

# Dungeons and Dragons Character Database

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CS 340 - Project Step 7

<http://access.engr.oregonstate.edu:5876/>

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## Project Outline and Database Outline - Updated Version

*(See change log at the end of this document)*

### Abstract

Dungeons and Dragons (D&D) is a fantasy tabletop role-playing game where players create unique characters and embark on fantasy adventures. D&D games can involve many players who have complex characters with many attributes. During normal gameplay, D&D players fill out a “character sheet” that lists their perspective character’s attributes (race, health, gender, combat class, etc). However, constantly recalling and re-writing all of a character’s minor details between different D&D games can be tiresome. Our D&D Character Database project helps players organize their character’s information into an intuitive user interface while preserving their character’s unique complexity.

### Website

The D&D Character Database shall allow a user to view characters stored in the database. New characters shall be added to the database via manual server-side SQL entry. If time permits or requirements change, we shall design a character-creation web interface.

### Database Outline

The entities in our database and their corresponding attributes are as follows,

#### Character Entity

A character is the most important entity of the database and is related (directly or indirectly) to every other entity in the database. The Character table has the following attributes:

- **Id:** This is an automatically generated (auto-incremented) Primary key that is assigned when a character is recorded in the database.
- **Race\_id:** This is an id from the race table. It is a foreign key that cannot be blank and has no default.

- **Name:** This is a string of characters that represents the name of a character with a max length of 100 characters. It cannot be blank and there is no default.
- **Gender:** This is a string of characters that represents the gender of a character with a max length of 10 characters. It cannot be blank and there is no default.
- **Alignment:** This is a string of characters that represents the alignment of a character with a max length of 3 characters. It cannot be blank and there is no default. Strings must be in the form of: <first>/<second>, where fist can be L, N, or C and second can be G, N, or E. Example: "L/G". L: Lawful, N: Neutral, C: Chaotic, G: Good, E: Evil
- **Hp (hit points):** This is a integer that represents the characters Hit Points. It is a required value and has no default.
- **Str:** This is a integer that represents the characters Strength. It has a default value of 10.
- **Dex:** This is a integer that represents the characters Dexterity. It has a default value of 10.
- **Con:** This is a integer that represents the characters constitution. It has a default value of 10.
- **Int:** This is a integer that represents the characters Intelligence. It has a default value of 10.
- **Wis:** This is a integer that represents the characters Strength. It has a default value of 10.
- **Cha:** This is a integer that represents the characters Strength. It has a default value of 10.

## Class Entity

A class entity represents the characters role in the game (wizards cast spells, rogues steal things, etc.). The class table is related to the character table.

- **Name:** This is a string of characters that represents the name of a class with a max length of 12 characters. It cannot be blank and there is no default. This is a primary key.
- **Hit\_dice:** This is a string that is a name of a dice of varying side counts (d6, d8, d10, or d12). It is a required value and has no default.
- **Description:** This is a string of characters that represents the description of a class with a max character limit of 500. It is a required value and has no default.

## Race Entity

A race entity represents the characters fantasy race of choice (Dwarf, Elf, etc.). The Race table is related to the character table.

- **Name:** This is a string of characters that represents the name of a race with a max length of 12 characters. It cannot be blank and there is no default. This is a primary key.
- **Description:** This is a string of characters that represents the description of a race with a max character limit of 500. It is a required value and has no default.

## Skill Entity

A skill entity represents the characters ability to do certain activities (stealth, craft, etc). The skill table is related indirectly to the character table through the character\_skills table.

- **Name:** This is a string of characters that represents the name of a skill with a max length of 20 characters. It cannot be blank and there is no default. This is a primary key.

- **Description:** This is a string of characters that represents the description of a skill with a max character limit of 500. It is a required value and has no default.

## Relationship Tables

### Character\_class

A character class entity represents the connection between characters and classes. A character can have multiple classes and a class can be associated with multiple characters.

- **Composite primary key:** [Character\\_id](#), [Class\\_id](#)
- **Character\_id:** A foreign key from the character table. It is required and has no default.
- **Class\_id:** A foreign key from the class table. It is required and has no default.
- **Level:** This is an integer that represents the characters level in a particular class. It has a default value of 1.

### Character\_skill

A character\_skill entity represents the connection between characters and skills. A character can have multiple skills and a skill can be associated with multiple characters.

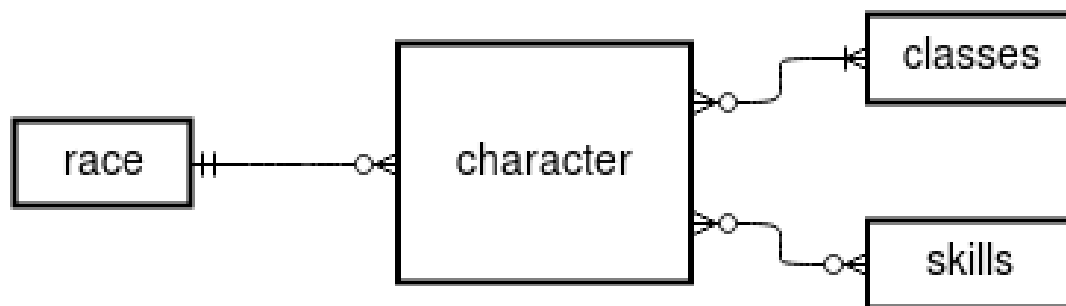
- **Composite primary key:** [Character\\_id](#), [Skill\\_id](#)
- **Character\_id:** A foreign key from the character table. It is required and has no default.
- **Skill\_id:** A foreign key from the skill table. It is required and has no default.

## Relationships

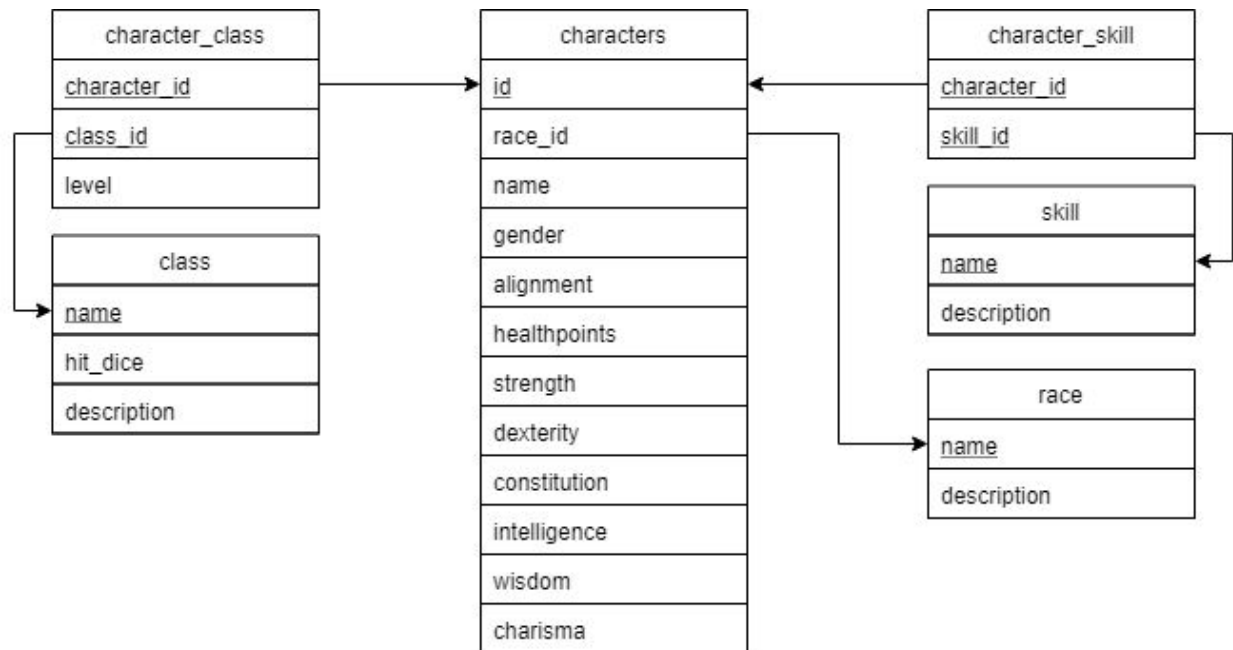
The relationships in the D&D Character Database are as follows,

1. **Characters are one race** - A character must be of only one race but a race can have many characters. Races and characters have a *one-to-many* relationship.
2. **Characters belong to one or more classes** - A character can be a hybrid of combat classes and classes can have many characters. A character must belong to at least one class. Classes and characters have a *many-to-many* relationship.
3. **Characters have zero or more skills** - A character can have many skills and many skills may be learned by many characters. Characters and skills have a *many-to-many* relationship.

## Entity-Relationship Diagram



## Database Schema



## Step 6 Fixes & Feedback

<b>Reviewer:</b> Stuart Kyawmyint
<b>Feedback:</b> Hi Kin-Ho, Great job! All the functionality looks to be working for the CRUD you have implemented on the site. I saw that you guys also implemented a way to handle some of the unwanted inputs as well! The only comment I really have is that you may want to implement a delete on one of your many-to-many relationships, such as the Character_class or Character_skill. The project guide is a bit vague when explaining some of the requirements, but I believe it asks for it. See an excerpt below and the underlined text. Just mentioning it in case, don't want to see you guys get any points taken off for your awesome database! " You need to include one DELETE and one UPDATE function in your website, for any one of the entities. In addition, it should be possible to add and remove things from at least one many-to-many relationship and it should be possible to add things to all relationships. This means you need INSERT functionality for all relationships as well as entities. And DELETE for at least one many-to-many relationship."
<b>Fix:</b> Added a delete function (button) to the character_skill table.

<b>Reviewer:</b> Lingyan Ma
<b>Feedback:</b> Hi Kin-Ho, Great work! all functions are working, and I like the search function you implemented, it is really dynamic! I agree with Stuart's suggestion to add a delete function in your many to many relationship, as it is required in the project guide.
<b>Fix:</b> No fix necessary. See fix from Stuart's feedback.

<b>Reviewer:</b> Roham Pardakhtim
<b>Feedback:</b> Chris,  Great job man! Wow what an amazing project. I tested all functionalities and it worked great! It was really a pleasure to see your project slowly mature throughout the quarter to get to where it is now.

Only little addition that I can think of in terms of UI, would be for the selected tab to remain highlighted.

You guys should be very proud of this, and have it on your portfolios!

All the best,  
-Roham

**Fix:**

No fix needed. The menu is meant to function that way.

**Reviewer:** Francisco Muniz

**Feedback:**

Hey Chris,  
Great Project! I created a new character, was able to edit him, and delete him so that worked out great. Also created a new skill and that worked. I tried creating a new race, but it would not allow me too. I would submit it, and when it went back to the page showing all the races, it would not list it. It was simple text in both fields, so not sure what was wrong, but just wanted to give you the heads up. Only other feedback i would have is to include the navigation bar on the pages where you are adding a new character, race, class, etc. The way its set up, if you go to add a new item, the only way to exit is to press the home button or the back button. Would be cool to still have the navigation bar to allow the user to go straight to another table if they change their mind in adding a new item. Thats all i have. Once again, great work on y'all's project!

**Fix:**

Couldn't reproduce error. We suspect that he entered a name that was already in use. The nav bar idea is good, but not necessary for the site to function properly, we will implement it if time allows.

## Step 5 Fixes & Feedback

**Reviewer:** Kevin Ohrlund

**Feedback:**

Hi Chris,  
  
As always, the website looks great! As far as I can tell, the update functionality is working perfectly, at least in the character vault. There's really not much to criticize, as the website functions as promised, and you're well on your way to being complete.

Job well done!

**Fix:**

No fix necessary.

**Reviewer:** Francisco Muniz

**Feedback:**

Hey Chris,  
Tested out your site. Add/read/and update functionality is working great. I really don't have a lot of feedback for your site. It looking great. Idk if y'all have implemented the delete function yet? If not then that makes sense why the site would time out and not perform the DELETE query. If yall did implement it already, then just want to let you know that it would not let me delete the test character i created. Other than that, looking forward to your completed site.

**Fix:**

Delete functionality was not implemented at this point. No fix necessary.

**Reviewer:** Lingyan Ma

**Feedback:**

the website works very well! the update function is working! just a minor suggestion, it might be helpful to add some indication of what the user should enter in each attribute in the insert function

**Fix:**

No fix necessary.

**Reviewer:** Timothy Loo

**Feedback:**

Great Job on the website! I believe I commented on your's for the previous step. I like that you updated the many-to-many relationships association page to use the character names versus the character ids. I would suggest to display the names as well instead of the ids  
I really like your search function. I'm able to search and filter by anything on the page!

**Fix:**

No fix necessary.

**Reviewer:** Stuart Kyawmyint

**Feedback:**

Hi Kin-Ho! The website is looking good with the updates you made to last time! The Creates, Read, and Update functionality all seem to be working. On thing I noticed that in the Class entity, the



hit\_dice attribute in your outline says that it is an integer, but it seems we are able to add characters and strings to it. I would either revise on your outline or database to whichever way you go with. Just a suggestion here, but on the integer inputs in the add Character entity you may want to have like a pre-populated default value. Currently it seems the default is 0 instead of the value of 10 that you say in your outline. Also, maybe having a min/max (which you can implement in the front-end here: [https://www.w3schools.com/tags/att\\_input\\_type\\_range.asp](https://www.w3schools.com/tags/att_input_type_range.asp)) may be beneficial as well.

**Fix:**

1. Fixed class (hit\_dice) value inconsistency in database outline. Hit\_dice is now a string that names the type of dice (example: d10 refers to a 10 sided dice).
2. Fixed default value inconsistency in our backend implementation. Adding a new character with blank values for stats and health points now defaults to 10.

## Step 4 Fixes & Feedback

**Reviewer:** Jason Lim

**Feedback:** Hi Kin-Ho,

I really like the overall feel and CSS aspects of the website. Great job on that. However, I did try to use your add functionality on the characters entity and it said that there was a 500 error. Not sure if you are still working on that but when I have those errors usually recommend going to the server logs on flip and looking at the error from there. Usually it will provide some aspect as to what the issue is and from there can debug the js or handlebars, etc to make sure that the routes are correct. This might be perhaps because the add-row route is not yet established yet from what I presume. I really like how the Search functionality dynamically adjusts once I type in the name. There is no need to click a button for the search functionality to work so that is very great!

**Fix:**

Not sure about 500 error. There may have been an outage server-side or a latent process may have stolen the port. Page does not have error.

**Reviewer:** Stuart Kyawmyint

**Feedback:**

Hi Kin-Ho!

I think I previously complimented on this, but I really like the style and layout of the page you have so far! It works really well with the pages we need and the example provided by the class. On the character page, the header for the table seems to have two headers for the ID column? The 'id' 'race\_id' and 'name' are three and have two columns associated with it. Not sure if that is what you were aiming for. Also, after looking at it again some of the headers and data seem to be misaligned.

I think it was mentioned previously too, but I was trying to test the add functionality and I keep getting to an error page. Not sure if it is because you have not implemented it yet or not. Also, in some of the insert form options, I would set it as an integer or numerical input in the form. That way people will not be able to add non integer values for attributes such as healthpoints, strength, etc. I like the search functionality you have, it works well in a broad sense. However it seems that if I type in something really really wrong (like a really long string of random characters), it just shows all the data instead of nothing at all. The Battlestar Galactica example search function just searches in a certain attribute, so may be it could be better to implement it that way?

**Fix:** Not sure about 500 error. There may have been an outage server-side or a latent process may have stolen the port. Page does not have error.

Form dropdowns to show names instead of tables IDs to be fixed.

Message that states “No entries match queries <>” to be added.

**Reviewer:** Timothy Loo

**Feedback:**

Hi Kin-Ho,

I like the look and feel of your site. It's very easy to navigate. I think it was mentioned above that you should change the inputs to numeric for entities you want to be integers, for example healthpoints and strength.

One of the other things I noticed was that when you create an association, you are asking the user to associate a skill or a class to a character id. I believe we were asked to try and avoid having the user remember the ID of characters.

**Fix:** Form dropdowns to show names instead of tables IDs to be fixed.

**Reviewer:** Francisco Muniz

**Feedback:**

Hey Chris, i know you said y'all's functionality was working, but i tried to input some test values. Literally just putting in test for the race, skill, and class entity but it kept redirecting me to y'all's error 505 page. Just wanted to give yall that heads up. I know you are still testing for some error catching, but i couldn't add a new item with just "test" in there. If i was putting the wrong type of values, please let me know so i can test it again. Other than that, i like how your site is looking, and the read functionality is looking great.

**Fix:** There was a portion of our code the is not available in node 6.1 so we refactored that section to us older techniques. Adding new items is now working properly on the school server.

**Reviewer:** Adriano Pangelinan

**Feedback:**

attempted to input some random crap and it worked. I purposely put in some BS. You may want to include some front-end to ensure you get the type of data entry you want. I used special characters for the name of a race and you may just want character values. For a start, looks like your create statements work well.

I think the look of the site is really well done and the theme is great. Keep up the good work.

**Fix:**

The error checking is on our todo list and will be implemented before the project is over.

**Reviewer:** Roham Pardakhtim

**Feedback:**

Hi Chris,

Your website looks fantastic, and a great to be on a portfolio! I see that you guys took the feedback of adding a navigation menu, that is great and much more UI friendly!

I tried really hard to break it, and like you mentioned adding some error catching would be great addition. My only feedback would be, when a user is adding maybe it be easier to rename some of your lables and give them more "friendly name" than "hit\_dice" for example.

Again, fantastic job!  
-Roham

**Fix:**

Great idea about the more friendly names. It will be a lot of work to change our code to cope with that unfortunately. Currently our code populates the names based on the database table names. Since it is not critical to the project we have added it to our stretch goals.

## Step 3 Fixes & Feedback

**Reviewer:** Stuart Kyawmyint

**Feedback:**

Hi Kin-Ho,

Really good job on setting up a lot of the information from the outline and diagrams previously. Some of your sample data was quite interesting. I had a few comments below. On some of the configurations of the table, I would double check with them with the specifications you've shown in

your outline. Such as, in the outline it is specified that the Name attribute of the Character entity will be max length of 100, but in the data definition it is shown as varchar(255). This is mainly a thought, but maybe you could consider making some of the types of data be an enum, such as Gender or Alignment. Not sure how to restrict certain inputs in the coming steps, but if there is difficulty that may be a route. In your class entity, the description attribute is a required value with no default. It is set-up correctly on the table, but in the sample data there were a couple without any values. Really good job on the website! I like the layout and style; it looks very D&D. I would maybe show some buttons/forms to show that there will be options for update, delete, and searching. For the DMQ file, I would check with the requirements from the CS340 Project Guide before turning in the final. I believe you will still need some queries on UPDATE and an INSERT option into every table individually (seems like you have it set up on the website though). Also, maybe consider some queries to display options for dropdown menu (if you do implement it). Good luck on finalizing project step 3!

**Fix:** Sample data descriptions will be added. Added queries UPDATE and INSERT.

**Reviewer:** Lingyan Ma

**Feedback:**

I like your website design outline, looks neat and elegant, it gives me some ideas on how a website should be designed, I'm looking forward to your final version! the ddl and dml looks good to me! very good job!

**Fix:** No changes required or suggested.

**Reviewer:** Francisco Muniz

**Feedback:**

Hey Chris,

I like what y'all have going out with your layout, and the sample data. Gives a good idea of what we will be looking at once it is all put together. Nicely done. My feedback, and its really just more of what i would like to see on it, and something i am doing on my project, is that i recommend implementing a sort of tool/navigation bar on all your pages. What i mean, is that currently, once you go to a specific page, if you wish to go to another one, you have to go to the main page to navigate elsewhere. It would be efficient to have that navigation/tool bar so that the user is able to get to all the other pages

without having to go back to the main page first. Like i mentioned, it is more of something that would make it easier on the user.

**Fix:** Implement a navigation menu present on all pages under the banner and page title.

**Reviewer: Kevin Ohrlund**

**Feedback:**

Hi Chris!

Your web design looks awesome! You seem to be further along than we are, and it's looking good!

Overall, I'd have to agree with what Francisco said. You should definitely consider some simple navigation buttons that will make the site flow a lot smoother.

One thought (somewhat outside this class and project, but could make for an epic project) is that it would be fun to see a "character builder" where a player could scroll through each of the classes, attributes, roll for stats, etc. all with one interface, and modify the database that way. I think it would be a smooth way to integrate all of your hard work into a single working product. Not that you're behind or it's not functioning poorly, just an idea from someone who doesn't have to implement it :)

Other than that, Your database design looks really good. All the table design matches with what your schema/diagram said you would have, and your select/update queries look like they make sense for the website. I'm looking forward to seeing the later stages of this.

Cheers!  
Kevin

**Fix:** No Fix. The character creator is an interesting idea that we put in our stretch goals, however its implementation will entirely depend on our extra time.

**Reviewer: Roham Pardakhtim**

**Feedback:**

Hey Chris,

I cannot believe that this is a draft, it looks amazing! I really like where you guys are going with this and my only piece of feedback would be to allow user to navigate between the pages, as Francisco mentioned maybe a navbar would be great, so user don't have to go back to main page every time!

Beside that, you guys have a solid DDL and DML, doing an amazing job of demonstrating where this

project is going. keep up the good work, you guys are killing it!

**Fix:** No fix necessary.

#### Changes Not Based on Feedback

- Added a page to collect data when a user adds a new row to a table. This page is accessible by clicking on any of the tables "Add New Item" buttons.
- Added placeholder buttons to the character page for editing and deleting an existing character
- Made all tables searchable via the front-end UI

## Step 2 Fixes & Feedback

5/6/19 - To simplify the front-end UI, we have decided to remove *features* and *class\_features* tables. We are also removing the columns *armor\_class*, *initiative*, *speed*, and inspiration from the *character* table.

**Reviewer:** Roham Pardakhtim

**Feedback:**

Hey Chris,

First, I'd like to say what a great idea for a database project! D&D sounds amazing and I can only imagine how fun final project is going to be for you guys (low key jealous! haha). You may want to expand a bit more about the topic in your "Abstract" section of document as how D&D is actually being played, which would explain the reasoning behind some of your relationship for someone who is new to topic and can help them better understand rules of the game.

After reading your very well organized document, and very neatly done ER diagram and schema there were only a few things that stood out for me that I'd like to bring up as food for thought:

- Is there any way to split the character entity, in to two entities, maybe one containing the stats while other had general information of the character. Separating stats could also be beneficial in the future, if you are thinking of expanding on this project
- You may want to start the project without the feature entity, and that be something to add later on, which would also save you a many-to-many relationship(yuck!). Specially

since it is an isolated entity and it is not a required part of the database in terms of D&D gameplay

Overall, fantastic job, looking very forward to see where you guys will go with this!

**Fix:**

To address the first point, there is indeed many attributes to the character table; however, each attribute is uniquely part of a character and splitting them into separate tables would not make sense as it will add unnecessary complexity to the relationships. The second point is valid, we could have chosen to not have a feature entity but that would force use to put full descriptions of class abilities in the class table drastically increasing the number of attributes; further, some classes share the same ability, so we opted to add another entity. For both points we decided our implementation was correct for our purpose.

**Reviewer:** Adriano Pangelinan

**Feedback:**

To start out, I think this is a really good idea and will be really useful. All of my comments are more "considerations" and probably nit-picky since I think overall your thought process and strategy is strong. Just want to give you some possible things you can add on.

- Consistency in attribute names - You have varying format on the names of your attributes (e.g. ac vs. race\_id in your character entity). I noticed that you tend to be fairly consistent depending on the data type so maybe that was what you were going for
- I'd consider putting your character attributes (not to be confused with database attributes) into a separate entity to simplify all the attributes for characters since there are a lot
- I don't quite understand the difference between skills and features. Maybe you could add more attributes that helps with this?

**Fix:**

No changes or fixes required. Attribute names will be consistent in final implementation. Unsure what *character attributes* is referring to, not making changes since no flaws are highlighted.

**Reviewer:** Francisco Muniz

**Feedback:**

Hey Chris, i reviewed your project proposal. I have always wanted to get into D&D but never had the opportunity so i'm excited to see how this comes out. Your ER diagram and your schema definitely line up, so it was pretty easy to follow through the relationships you have set up. One thing that stood out to me that you may need to address in the future is your Character\_class relationship table. We just learned about normalizing your data tables this week, and if i understood it correctly, you shouldn't have an attribute that depends on a foreign key, such as the level attribute to the class id. I may be misinterpreting the lecture material, but if im right, you may run into a problem in the future. Something to look out for as you're moving through your project. But definitely looking forward to the end result.

**Fix:**

I believe that Francisco is referring to the was the class features table. We believe he would be correct if the level attribute depended on a single foreign key used in the primary key, but in this case the level attribute is dependent on the entire primary key since multiple classes may have the same feature but attain them at different levels meaning the level requirement attribute is uniquely dependent on both the class and the feature. Due to the above explanation, we chose to not implement this fix.

**Reviewer:** Jason Lim

**Feedback:**

Great job! I like the abstract and concept of tabletop games as your topic. There is a quite number of database attributes for character and each entity afterwards seems to be a more specific part of the character. Good relationships table listing each relation of character to classes, race, skills, and features. The ERD looks good, however, is there any interaction between classes and skills, between race and skills? Each class may have its own specific skills or each race might have its own classes, etc. The database schema looks clear and has a great organization per primary key and how it interacts with each other table for the database schema. Good work overall.

**Fix:** No changes required or suggested.

**Reviewer:** Stuart Kyawmyint

**Feedback:**

Hi Kin-Ho, I really like your group's idea of a Dungeons and Dragons database. I've never played it, but I am really into RPG videogames, which use a lot of similar concepts.

Going through your entities, I think you did a good job having an extensive list of attributes for the character. One thing that may could pop up later is setting a maximum or minimum value for some of



the integers. Like could some of those attributes in character, such as strength or dexterity, go to negative if they were "cursed" or "poisoned", or something. Another thing is using the Name attribute as the primary key; I think it would be good to specify that the names will be unique and the database would not allow any duplicates.

The relationships in your database makes sense to me. Like what Jason mentioned earlier, I would expect there be some sort of relationship between skills+classes and skills/feature+race. Maybe your thought is the skills in classes are the features? Or maybe within the race and classes entity themselves have its own attribute that make them unique.

Really good job on the ERD and Schema. One thing is that in your relationship you say that "Characters have zero or more skills", however it seems like in the ERD the notation shows up as "one or more" skills? I could be wrong, but I would double check.

**Fix:** We will adjust entity-relationship diagram .