

CPSC 304 Project

Milestone #: 4

Date: April 4th 2023

Group Number: 48

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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 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

Project Summary

This database models characteristics of events and players in the competitive Valorant esports scene. This database could be used by coaches, fans, and analysts to analyse and predict future outcomes. People using the database will be able to query for and view previous events and the organisations participating in them.

Based on our current implementation of the project, we are able to:

1. Check for the average damage per round for all players
2. Find player's in-game-name with kills above a specified threshold
3. Check the matches for which two players have played in together
4. See the headshot percentage by weapon of an inputted player in-game-name
5. Show all the attributes currently under Organizations
6. Add new organizations into the database
7. Delete matches from the database
8. Update winrates of specified organizations
9. Show the region that has the highest win rate, indicated as leading region
10. Select a table and its attributes to output a table with those targeted attributes

Changed Schema

We took out the Contract table and attributes under agentPlayed because they were never used. AvgCombatScore represented some of the attributes that we wanted to implement into agentPlayed but we ended up taking it out. We were able to instead find some similar stats based off of our weaponsUsed table such as kills, which were the most important for our needs.

Copy of the Schema and Data Screenshots

```
CREATE TABLE OrganizationID (  
    o_id INTEGER,  
    name CHAR(255) NOT NULL UNIQUE,  
    PRIMARY KEY (o_id)  
);
```

```
SET PAGESIZE 1000
COLUMN o_id FORMAT 999
COLUMN name FORMAT A20
SELECT o_id, name FROM OrganizationID;
```

O_ID	NAME
1	Sentinels
2	LOUD
3	Fnatic
4	Paper Rex
5	NRG

```
CREATE TABLE Organization (
    name CHAR(255) NOT NULL PRIMARY KEY,
    ranking INTEGER UNIQUE,
    region CHAR(255) NOT NULL,
    win_rate REAL
);
```

```
SET LINESIZE 200
SET PAGESIZE 1000
SET COLSEP '|'
COLUMN name FORMAT A20
COLUMN ranking FORMAT 999
COLUMN region FORMAT A20
COLUMN win_rate FORMAT 999 .99
SELECT name, ranking, region, win_rate FROM organization;
```

NAME	RANKING	REGION	WIN_RATE
Sentinels	37	Americas	.48
LOUD	2	Americas	.87
Fnatic	6	EMEA	.74
Paper Rex	4	Pacific	.78
NRG	31	Americas	.56

```
CREATE TABLE HistoricalMatchup (  
    o_id1 INTEGER,  
    o_id2 INTEGER,  
    win_loss_ratio CHAR(255),  
    PRIMARY KEY (o_id1, o_id2)  
);
```

```
SELECT o_id1, o_id2, win_loss_ratio FROM HistoricalMatchup;
```

O_ID1	O_ID2	WIN_LOSS_RATIO
5	2	0:1
1	5	2:1
3	4	0:1
3	1	1:2
4	5	0:0

```
CREATE TABLE Event (  
    e_id INTEGER PRIMARY KEY,  
    name CHAR(255) NOT NULL,  
    start_date DATE,  
    end_date DATE,  
    winning_organization INTEGER,  
    prize_pool REAL NOT NULL,  
    FOREIGN KEY (winning_organization) REFERENCES OrganizationID  
(o_id));
```

```
SELECT e_id, name, start_date, end_date, winning_organization, prize_pool
FROM Event;
```

E_ID	NAME	START_DATE	END_DATE	WINNING_ORGANIZATION	PRIZE_POOL
1	VCT 2023: LOCK//IN S ??o Paulo	13-FEB-23	04-MAR-23		500000.00
2	VCT 2021: Stage 2 Ma sters - Reykjav??k	24-MAY-21	30-MAY-21	1	600000.00
3	2022: Stage 2 Master s - Copenhagen	10-JUL-22	24-JUL-22		650000.00
4	VCT 2021: Brazil Sta ge 1 Masters	13-MAR-21	21-MAR-21	2	45538.00
5	VCT 2022: Game Chang ers Korea	22-SEP-22	23-SEP-22	4	7038.00

```
CREATE TABLE ParticipatingIn (
    o_id INTEGER,
    e_id INTEGER,
    final_placement INTEGER,
    PRIMARY KEY (o_id, e_id),
    FOREIGN KEY (o_id) REFERENCES OrganizationID (o_id) ON DELETE
CASCADE,
    FOREIGN KEY (e_id) REFERENCES Event (e_id) ON DELETE SET NULL
);
```

```
SELECT o_id, e_id, final_placement FROM ParticipatingIn;
```

O_ID	E_ID	FINAL_PLACEMENT
1	3	1
1	1	2
2	1	1
3	1	1
4	3	1

```
CREATE TABLE TeamMemberContract (  
    tm_id INTEGER,  
    in_game_name CHAR(255) NOT NULL UNIQUE,  
    real_name CHAR(255) UNIQUE,  
    start_date DATE,  
    end_date DATE,  
    salary INTEGER,  
    o_id INTEGER,  
    PRIMARY KEY (tm_id),  
    FOREIGN KEY (o_id) REFERENCES OrganizationID (o_id) ON DELETE  
SET NULL);
```

```
SELECT tm_id, in_game_name, real_name, sSQL> tart_date, end_date, salary, o_id  
FROM TeamMemberContract;
```

TM_ID	IN_GAME_NAME	REAL_NAME	START_DAT	END_DATE	SALARY	O_ID
1	TenZ	Tyson Ngo	01-JUN-20			1
2	aspas	Erick Santos	01-JAN-22			2
3	Enzo	Enzo Mestari	09-MAY-22	30-NOV-22		3
4	SyykoNT	Don Muir	03-OCT-22			1
5	s0m	Sam Oh	07-OCT-20			5
6	f0rsakeN	Jason Susanto	08-FEB-21			4

```
CREATE TABLE Player (  
    tm_id INTEGER PRIMARY KEY,  
    rank CHAR(255),  
    role CHAR(255),  
    FOREIGN KEY (tm_id) REFERENCES TeamMemberContract (tm_id) ON  
    DELETE CASCADE);
```

```
SELECT tm_id, rank, role FROM Player;
```

TM_ID	RANK	ROLE
1	Radiant #1	Duelist
2	Radiant #1	Duelist
3	Radiant #220	Initiator
5	Radiant #24	Controller
6	Radiant #1	Duelist

```
CREATE TABLE Weapon (  
    weapon_name CHAR(255),  
    damage INTEGER,  
    PRIMARY KEY (weapon_name)  
);
```

```
SELECT weapon_name, damage FROM Weapon;
```

WEAPON_NAME	DAMAGE
Sheriff	159
Marshal	202
Vandal	160
Classic	78
Guardian	195

```
CREATE TABLE UsesWeapon (  
    tm_id INTEGER,  
    weapon_name CHAR(255),  
    average_damage_per_round REAL,  
    kills REAL,  
    headshot_percentage REAL,  
    PRIMARY KEY (tm_id, weapon_name),  
    FOREIGN KEY (tm_id) REFERENCES TeamMemberContract (tm_id) ON  
DELETE CASCADE,  
    FOREIGN KEY (weapon_name) REFERENCES Weapon (weapon_name) ON  
DELETE SET NULL  
);
```

```
SELECT tm_id, weapon_name, average_damage_per_round, kills, headshot_percentage  
FROM UsesWeapon;
```

TM_ID	WEAPON_NAME	AVERAGE_DAMAGE_PER_ROUND	KILLS	HEADSHOT_PERCENTAGE
1	Vandal	177.10	483.00	.36
1	Marshal	120.90	323.00	.25
1	Classic	28.30	4545.00	.34
2	Sheriff	88.40	444.00	.56
2	Vandal	175.90	.00	.46

```
CREATE TABLE StagedEvent (  
    e_id INTEGER PRIMARY KEY,  
    num_attendees INTEGER,  
    venue_location CHAR(255) NOT NULL  
);
```



```
SELECT e_id, num_attendees, venue_location
FROM StagedEvent;
```

E_ID	NUM_ATTENDEES	VENUE_LOCATION
1	10332	Gin??sio do Ibirapue ra
2	4215	Laugardalsh??11
3	6922	Forum Copenhagen
6	2352	Marlene-Dietrich-Hal le
8	1702	Volkswagen Arena

```
CREATE TABLE OnlineEvent (
    e_id INTEGER PRIMARY KEY,
    num_viewers INTEGER,
    broadcast_platform CHAR(255) NOT NULL
);
```

```
SELECT e_id, num_viewers, broadcast_platform FROM OnlineEvent;
```

E_ID	NUM_VIEWERS	BROADCAST_PLATFORM
1	372184	Twitch
2	488364	Twitch
3	317604	Twitch
4	372184	Twitch
5	372184	Twitch

```
CREATE TABLE SeriesInEvent (  
    s_id INTEGER PRIMARY KEY,  
    game_date DATE NOT NULL,  
    winning_organization INTEGER,  
    e_id INTEGER,  
    FOREIGN KEY (e_id) REFERENCES Event (e_id) ON DELETE SET  
NULL,  
    FOREIGN KEY (winning_organization) REFERENCES OrganizationID  
(o_id)  
);
```

```
SELECT s_id, game_date, winning_organization, e_id FROM SeriesInEvent;
```

S_ID	GAME_DATE	WINNING_ORGANIZATION	E_ID
1	19-FEB-23		2
2	24-FEB-23		3
3	30-MAY-21		1
4	14-JUL-22		5
5	17-JUL-22		4

```
CREATE TABLE MatchInSeries (  
    m_id INTEGER PRIMARY KEY,  
    num_rounds INTEGER,  
    winning_organization INTEGER,  
    scoreline CHAR(255),  
    s_id INTEGER,  
    FOREIGN KEY (s_id) REFERENCES SeriesInEvent (s_id) ON DELETE  
SET NULL,  
    FOREIGN KEY (winning_organization) REFERENCES OrganizationID  
(o_id)  
);
```

```
SELECT m_id, num_rounds, winning_organization, scoreline, s_id FROM MatchInSeries;
```

M_ID	NUM_ROUNDS	WINNING_ORGANIZATION	SCORELINE	S_ID
1	19	3	13:6	2
2	20	3	13:7	2
3	16	2	13:3	1
4	28	5	15:13	1
5	34	2	18:16	1

```
CREATE TABLE Map (  
    map_name CHAR(255),  
    PRIMARY KEY (map_name)  
);
```

```
SELECT map_name FROM Map;
```

```
MAP_NAME  
-----  
Ascent  
  
Breeze  
  
Fracture  
  
Haven  
  
Lotus  
  
Pearl  
  
Split
```

```
CREATE TABLE MapPicks (  
    map_name CHAR(255),  
    o_id INTEGER,  
    num_times_played INTEGER,  
    PRIMARY KEY (map_name, o_id),  
    FOREIGN KEY (map_name) REFERENCES Map ON DELETE SET NULL,  
    FOREIGN KEY (o_id) REFERENCES OrganizationID ON DELETE CASCADE  
);
```

```
SELECT map_name, o_id, num_times_played FROM MapPicks;
```

MAP_NAME	O_ID	NUM_TIMES_PLAYED
Ascent	1	25
Haven	2	11
Ascent	5	18
Lotus	3	2
Breeze	4	0

```
CREATE TABLE MapPlayed (  
    m_id INTEGER,  
    map_name CHAR(255) NOT NULL,  
    starting_side CHAR(255) NOT NULL,  
    PRIMARY KEY (m_id, map_name),  
    FOREIGN KEY (m_id) REFERENCES MatchInSeries ON DELETE CASCADE,  
    FOREIGN KEY (map_name) REFERENCES Map ON DELETE SET NULL  
);
```

```
SELECT m_id, map_name, starting_side FROM MapPlayed;
```

M_ID	MAP_NAME	STARTING_S
1	Haven	Defend
2	Split	Defend
3	Split	Attack
4	Pearl	Defend
5	Fracture	Attack

```
CREATE TABLE Matchup (  
    s_id INTEGER,  
    o_id INTEGER,  
    PRIMARY KEY (s_id, o_id),  
    FOREIGN KEY (s_id) REFERENCES SeriesInEvent ON DELETE CASCADE,  
    FOREIGN KEY (o_id) REFERENCES OrganizationID ON DELETE CASCADE  
);
```

```
SELECT s_id, o_id FROM Matchup;
```

S_ID	O_ID
1	1
1	2
2	2
2	3
2	4

```
CREATE TABLE Agent (  
    agent_number INTEGER,  
    name CHAR(255) UNIQUE NOT NULL,  
    pick_rate REAL NOT NULL,  
    PRIMARY KEY (agent_number)  
);
```

```
SELECT agent_number, name, pick_rate FROM Agent;
```

AGENT_NUMBER	NAME	PICK_RATE
4	Killjoy	.66
10	Jett	.55
6	Sova	.47
13	Breach	.41
3	Omen	.41

```
CREATE TABLE AgentPlayed (  
    tm_id INTEGER,  
    m_id INTEGER,  
    agent_number INTEGER,  
    PRIMARY KEY (tm_id, m_id, agent_number)  
);
```

```
SELECT tm_id, m_id, agent_number FROM AgentPlayed;
```

TM_ID	M_ID	AGENT_NUMBER
1	1	10
1	3	8
2	1	6
2	3	1
2	4	3

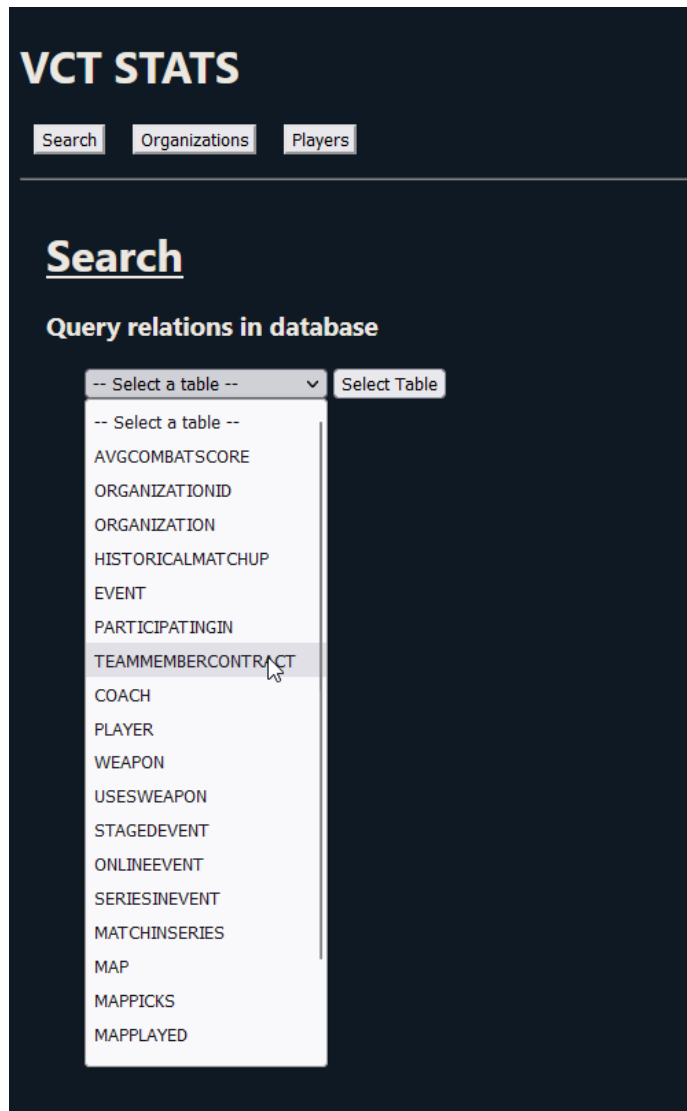
List of all SQL queries used

- a) INSERT Operation
 - i) Organizations.php, line 223
insert new organization
- b) DELETE Operation

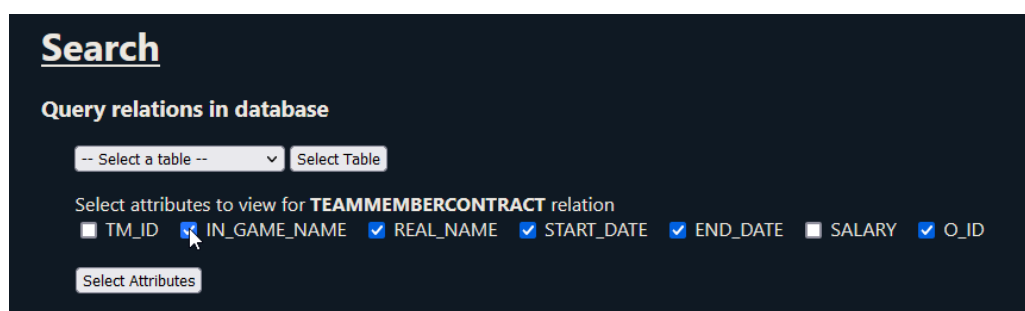
- i) Organizations.php, line 214
delete a match, which also deletes a mapplayed
- c) UPDATE Operation
 - i) Organizations.php, line 205
update the winrate of an org
- d) SELECTION Operation
 - i) Organizations.php, line 292
select from organisations with conditions
- e) PROJECTION Operation
 - i) Search.php, line 102
choose which table and which columns to submit
- f) JOIN Operation
 - i) Players.php, line 323
joins Players and UsesWeapon
- g) GROUP BY Operation
 - i) Organizations.php, line 217
finds the AvgDmg per round for AllWeapons for each person
- h) HAVING Operation
 - i) Players.php, line 246
Returns PlayerAboveKillsThreshold grouped by player, sums kills by all weapons
- i) Nested GROUP BY Operation
 - i) Organizations.php, line 278
select the winrate for a region for which the average winrate is the maximum over all regions
- j) DIVISION Operation
 - i) Players.php, line 284
List of match IDs where two players have played in the same match

GUI Screenshots

Search Tool (Projection)



User selects table they want to project on



User selects attributes to project for selected table

TEAMMEMBERCONTRACT				
IN_GAME_NAME	REAL_NAME	START_DATE	END_DATE	O_ID
TenZ	Tyson Ngo	01-JUN-20		1
aspas	Erick Santos	01-JAN-22		2
Enzo	Enzo Mestari	09-MAY-22	30-NOV-22	3
SyykoNT	Don Muir	03-OCT-22		1
s0m	Sam Oh	07-OCT-20		5
f0rsakeN	Jason Susanto	08-FEB-21		4

Resulting table with projected attributes

Add New Organization (Insert)

VCT STATS

Search

Organizations

Players

Organizations

Leading Region

The top region is **Pacific**

List of Teams

Filter conditions:

e.g. region='Americas'

Enter

Name	Ranking	Region	Win Rate
Sentinels	37	Americas	48%
LOUD	2	Americas	87%
Fnatic	6	EMEA	74%
Paper Rex	4	Pacific	78%
NRG	31	Americas	56%

Add new Organization

Name:

Ranking:

Region:

Winrate:

Insert

Delete a Match that was Played

Match Played:

Delete

Update Organization Win Rate

Organization:

New Winrate:

Update

The highlighted area is for the user to add a new organization into the database with the organization name, ranking, region, and winrate. User can see the organizations already in the database by looking at the table under List of Teams in red and black on the middle left-hand side (5 teams)

Add new Organization

Name:

Cloud 9

Ranking:

20

Region:

Americas

Winrate:

0.48

Insert

User inputs organization name, ranking, region, and winrate

List of Teams

Filter conditions:

e.g. region='Americas'

Enter

Name	Ranking	Region	Win Rate
Sentinels	37	Americas	48%
LOUD	2	Americas	87%
Fnatic	6	EMEA	74%
Paper Rex	4	Pacific	78%
NRG	31	Americas	56%
Cloud 9	20	Americas	48%

Resulting table shows 6 teams (+1 teams from the previous picture) with the added team being the inputs from the previous step

Delete an Existing Match (Delete)

VCT STATS

Search

Organizations

Players

Organizations

Leading Region

The top region is *Pacific*

List of Teams

Filter conditions:

Name	Ranking	Region	Win Rate
Sentinels	37	Americas	48%
LOUD	2	Americas	87%
Fnatic	6	EMEA	74%
Paper Rex	4	Pacific	78%
NRG	31	Americas	56%

Add new Organization

Name:

Ranking:

Region:

Winrate:

Delete a Match that was Played

Match Played:

Update Organization Win Rate

Organization:

New Winrate:

The highlighted area is for the user to delete a match that has been played

Delete a Match that was Played

Match Played:

User inputs match ID (*m_id*) which user wants to delete

Search

Query relations in database

MATCHINSERIES



Select Table

MATCHINSERIES

M_ID	NUM_ROUNDS	WINNING_ORGANIZATION	SCORELINE	S_ID
1	19	3	13:6	2
2	20	3	13:7	2
3	16	2	13:3	1
4	28	5	15:13	1
5	34	2	18:16	1

Table showing matches *BEFORE* the deletion

Search

Query relations in database

MAPPLAYED



Select Table

MAPPLAYED

M_ID	MAP_NAME	STARTING_SIDE
1	Haven	Defend
2	Split	Defend
3	Split	Attack
4	Pearl	Defend
5	Fracture	Attack

Table showing MapPlayed *BEFORE* the deletion. note that MapPlayed has a foreign key *m_id* to MatchInSeries. So when a row with an *m_id* is removed from MatchInSeries, the entry corresponding to that *m_id* should also be removed from MapPlayed.

Search

Query relations in database

MATCHINSERIES

Select Table

MATCHINSERIES

M_ID	NUM_ROUNDS	WINNING_ORGANIZATION	SCORELINE	S_ID
1	19	3	13:6	2
2	20	3	13:7	2
3	16	2	13:3	1
4	28	5	15:13	1

Table showing matches AFTER the deletion of $m_id = 5$

Search

Query relations in database

MAPPLAYED

Select Table

MAPPLAYED

M_ID	MAP_NAME	STARTING_SIDE
1	Haven	Defend
2	Split	Defend
3	Split	Attack
4	Pearl	Defend

The entry corresponding to $m_id = 5$ is also removed from MapPlayed.

Update Organization Win Rate

VCT STATS

Search Organizations Players

Organizations

Leading Region

The top region is **Pacific**

List of Teams

Filter conditions:

Name	Ranking	Region	Win Rate
Sentinels	37	Americas	48%
LOUD	2	Americas	87%
Fnatic	6	EMEA	74%
Paper Rex	4	Pacific	78%
NRG	31	Americas	56%

Add new Organization

Name:

Ranking:

Region:

Winrate:

Delete a Match that was Played

Match Played:

Update Organization Win Rate

Organization:

New Winrate:

The highlighted area is for the user to update the win rate of an organization. We can see the win rate for LOUD is currently 87%.

Update Organization Win Rate

Organization:

New Winrate:

User inputs the organization of which its win rate is to be changed, and the new win rate for the organization

List of Teams

Filter conditions:

Name	Ranking	Region	Win Rate
Sentinels	37	Americas	48%
LOUD	2	Americas	76%
Fnatic	6	EMEA	74%
Paper Rex	4	Pacific	78%
NRG	31	Americas	56%
Cloud 9	20	Americas	48%

The resulting table shows LOUD with its new win rate at 76%.

List Teams with Input Filter Conditions (Selection)

VCT STATS

Search

Organizations

Players

Organizations

Leading Region

The top region is *Pacific*

List of Teams

Filter conditions:

Name	Ranking	Region	Win Rate
Sentinels	37	Americas	48%
LOUD	2	Americas	87%
Fnatic	6	EMEA	74%
Paper Rex	4	Pacific	78%
NRG	31	Americas	56%

Add new Organization

Name:

Ranking:

Region:

Winrate:

Delete a Match that was Played

Match Played:

Update Organization Win Rate

Organization:

New Winrate:

The highlighted region allows the user to filter the table based on a specified condition.

List of Teams

Filter conditions:

Name

Ranking

Re

User indicates **region='Americas'** to be the filter in the WHERE clause for the table shown

List of Teams

Filter conditions:

Name	Ranking	Region	Win Rate
Sentinels	37	Americas	48%
LOUD	2	Americas	76%
NRG	31	Americas	56%
Cloud 9	20	Americas	48%

The resulting table is filtered for as shown **regions='Americas'** under the **Region** column

Find the Region with the Highest Average Win Rate
(Group By, Nested Group By)

Organizations

Leading Region

The top region is **Pacific**

User can see the leading region based on the highest individual team win rate and its region

Find players with kills above a threshold (Having, Aggregation)

VCT STATS

Players

Average damage per round (ADR) for all players

Player	ADR
aspas	132.2
TenZ	108.8

Finds player in-game name with kills above a threshold

Threshold value:

Look up all Match ID if two players have played in the same match

First Player:

Second Player:

See headshot percentage by weapon of a player

Player Name:

The highlighted area has threshold value represents the number of kills which filters for players that have kills above that value

Finds player in-game name with kills above a threshold

Threshold value:

User inputs the value desired as a threshold

Here are your results!

In-game Name	Number of Kills
TenZ	5351

Resulting table shows player with total number of kills above the threshold value, and shows the player's number of kills

Find all matches where two players played in the same match
(Division)

VCT STATS

SearchOrganizationsPlayers

Players

Average damage per round (ADR) for all players

Player	ADR
aspas	132.2
TenZ	108.8

Finds player in-game name with kills above a threshold

Threshold value:

Look up all Match ID if two players have played in the same match

First Player:

Second Player:

See headshot percentage by weapon of a player

Player Name:

The highlighted area shows boxes where user can input two different player in-game-names already in the database to find matches which both players have played together in

Look up all Match ID if two players have played in the same match

First Player:

Second Player:

User inputs two player names into the boxes

Matches TenZ and aspas have played together

Match ID

1
3

Resulting table is the matches based on Match ID (m_id) which both players have played together in

See headshot percentage by weapon of a player (Join)

VCT STATS

Players

Average damage per round (ADR) for all players

Player	ADR
aspas	132.2
TenZ	108.8

Finds player in-game name with kills above a threshold

Threshold value:

Look up all Match ID if two players have played in the same match

First Player:

Second Player:

See headshot percentage by weapon of a player

Player Name:

The highlighted area asks for input for player in-game-name that is already in database to find their headshot percentage based on weapons used by the player

See headshot percentage by weapon of a player

Player Name:

User inputs a player name

Headshot Percentage by Weapon of TenZ

Player Name	Weapon Name	Headshot Percentage
TenZ	Vandal	.361
TenZ	Marshal	.247
TenZ	Classic	.338

Resulting table shows the player name, the different weapons used, and the corresponding headshot percentage