wilds of Eldraine	Artifact
6	550603	Commander 2016	Artifact
7	621525	Wilds of Eldraine	Instant
8	666666	Warhammer 40000 Commander	Creature
9	687437	Eventide	Creature
10	781273	March of the Machine	Artifact
11	872019	March of the Machine	Battle
12	921559	Dominaria Remastered	Sorcery
13	943789	GateCrash	Creature
14	999999	Commander Legends: Battle for Baldur's Gate	Creature

Type (typeName: char[20], playSpeed: char[1])

	TYPE NAME	PLAY SPEED
1	Battle	S
2	Artifact	S
3	Sorcery	S
4	Creature	S
5	Instant	I

Creator (creatorID: char[64], creatorRating: double)

	CREATORID	CREATORRATING
1	Darth_Zharlner	1.99
2	Hatsu	2.45
3	Pariah462	3.2
4	sumdumname	4.9
5	Anonymous	2.78
6	ora_neilli01	0

Deck_From_Creator (deckID: integer, deckName: char[64], playFormat: char[4],
creatorID: char[64] NOT NULL)

	DECKID	DECKNAME	PLAYFORMAT	CREATORID
1	296753	Ninja Tribal	STAN	Darth_Zharlner
2	99275	Trap Cards	COMM	Hatsu
3	977177	Madness Discard	PAUP	Pariah462
4	931273	Propagate	PAUP	Pariah462
5	261092	Modern Tap Down	MDRN	Anonymous
6	864695	Keyword Soup	COMM	sumdumname
7	878789	Aristocrats	COMM	sumdumname
8	123412	Demon Tribal	COMM	sumdumname

Card_In_Deck (deckID: integer, artID: char[64], setName: char[32])

	DECKID	ARTID	SETNAME
1	99275	493175	Dominaria Remastered
2	99275	550603	Commander 2016
3	123412	493175	Dominaria Remastered
4	123412	550603	Commander 2016
5	123412	666666	Warhammer 40000 Commander
6	123412	999999	Commander Legends: Battle for Baldurs Gate
7	261092	493175	Dominaria Remastered
8	261092	550603	Commander 2016
9	261092	621525	Wilds of Eldraine
10	296753	137981	Lord of the Rings Commander
11	296753	872019	March of the Machine
12	864695	109274	Lord of the Rings Commander
13	864695	550603	Commander 2016
14	864695	687437	Eventide
15	864695	999999	Commander Legends: Battle for Baldurs Gate
16	878789	493175	Dominaria Remastered
17	878789	550603	Commander 2016
18	878789	943789	GateCrash
19	931273	109274	Lord of the Rings Commander
20	931273	493175	Dominaria Remastered
21	931273	550603	Commander 2016
22	977177	493175	Dominaria Remastered
23	977177	550603	Commander 2016
24	977177	921559	Dominaria Remastered

Queries:

All the Queries can be found in

src/main/java/app/repository/DatabaseConnectionHandler.java

Insert: Inserting a card into a deck (Line 270, putCardInDeck)

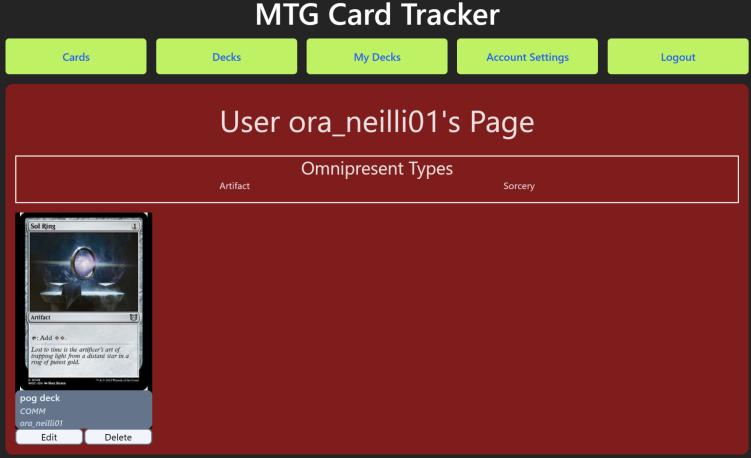
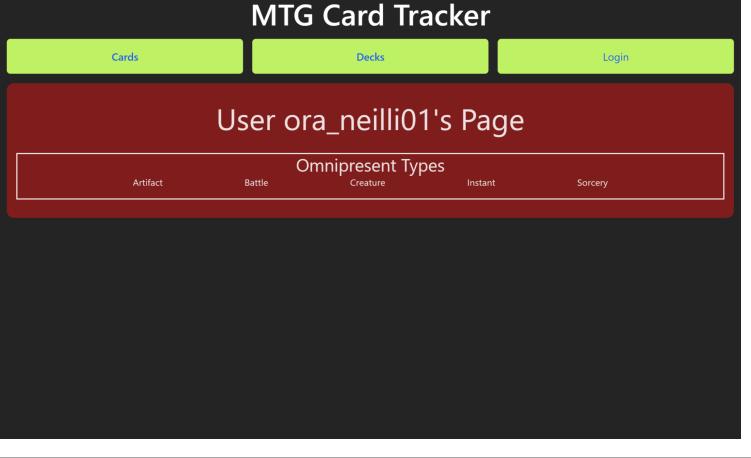
```
INSERT INTO Deck_From_Creator VALUES (?, ?, ?)
```

Before	
During	
After	

Delete: Deleting a Deck Cascades and removes all the instances where the deck is mentioned in cardInDeck (line 247, deleteDeck)

```
DELETE FROM Card_In_Deck WHERE deck_id = (?)
```

```
DELETE FROM Deck_From_Creator WHERE deck_id = (?)
```

Before	 A screenshot of the MTG Card Tracker application. The main title is "MTG Card Tracker". Below it is a red header bar with the text "User ora_neilli01's Page". Underneath the header is a navigation bar with tabs: "Cards", "Decks", "My Decks", "Account Settings", and "Logout". A sub-header "Omnipresent Types" is displayed above a grid of cards. The first card shown is "Sol Ring" (Artifact). Below the card is a section labeled "pog deck COMM ora_neilli01" with "Edit" and "Delete" buttons. The "Delete" button is highlighted with a red circle.
During	 A screenshot of the MTG Card Tracker application during the deletion process. The interface is identical to the "Before" state, but the "Delete" button for the "Sol Ring" card is now explicitly circled in red.
After	 A screenshot of the MTG Card Tracker application after the card has been deleted. The page is mostly blank, with only the top navigation bar and a small portion of the previous content visible.

Update: Updating the any numerical or string non key feature of Card_In_Deck (line 355, updateNonKeyString)

UPDATE Deck_From_Creator **SET** (?) = (?) **WHERE** (?) = (?)
UPDATE Card_In_Deck **SET** (?) = (?) **WHERE** (?) = (?)

Before	<p>Format: MDRN Creator: ora_neilli01 Edit Deck Delete Deck</p>
During	<p>Deck Name: that Deck Type: Commander <input type="button" value="Commander"/> Deck Owner: ora_neilli01 <input type="button" value="ora_neilli01"/> Clear Submit</p>
After	<p>Format: COMM Creator: ora_neilli01 Edit Deck Delete Deck</p>

Selection: Finding a card with any of the given names (line 538 in function generateCardQuery)

```
for (int i = 0; i < input.length; i++) {
    if (i > 0) {
        query += " OR";
    }

    query += " a.cardName = " + input;
}
```

(Added to query in Join based on user input)

Before	
During	
After	

Projection: Picking the column names in listings (line 380, getListings)

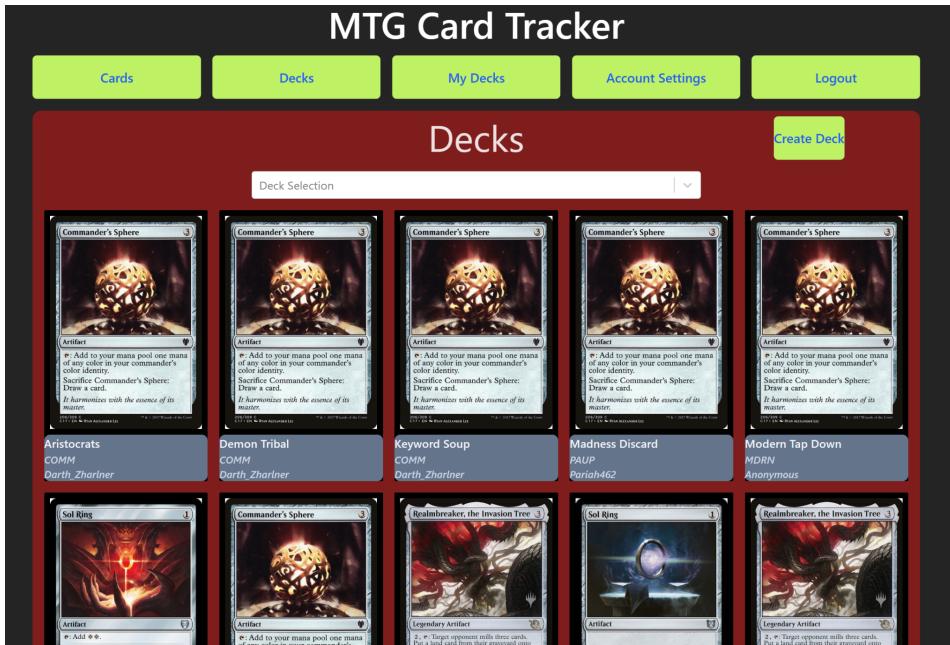
```
SELECT c.seller, p.platformName, p.platformLink
FROM Platform p, Listings_On_Platform l, Card_Listing c
WHERE p.platformName = l.platformName AND c.listingID =
l.listingID AND c.artID = (?) AND c.setName = (?)
```

Before	
During	
After	

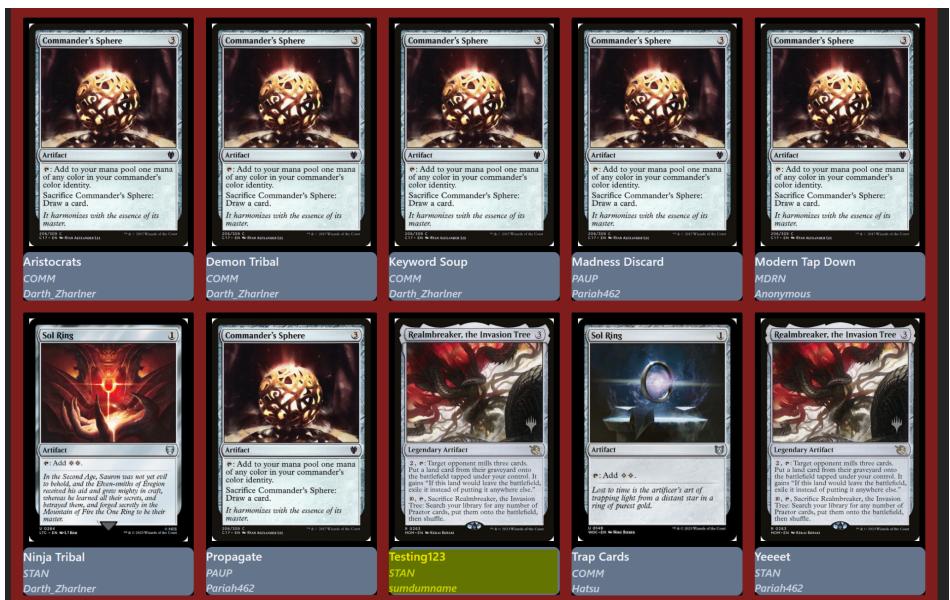
Join: Joining cardOfArt with componentsOfCard and cardInDeckin to find info of cards in a deck (line 450, getCardsInDeck)

```
SELECT a.cardName as cardName, c.setName as setName, c.rarity as
rarity, c.stats as stats, c.artID as artID, c.mana as mana
FROM Card_With_Drawn_Art a, Components_Of_Card c, Card_In_Deck d
WHERE a.artID = c.artID AND d.artID = a.artID AND c.setName =
d.setName AND d.deckId = (?)
```

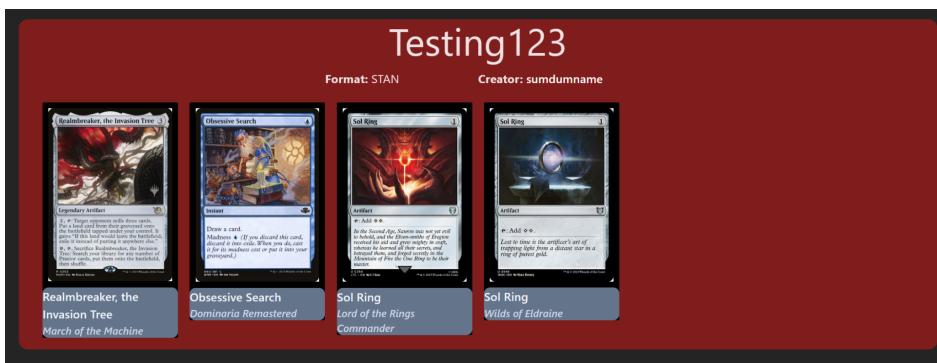
Before



During



After



Aggregation with Group By: Finding cards with multiple printings (line 538 in function generateCardQuery)

GROUP BY a2.cardName **HAVING COUNT(*) > 1** (Added to query in Join based on user input)

Before	
During	
After	

Aggregation with Having: Finding cards with multiple printings (line 538 in function generateCardQuery)

GROUP BY a2.cardName **HAVING COUNT(*) > 1** (Added to query in Join based on user input)

Before	
During	
After	

Nested Group By Aggregation: Find set with lowest average mana cost of cards (line 605, getLowestCurveDeck)

```
SELECT d.deckID as deckID, d.deckName as deckName, d.playFormat  
as playFormat, d.creatorID as creatorID  
FROM Deck_From_Creator d, Components_Of_Card c, Card_In_Deck cd  
WHERE d.deckID = cd.deckID AND c.artID = cd.artID AND c.setName  
= cd.setName  
GROUP BY d.deckID, d.deckName, d.playFormat, d.creatorID  
HAVING avg(c.mana) <= all(SELECT AVG(c2.mana)  
                 FROM Deck_From_Creator d2,  
                 Components_Of_Card c2, Card_In_Deck cd2  
                 WHERE d2.deckID = cd2.deckID AND  
                 c2.artID = cd2.artID AND c2.setName =  
                 cd2.setName  
                 GROUP BY d2.deckID)
```

Before	<p>MTG Card Tracker</p> <p>Cards Decks My Decks Account Settings Logout</p> <h2>Decks</h2> <p>Deck Selection</p> <ul style="list-style-type: none"> Aristocrats COMM Darth_Zhariner Demon Tribal COMM Darth_Zhariner Keyword Soup COMM Darth_Zhariner Madness Discard PAUP Pariah462 Modern Tap Down MDRN Anonymous <p>Create Deck</p>
During	<p>MTG Card Tracker</p> <p>Cards Decks My Decks Account Settings Logout</p> <h2>Decks</h2> <p>Deck Selection</p> <ul style="list-style-type: none"> Aristocrats COMM Darth_Zhariner Demon Tribal COMM Darth_Zhariner Keyword Soup COMM Darth_Zhariner Madness Discard PAUP Pariah462 Modern Tap Down MDRN Anonymous <p>Create Deck</p>
After	<p>MTG Card Tracker</p> <p>Cards Decks My Decks Account Settings Logout</p> <h2>Decks</h2> <p>Lowest Curve</p> <p>Testing123 STAN sumdumname</p> <p>Create Deck</p>

Division: Find card types present in all decks of a creator (line 576, generateOmnipresentTypes)

```
SELECT t.typeName as type
FROM Type t
WHERE NOT EXISTS
  ((SELECT d.deckName
    FROM Deck_From_Creator d
    WHERE d.creatorID = (?))
MINUS
  (SELECT c.deckID
    FROM Card_In_Deck c, Types_of_Card ct, Deck_From_Creator d
    WHERE c.deckID = d.deckID AND ct.artID = c.artID AND
      ct.typeName = t.typeName))
```

Before	<h3 style="text-align: center;">MTG Card Tracker</h3> <p style="text-align: center;">Cards Decks My Decks Account Settings Logout</p> <h2 style="text-align: center;">Cards</h2> <p style="text-align: center;">Sort By <input type="text" value="Search"/></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Invasion of Kamigawa March of the Machine</p> </div> <div style="text-align: center;"> <p>Realmbreaker, the Invasion Tree March of the Machine</p> </div> <div style="text-align: center;"> <p>Commander's Sphere Commander 2016</p> </div> <div style="text-align: center;"> <p>Obsessive Search Dominaria Remastered</p> </div> <div style="text-align: center;"> <p>Sol Ring Dominaria Remastered</p> </div> </div>
During	<h3 style="text-align: center;">MTG Card Tracker</h3> <p style="text-align: center;">Cards Decks My Decks Account Settings Logout</p> <h2 style="text-align: center;">Cards</h2> <p style="text-align: center;">Sort By <input type="text" value="Search"/></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Invasion of Kamigawa March of the Machine</p> </div> <div style="text-align: center;"> <p>Realmbreaker, the Invasion Tree March of the Machine</p> </div> <div style="text-align: center;"> <p>Commander's Sphere Commander 2016</p> </div> <div style="text-align: center;"> <p>Obsessive Search Dominaria Remastered</p> </div> <div style="text-align: center;"> <p>Sol Ring Dominaria Remastered</p> </div> </div>
After	<h3 style="text-align: center;">MTG Card Tracker</h3> <p style="text-align: center;">Cards Decks My Decks Account Settings Logout</p> <h2 style="text-align: center;">User ora_neilli01's Page</h2> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p style="text-align: center;">Omnipresent Types</p> <p style="text-align: center;">Artifact Battle Creature Sorcery</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Commander's Sphere Artifact Add one mana of any color in your commander's color identity. Sacrifice Commander's Sphere: Draw a card. It harmonizes with the essence of its master.</p> </div> <p style="text-align: center;">that COMM ora_neilli01</p> <p style="text-align: center;">Edit Delete</p> </div>