Senior Project

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What's the problem?

In Dungeons and Dragons, everyone involved must keep track of statistics, modifiers, hp values, and more, erasing and re-writing values constantly. The creation of a Dungeons and Dragons utilities tool is necessary to ensure smooth gameplay, relieve stress, and prevent errors when calculating values.

Motivation

- I enjoy tabletop role-playing games and have played fifth edition Dungeons and Dragons for nearly 4 years now.
- Previous tools I have used never felt quite right, having problems such as:
  - Difficult interface
  - Felt Clunky
  - Lacked functionalities I thought obvious
  - Paid to use
- The desire to create something I felt was my own project
- Personal use

Research and Background

- Deciding a language
  - C++?
  - C#?
  - Python?
- How GUI's work in these languages
- Availability of libraries
  - C++ is built for more "low-to the ground" applications, offering control
  - Python is intended for high level projects; is more user friendly
- Documentation
  - Python seems more robust in its library documentation because of the userbase
  - C++ and C# felt lacking in usability without a strong understanding of many base tools and libraries

Hardware/Software Requirements

Hardware

- An intel I3 processor or above (or it's AMD equivalent)
- 1GB Ram
- Secondary Storage (size depends on amount of data wanting to be stored)
- Keyboard for input

Software

- A Linux based operating system
- Python3
- SQLite/SQL Alchemy
- Pandas
- Orator

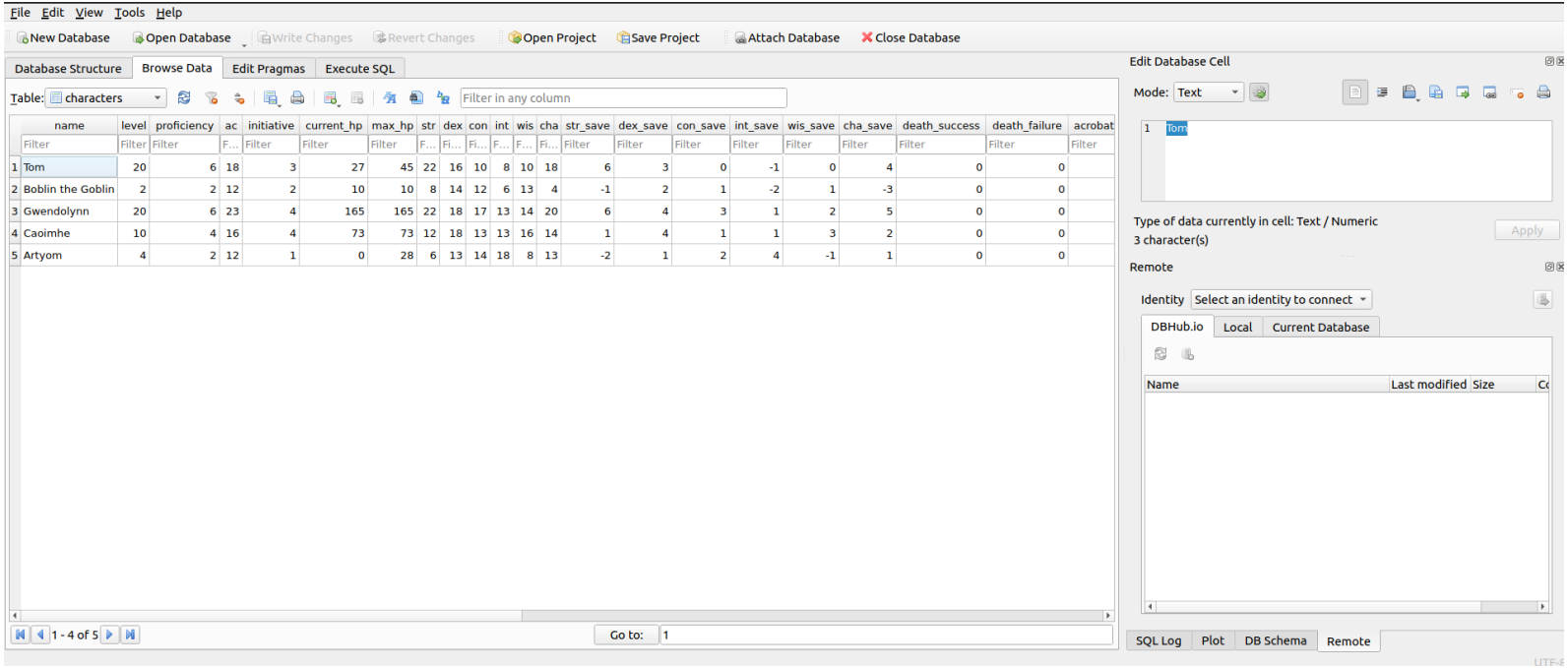
Demo

Functional Requirements

- Allow the storing and loading of character data for later reference
- Allow for modification of character data
- Allow for the creation of new character data
- Allow for the importing of character data from a standardized PDF
- Allow for the viewing of character data

Database

- This displays the database functionality, showing stored characters from the program.



Character Data Creation

- This displays the process of character creation with error messages

```
----- Create Character -----

Saved Characters:
Tom
Boblin the Goblin
Gwendolynn
Caoimhe
Artyom

Please type your new character's name or press ENTER to go back: Kindred
Please type Kindred's level: 20
Please type Kindred's current HP: 999
Please type Kindred's max HP: a

Please input an integer value.
Please type Kindred's max HP: 998

Maximum HP cannot be smaller than current hp.
Please type Kindred's max HP: 999
Please type Kindred's armor class: 20
Please type Kindred's strength score: 20
Please type Kindred's dexterity score: 20
Please type Kindred's constitution score: 20
Please type Kindred's intelligence score: 20
Please type Kindred's wisdom score: 20
Please type Kindred's charisma score: 20
----- Kindred's Statistics -----

Level: 20
HP: 999/999
Armor Class: 20
STR: 20 (+5)
DEX: 20 (+5)
CON: 20 (+5)
INT: 20 (+5)
WIS: 20 (+5)
CHA: 20 (+5)

 Does this look right (y/n)? y
```

High-Level Test Plan

- Ensure the product can run on the specified hardware without interruption
- Ensure each functional requirement is met
  - Data viewing
  - Data creation
  - Data storage
  - Data editing
- Ensure input validation to prevent improper data entry
- Ensure integrity of the database

Test Results

- Project runtime performance
  - While running with only 1 thread, no performance issues were detected
- Functional requirement testing
  - Data viewing – The data is displayed accurately and without error
  - Data creation – The data is created without improper input
  - Data editing – The data is able to be edited without improper input
  - Data saving/loading – The data is able to be saved and loaded from the database file
- Graphical user interface
  - No graphical user interface was implemented

Challenges Overcome

- Language decisions and implementation method
- Interacting with a PDF
- Understanding program to database interaction
- How to properly write documentation

Challenges Not Overcome

- Time constraints and full implementation
- Utilizing a fully graphical user interface
- Implementing a way to interpret Dungeons and Dragons spells and abilities

Future Enhancements

- Implement full functionality
- Create a graphical user interface for use with mouse pointer and buttons
- Web hosting/mobile app production
- Clean and optimize code for functionality and speed

Questions?