The Spell Database Project

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Group 8

Project URL: http://flip1.engr.oregonstate.edu:9800/

Summary

In the beginning of the project, our overview was not clear about the goal and reason for the database we were building so after receiving feedback, we went into more detail and made it align with our goals in a way that was more understandable. We also received some helpful feedback about one of our entities that could be used as an enum attribute, instead of an entire separate entity. We also added more constraints to attributes as well to better suit the world and database we were creating. We also decided it would be a good idea to have the spells' damage be NULL or 0 for spells that have no damage like healing or the like.

After getting to the point of mock UI implementation where we had an example website up with values and inputs that related to our database, we received some more feedback on our initial design. We had a few typos here and there that we fixed and we fixed some range discrepancies. We also changed a few of the input types we had originally used like replacing checkboxes with multi-select dropdown lists and a few others in some of the entity pages. We added a search function to an entity. We also decided to simplify some of the many-to-many relationships we had created to make a simpler design to implement. In the end the resulting project can be seen and evaluated below.

Overview

The Oregon School of Magic is currently using a database created hundreds of years ago that still depends on physical books and files and is missing all of the latest spells. Using this new database implemented by us, Students would be able to use an interactive website to record Spells and their associated information such as what Class they belong to, and what Element they have. Also, it is handy for the higher-ups to see what students are assigned to which master, in this school a student must learn from only one master at a time until the master passes the proper knowledge onto the student. This would greatly benefit not only the higher-ups like principals and school staff but also students to be able to access an overview of their personal information. There are an estimated 1000 elite students at the Oregon School of Magic that will need to use the database, with each student having between 1 and 50 spells.

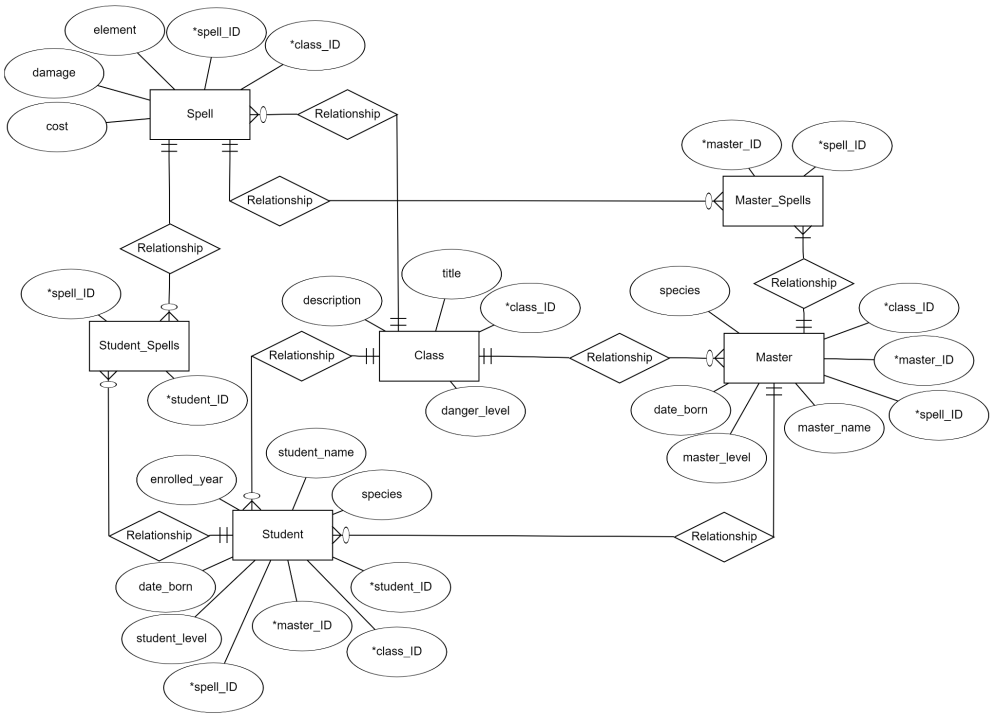
Database Outline

- Spell: records spell information of the student
  - spell_id: int, auto_increment, unique, not NULL, PK
  - class_id: int, not NULL, FK
  - spell_name: varchar, not NULL
  - element: enum [Air, Water, Fire, Earth, Light, Dark], not NULL
  - cost: int, not NULL, range [10-1000]
  - damage: int, range [1-10000], NULL allowed
  - relationship:
    - M:1 relationship between Spell and Class, implementation with class_id as a FK inside Spell (a spell can be associated with one class and a class can have many different spells associated with it)

        - M:M relationship between Spell and Master, implementation with an intersection with master_id and spell_id as FKs
        - M:M relationship between Spell and Student, implementation with an intersection with master_id and student_id as FKs
- Class: tiered ranking of proficiency, a person may only teach/use spells at or lower than their class
    - class_id: int, auto-increment, unique, not NULL, PK
    - title: string, not NULL
    - danger_level: not NULL, enum [Apprentice, Adept, Expert, Legendary, Zenith]
    - description: string
    - relationship:
        - Class/Spell
        - 1:M relationship between Class and Master, implementation with an intersection with class_id as an FK inside Master
        - 1:M relationship between Class and Student, implementation with an intersection with class_id as an FK inside Students
- Master: teachers at the school who are masters of magic
    - master_id: int, auto_increment, unique, not NULL, PK
    - class_id: int, not NULL, FK
    - spell_id: int, not NULL, FK
    - master_name: string, not NULL
    - master_level: enum [Apprentice, Adept, Expert, Legendary, Zenith], not NULL
    - date_born: date, ddmmyyyy
    - species: string, not NULL
    - relationship:
        - Master/Class
        - M:M relationship between Master and Spell
        - 1:M relationship between Master and Student, implementation with an intersection of master_id as FK inside Student
- Student: students attending the School of Magic
    - student_id: int, auto_increment, unique, not NULL, PK
    - master_id: int, not NULL, FK
    - class_id: int, not NULL, FK
    - spell_id: int, not NULL, FK
    - student_level: enum [Apprentice, Adept, Expert, Legendary, Zenith], not NULL
    - date_born: date, ddmmyyy not NULL*
    - registration_year: ddmmyy not NULL*
    - student_name: string, not NULL
    - species: string, not NULL
    - relationship:
        - Class/Student
        - Master/Student
        - Spell/Student
- Student_Spell: intersection between Student and Spell
    - student_spell_id: int, not NULL, auto_increment
    - student_id: int, not NULL, FK
    - spell_id: int, not NULL, FK
- Master_Spell: intersection between Master and Spell
    - master_spell_id: int, not NULL, auto_increment

- master_id: int, not NULL, FK
- spell_id: int, not NULL, FK

Entity-Relationship Diagram



Schema

Spell

Spell(
    spell_id: INT(11) auto_increment, primary key
    class_id: INT(11) NOT NULL
    spell_name: varchar(64) NOT NULL
    element: ENUM('Air','Water','Fire','Earth','Light','Dark') NOT NULL
    cost: INT(11) NOT NULL check(cost >= 10 AND cost <= 1000)
    damage: INT(11) check(damage >= 0 AND damage <= 10000)
)

Class

Class (
    class_id: INT (11) auto_increment, primary key
    title: varchar(64) NOT NULL
    danger_level: ENUM('Apprentice', 'Adept', 'Expert', 'Legendary', 'Zenith') DEFAULT 'Apprentice' NOT NULL
)

Master

master (
    master_id: INT(11) auto_increment, primary key
    class_id: INT(11) NOT NULL, foreign key
    master_name: varchar(64) NOT NULL
    danger_level: ENUM('Apprentice', 'Adept', 'Expert', 'Legendary', 'Zenith') DEFAULT 'Expert' NOT NULL
    date_born: DATE NOT NULL
    species: varchar(64) NOT NULL
)

Student

student (
    student_id: INT(11) auto_increment, primary key
    class_id: INT(11) NOT NULL, foreign key
    master_id: INT(11) NOT NULL, foreign key
    danger_level: ENUM('Apprentice', 'Adept', 'Expert', 'Legendary', 'Zenith') DEFAULT 'Apprentice' NOT NULL
    date_born: DATE NOT NULL
    registration: DATE
    student_name: VARCHAR(64) NOT NULL
    species: VARCHAR(64) NOT NULL
)

Master-Spell

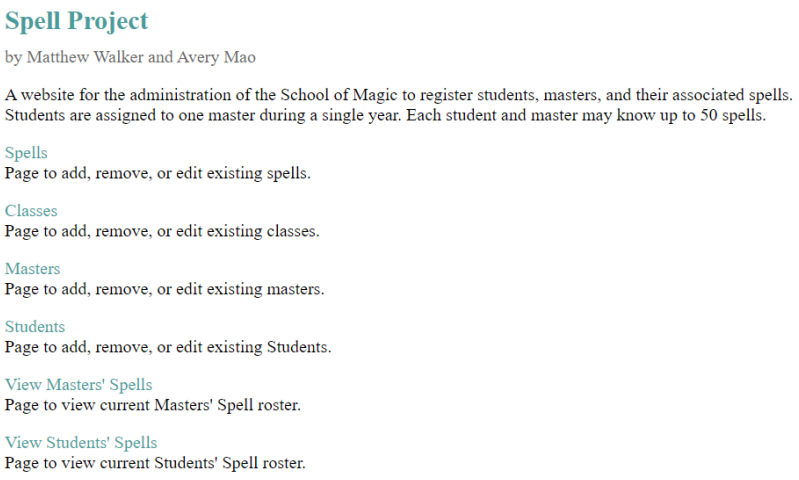
master_spell (
    master_spell_id: INT(11) auto_increment, primary key
    master_id: INT(11) NOT NULL, foreign key
    spell_id: INT(11) NOT NULL, foreign key
)

Student-Spell

student_spell (
    student_spell_id: INT(11) auto_increment, primary key
    student_id: INT(11) NOT NULL, foreign key
    spell_id: INT(11) NOT NULL, foreign key
)

Images of website UI

Index page



Spell Project

by Matthew Walker and Avery Mao

A website for the administration of the School of Magic to register students, masters, and their associated spells. Students are assigned to one master during a single year. Each student and master may know up to 50 spells.

Spells
Page to add, remove, or edit existing spells.

Classes
Page to add, remove, or edit existing classes.

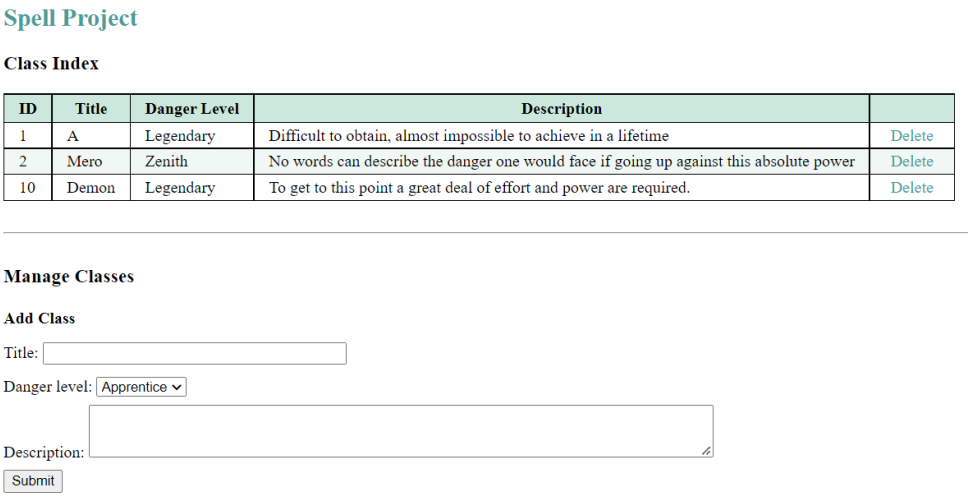
Masters
Page to add, remove, or edit existing masters.

Students
Page to add, remove, or edit existing Students.

View Masters' Spells
Page to view current Masters' Spell roster.

View Students' Spells
Page to view current Students' Spell roster.

Classes Page



Spell Project

Class Index

ID	Title	Danger Level	Description	
1	A	Legendary	Difficult to obtain, almost impossible to achieve in a lifetime	Delete
2	Mero	Zenith	No words can describe the danger one would face if going up against this absolute power	Delete
10	Demon	Legendary	To get to this point a great deal of effort and power are required.	Delete

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Manage Classes

Add Class

Title:

Danger level: Apprentice

Description:

Submit

BROWSE/CREATE Master Page

Spell Project

Master Index

ID	Name	Class	Level	Date Born	Species	
2	Gandalf	1	Legendary	0029-10-08	Human	Delete
7	Voldemort	10	Legendary	1924-03-05	Snake Kin	Delete

You can view each master's spell roster here.

Manage Masters

Add Master

Class: 1

Name:

Birthdate: mm/dd/yyyy

Species:

Level: Apprentice

Submit

BROWSE/CREATE Student page

Spell Project

Student Index

ID	Class	Name	Studying Under	Level	Date Born	Registration Date	Species	
2	2	Frodo Baggins	2	Apprentice	0300-01-09	0320-09-01	Hobbit	Delete
8	10	Harry Potter	7	Adept	1996-09-11	2009-09-06	Warlock	Delete

You can view each student's spell roster here.

Manage Students

Add Student

Class: 1

Name:

Species:

Birthdate: mm/dd/yyyy

Registration date: mm/dd/yyyy

Danger level: Apprentice

Master: 2

Submit

BROWSE/CREATE spell page

Spell Project

Spell Index

Search by spell name: Search Cancel

ID	Class	Element	Name	Cost	Damage	
37	1	Air	Aerial Ace	25	100	Delete
41	1	Water	Hydro Blast	30	120	Delete

Manage Spells

Add Spell

Class: 1

Element: Air

Name:

Cost [10-1000]:

Damage [0-10000]:

Submit

CREATE/UPDATE portion of spell page

Manage Spells

Add Spell

Class: 1

Element: Air

Name:

Cost [10-1000]:

Damage [0-10000]:

Submit

Edit Spell

Spell ID: 37

Class: 1

Element: Air

Name:

Cost [10-1000]:

Damage [0-10000]:

Update

BROWSE/CREATE Master Spell relationships

Spell Project

Master Spell Rosters

Spell Registration ID	Master ID	Spell ID	
17	7	37	Delete
18	7	41	Delete
19	2	37	Delete
20	2	41	Delete

Manage Master Spell Roster

Add new spell to a master's current roster:

Master ID: 2

Spell ID: 37

Submit

BROWSE/CREATE Student Spell relationships

Spell Project

Student Spell Rosters

Spell Registration ID	Student ID	Spell ID	
19	8	41	Delete
20	2	41	Delete
21	2	37	Delete

Manage Student Spell Roster

Add new spell to a student's current roster:

Student ID: 2

Spell ID: 37

Submit