Requirements Specification: Dungeons & Dragons 5E Character Tools

Christopher Evans - https://github.com/cevans88

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1 Introduction

This document is the Software Requirements Specification document for the Dungeons & Dragons 5th Edition Character Tools application, written to conform with the IEEE's guidelines on SRS documents. It will serve to unambiguously define the requirements of the application so that efforts in later stages of the development cycle may be more focused and effective.

1.1 Purpose

By formally defining the requirements of the application this document benefits the project in a number of ways:

- **Reduces the development effort:** Explicitly specifying the requirements at the outset of the project minimises the amount of redesign, recoding, and retesting. It can also expose omissions and inconsistencies earlier in the development cycle where such problems require less effort to rectify.
- **Provides a basis for validation:** Design and implementation compliance plans can be produced using this SRS as a reference.

It is divided into **X** parts:
The intended audience for this document includes the design, development, and testing teams who will find its contents invaluable as a basis for their work (whether that be designing interfaces or writing test suites to verify the meeting of specific requirements).

1.2 Scope

Application: Dungeons & Dragons 5th Edition Character Tools

The intent of the application is to provide desktop GUI tools for creating, viewing, and storing characters in the D&D 5E ruleset. Users will be able to make selections from the various player classes, backgrounds, races, and equipment lists, as well as customise the statistics, equipment, and levels of characters once they have been created.

By consolidating all the choices that are found across the various books and supplements available to players into one application and providing a means of easily creating and viewing characters with those choices the application aims to streamline the process of planning or experimenting with characters.

Additional features which the application could be extended with include a combat simulation facility, the option of sharing or exporting character profiles with others, and implementing the suite as a web application.

In order to provide an effective character creation suite it will be necessary for the application to:

- Accurately model the systems present in D&D 5E;

- Be up to date on all the available character options that exist across the D&D 5E books;
- Since additional releases are inevitable the application should be able to easily integrate further options.
- Provide a GUI that:
  - Is pleasing to the eye;
  - Presents all the desired character information in a useful way, that is:
    * Can all be viewed at once if needed;
    * Can be contrasted with other options;
    * Is self-explanatory either through labels or tooltips.
    * Makes it easy to make selections or edits.

In order to provide a combat simulation facility the application will need to be extended to include:

- Data for modelling the various creatures that can be involved in combat with player characters;
- Accurate modelling of the combat systems in D&D5E;
- A suitable interface for setting up, running, and analysing combat encounters.
- Since D&D5E combat is often represented as a grid of 5" by 5" squares it would make sense to base the interface around this model;
- The scope of this feature does not extend to implementing an artificial intelligence system for creatures in the combat scenario.

Enabling the sharing or exporting of character profiles will require the application to be able to convert the totality of a character's attributes to a string, and in turn be able to import such a string and construct the same character entity.

Implementing the suite as a web application would entail embedding it into a website so that users will not have to run an executable on their desktop computer to use the application.

1.3 References

This SRS shall be used in conjunction with the following documents:

D&D5E Character Sheet, Figure 2 in Appendix, Wizards of the Coast LLC, 28/08/2017.

D&D5E Spellcasting Sheet, Figure 3 in Appendix, Wizards of the Coast LLC, 28/08/2017.

1.4 Definitions, acronyms, and abbreviations

In order to fully disambiguate terms used in this SRS a number of key terms are defined below:

1.4.1 Dungeons & Dragons 5th Edition:

The 5th edition rules system for the Dungeons & Dragons roleplaying game made and owned by Wizards of the Coast LLC. Since the rules and mechanics vary between different editions of the game it is important to define which edition the application is intended to model. The rules and mechanics being modelled are found in the 5th Edition Player's Handbook, errata clarification documents, and the wide range of supplement material that is produced for players such as the 5th Edition Sword Coast Adventurer's Guide.

1.4.2 D&D5E:

Acronym for Dungeon's & Dragons 5th Edition. "5E" also used in isolation to abbreviate "5th Edition".

1.4.3 Character:

A character in the context of D&D5E is an entity comprised of many different attributes that have been selected from a variety of options by a player including, but not limited to:

- Name (e.g. Tiberius)
- Race (e.g. Dwarf)
- Class (e.g. Fighter)
- Background (e.g. Folk Hero)

A comprehensive picture of the elements that make up a character can be seen by examining the D&D5E Character Sheet included in the Appendix.

1.4.4 Player

The person making a D&D5E character, synonymous with "user" of the D&D5E Character Tools application.

1.4.5 Player's Handbook

The core rulebook which defines most of the mechanics used in D&D5E, often abbreviated to the PHB.

1.5 Overview

TODO

2 Overall description

This section of the SRS will provide details of the factors influencing the requirements of the application, the intent being to provide a background/context which will make the requirements easier to understand.

2.1 Product perspective

The application is a stand-alone and does not relate to any other applications or systems. That said, constraints that must be factored into the requirements of the system are detailed below:

2.1.1 User interfaces

All user interaction with the application will be done via a GUI using mouse and keyboard. User input will consist of:

1. Clicking navigation and selection buttons with the mouse;
2. Brief bursts of keyboard input to enter numeric values or text fields (such as character names)
3. Pressing keyboard shortcuts to accomplish the same as 1.

Screen format:

1. The application will need to provide a window that is capable of being rendered in full-screen or windowed mode, as well as able to be resized and/or minimised.
2. A minimum screen resolution of 1024x768 will be catered for, along with a maximum of 1920x1080.
3. A variety of aspect ratios shall be catered for:
    - 4:3
    - 16:10
    - 16:9

Window layouts and content
All of the window layouts will be consistent with respect:

- Presence and placement of generic navigation buttons (e.g. "Previous", "Quit", "Log out").
- Retaining the default window controls provided by the operating system whenever the application is not being rendered in full-screen mode.

All of the window contents will be consistent with respect:

- The Tab key on the keyboard shall be usable to jump between fields.
- Pressing F1 on the keyboard will produce a help message pop-up relating to the currently active window.
- Pressing F2 on the keyboard or hovering the mouse over a label should provide an explanatory tooltip.

Regarding characteristics particular to specific interfaces:

1. **Profile selection screen:** Window where the user shall be able to create or select a profile.
    - A Default profile will be available from the outset.
    - Profiles shall be selectable via a drop-down selection box.

2. **Main menu:** Provides menu of buttons which are used to access the various tools of the application (e.g. "Create character", "Load character").

3. **Character creation mode prompt:** Prompts user to specify how a newly created character's ability scores are generated, in line with the options available within the PHB:

   - *Randomly*: Where 4 6-sided dice are rolled, the lowest one is discarded, and the remainder are added together. This is done 6 times to provide an array of 6 scores ranging 3-18 (e.g. [11, 12, 9, 15, 16, 8]). The player then chooses which ability is assigned each score. The score rolling process should be transparent and depict the scores being rolled one-by-one in order to involve the player in the score rolling process.
   - *Standard array*: Instead of randomly generating values a standard array is provided to assign values from ([15, 14, 13, 12, 10, 8]).
   - *Customised ability scores*: 27 points are granted to spend on ability scores (see Table 1):
   - *Manual entry*: The player has free reign to enter values from 3-18 (to account for having physically rolled a set of values or simply accommodating a player's desire to experiment).

4. **Character sheet:** Provides a character sheet displaying the chosen character's values (or a blank sheet if a new character is being created). Information will need to be laid out and formatted such that it is dense enough to minimise scrolling or tabbing between pages while maintaining readability.

   - Dividing character information into separate tabs or pages containing attributes with a common thread may be recommended (e.g. 3 tabs named "Attributes and Skills", "Attacks & Equipment", and "Proficiencies & Traits").
   - A "Load character" button should produce a pop-up window providing the option of selecting a stored character to load, entering a character import string, or specifying the location of a character file.
   - An "Export character" button should produce a pop-up window containing a string representing the totality of that character's attributes as well as a button enabling storage of the character within a file.

5. **Comparison tool:** A vertically split page with a selection box at the top of each half where a character can be selected to be displayed. In order to fit both characters' information on screen a view mode selection control will be provided (so the user can decide whether to contrast attributes, skills, or other aspects).

The default user interface will not provide verbose explanation of labels and fields on account of the assumed presence of mouse-over tooltips and accessible help pop-ups.

2.1.2 Software interfaces

The presence of an Operating System capable of running the Java Virtual Machine is assumed, otherwise there are no specific software requirements associated with running the application.

Score	Cost	Score	Cost
8	0	12	4
9	1	13	5
10	2	14	7
11	3	15	9

Table 1: Ability score points cost

2.1.3 Memory constraints

Since the application is intended to be operable on relatively low performance hardware the application will be constrained to operate within a 2GB memory limit. This will ensure that the application will operate effectively on a system possessing 4GB of memory (and assuming some of that will be allocated to the operating system and other background programs).

2.2 Product functions

1. **Profile creation:** The user will be able to create a new profile if they would prefer to organise the characters they create using the profile system.
2. **Profile selection:** The user will be able to select a profile from the list of existing profiles to browse the characters associated with that profile.
3. **Profile deletion:** The user will be able to delete any existing profiles (except the "Default" profile).
4. **Character creation:** The user will be able to create a new character which will be associated with the profile they are using (see Figure 1).
5. **Storing characters:** The user will be able to store characters that they have created or modified in a local database on their system so that the character details can be loaded in future.
6. **Loading characters:** The user will be able to load a previously created character from a local database. Previously loaded profiles will be listed under a "Recently accessed" window.
7. **Deleting characters:** The user will be able to delete characters associated with the current profile, deleting the local file and that character's listing in the "Recently Accessed" window.
8. **Modifying characters:** Once a character has been created/loaded, the user will be able to make adjustments to the various values associated with the character (e.g. increase it's level, make changes to their inventory, etc).
9. **Export characters to a String:** The application will be able to produce a string representation of the active character sheet which the user can share so that another use may import the same character settings into their application.
10. **Comparison of characters:** The user will be able to view and contrast a pair of characters simultaneously, selecting what aspect of the characters the display mode is focused on at that given moment.

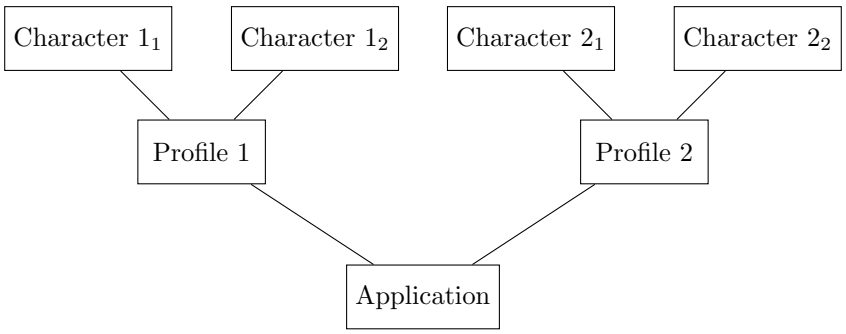


Figure 1: Application > Profile > Character relationship diagram

2.3 User characteristics

The intended audience of the product will be players of the D&D5E game, as such, it is assumed that the users will be familiar with how the mechanics of the game work. Because of this the application will not be concerned with explaining how the systems work, only implementing them accurately and providing sufficient tooltip and help documentation for users to make use of the tools effectively. As an example, the application cannot assume that users will understand intuitively how to store, load, or export characters; how to make use of application features will need to be thoroughly documented.

2.4 Apportioning of requirements

In section 1.2 the scope definition included descriptions of how the application could be extended to provide combat simulation tools or be converted to be run in a web browser. Both of these features are considered to be less of a priority than the other functions covered previously and consequently will not be a concern for the rest of this SRS. If a future project does start to extend the application with these features then a separate SRS will be produced.

3 Specific requirements

3.1 External interface requirements

3.1.1 User interfaces

3.1.1.1 Startup

3.1.1.1.1 The application shall display the Profile selection screen at program start

The Profile selection screen will be the first window to appear when the program is first executed.

3.1.1.2 Profile selection screen

3.1.1.2.1 The Profile selection screen shall display all existing profiles

3.1.1.2.2 The Profile selection screen shall provide a Default profile on initial startup and thereafter

3.1.1.2.3 The Profile selection screen shall provide means of creating a new profile

3.1.1.2.4 The Profile selection screen shall provide means of proceeding to the Main Menu with a selected profile

3.1.1.2.5 The Profile selection screen shall provide means of deleting a selected profile (except the Default profile)

3.1.1.2.6 Pressing the F1 key on the keyboard with the Profile selection screen active shall display a help message pop-up relating to the Profile selection screen

3.1.1.2.7 The Profile selection screen shall include a button which can be clicked to close the application

3.1.1.3 Main menu

3.1.1.3.1 The Main menu shall display a collection of navigation buttons which can be clicked to access every one of the following facilities:

1. Create character;
2. Load character;
3. Compare character.

3.1.1.3.2 The Main menu shall include a button which can be clicked to return to the Profile selection screen

3.1.1.3.3 Pressing the F1 key on the keyboard with the Main menu active shall display a help message pop-up relating to the Main menu

3.1.1.3.4 When the Create character button is clicked the user will be prompted to select how they would like to generate their character's ability scores

3.1.1.3.5 Pressing the *1* key while the Main menu is active will prompt the user to select how they would like to generate their character's ability scores

3.1.1.3.6 When the Load character button is clicked the application should display the Character sheet and immediately open a pop-up window as if the "Load character" button on the Character sheet had been clicked

3.1.1.3.7 When the *2* key is pressed the application should display the Character sheet and immediately open a pop-up window as if the "Load character" button on the Character sheet had been clicked

3.1.1.3.8 When the Compare character button is clicked the Comparison tool should be displayed

3.1.1.3.9 When the *3* key is pressed the Comparison tool should be displayed

3.1.1.3.10 Pressing the *Escape* key while the Main menu is active will return to the Profile selection screen

3.1.1.4 Character creation mode prompt

3.1.1.4.1 The Character creation mode prompt shall include a button which can be clicked to return to the Main Menu

3.1.1.4.2 The Character creation mode prompt shall provide selection buttons and explanations of the 4 options:

1. Randomly;
2. Standard array;
3. Customised ability scores;
4. Manual entry.

3.1.1.4.3 If the "Randomly" option is selected then

3.2 Classes/Objects

3.2.1 CLASS/OBJECT-ONE

3.2.1.1 Attributes (direct or inherited)

3.2.1.1.1 ATTRIBUTE-ONE

3.2.1.2 Functions (services, methods, direct or inherited)

3.2.1.2.1 FUNCTIONAL REQUIREMENT ONE

3.2.1.3 Messages (communications received or sent)

3.3 Performance requirements

3.4 Design constraints

3.5 Software system attributes

3.5.1 Reliability

3.5.2 Availability

3.5.3 Security

3.5.4 Maintainability

3.5.5 Portability

4 Supporting information

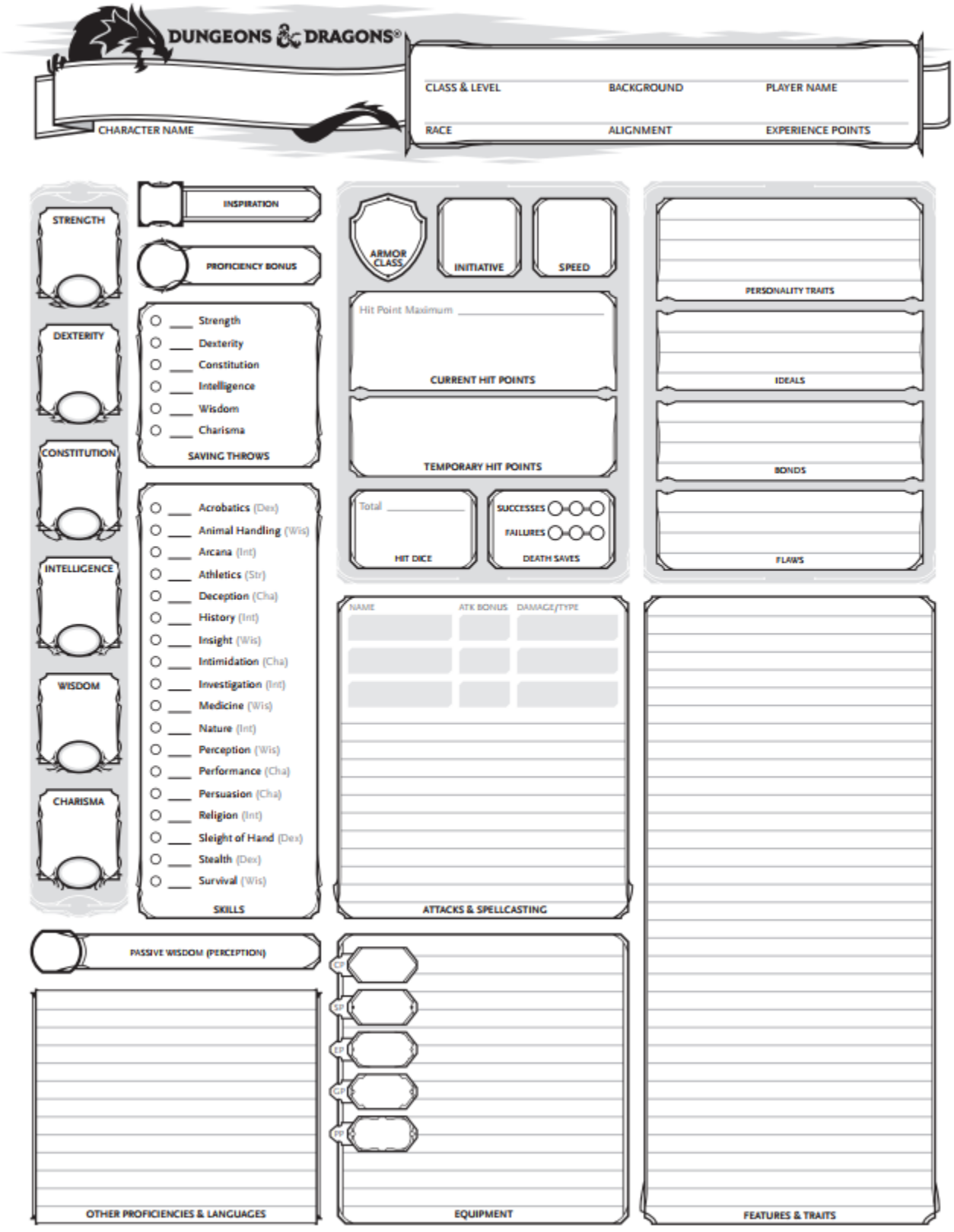
4.1 Table of contents and index

4.2 Appendixes

A D&D5E Character Sheet

B D&D5E Spellcasting Sheet

Figure 2: D&D5E Character Sheet



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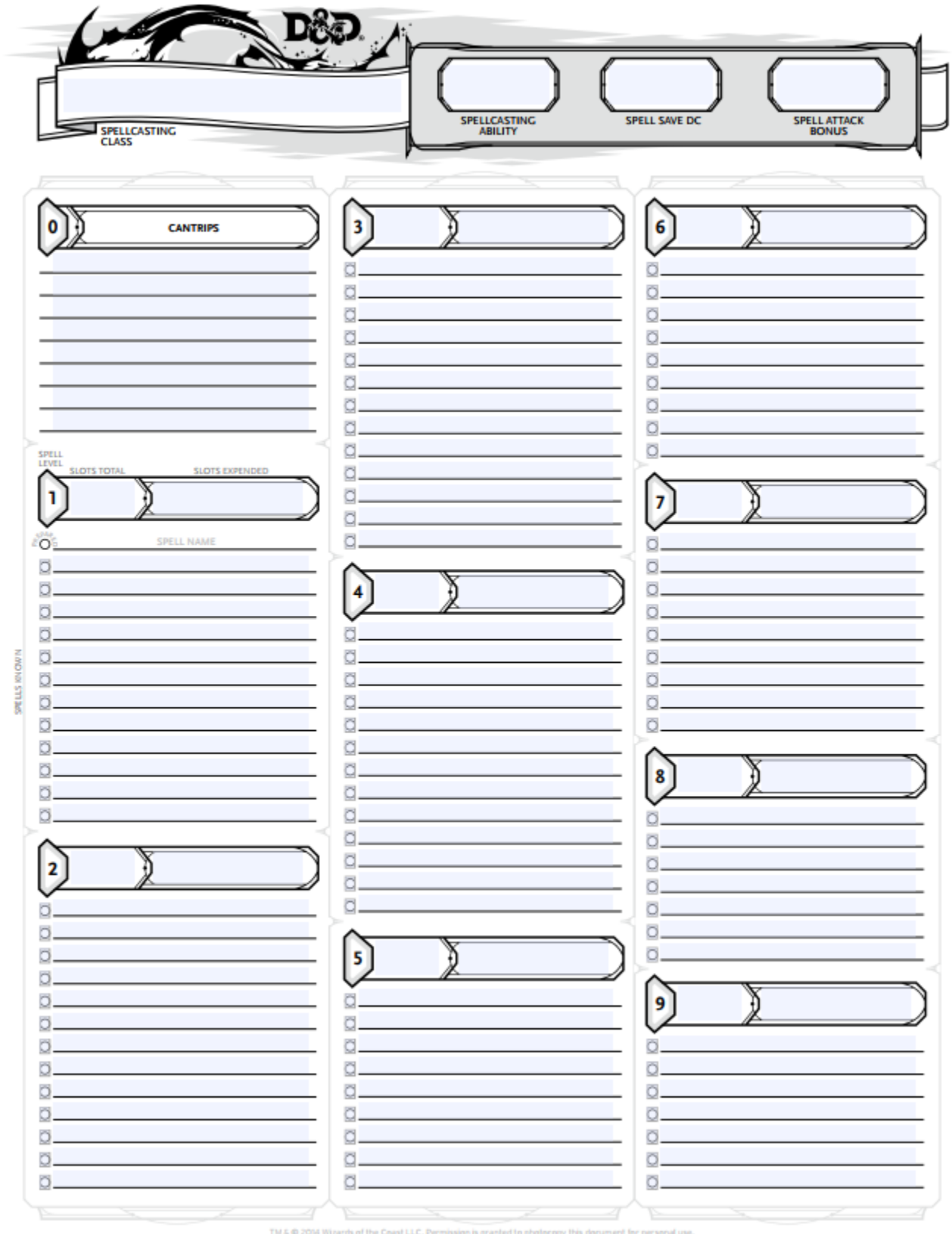
Figure 3: D&D5E Spellcasting Sheet