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CS 4750: Database Systems
Thursday, July 13, 2023

Smash at UVa Database

Overview

For our system, we will be creating a database to store player and tournament data for the Smash Club at UVa. The club, currently, uses a database that stores player data for everyone who participates in Charlottesville Smash tournaments, but it would be extremely beneficial for the club if there was a specific database for just keeping track of player data from UVa Smash tournaments. This database will keep track of each UVa player in the league, each UVa tournament in the league, each game that happens at the tournament, the characters played by each participant during a game, and the club officer/tournament organizer for each event.

In addition to making it easier to manage tournament data specific to UVa Smash tournaments, this system we are working to create would be beneficial to the club as it would be able to serve as sort of a dynamic club roster. For every player that enters a UVa tournament, their information will be logged into the system and serve as “member data” for our club. Every year, we have to submit an updated roster list and we do so by having members fill out a Google Doc with their information. This system is not very efficient and can leave us with an incomplete or inaccurate list if some members forget to fill out this form. So, it would be ideal if the club had a system to log each member as soon as they enter a tournament. With the current system that logs all of Charlottesville’s player data, this is not possible since that information is made publicly available so we do not want it storing the information of UVa Students. However, with this system, we are creating, we will be able to do so since it is just for club use.

Our new system will allow members in Smash at UVa to query player and character data about each UVa tournament participant, view information about each UVa Smash tournament, and statistics from the games that place during them. In addition to being able to query this information as well, Club officers will be able to query more specific data pertaining to UVa students, such as a UVa student’s email address. This will allow club officers to easily query information for members which will be helpful if UVa student member information is needed for some club-related tasks.

Organization

Smash at UVa is a student-run club dedicated to playing and enjoying the Super Smash Bros. game. This club holds weekly tournaments where anyone who enjoys the game can come to play with others. These tournaments are great places to learn more about the game and, also, for you to get competitive if you take the game more seriously.

Most meetings of this club are formatted in the style of tournaments where every participant is entered into a double-elimination bracket and battle it out in 1-on-1 matches to see who the overall best player is at that tournament. Entering a tournament requires a small fee; however, once this fee is paid and you enter a tournament you are considered a member of the club.

Organization Affiliation

Jordan has been part of the UVa Smash Club for the past few years, and is, now, a club officer. As a club officer, Jordan would like to help the club in any way he can, so creating this system is a great way to do so. Having an organized list of members would be a major step for the club and will aid in helping it stay more organized.

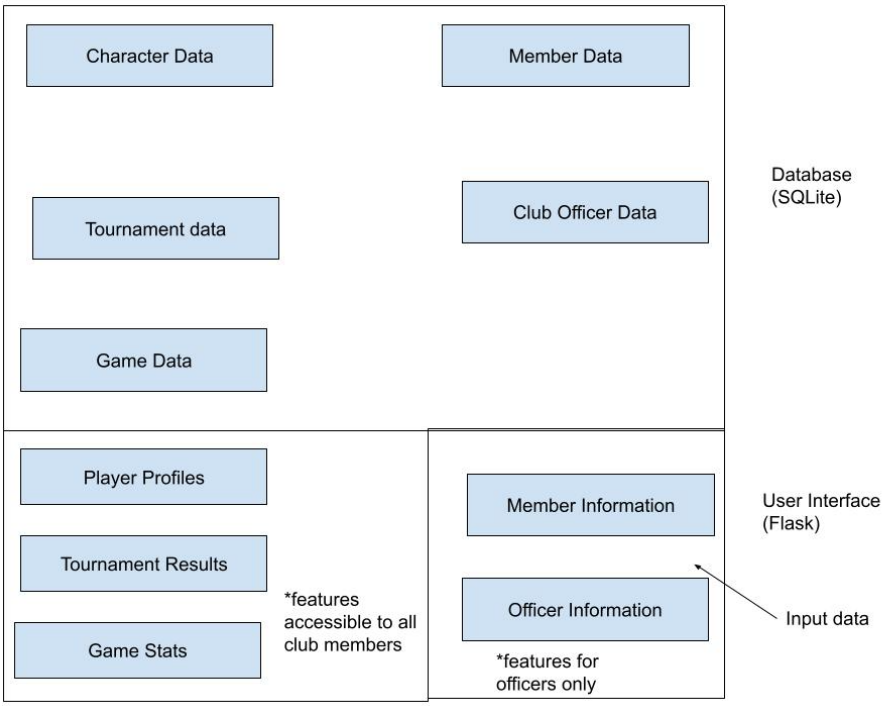
The fluctuating nature of smash tournaments makes it so the player turnout to each tournament every week is always a little different. Due to this, it is hard to have a concrete idea of what members are in the club. This system would be useful in keeping track of members for the officers and, as a whole, allow the club to work more efficiently.

Member Responsibilities

As a two-person group, we will likely both need to be very hands-on for this project. However, since Jordan is the one affiliated with this club, he will play a larger focus on designing the system and determining its requirements while Jakob will focus more on implementation. We will each work on every aspect of this system together, but one of us will serve as the “leader” for the design process and the other for the implementation process.

System Architecture

Figure A System Architecture Diagram



- *Certain information will be queryable by all users, while some information is only made available to club officers.
- As shown in Fig. A, we are using Flask (Python, HTML, CSS) to build our GUI.
- We will be using GitHub for version control.

Requirements

Our system will set to meet the following requirements:

- Allow all members of the club to query player data about other members in the club.
- Allow all members of the club to query the results of each UVa tournament.
- Allow all members of the club to query statistics from each game played in UVa tournaments (game-winner, game-loser, etc.).
- Allow club officers to input the data after each game and input new members into the system.
- Allow club officers to query member information, such as UVa computing ID.
- Allow club officers to query information of other officers so officers can find the best ways to contact one another.

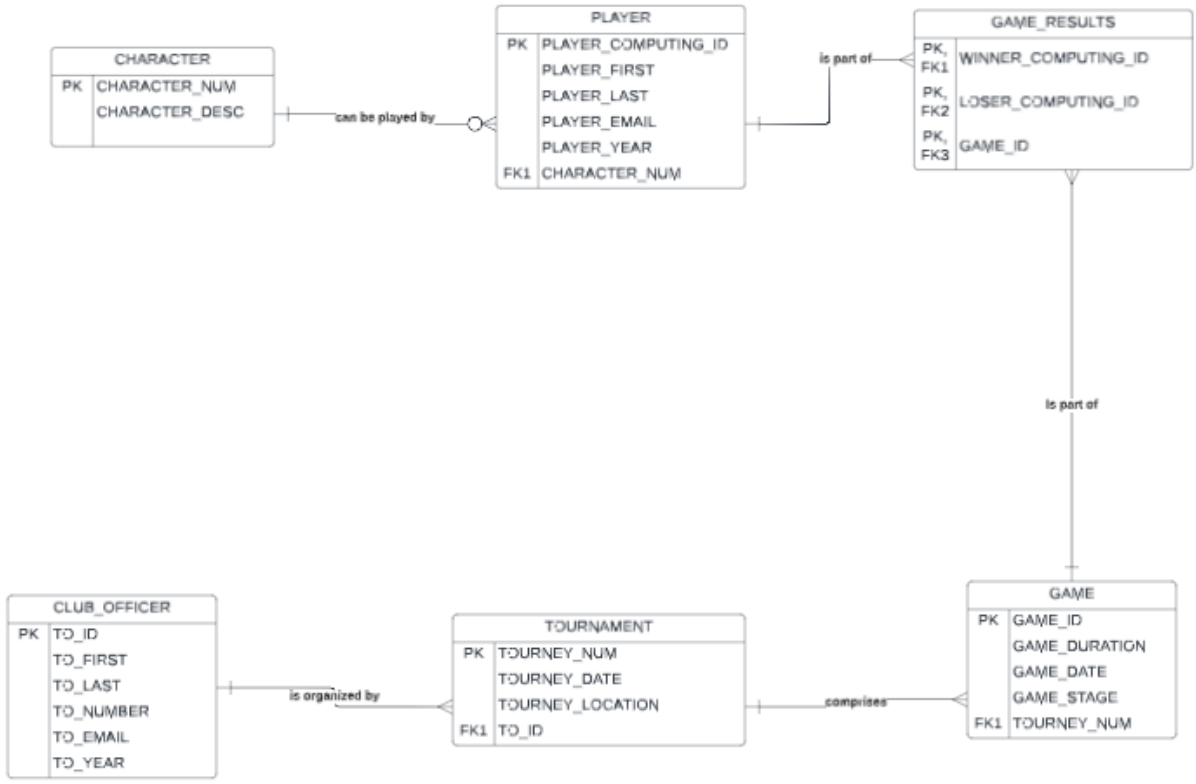
Business Rules

The business rules for our system are the following:

- Many players in the league can play many games.
- Many games can be attended by many players.
- Many games comprise a tournament.
- A game is played between two players.
- A tournament consists of many games.
- Each player can play one or many characters.
- Many characters can be played by 0 or many players.
- A tournament organizer organizes 1 or many tournaments.
- Many tournaments are organized by a tournament organizer.

Proposed Database Diagram

Figure B Database ERD Diagram



System Description

How will data be input into the system?

- Our system will allow tournament organizers and club officers to enter information into the database after each tournament.
- The website we use to run tournaments provides all of the necessary statistics after a competition.

What are the requirements that the UVa Smash Club has for the system?

- View tournament information (time, date, location)
- View rankings
- View games (winner, loser)
- View player information
- View and track player attendance

How will users be able to query data and how will information be presented to users?

Users will be able to navigate to specific pages to find the club data they are looking for.

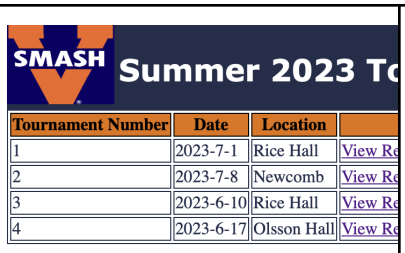
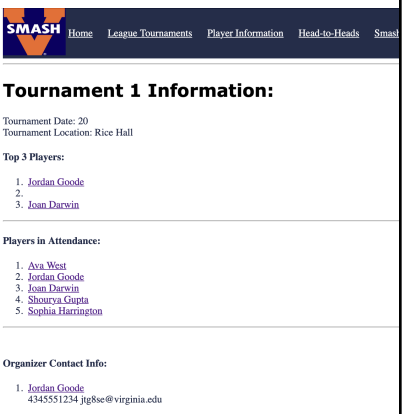
- These data are:
    - <u>League Tournaments (get-all)</u>
        - List of tournaments, with links to tournament pages, containing:
    - <u>Tournament (get-one)</u>
        - Values of tournament attributes.
        - Links to the games played at the tournament.
        - Links to the players present.
    - <u>Player Information (get-all)</u>
        - List of players, with links to their player page.
    - <u>Player (get-one)</u>
        - All player attributes.
        - Links to tournaments attended by the players.
        - Links to games played by the player.
    - <u>Head-to-Heads / Games (get-all)</u>
        - List of all games in the tournament season
        - Links to the games pages
        - Links to the tournaments where the games were held.
    - <u>Game (get-one)</u>
        - All game attributes.
        - Links to players in the game.
        - Link to the tournament where the game was held.
    - <u>Smash Characters List</u>
        - Character Names
        - Character Icons

- About UVa Smash Club
  - Club Officer information

Interface (and Snapshots)

Please clone the repository at https://github.com/jakekauff/SmashAtUVa/tree/main and follow the guide for running the interface.

Here are snapshots of the interface, along with the corresponding requirements:

Snapshot 1	 SMASH Summer 2023 To Tournament Number | Date | Location 1 | 2023-7-1 | Rice Hall | View Re 2 | 2023-7-8 | Newcomb | View Re 3 | 2023-6-10 | Rice Hall | View Re 4 | 2023-6-17 | Olsson Hall | View Re	- Meets requirement for viewing all tournaments in the current league, with date and location.
Snapshot 2	 SMASH Home League Tournaments Player Information Head-to-Heads Smash Tournament 1 Information: Tournament Date: 20 Tournament Location: Rice Hall Top 3 Players: 1. Jordan Goode 2. 3. Joan Darwin Players in Attendance: 1. Ava West 2. Jordan Goode 3. Joan Darwin 4. Shourya Gupta 5. Sophia Harrington Organizer Contact Info: 1. Jordan Goode 4345551234 jtg8se@virginia.edu	- Meets requirement for viewing tournament-specific information (date, location, rankings, attendance, and organizing officer)

<table>
<tr>
<td>Snapshot 3</td>
<td>
SMASH Players Home
<table>
<tr><th>Name</th><th>Computing ID</th><th>Character</th></tr>
<tr><td>Jordan Goode</td><td>jtg8se</td><td>Bayonetta</td></tr>
<tr><td>Shourya Gupta</td><td>sg2vp</td><td>Ness</td></tr>
<tr><td>Ethan Hartley</td><td>eh2vu</td><td>Steve</td></tr>
<tr><td>Sophia Harrington</td><td>sh3rt</td><td>Sora</td></tr>
<tr><td>Ava West</td><td>aw5pr</td><td>Hero</td></tr>
<tr><td>Noah Price</td><td>np8rq</td><td>Rob</td></tr>
<tr><td>Joan Darwin</td><td>jd5tp</td><td>Cloud</td></tr>
</table>
</td>
<td>
- Meets requirement to be able to view all players' information at a glance.
- Links to player-specific pages.
</td>
</tr>
<tr>
<td>Snapshot 4</td>
<td>
SMASH Home League Tou

Shourya Gupta
<table>
<tr><th>Name</th><th>Computing ID</th><th>Cha</th></tr>
<tr><td>Shourya Gupta</td><td>sg2vp</td><td>Nes</td></tr>
</table>

Tournaments attended:
1. Tournament #1
2. Tournament #2
3. Tournament #3
Head-to-Heads
Wins:
Losses:
1. Game 127
2. Game 130
3. Game 132
</td>
<td>
- Meets requirement for viewing player-specific information, like which tournaments he/she participated in and their wins and losses.
- Links to games and tournaments.
</td>
</tr>
</table>

<table>
<tr>
<td>Snapshot 5</td>
<td>
SMASH Summer 2023 Games
<table>
<tr><th>Match Number</th><th>Tournament</th><th>Winner</th><th>Loser</th><th></th></tr>
<tr><td>123</td><td>Tournament 1</td><td>jtg8se</td><td>eh2vu</td><td>More Info.</td></tr>
<tr><td>124</td><td>Tournament 1</td><td>jd5tp</td><td>sh3rt</td><td>More Info.</td></tr>
<tr><td>125</td><td>Tournament 2</td><td>jtg8se</td><td>jd5tp</td><td>More Info.</td></tr>
<tr><td>126</td><td>Tournament 2</td><td>aw5pr</td><td>sh3rt</td><td>More Info.</td></tr>
<tr><td>127</td><td>Tournament 3</td><td>np8rq</td><td>sg2vp</td><td>More Info.</td></tr>
<tr><td>128</td><td>Tournament 3</td><td>jtg8se</td><td>np8rq</td><td>More Info.</td></tr>
<tr><td>129</td><td>Tournament 4</td><td>np8rq</td><td>eh2vu</td><td>More Info.</td></tr>
<tr><td>130</td><td>Tournament 4</td><td>eh2vu</td><td>sg2vp</td><td>More Info.</td></tr>
<tr><td>131</td><td>Tournament 1</td><td>np8rq</td><td>jd5tp</td><td>More Info.</td></tr>
<tr><td>132</td><td>Tournament 2</td><td>aw5pr</td><td>sg2vp</td><td>More Info.</td></tr>
<tr><td>133</td><td>Tournament 3</td><td>jd5tp</td><td>aw5pr</td><td>More Info.</td></tr>
<tr><td>134</td><td>Tournament 4</td><td>aw5pr</td><td>jd5tp</td><td>More Info.</td></tr>
</table>
</td>
<td>- Lists all games.</td>
</tr>
<tr>
<td>Snapshot 6</td>
<td>
SMASH Home League Tournaments Player Informati
Game 125 Information:
Game Duration:
60
Game Winner:
Jordan Goode
Game Loser:
Joan Darwin
Game Tournament:
Tournament 2
</td>
<td>- Gives game-specific information.</td>
</tr>
<tr>
<td>Snapshot 7</td>
<td>
SMASH About UVa Smash Home League Tournaments Playe
Current League:
Summer 2023
Student Officers:
Jordan Goode (Click for Player Information) [Phone: 4345551234; Email: jtg8se@virginia.edu]
</td>
<td>- Gives information about the club.</td>
</tr>
</table>

Snapshot 8		- Lists all playable characters, even if they aren't currently being played by a player.

SQL Scripts

Our SQL scripts for creating and loading the data into the database can be found in the .zip submission, with the names 'dropCreate.sql' and 'addData.sql' successively.

Here are the SQL scripts that we use in the database interface, listed by page:

League Tournaments Page:

```
SELECT * FROM tournament; -- get all tournaments
SELECT * FROM player; -- get all players
```

Tournament Page:

```
-- get all info for the tournament with specified TourneyNum, joined with
organizing officer's information.
SELECT * FROM tournament INNER JOIN club_officer
ON tournament.OfficerID = club_officer.OfficerID
WHERE TourneyNum = {TourneyNum};
-- get players present at specified tournament
SELECT ComputingID FROM player_attendance
WHERE TourneyNum = {TourneyNum};
```

Players List

```
SELECT * FROM player; -- get all players

-- get all info for character with specified CharacterNumber
SELECT * FROM characters WHERE CharacterNumber = {num};
```

Player

```
-- get info for player with specified ComputingID
SELECT * FROM player WHERE ComputingID = {PlayerID} LIMIT 1;
-- Get TourneyNums for tournaments that the specified player has attended
SELECT TourneyNum FROM player_attendance WHERE ComputingID = {PlayerID};
-- Get game info where this player won
SELECT * FROM game WHERE Winner = {PlayerID};
-- Get game info where this player lost
SELECT * FROM game WHERE Loser = {PlayerID};
-- Get character info for this player's character
SELECT * FROM characters WHERE CharacterNumber = ( SELECT CharacterNumber
FROM player WHERE ComputingID = {PlayerID});
```

Games list:

```
SELECT * FROM game; -- get all games
SELECT * FROM player; -- get all players
```

Characters List:

```
SELECT * FROM characters; -- get all characters
```

Game Page

```
-- get game with specified GameID
SELECT * FROM game WHERE GameID = {GameID} LIMIT 1;

-- Get name of winner
SELECT FirstName, LastName FROM player WHERE ComputingID = {winnerID} LIMIT
1

-- Get name of loser
SELECT FirstName, LastName FROM player WHERE ComputingID = {loserID} LIMIT
```

```
1
```

About Page

```
SELECT * FROM club_officer ORDER BY OfficerID DESC; -- get officer
information, ordered by OfficerID descending
```