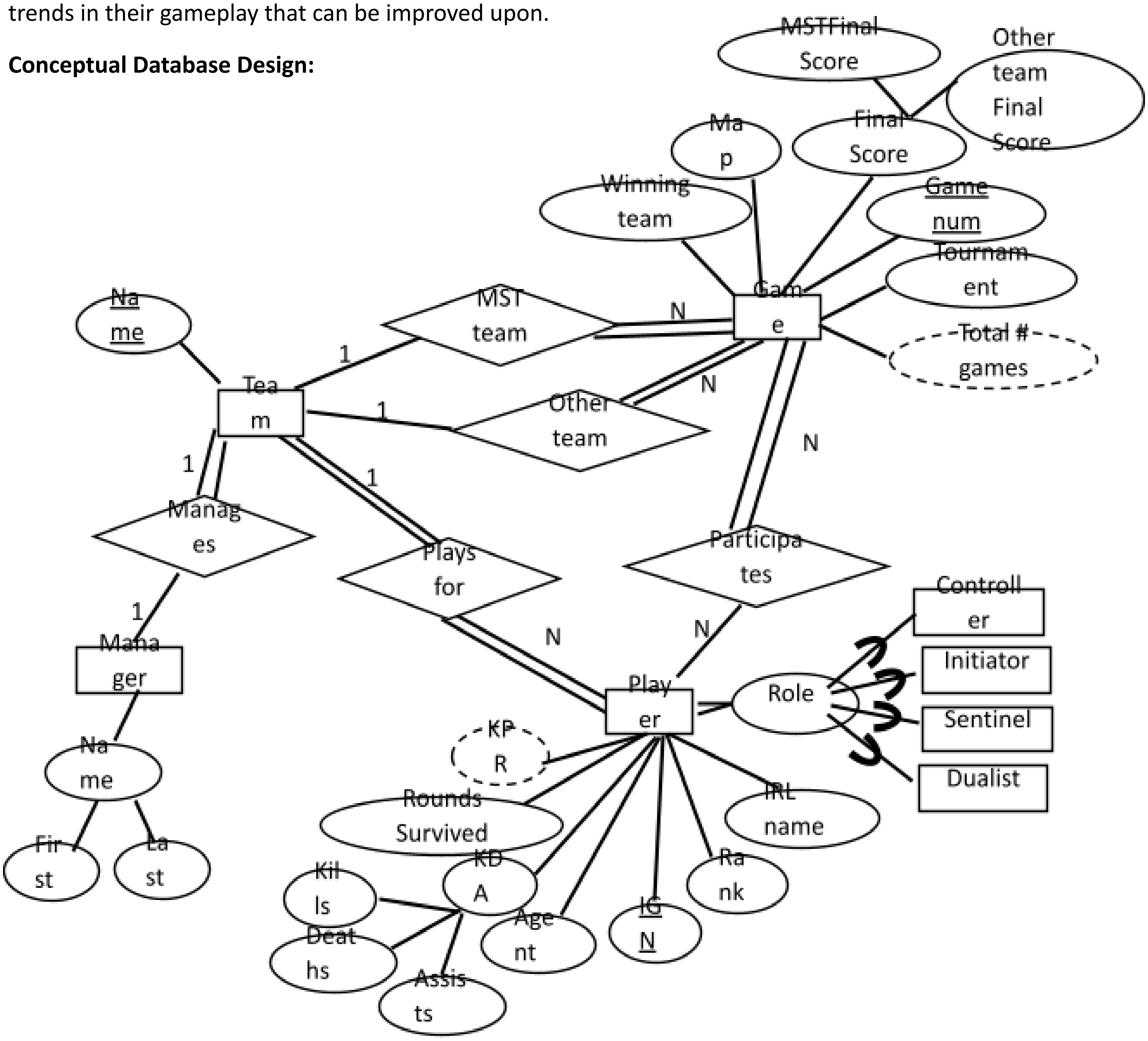
Database Project Phase 2

Problem Statement:

The database we are going to build is for the Esports club's competitive Valorant teams. This database is going to be a command-line program. The program will keep track of each teams' games, player stats, and other important aspects of the game. The reason we went with a database approach for this is to have program-operation independence for their past games and stats. Which allows the team to see trends in their gameplay that can be improved upon.

Conceptual Database Design:



Our database will consist of two teams from the entity 'Team', the MST team and the opposing team. Both of these teams will share the attribute of 'Name', which is 'Team's' Primary key and MST and the opposing team's foreign key.

The 'Game' entity has the attributes of 'Winning Team', 'Map', 'Final score',which is broken down into 'MST Final Score' and 'Other Team Final Score', 'Tournament', and 'Total # of games', meaning there can be multiple games. The 'Game num' is a primary key attribute to 'Game'.

Each ‘Team’ has ‘Players’ which ‘Play for’ the ‘Team’. Also, each ‘Player’ ‘Participates’ in a ‘Game’. Participates has the attribute foreign key of ‘Game num’, and the ‘Plays for’ has an attribute of a foregin key: ‘name’.

Also, each ‘Team’ is ‘Managed’ by a ‘Manager’ that has a name, both a ‘First’ and ‘Last’. ‘Manager’ and ‘Manages’ both inherit the ‘Name’ from ‘Team’.

Each ‘Player’ has a ‘KPR’, which can be calculated by a function, ‘Rounds survived’, an ‘Agent’, a primary key ‘IGN’, a ‘Rank’, an ‘IRL name’, a ‘KDA’ which is separated into ‘Kills’, ‘Deaths’, and ‘Assists’. Also, each player has a ‘Role’, which becomes its own entities, either an ‘Initiator’, a ‘Duelist’, a ‘Sentinel’, or a ‘Controller’. These new entities have foreign keys of ‘IGN’ and ‘Game num’.

Logical Database Design:

Team(Team name)

Game(Winning team, Map, Final score, Tournament, Total # of games, Game num)

MST team(Team name, Game num)

Other team(Team name, Game_num)

Participates(Game num)

Manages(Team name)

Plays for(Team name)

Manager(First, Last)

Player(KPR, Rounds survived, Kills, Deaths, Assists, Agent, IGN, Rank, IRL name, Role)

Controller(IGN, Game_num)

Sentinel(IGN, Game_num)

Initiator(IGN, Game_num)

Duelist(IGN, Game_num)

Summary Table of Database types:

Table	Attribute	Type	Constraint
Team	Team_name	CHAR(80)	Primary Key
Game	Winning_team	CHAR(80)	NOT NULL
Game	Map	CHAR(80)	NOT NULL
Game	MST_final_score	INTEGER	NOT NULL
Game	Other_team_final_score	INTEGER	NOT NULL
Game	Tournament	CHAR(80)	

Table	**Attribute**	**Type**	**Constraint**
Game	Num_games	INTEGER	NOT NULL
Game	Game_num	INTEGER	Primary Key
MST_team	Team_name	CHAR(80)	Foreign Key
MST_team	Game_num	INTEGER	Foreign Key
Other_team	Team_name	CHAR(80)	Foreign Key
Other_team	Game_num	INTEGER	Foreign Key
Participates	Game_num	INTEGER	Foreign Key
Manages	Team_name	CHAR(80)	Foreign Key
Plays_for	Team_name	CHAR(80)	Foreign Key
Manager	First	CHAR(80)	NOT NULL
Manager	Last	CHAR(80)	NOT NULL
Player	KPR	INTEGER	NOT NULL
Player	Rounds_Survived	INTEGER	NOT NULL
Player	Kills	INTEGER	NOT NULL
Player	Deaths	INTEGER	NOT NULL
Player	Assists	INTEGER	NOT NULL
Player	Agent	CHAR(80)	NOT NULL
Player	IGN	CHAR(80)	Primary Key
Player	Rank	CHAR(80)	NOT NULL
Player	IRL_name	CHAR(80)	NOT NULL
Player	Role	CHAR(80)	NOT NULL
Controller	IGN	CHAR(80)	Foreign Key
Controller	Game_num	INTEGER	Foreign Key
Sentinel	IGN	CHAR(80)	Foreign Key
Sentinel	Game_num	INTEGER	Foreign Key
Initiator	IGN	CHAR(80)	Foreign Key
Initiator	Game_num	INTEGER	Foreign Key
Duelist	IGN	CHAR(80)	Foreign Key
Duelist	Game_num	INTEGER	Foreign Key

Application Program Design:

Search for games based on certain maps.

```
def games_by_map(map_name):
   games[] = query all games with the  same map_name
   print(games[])
```

Search for game that were won by certain teams.

```
def games_won_by(team_name):
   games[] = query all games won by team_name
   print(games[])
```

Search for games that were a part of certain tournaments.

```
def tourna_games(tournament_name)
   games[] = query all games with tournament_name
   print(games[])
```

Search for games by Gold/Green MST team.

```
def MST(team_name)
   games[] = query all games with team_name in it
   print(games[])
```

In the searched games above be able to find:
player’s rank, agent, KDA, role, KPR, RSV

```
def rank(game, IGN)
   query game for rank if they match IGN
   print(rank)
```

“same as above for each: agent, KDA, role, RSV”

Each team has a manager and a name.

The total number of games in database should be able to be counted and the KPR of each player should be able to be calculated

```
def total_games()
   look at last entry in database’s game number then print that number
```

```
def KPR(game, IGN)
   in a game takes IGN and finds KDA and # rounds
   divides Kills/# rounds and prints it
```

```
def add_game()
   prompt for all aspects of a game then add it into database
```

Installation Instructions:

Intended Operating System: This code is compatible with all machines that can run sqlite3, tabulate, and python.

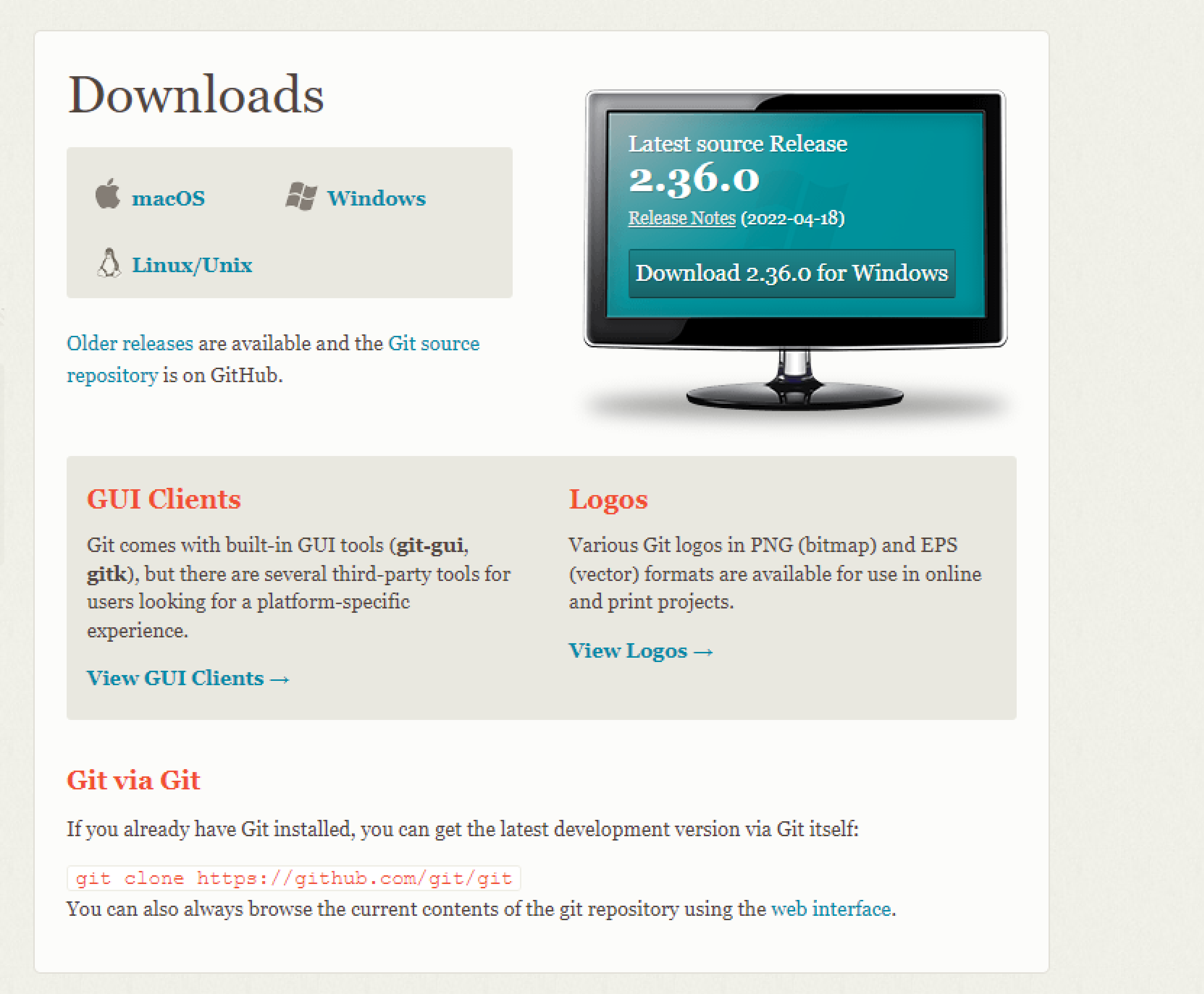
Steps for Installation:

1. Install desired compiler and terminal.
2. Install git bash, sqlite3, tabulate, and python dependencies.
3. The following instructions will show examples of how to install sqlite3 on Windows for VS code.

Installing git bash

1. Click the below link to install Git Bash (Git for Windows) or Google Git.

   https://git-scm.com/downloads



Downloads

macOS Windows

Linux/Unix

Older releases are available and the Git source repository is on GitHub.

Latest source Release
2.36.0
Release Notes (2022-04-18)
Download 2.36.0 for Windows

GUI Clients

Git comes with built-in GUI tools (**git-gui**, **gitk**), but there are several third-party tools for users looking for a platform-specific experience.

View GUI Clients →

Logos

Various Git logos in PNG (bitmap) and EPS (vector) formats are available for use in online and print projects.

View Logos →

Git via Git

If you already have Git installed, you can get the latest development version via Git itself:

```
git clone https://github.com/git/git
```

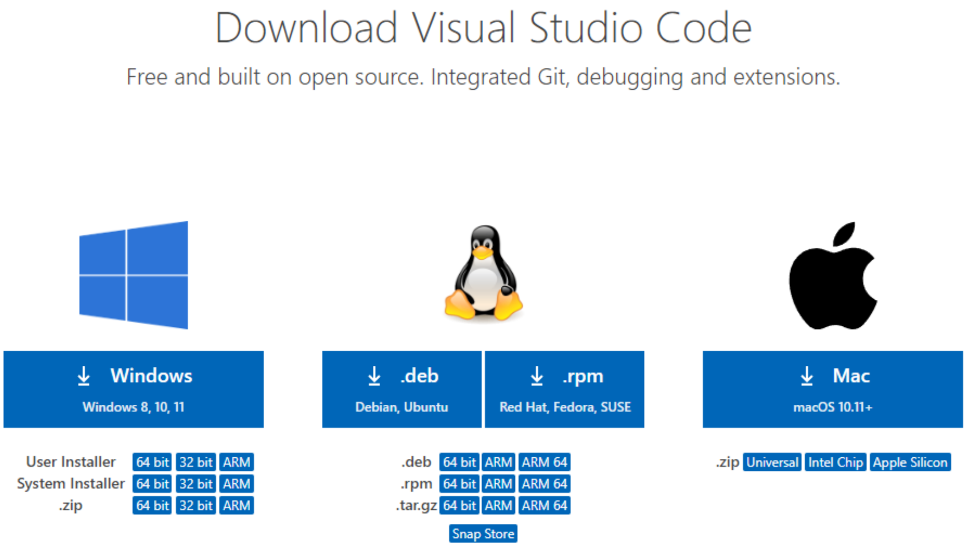
You can also always browse the current contents of the git repository using the web interface.

2. Click the Download {insert version here} for Windows on the monitor or download for Windows and follow the prompts to install how desired.

Installing VS Code

1. Click the below link or Google VS code download. Select the Windows button and select either the 64-bit or 32-bit version depending on your computer.

   https://code.visualstudio.com/download



Download Visual Studio Code

Free and built on open source. Integrated Git, debugging and extensions.

2. Follow the installation instructions.

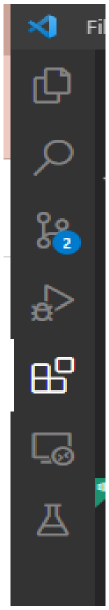
Installing sqlite3 for VS code

1. Follow the following YouTube tutorial or Google how to install SQLite3 on Windows machines.

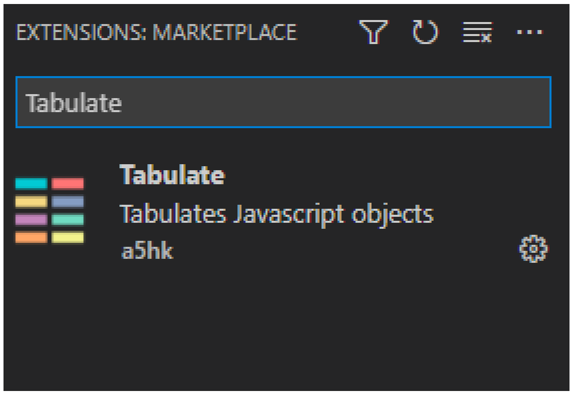
   https://www.youtube.com/watch?v=QZx6zEq9o2k&ab_channel=GeekyScript

Installing Tabulate on VS code

1. Click the cubes on the left side named extensions



2. Search in Tabulate and click install

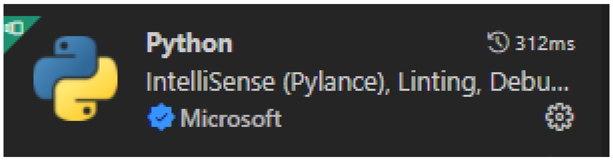


Tabulate

Tabulate
Tabulates Javascript objects
a5hk

Installing python for VS code

1. Install the python extension in the VS code extensions (the same way done above for tabulate) and install python



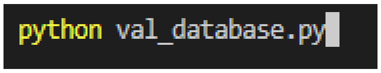
Python
312ms
IntelliSense (Pylance), Linting, Debu...
Microsoft

2. Install pip for python using Git Bash in the VS Code terminal and copy the below command to install pip for Windows. If the below command does not work, Google a tutorial to install pip for python on Windows.

```
python get-pip.py
```

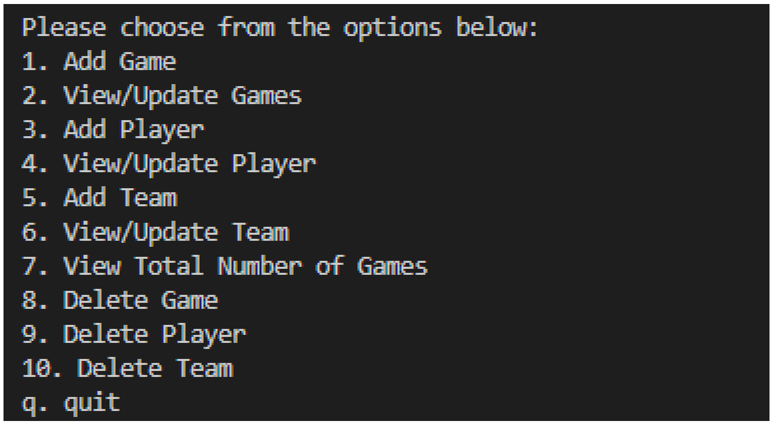
User Manual:

Start the program by typing python val_database.py in your terminal and pressing enter.



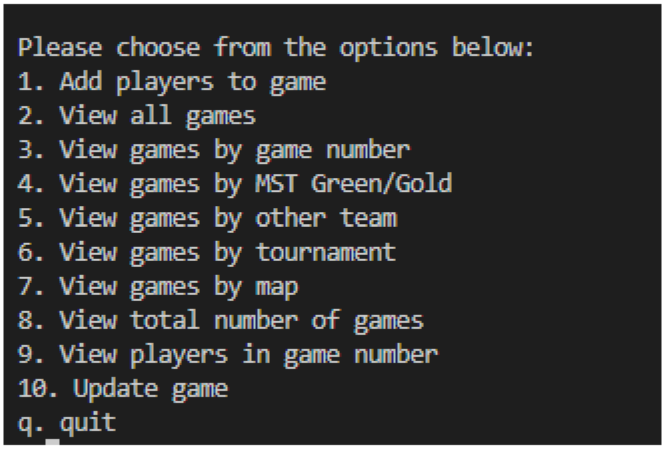
```
python val_database.py
```

A main menu should appear:



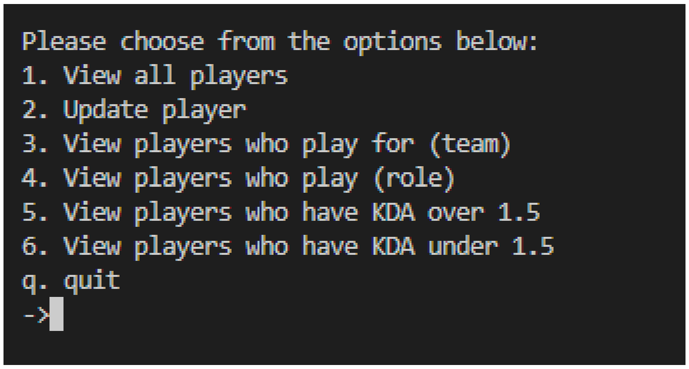
```
Please choose from the options below:
1. Add Game
2. View/Update Games
3. Add Player
4. View/Update Player
5. Add Team
6. View/Update Team
7. View Total Number of Games
8. Delete Game
9. Delete Player
10. Delete Team
q. quit
```

To view / update games, select option 2. The following menu should appear:



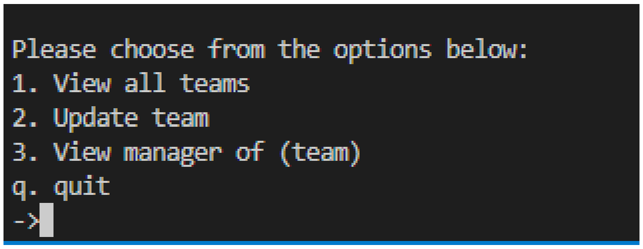
```
Please choose from the options below:
1. Add players to game
2. View all games
3. View games by game number
4. View games by MST Green/Gold
5. View games by other team
6. View games by tournament
7. View games by map
8. View total number of games
9. View players in game number
10. Update game
q. quit
```

To view / update player, select option 4. The following menu should appear:



```
Please choose from the options below:
1. View all players
2. Update player
3. View players who play for (team)
4. View players who play (role)
5. View players who have KDA over 1.5
6. View players who have KDA under 1.5
q. quit
->
```

To view / update team, select option 6. The following menu should appear:

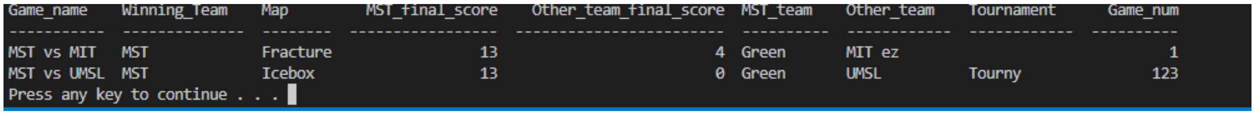


```
Please choose from the options below:
1. View all teams
2. Update team
3. View manager of (team)
q. quit
->
```

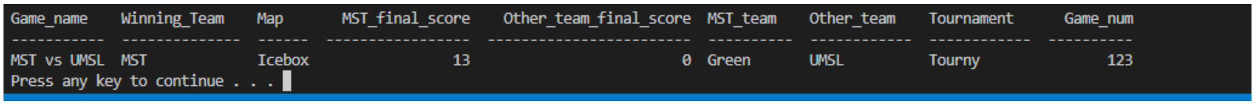
To delete a game, select option 8 from the main menu.

Enter a game number and continue.

Then, view all games from the view all games (2) option from the main menu. The change is reflected below:



```
Game_name    Winning_Team    Map       MST_final_score    Other_team_final_score  MST_team    Other_team    Tournament    Game_num
-----------  --------------  --------  -----------------  ----------------------  ----------  ------------  ------------  ----------
MST vs MIT   MST             Fracture                 13                       4  Green       MIT ez                               1
MST vs UMSL  MST             Icebox                   13                       0  Green       UMSL          Tourny               123
Press any key to continue . . .
```

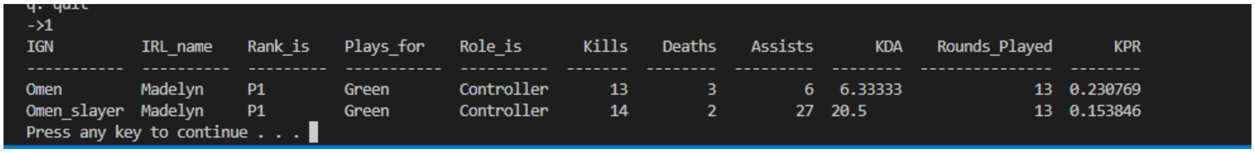


```
Game_name    Winning_Team    Map     MST_final_score    Other_team_final_score  MST_team    Other_team    Tournament    Game_num
-----------  --------------  ------  -----------------  ----------------------  ----------  ------------  ------------  ----------
MST vs UMSL  MST             Icebox                 13                       0  Green       UMSL          Tourny               123
Press any key to continue . . .
```

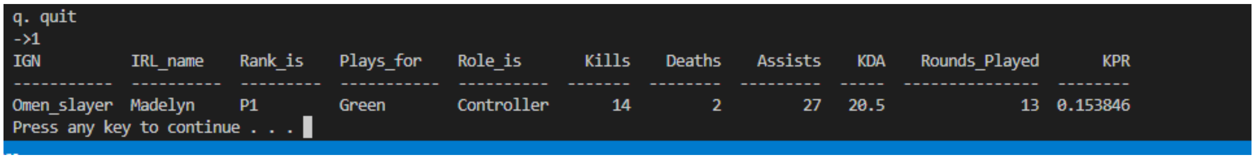
To delete a player, select option 9 from the main menu.

Enter the IGN of the player being deleted and continue.

Then, view all players from the view all players (4) option from the main menu. The change is reflected below:



```
q. quit
->1
IGN          IRL_name    Rank_is    Plays_for    Role_is       Kills    Deaths    Assists        KDA    Rounds_Played         KPR
-----------  ----------  ---------  -----------  ----------  -------  --------  ---------  --------  ---------------  --------
Omen         Madelyn     P1         Green        Controller       13         3          6   6.33333               13  0.230769
Omen_slayer  Madelyn     P1         Green        Controller       14         2         27  20.5                   13  0.153846
Press any key to continue . . .
```

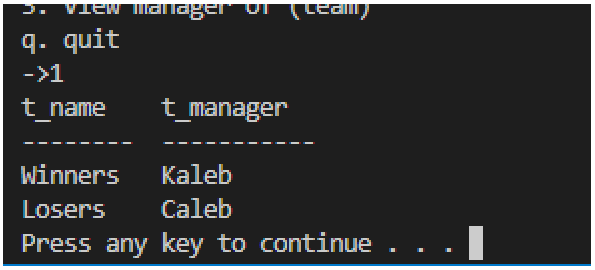


```
q. quit
->1
IGN          IRL_name    Rank_is    Plays_for    Role_is       Kills    Deaths    Assists    KDA    Rounds_Played         KPR
-----------  ----------  ---------  -----------  ----------  -------  --------  ---------  -----  ---------------  --------
Omen_slayer  Madelyn     P1         Green        Controller       14         2         27   20.5               13  0.153846
Press any key to continue . . .
```

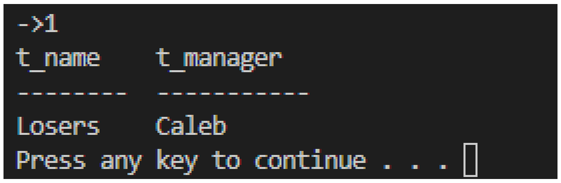
To delete a team, select option 10 from the main menu.

Enter the team name of the team being deleted and continue.

Then, view all teams from the view all teams (6) option from the main menu. The change is reflected below:



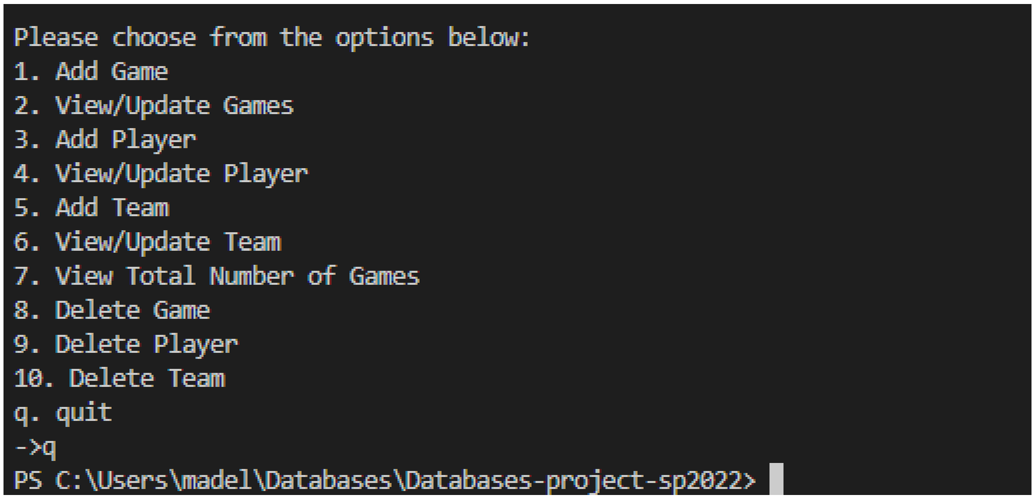
```
5. View manager of (team)
q. quit
->1
t_name    t_manager
--------  -----------
Winners   Kaleb
Losers    Caleb
Press any key to continue . . .
```



```
->1
t_name    t_manager
--------  -----------
Losers    Caleb
Press any key to continue . . .
```

To quit or exit the program:

For all menus, a quit option should be present. Enter q into the terminal to leave or go back. In the main menu, q will exit the program.



```
Please choose from the options below:
1. Add Game
2. View/Update Games
3. Add Player
4. View/Update Player
5. Add Team
6. View/Update Team
7. View Total Number of Games
8. Delete Game
9. Delete Player
10. Delete Team
q. quit
->q
PS C:\Users\madel\Databases\Databases-project-sp2022>
```

To force out of the program at any time on a Windows machine, enter ^c into the terminal. This will force the program to terminate. Re-enter the python val_database.py to restart the program.