**Salsimjo’s Creature Laboratory**

**Introduction**

Our application seeks to make a difficult capability that Dungeon Masters (DMs) for the roleplaying game *Dungeon & Dragons* (D&D) simple and easy: **Creating a complete homebrew creature from scratch.**

Many DMs attempt and shy away at creating homebrew creatures because:

* By-the-book evaluation requires referencing a table, the Creature CR Table, which can feel imprecise or lead to user error
* Involves unclear calculations for more complex creatures that must be done before or are outside of the Creature CR Table
  + D&D has provided guidance as to the evaluation of more complex or intricate creature attacks and abilities, but they are still largely felt by DMs to be unclear
* Lack of confidence in final Challenge Rating (CR) evaluation, especially compared to official D&D creatures

**Goals**

Core Application Goals

We want to algorithmically simplify this entire process and help DMs feel at ease and confident in their homebrew creatures.

* Using official D&D sources, use algorithms to calculate a creature’s CR based entirely on the user’s inputs
* Make it feel easier to create homebrew creatures
* Give confidence to the DM that their creature is actually as powerful as they intend it to be with accurate and precise CR evaluation.

Future Goals

We have several ideas for the future of this application.

* Creating an in-house “database” to give DMs the ability to save their homebrew creatures
* Implementing an Export/Import capability to share creatures amongst other users through various popular D&D media (such as their official website forums or other popular DM organizational applications)
* Implementing a Magical Item Rarity Evaluation capability. This is another difficult ability offered to DMs for their games with unclear guidance. This functionality would receive user input regarding the capabilities of a homebrew magic item and determine an appropriate rarity for it.

**Approach**

Implementation

We decided to implement our project as an **executable application**.

Pros:

* No internet connection required after download
* Increased portability as a DM could down the app on their laptop or other mobile device (future goal)
* Increased user convenience due to being a stand-alone application

Cons:

* Requires user resources (application saved to memory space, especially after implementing a future goal of adding the capability of saving your homebrew creatures)
* Formatting for the application window is not as straightforward/easy for our team compared to website development. (Challenge accepted!)
* Requires updates for future additions/bug fixes to the initial application

Development Plan

We felt an inside-out or bottom-up approach would be best for the core goal of our application:

* Implementation of Offensive and Defensive CR calculations to produce the creature’s CR was done first. The formula for a creature’s overall CR is very simple:

However, the calculations for *Offensive CR* and *Defensive CR* are intricate, complex, and do not have straightforward formulas.

* + Specifically, *Offensive CR* is the most difficult for DMs to determine
* Implementation of UI would be next after we have working algorithms for the basic CR calculation.
  + By “basic CR calculation”, we mean the generation of the creature’s CR based on the official Creature CR Table that is referenced by a DM when homebrewing a creature. This does not involve any calculations required by the DM before referencing this Table.
* Implementation of the results would be last. This is where the DM would finally see their finished creation!

**Progress**

Our progress thus far has been up to our expectations as the design goals have gotten more difficult as we move further along our application’s development:

* The Creature Laboratory can correctly determine a creature’s CR based on given inputs to calculate the creature’s Offensive CR and Defensive CR.
  + However, this is only an algorithmic implementation of a DM correctly referencing the Creature CR Table after the implicit calculations are done by the DM, which are outside the scope of this table.
  + This is what every popular ‘D&D creature creator’ website or app does. Our goal is to take this further and remove all math-work from the user!
* With research and personal experience, our team has determined a general but inclusive format for user inputs to allow our application to perform the more intricate and complex calculations the DM must do on their own.