CPSC 304 Project Cover Page

Milestone #: 4

Date: 5 August 2024

Group Number: 2

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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 e-mail 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

3a Final Project Description

Our project focuses on collecting, managing, and analyzing data related to tournaments in the online rhythm game "osu!" While the osu! website provides an overall leaderboard and ranking system based on individual performance, there is no system for tournaments. Our application fills this gap by providing tools for organizing, tracking, and filtering tournament data.

Within the tournament catalog, the application provides key information on matches within each tournament. Information regarding songs and artists, along with which beatmaps will be used are stored. Additionally, it stores scores set on those beatmaps and includes essential details such as mods used, combo, accuracy, and date set. Furthermore, data associated with players that set these scores are stored. These include their username, rank, and represented country.

Our application is designed for osu! players, fans, and tournament organizers. Players and fans can stay up to date with tournament information, match history, and players' performances. Additionally, tournament organizers will have a better tool to avoid reusing beatmaps across tournaments.

Overall, our project provides a user-friendly application for osu! players, fans, and tournament organizers to view and filter data related to osu! tournaments. Historically, finding information regarding smaller tournaments has been challenging. By providing key data associated with tournaments, our application aims to make tournament details easily accessible for the osu! community. Our application serves as a simple, yet comprehensive platform for the osu! community to collect, manage, and analyze data related to tournaments.

3b Final Schema Changes

- Added a 'BeatmapHitObjects' table. HitObjects in a beatmap have specific and detailed attributes, so having its own table allows us to manage this separately from the 'Beatmap' table
- Added a 'TournamentBadge' table. Allows us to separate its attributes from the 'Tournament' table
- Changed to using data type 'VARCHAR' from 'CHAR' to store strings of variable length
- Changed the datatype for 'isFeatured' in the 'Artist' table from 'BOOL' to 'CHAR(1)' since BOOL is not supported in SQLPLUS
- Added the UNIQUE constraint to 'name' attribute in 'Artist' and 'Song' table providing a guarantee for uniqueness in those columns

3c Final Schema and Data from SQL Script

i. Final Schema

Note: <u>primary keys are underlined</u> and **foreign keys are bolded**

Artist(<u>artistId</u>: INT, isFeatured: CHAR(1), name: VARCHAR(32))

NOT NULL: isFeatured, name

• UNIQUE: name

Country(countryName: VARCHAR(32), flag: BLOB)

NOT NULL: flag

TournamentBadge(hitObjectsURL: VARCHAR(256), badgeIssueDate: DATE)

• NOT NULL: badgeIssueDate

BeatmapHitObjects(<u>hitObjectsUrl</u>: VARCHAR(256), maxCombo: INT, hpDrain: FLOAT, stars: FLOAT)

• NOT NULL: maxCombo, hpDrain, stars

Player(<u>playerId</u>: INT, rank: INT, username: VARCHAR(32), joinDate: DATE, **countryName**: VARCHAR(32))

• NOT NULL: rank, username, joinDate, countryName

UNIQUE: username

Song(songId: INT, bpm: INT, genre: VARCHAR(32), name: VARCHAR(64), artistId: INT)

• NOT NULL: bpm, name, artistID

UNIQUE: name

Tournament(<u>tournamentId</u>: INT, startDate: DATE, badgeUrl: VARCHAR(256), badgeIssueDate: DATE, name: VARCHAR(64), lowerRankBound: INT, upperRankBound: INT, **countryName**: VARCHAR(32))

NOT NULL: startDate, name

Match(<u>matchId</u>: INT, round: VARCHAR(32), **tournamentId**: INT)

• NOT NULL: round, tournamentID

BeatmapSet(<u>beatmapSetId</u>: INT, creationDate: DATE, **playerId**: INT, **songId**: INT)

NOT NULL: creationDate, playerID, songID

Beatmap(<u>beatmapSetId</u>: INT, difficultyName: VARCHAR(64), maxCombo: INT, hpDrain: INT, stars: FLOAT, hitObjectsUrl: VARCHAR(256), **playerId**: INT)

NOT NULL: maxCombo, hpDrain, stars, hitObjectsUrl, playerId

Standard(<u>beatmapSetId</u>: INT, <u>difficultyName</u>: VARCHAR(64), circleSize: FLOAT)

NOT NULL: circleSize

Taiko(<u>beatmapSetId</u>: INT, <u>difficultyName</u>: VARCHAR(64), drumSpeed: FLOAT)

NOT NULL: drumSpeed

Mania(**beatmapSetId**: INT, **difficultyName**: VARCHAR(64), keyCount: INT)

NOT NULL: keyCount

Score(<u>scoreId</u>: INT, modifier: VARCHAR(8), dateSet: DATE, totalScore: INT, combo: INT, accuracy: FLOAT, **playerId**: INT, **beatmapSetId**: INT, **difficultyName**: VARCHAR(64), **matchId**: INT)

 NOT NULL: dateSet, combo, accuracy, playerId, beatmapSetId, difficultyName, matchId

ii. Screenshots of Data from SQL PLus

All tables:

```
SQL> SELECT table_name FROM all_tables WHERE owner='ORA_RQUAY';
TABLE_NAME
ARTIST
BEATMAP
BEATMAPHITOBJECTS
BEATMAPSET
COUNTRY
MANIA
MATCH
PLAYER
SCORE
SONG
STANDARD
TAIKO
TOURNAMENT
TOURNAMENTBADGE
14 rows selected.
```

Artist:

```
SQL> SELECT * FROM ARTIST;
 ARTISTID I NAME
        0 Y Kommisar
        1 Y ZxNX
        2 Y Aether
        3 N Denkishiki Karen Ongaku Shuudan
        4 N Noah
        5 Y Silentroom
        6 Y Marmalade butcher
        7 Y Sobrem
        8 Y II-L
        9 Y katagiri
       10 Y Frums
       11 Y Camellia
       12 N ROKINA
       13 N Wolpis Carter
       14 N SDMNE
15 rows selected.
```

Beatmap:

ATMAPSETID DIFFICULTYNAME	MAXCOMBO	HPDRAIN HITOBJECTSURL	MAPPERID
2095159 TEMPORAL BLAST	1820	5 https://osu.ppy.sh/beatmapsets/2095159/download	10466315
2095138 Annihilation	1299	6 https://osu.ppy.sh/beatmapsets/2095138/download	5745865
2095121 Extra Stage	1468	4 https://osu.ppy.sh/beatmapsets/2095121/download	4960893
2095134 Consumed	1516	4 https://osu.ppy.sh/beatmapsets/2095134/download	7715620
2095157 Extra Stage	1812	5 https://osu.ppy.sh/beatmapsets/2095157/download	5194391
1980705 Hell Oni	1759	3 https://osu.ppy.sh/beatmapsets/1980705/download	4050738
1720005 X	2158	5 https://osu.ppy.sh/beatmapsets/1720005/download	4433058
1980775 Super Macaroni	1121	5 https://osu.ppy.sh/beatmapsets/1980775/download	11563671
1664805 Cosmic Cruise	1532	6 https://osu.ppy.sh/beatmapsets/1664805/download	9821194
1980692 WereOni	1452	7 https://osu.ppy.sh/beatmapsets/1980692/download	1910766
1939259 [7K] Blazing Inferno	6500	8 https://osu.ppy.sh/beatmapsets/1939259/download	7898495
1939327 [7K] rickrollab	8212	8 https://osu.ppy.sh/beatmapsets/1939327/download	18219603
1939270 [7K] Event Horizon	3200	8 https://osu.ppy.sh/beatmapsets/1939270/download	3360737
1657994 [7K] Love You (Cut Ver.)	5933	7 https://osu.ppy.sh/beatmapsets/1657994/download	2218047
1939330 [7K] Schadenfreude	8145	8 https://osu.ppy.sh/beatmapsets/1939330/download	18219603

BeatmapHitObjects:

SQL> SELECT * FROM BEATMAPHITOBJECTS;			
HITOBJECTSURL	MAXCOMBO	HPDRAIN	STARS
https://osu.ppy.sh/beatmapsets/2095159/download	1820	 5	8.05
https://osu.ppy.sh/beatmapsets/2095138/download	1299	6	7.93
https://osu.ppy.sh/beatmapsets/2095121/download	1468	4	7.6
https://osu.ppy.sh/beatmapsets/2095134/download	1516	4	7.73
https://osu.ppy.sh/beatmapsets/2095157/download	1812	5	7.61
https://osu.ppy.sh/beatmapsets/1980705/download	1759	3	6.77
https://osu.ppy.sh/beatmapsets/1720005/download	2158	5	7.99
https://osu.ppy.sh/beatmapsets/1980775/download	1121	5	7.97
https://osu.ppy.sh/beatmapsets/1664805/download	1532	6	6.51
https://osu.ppy.sh/beatmapsets/1980692/download	1452	7	7.61
https://osu.ppy.sh/beatmapsets/1939259/download	6500	8	8.02
https://osu.ppy.sh/beatmapsets/1939327/download	8212	8	10.43
https://osu.ppy.sh/beatmapsets/1939270/download	3200	8	8.43
https://osu.ppy.sh/beatmapsets/1657994/download	5933	7	8.34
https://osu.ppy.sh/beatmapsets/1939330/download	8145	8	11.31
15 rows selected.			

BeatmapSet:

SQL> SELECT * F	FROM BEATMAPSET;		
BEATMAPSETID CF	REATIONDATE	MAPPERID	SONGID
2095159 20	323-11-26	10466315	0
2095138 20	323-11-26	5745865	1
2095121 20	323-11-26	4960893	2
2095134 20	323-11-26	7715620	3
2095157 20	323-11-26	5194391	4
1980705 26	323-04-23	4050738	5
1720005 20	322-03-14	4433058	6
1980775 26	323-04-23	11563671	7
1664805 26	322-01-01	9821194	8
1980692 20	323-04-23	1910766	9
1939259 26	323-02-12	7898495	10
1939327 26	323-02-12	18219603	11
1939270 20	323-02-12	3360737	12
1657994 26	321-12-24	2218047	13
1939330 20	323-02-12	18219603	14
15 rows selecte	ed.		

Country:

```
SQL> SELECT * FROM COUNTRY;

COUNTRYNAME FLAG

------
United States
Australia
Japan
Taiwan
Canada
United Kingdom
Russian Federation
France
Brazil
South Korea
Germany

11 rows selected.
```

Mania:

```
SQL> SELECT * FROM MANIA;

BEATMAPSETID DIFFICULTYNAME KEYCOUNT

1939259 [7K] Blazing Inferno 7
1939327 [7K] rickrollab 7
1939270 [7K] Event Horizon 7
1657994 [7K] Love You (Cut Ver.) 7
1939330 [7K] Schadenfreude 7
```

Match:

```
SQL> SELECT * FROM MATCH;

MATCHID ROUND

111534249 OWC2023: (Australia) V5 (United States)
1188221558 TWC2023: (Taiwan) V5 (Germany)
1106911235 MWC7K2023: (Philippines) V5 (South Korea)
111072404 OCL: (HKU School of Professional and Continuing Education A) vs (Portland State University A)
103540083 UBCSS: (Ophiz) vs (ZephyrCo)

5
```

Player:

```
SQL> SELECT * FROM PLAYER;
           rank username
 PLAYERID
                                                      JOINDATE COUNTRYNAME
  7813296 26 hydrogen bomb
7075211 161 tekkito
4108547 19 WindowLife
                                                     2016-01-23 United States
                                                     2016-09-11 United States
                                                     2014-03-06 United States
  7562902 2 mrekk
7341183 16 ASecretBox
                                                     2015-12-12 Australia
                                                     2015-10-30 Australia
  10466315 362090 Serenhaide
                                                     2017-07-06 Canada
  5745865 1761554 Altai
                                                     2015-01-24 United Kingdom
             4493 Djulus
                                                     2014-09-22 Russian Federation
  4960893
             8020 IsomirDiAngelo
   7715620
                                                     2016-01-08 France
               8668 Camo
                                                     2014-11-11 United States
  5194391
  4050738 954166 HiroK
                                                      2014-02-21 Brazil
  4433058 431048 sendol
                                                     2014-05-23 South Korea
  11563671 794865 4sbet1
                                                     2018-01-17 Japan
  9821194 54068 Miniature Lamp
                                                     2017-03-01 United States
                                                     2012-09-10 Germany
  1910766
                   Nwolf
                     Wonki
  7898495
                                                     2016-02-07 South Korea
  18219603 2108858 Leeju
                                                     2020-08-23 Germany
  3360737
                     Jinjin
                                                     2013-09-29 United States
  2218047
                     Kim_GodSSI
                                                     2012-12-26 South Korea
19 rows selected.
```

Score:

SCOREID MODIFIER	R TOTALSCORE	COMBO	ACCURACY DATESET	PLAYERID	BEATMAPSETID	DIFFICULTYNAME	MATCHID
1 HR	760905	1518	96.48 2023-12-01	7813296	2095159	TEMPORAL BLAST	111534249
2 HD	599548	1145	96.39 2023-12-01	7075211	2095138	Annihilation	111534249
3	485149	682	98.13 2023-12-01	4108547	2095121	Extra Stage	111534249
4 HD	680844	1163	98.74 2023-12-01	7562902	2095134	Consumed	111534249
5	532323	1186	95.78 2023-12-01	7341183	2095157	Extra Stage	111534249
6	468524	620	96.33 2023-12-01	7813296	2095138	Annihilation	111534249
7 HR	556454	687	98.79 2023-12-01	7813296	2095121	Extra Stage	111534249
8 HR	558443	1048	94.15 2023-12-01	7813296	2095134	Consumed	111534249
9 HR	714260	1172	98.76 2023-12-01	7813296	2095157	Extra Stage	111534249

Song:

SONGID	BPM GENRE	NAME	ARTISTID
0	245 Video Game	AKARI BEAM CANNON LAST BOSS	0
1	222 Electronic	Fana	1
2	240 Rock	Lunate Elf	2
3	264 Metal	E.E.L.S.	3
4	223 Video Game	Necrofantasia	4
5	174 Electronic	Shuu no Hazama	5
6	194 Rock	Amanita	6
7	232 Electronic	Super Macaron	7
8	136 Unspecified	EXPLORER-4	8
9	177 Unspecified	Angel???s Salad	9
10	142 Unspecified	ultra-blazures	10
11	140 Electronic	Never Gonna Give You Up (Camellia Remix)	11
12	999 Video Game	Schwerkraft	12
13	140 Rock	Batsubyou	13
14	240 Electronic	Beyond the Aexis	14

Standard:

SQL> SELECT * FROM STANDARD;	
BEATMAPSETID DIFFICULTYNAME	CIRCLESIZE
2095159 TEMPORAL BLAST 2095138 Annihilation	3.8 4.2
2095121 Extra Stage 2095134 Consumed	4 4
2095157 Extra Stage	4

Taiko:

```
SQL> SELECT * FROM TAIKO;

BEATMAPSETID DIFFICULTYNAME DRUMSPEED

1980705 Hell Oni 10
1720005 X 9.6
1980775 Super Macaroni 5
1664805 Cosmic Cruise 8
1980692 WereOni 10
```

Tournament:

SQL> SELECT	* FROM TOURNAMENT;				
TOURNAMENTI) name	LOWERRANKBOUND UPPERRANKBOUND	STARTDATE	BADGEURL	COUNTRYNAME
:	1 osu! World Cup 2023		2023-09-21	https://assets.ppy.sh/profile-badges/owc2023-winner.png	
	2 osu!taiko World Cup 2023		2023-02-16	https://assets.ppy.sh/profile-badges/otwc-2nd-2023.png	
3	3 osu!mania 7K World Cup 2023		2022-12-15	https://assets.ppy.sh/profile-badges/mwc7k2023-winner.png	
4	4 osu!Collegiate League: 10th Edition		2023-08-31	https://assets.ppy.sh/profile-badges/OCL10.png	
	5 osu!UBC Sunset Series ???22	100000	2022-08-07	https://assets.ppy.sh/profile-badges/oubc-2022.png	

TournamentBadge:

SQL> SELECT * FROM TOURNAMENTBADGE;	
BADGEURL	BADGEISSUE
	0003 40 00
https://assets.ppy.sh/profile-badges/owc2023-winner.png	2023-12-02
https://assets.ppy.sh/profile-badges/otwc-2nd-2023.png	2023-04-30
https://assets.ppy.sh/profile-badges/mwc7k2023-winner.png	2023-02-21
https://assets.ppy.sh/profile-badges/OCL10.png	2024-01-15
https://assets.ppy.sh/profile-badges/oubc-2022.png	2022-10-07

3d Queries

INSERT

```
./controller/src/appService.ts | line 758
addSong (song: SongPUTRequestBody)
```

- adds song
- if artistId foreign key is not present, create new one

DELETE

```
./controller/src/appService.ts | line 144
remoteBeatmapSet(beatmapSetId: string)
```

- removes beatmapset based on given id, deletes any associated beatmaps

UPDATE

```
./controller/src/appService.ts | line 396
updateBeatmapSet(beatmapsetId:string, body:BeatmapSsetPostRequestBody)
```

- updates beatmapset with given beatmapData based on id

SELECTION

```
./controller/src/appService.ts | line 559
fetchWithFilters(tableName: string, filters: string)
```

- selects row from given table that pass given filter

PROJECTION

```
./controller/src/appService.ts | line 429, 587, 604
fetchTables(tableName: string, attributes: string | undefined)
fetchTableNames()
fetchColumnNames(tableName: string)
```

- select table with support for projection based on columns passed
- returns all names for all tables across schema
- returns all column/attribute names for a given table

JOIN

./controller/src/appService.ts | line 101

fetchBeatmapSets(bpmLowerBound: number, bpmUpperBound: number)
- join on player, song and artist, support for specifying song bpm

AGGREGATION with GROUP BY

```
./controller/src/appService.ts | line 505
fetchPlayersAvgAccuracy(playerId: string | undefined)
```

- returns players grouped by playerName with their average accuracy

AGGREGATION with HAVING

```
./controller/src/appService.ts | line 459
fetchPlayersAvgScoreGreaterThan(lowerBound: string | undefined)
```

- returns players with a average score greater than a given bound

Nested AGGREGATION with GROUP BY

```
./controller/src/appService.ts | line 533
fetchMaxAvgAccPerMod( )
```

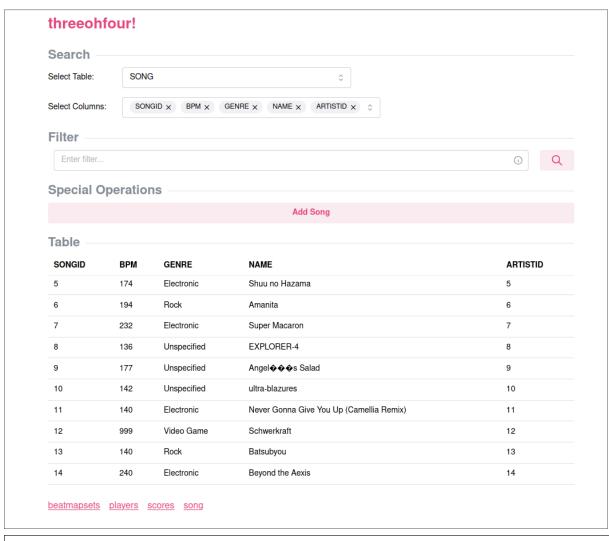
- returns modifier with the maximum average accuracy

DIVISION

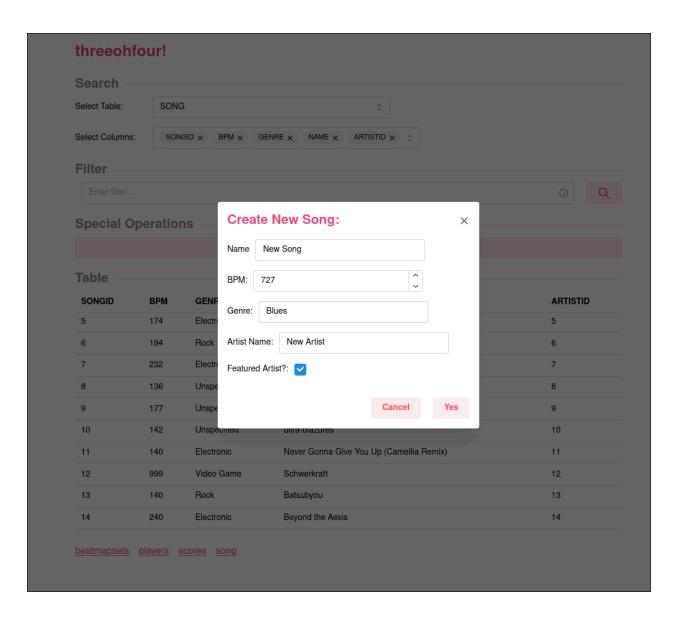
- ./controller/src/appService.ts | line 726
 fetchPlayersWithAllBeatmaps()
- returns players with a score on ALL beatmaps

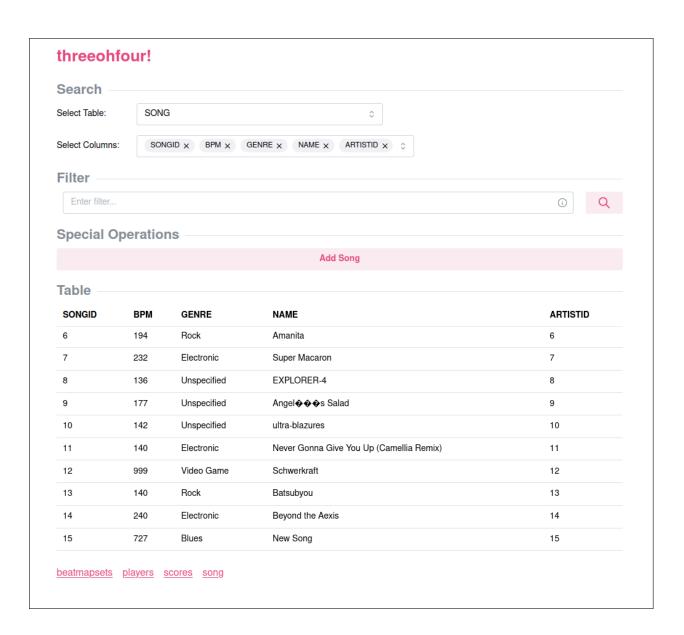
3e Screenshots

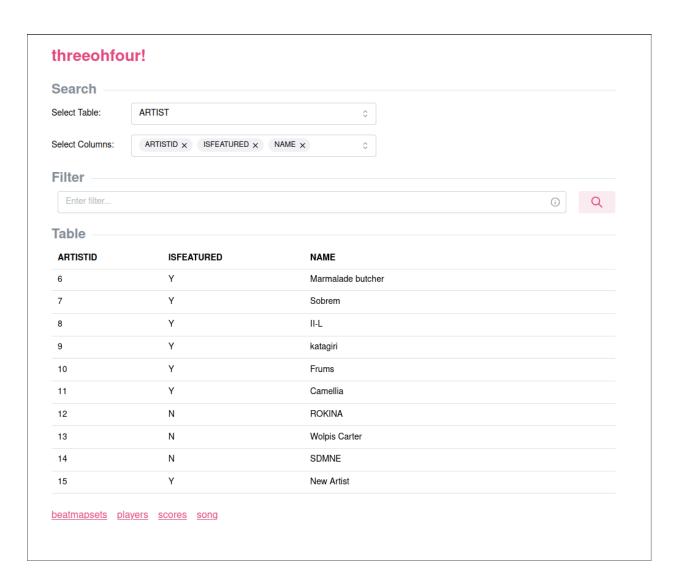
INSERT



Add Song



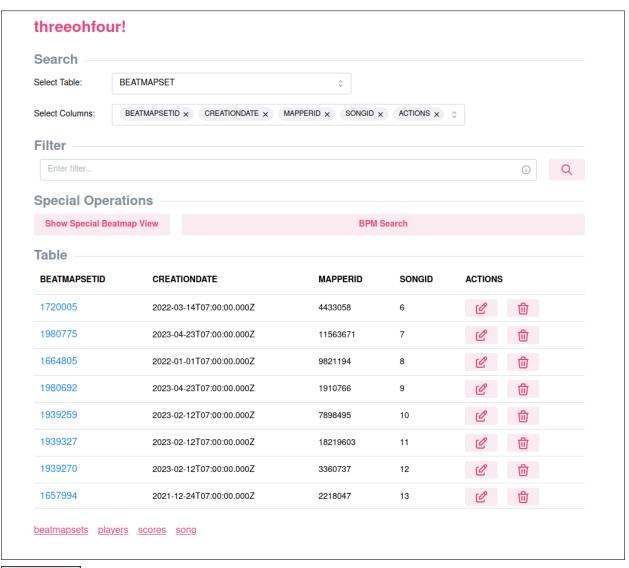




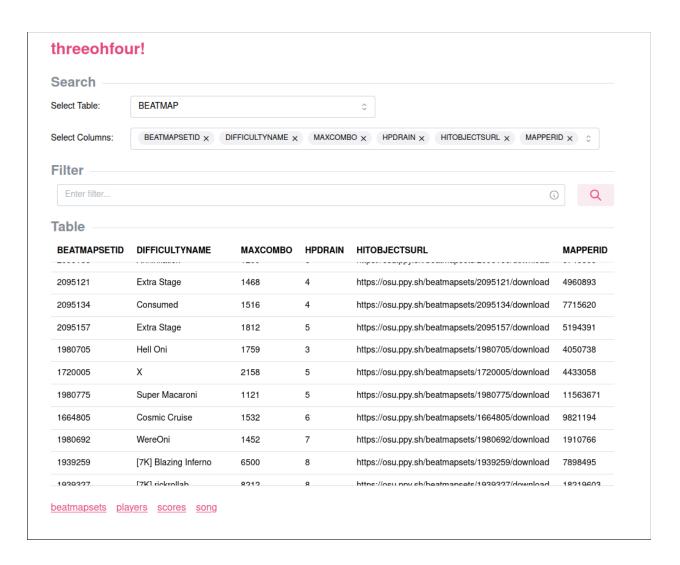
notification preview:

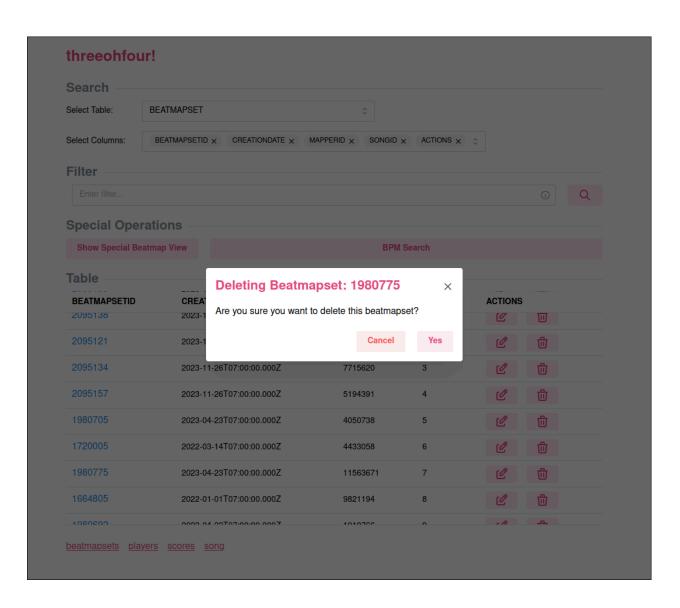
NAME	ARTISTID	
AKARI BEAM CANNON LAST BOSS	0	
Fana	1	
Lunate Elf	2	
E.E.L.S.	3	
Necrofantasia	4	
Shuu no Hazama	5	
Amanita	6	
Super Macaron	7	
EXPLORER-4	8	
Angel���s Salad	9	
1	Song added successfully	-
2		
3		
4		
5		
6		
7		
8		
9		
	Error	
	ORA-01400: cannot insert NULL into	×

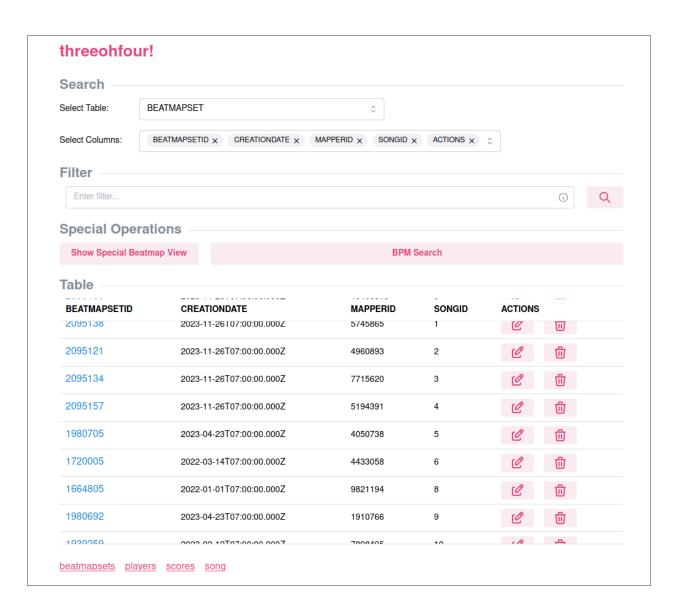
DELETE

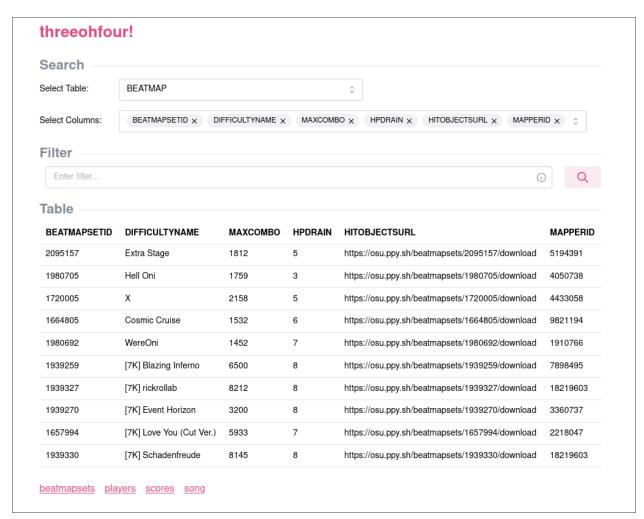






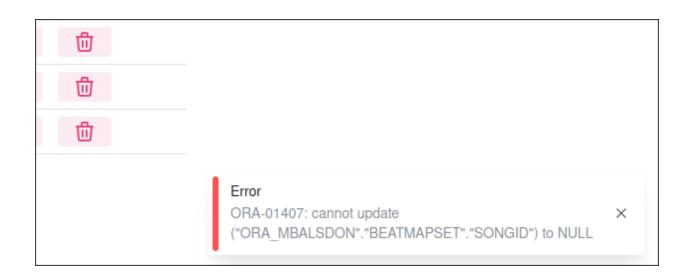




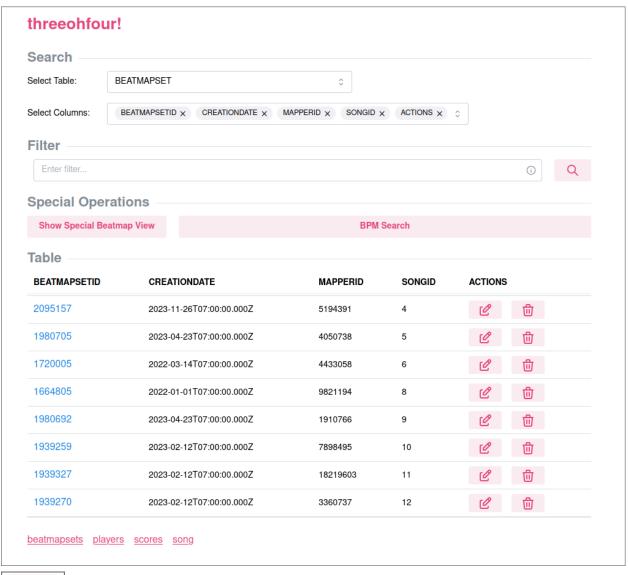


notification preview:

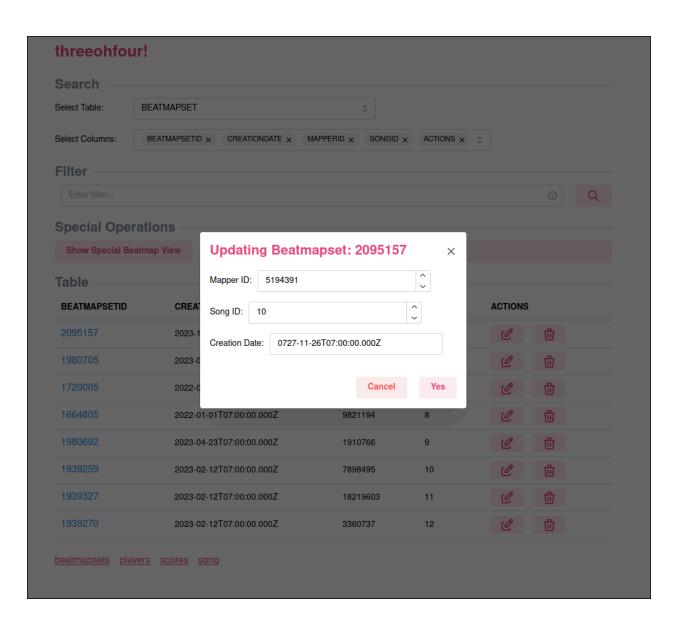


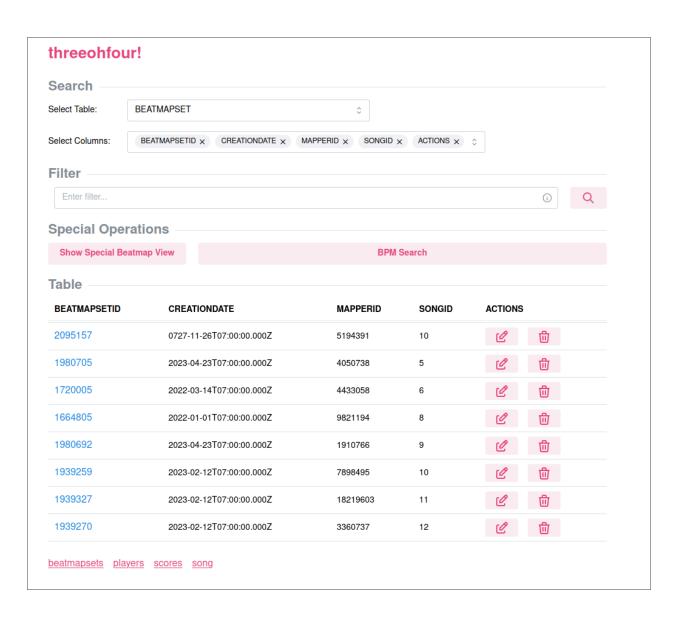


UPDATE

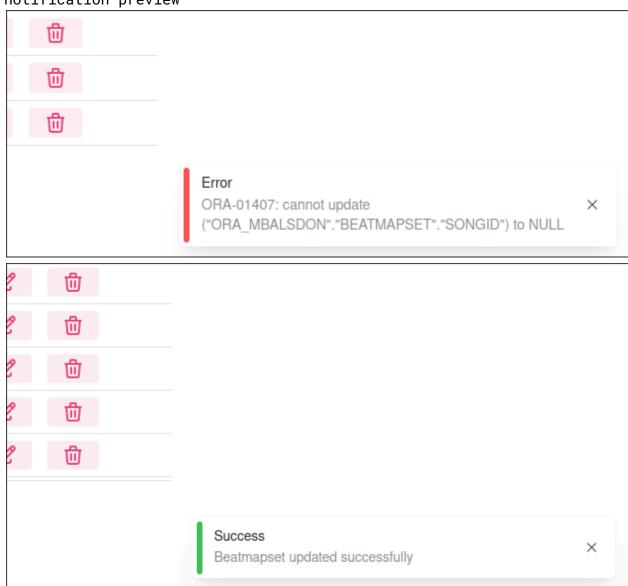




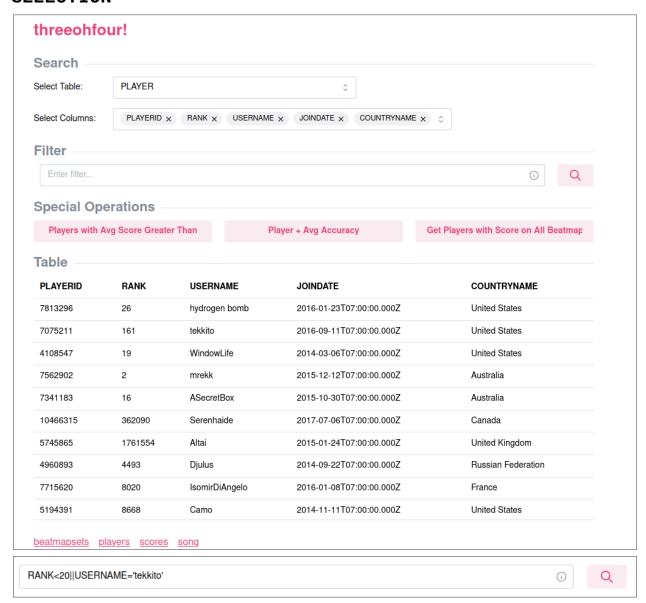


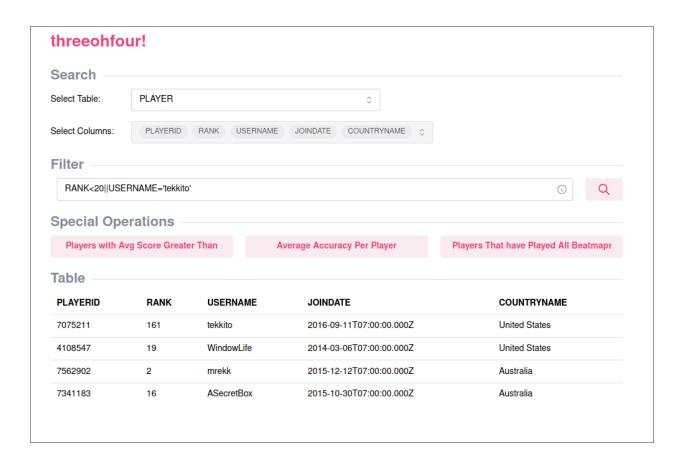


notification preview

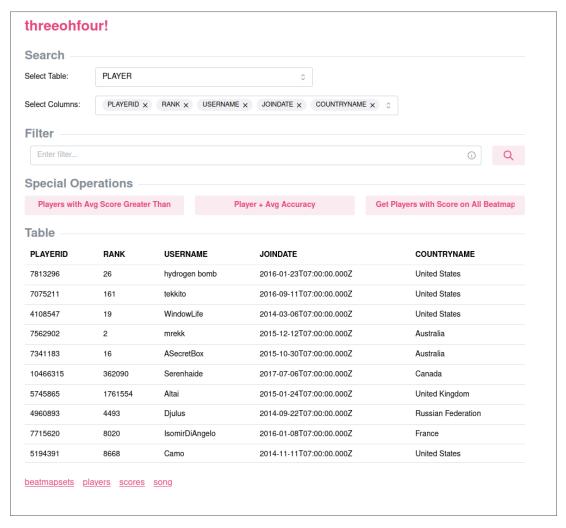


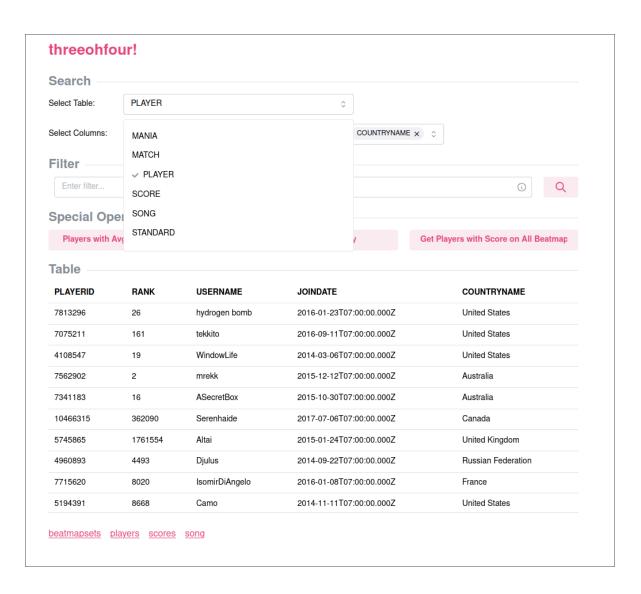
SELECTION

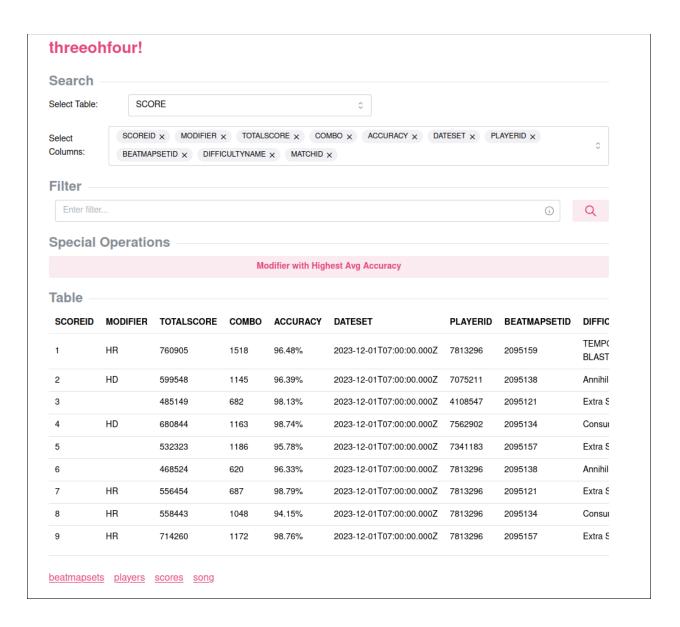


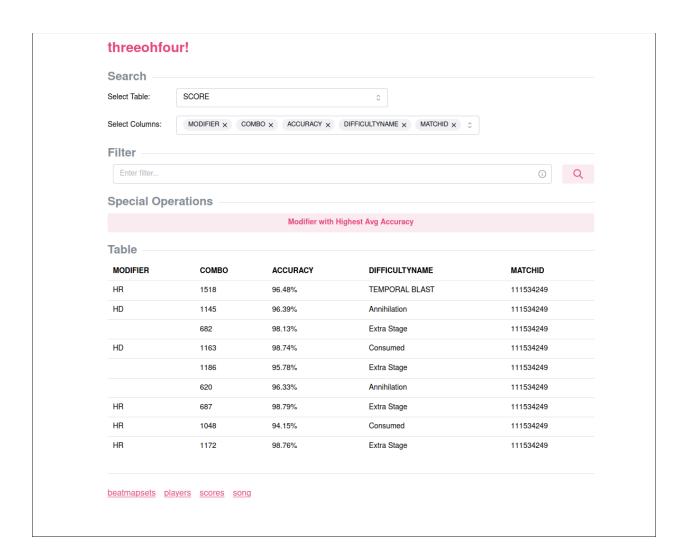


PROJECTION

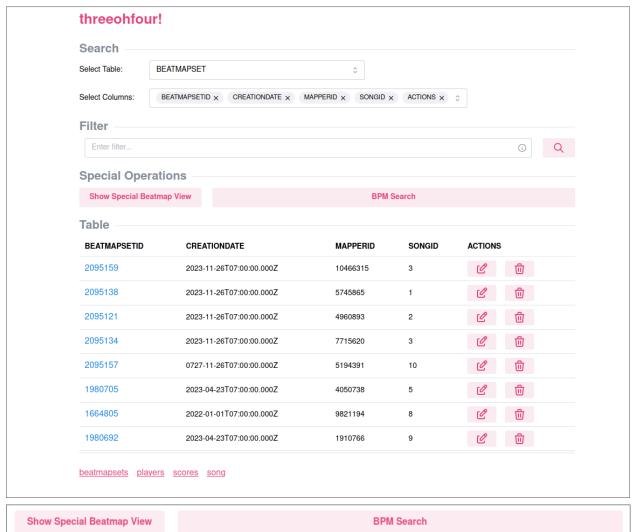


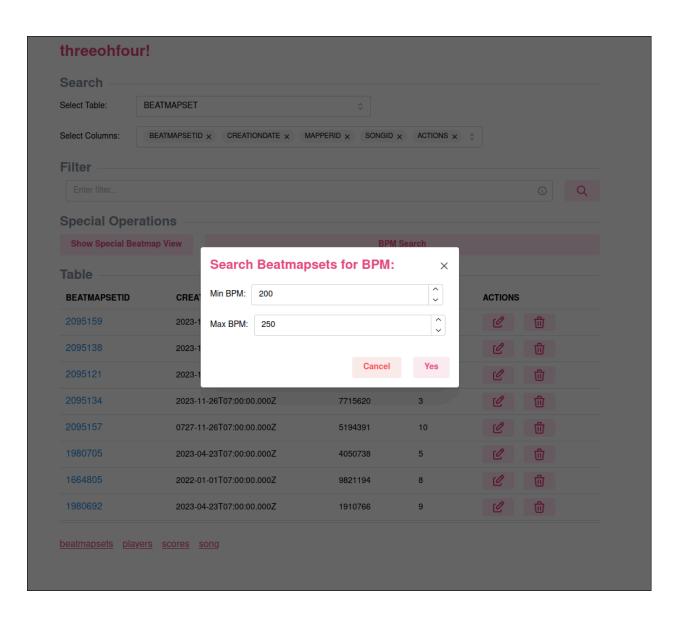


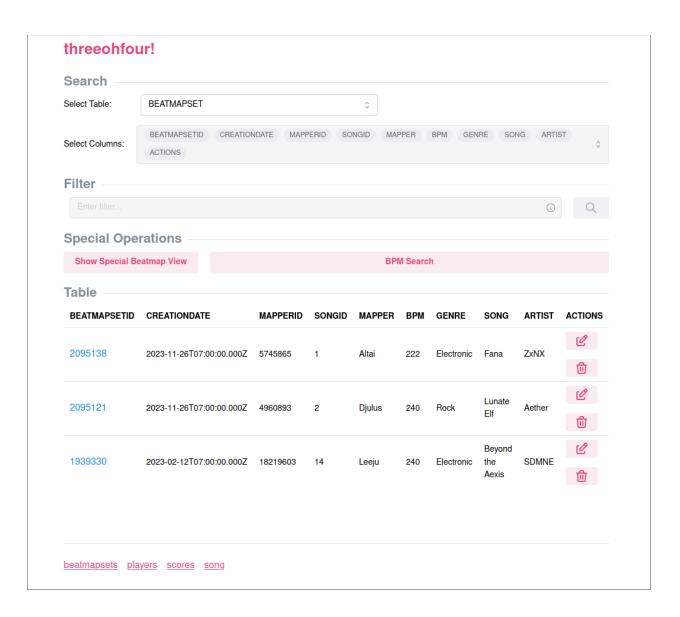




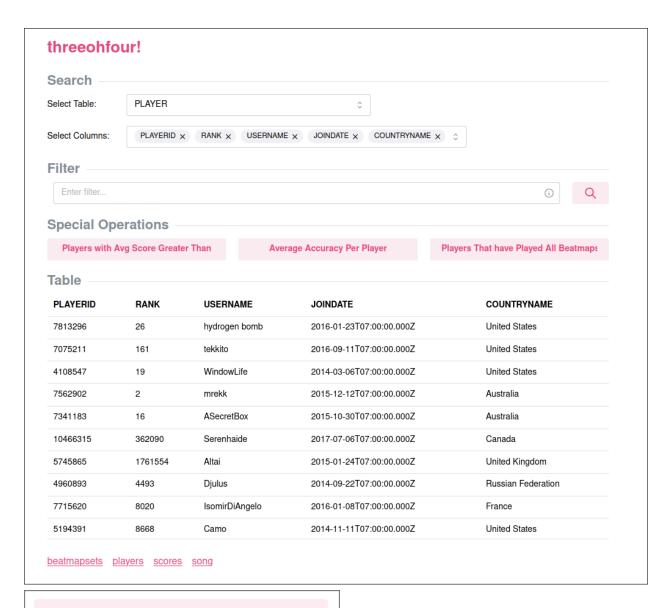
JOIN



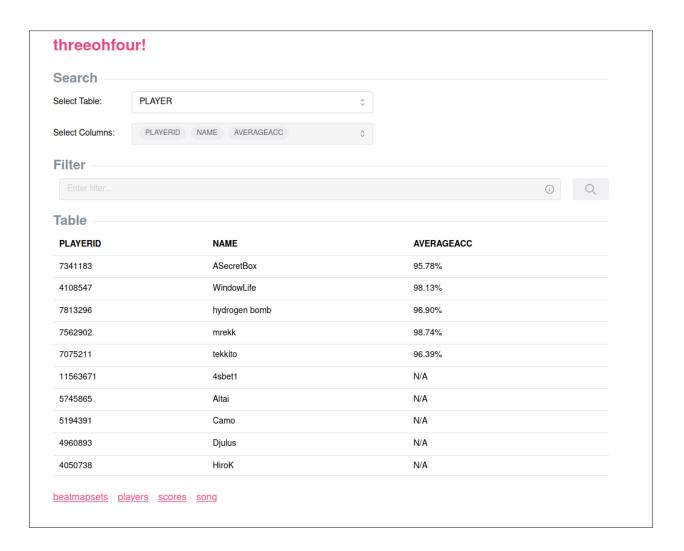




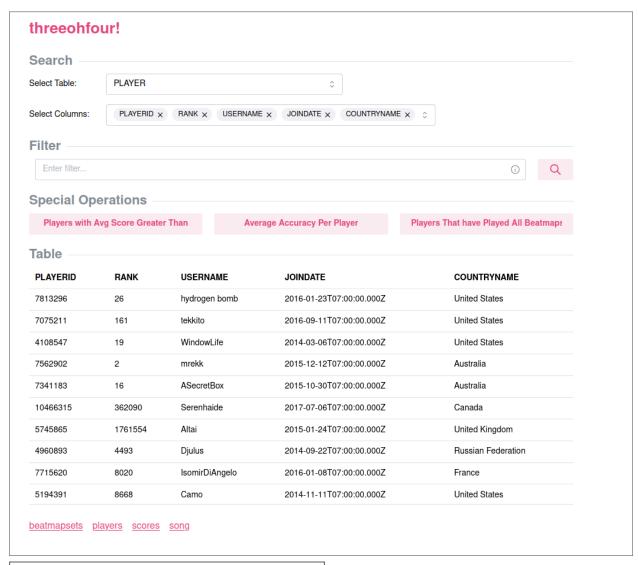
AGGREGATION with GROUP BY



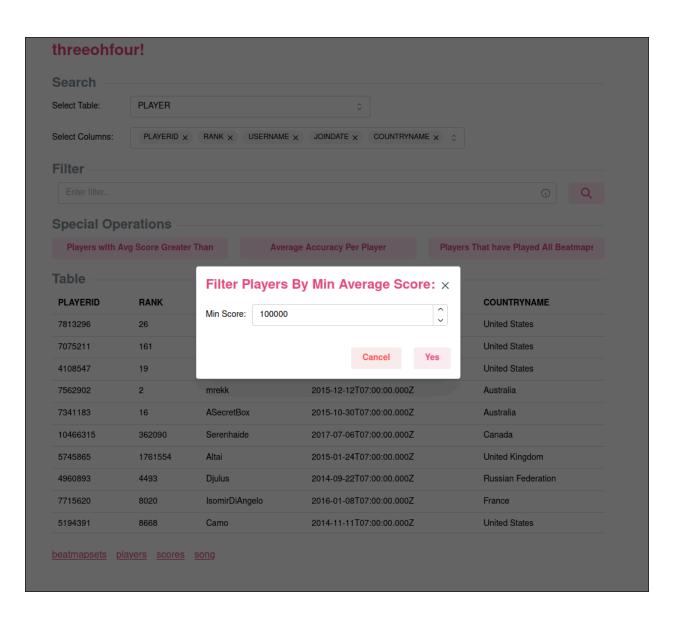
Average Accuracy Per Player

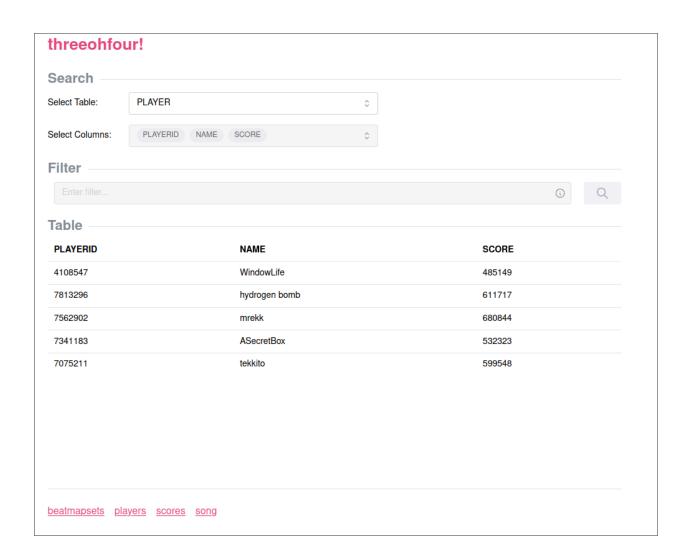


AGGREGATION with HAVING

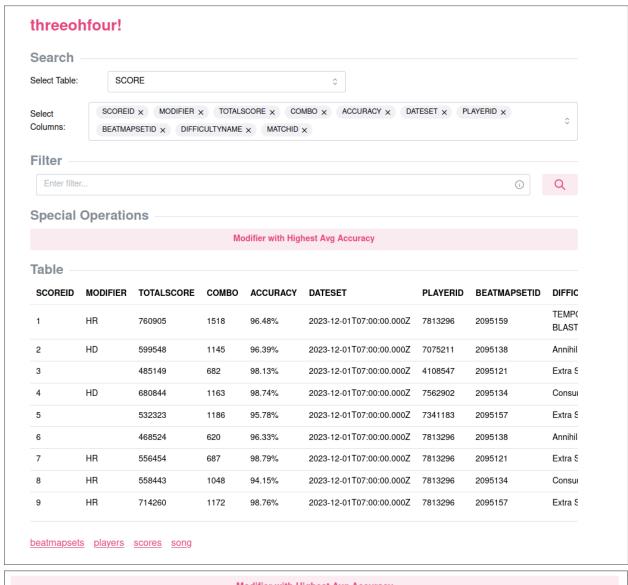


Players with Avg Score Greater Than

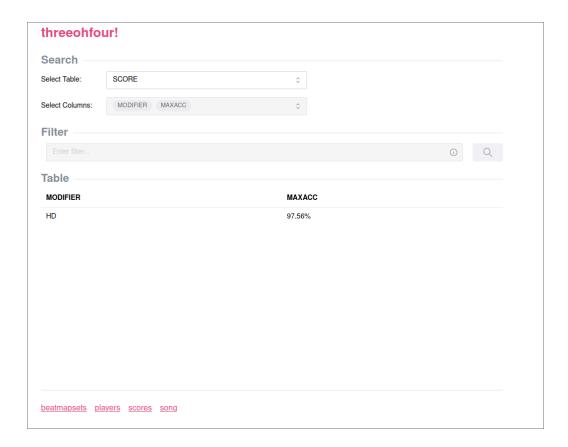




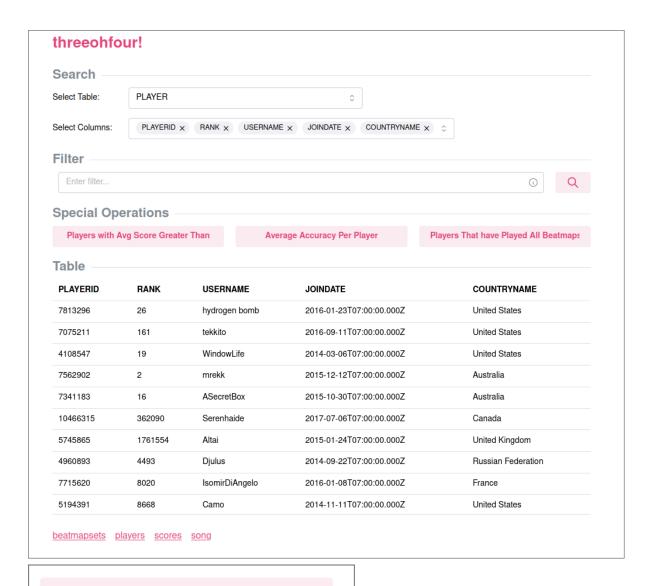
Nested AGGREGATION with GROUP BY



Modifier with Highest Avg Accuracy



DIVISION



Players That have Played All Beatmaps

