

# HOGWARTS' MANAGEMENT SYSTEM



Web Semântica 23/24 \*

Bruna Simões	103453
Paulo Pinto	103234
Tiago Carvalho	104142

# 01

## INTRODUCTION



# Introduction

## Harry Potter universe dataset

- Harry Potter theme
- Hogwarts Wizarding School

Idea of developing an Web App  
to manage the Hogwarts personnel

Multiple people with multiple access levels  
interacting mutually.

02

DATA



# Used dataset

## Relational Dataset

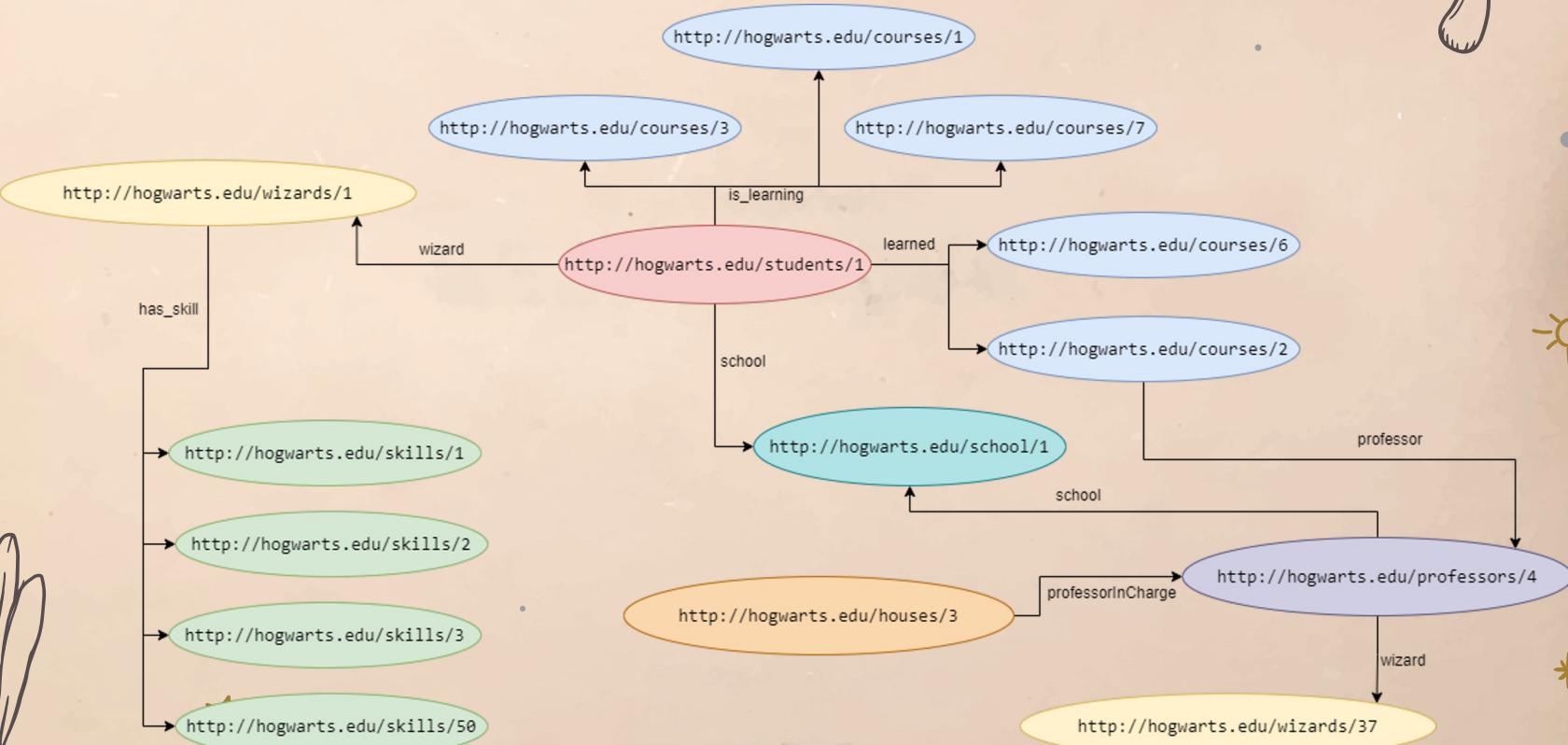
- Lack of availability of RDF datasets for the Harry Potter theme.
- A lot of unavailable or incomplete information
- Using a relational model to obtain most of the information needed in order to create a management system.

## Conversion

- Python script usage to generate the .rdf file, using the RDF/XML syntax.
- Conversion was made attending to the fact that there are entities that have a many-to-one mapping, for example, for wizards and their skills.
- About 3649 different triples.

```
<rdf:Description rdf:about="http://hogwarts.edu/wizards/31">
<hogwarts:id>31</hogwarts:id>
<hogwarts:_type>wizard</hogwarts:_type>
<hogwarts:name>Molly Weasley</hogwarts:name>
<hogwarts:gender>Female</hogwarts:gender>
<hogwarts:species>Human</hogwarts:species>
<hogwarts:blood-type>Pure-blood</hogwarts:blood-type>
<hogwarts:eye_color>Bright brown</hogwarts:eye_color>
<hogwarts:house>1</hogwarts:house>
<hogwarts:has_skill rdf:resource="http://hogwarts.edu/skills/18"/>
<hogwarts:has_skill rdf:resource="http://hogwarts.edu/skills/27"/>
<hogwarts:has_skill rdf:resource="http://hogwarts.edu/skills/10"/>
</rdf:Description>
<rdf:Description rdf:about="http://hogwarts.edu/wizards/32">
<hogwarts:id>32</hogwarts:id>
<hogwarts:_type>wizard</hogwarts:_type>
<hogwarts:name>Arthur Weasley</hogwarts:name>
<hogwarts:gender>Male</hogwarts:gender>
<hogwarts:species>Human</hogwarts:species>
<hogwarts:blood-type>Pure-blood</hogwarts:blood-type>
<hogwarts:eye_color>Green</hogwarts:eye_color>
<hogwarts:house>1</hogwarts:house>
<hogwarts:patronus>Weasel</hogwarts:patronus>
<hogwarts:has_skill rdf:resource="http://hogwarts.edu/skills/20"/>
</rdf:Description>
<rdf:Description rdf:about="http://hogwarts.edu/wizards/33">
<hogwarts:id>33</hogwarts:id>
<hogwarts:_type>wizard</hogwarts:_type>
<hogwarts:name>Quirinus Quirrell</hogwarts:name>
<hogwarts:gender>Male</hogwarts:gender>
<hogwarts:species>Human</hogwarts:species>
<hogwarts:blood-type>Half-blood</hogwarts:blood-type>
<hogwarts:house>2</hogwarts:house>
```

# Final dataset



# SPARQL queries

## Creation

```
PREFIX hogwarts: <http://hogwarts.edu/ontology#>

INSERT {{  
    ?course hogwarts:teaches_spell ?spell  
}}  
WHERE {{  
    ?spell hogwarts:_type "spell" .  
    ?spell hogwarts:id "{spell_id}" .  
    ?course hogwarts:_type "course" .  
    ?course hogwarts:id "{course_id}"  
}}
```

## Reading

```
PREFIX hogwarts: <http://hogwarts.edu/ontology#>

SELECT ?name ?wizardId  
WHERE {{  
    ?professor hogwarts:_type "professor" .  
    ?professor hogwarts:wizard ?wizard .  
    ?wizard hogwarts:id ?wizardId .  
    ?wizard hogwarts:name ?name  
  
    FILTER(?wizardId != "{professor_id}")  
}}
```

## Updating

```
PREFIX hogwarts: <http://hogwarts.edu/ontology#>

DELETE {{  
    ?course hogwarts:professor ?old_professor .  
}}  
INSERT {{  
    ?course hogwarts:professor ?new_professor .  
}}  
WHERE {{  
    ?course hogwarts:_type "course" .  
    ?course hogwarts:id "{course_id}" .  
    ?course hogwarts:professor ?old_professor .  
    ?new_professor hogwarts:_type "professor" .  
    ?new_professor hogwarts:id "{professor_id}" .  
}}
```

## Deletion

```
PREFIX hogwarts: <http://hogwarts.edu/ontology#>

DELETE {{  
    ?course hogwarts:teaches_spell ?spell  
}}  
WHERE {{  
    ?spell hogwarts:_type "spell" .  
    ?spell hogwarts:id "{spell_id}" .  
    ?course hogwarts:_type "course" .  
    ?course hogwarts:id "{course_id}" .  
    ?student hogwarts:teaches_spell ?spell  
}}
```

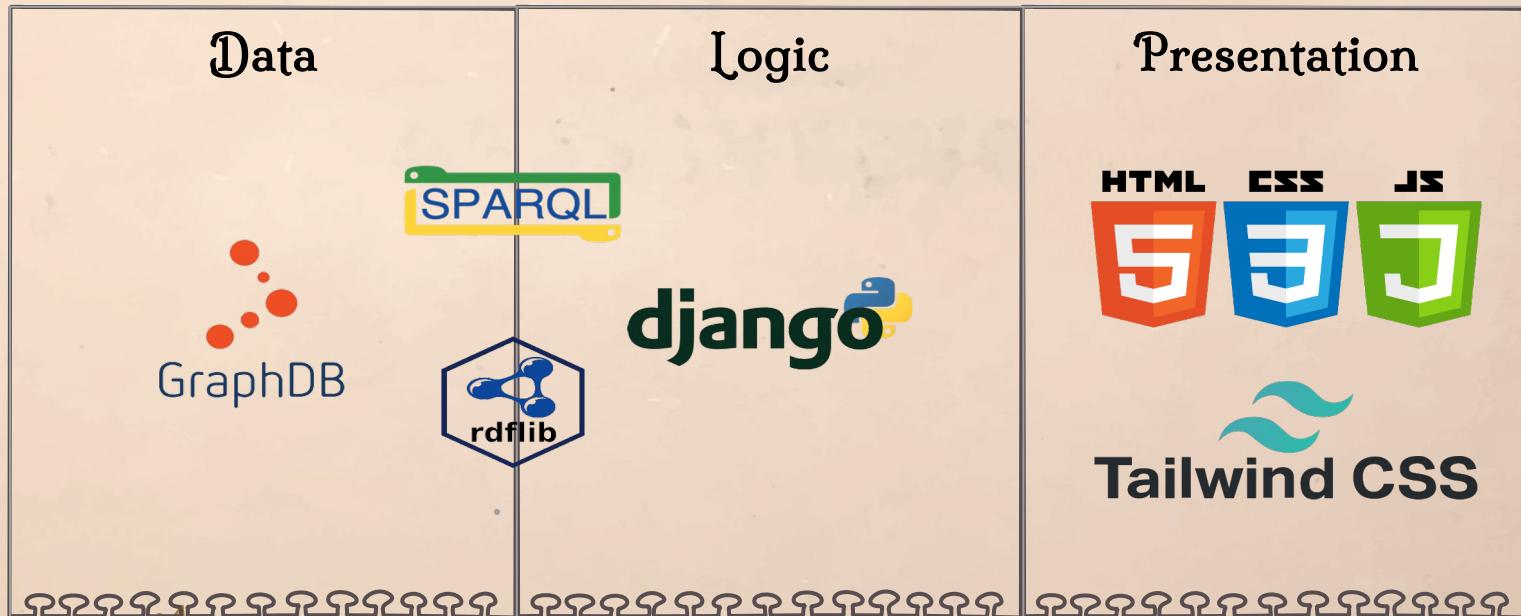


03

## TECHNOLOGIES



# Technologies



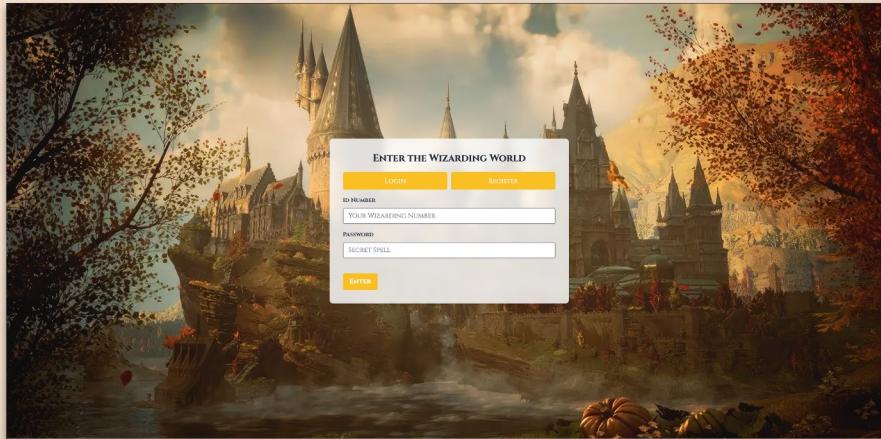
04

## APP FUNCTIONALITIES



# APP FUNCTIONALITIES

Login



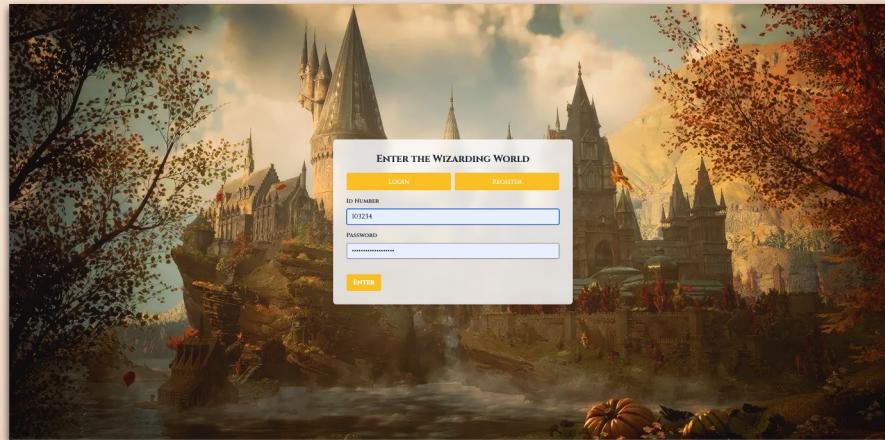
# APP FUNCTIONALITIES

Register



# APP FUNCTIONALITIES

Authenticating  
As  
Student



# Student Dashboard

## APP FUNCTIONALITIES

HARRY JAMES POTTER'S DASHBOARD

**SPECIES:** HUMAN    **GENDER:** MALE    **SCHOOL:** HOGWARTS SCHOOL OF WIZARDS, YEAR 2    **PATRONUS:** STAG

**BLOOD TYPE:** HALF-BLOOD    **HOUSE:** GRYFFINDOR    **SKILLS:** SNEAK, DEFENCE AGAINST THE DARK ARTS, DUELLING, PARSELTONGUE

**EYE COLOR:** BRIGHT GREEN

**CURRENTLY LEARNING**

CHARMS  
ASTRONOMY

**LEARNED COURSES**

POTIONS  
TRANSLATION  
HERBLOGY

**SPELLS ACQUIRED**

HEX THAT GROWS ANTELES ON THE HEAD	EXPLODING CHARM	BLASTING CURSE	DRAGONFLY SPELL
DUAMMING CHARM	FUMO DUO	ELECTROBILIS	LANTLOCK
MAGIUS EXTREMOS	WAND-EXTINQUISHING CHARM	PARTS TEMPORIS	PROTEGO MAXIMA
REVELIO CHARM	SOFTENING CHARM	VIBRILLIUS	SUMMONING CHARM
AVENGERUM	STICKY-FEET HEX	DRAGNUDO	VANISHING SPELL
FUDENDO TRAI	HEMIPYCHUS CHARM	INFOMORUS SPELL	LUMOS MAXIMA

**PAGE:** PAGE 1 / NEXT

The pie chart illustrates the distribution of learned spells across four categories: Potions, Transfiguration, Herbology, and Not Acquired. The segments are color-coded: brown for Potions, light blue for Transfiguration, green for Herbology, and grey for Not Acquired.

# APP FUNCTIONALITIES

Student  
Edits  
Personal Info

HARRY JAMES POTTER'S DASHBOARD

LOGOUT

SPECIES: HUMAN  
GENDER: MALE  
SCHOOL: HOGWARTS SCHOOL OF WIZARDRY, YEAR 2  
PATRONUS: STAG

CHARMS: ANTHONYMUT

CURRENTLY LEARNING

BLOOD TYPE: HALF-BLOOD  
HORCRUXES: 0  
SKILL: SEIZUR, DISTINGUE AGAINST THE DARK ARTS, DUCILLIN, PARSELETONGUE  
EYE COLOR: BRIGHT GREEN

NAME: HARRY JAMES POTTER  
SPECIES: HUMAN  
BLOOD TYPE: HALF-BLOOD  
EYE COLOR: BRIGHT GREEN  
WAND: 17" HOLY PHOENIX FEATHER

SPells ACQUIRED

DIAHMONI CHARM  
MACOCUS DEDAMOS  
REVELIO CHARM  
AVENDSEUM  
FUPUNDO TRA

FUMO DUO  
WAND EXTINGUISHING CHARM  
SOFTENING CHARM  
STICKERAT HEX  
REDIVOCUS CHARM

TRUTH TEMPORIS  
VERBOSIUS  
DAMPJEDGO  
INFORMANUS SPELL

PROTEGO MAXIMA  
SUMMONING CHARM  
MANSHING SPELL  
LUMOR MAXIMA

CONFIRM  
REFRESH  
PAGE 1  
HELP

LEGEND: Potions (Red), Transfiguration (Blue), Herbology (Green), Acc. Acquired (Grey)



# APP FUNCTIONALITIES

Student  
Views  
Course Info

HARRY JAMES POTTER'S DASHBOARD

BLOOD TYPE: HALF-BLOOD

CHARMS

PROFESSION: CHARM UNKNOWN

SPELL: LAUNCH

NAME: LAUNCH AN OBJECT UP INTO THE AIR

EFFECT: ROCKETS TARGET UPWARD

TYPE: SPELL

CHARMS

PROFESSION: CHARM UNKNOWN

SPELL: LAUNCH

NAME: BARRIER

EFFECT: JET OF WHITE SHARKS

TYPE: SPELL

CHARMS

PROFESSION: CHARM UNKNOWN

SPELL: LAUNCH

NAME: COLOUR CHANGE CHARM

EFFECT: CHANGES COLOUR

TYPE: SPELL

CHARMS

PROFESSION: CHARM UNKNOWN

SPELL: LAUNCH

NAME: PREDICTION

EFFECT: REVEALS SECRET PASSAGES

TYPE: SPELL

CURRENTLY LEARNING

CHARMS

ATHENOMANTIS

CHARMS ACQUIRED

REED THAT GROWS ANYWHERE ON THE HEAD

EXPLODING

DIAHMONIC CHARM

FUMO DUST

MAGICKS DETRIMENTS

WAND EXPERT

REVELIO CHARM

SOFTNESS

AVENDEACUM

STICKBREAKER

FUMENO TREA

REMOVOCUS CHARM

LUMOX MARDMA

PAGE 1 OF 4

PREV

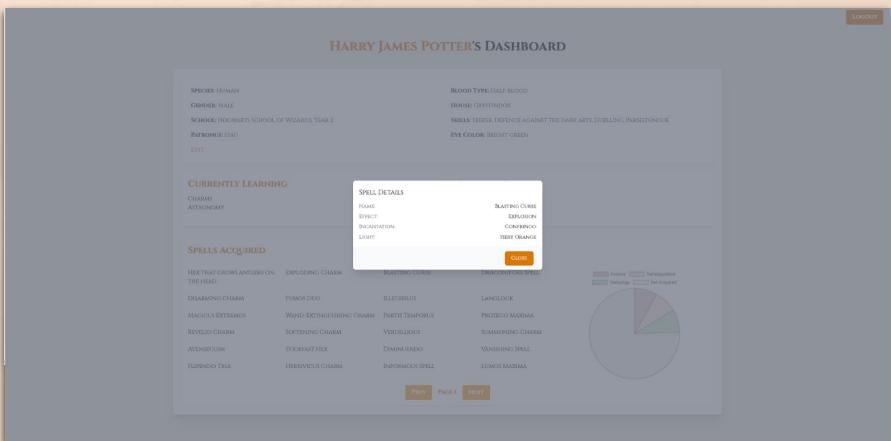
NEXT

CLOSE

Logout

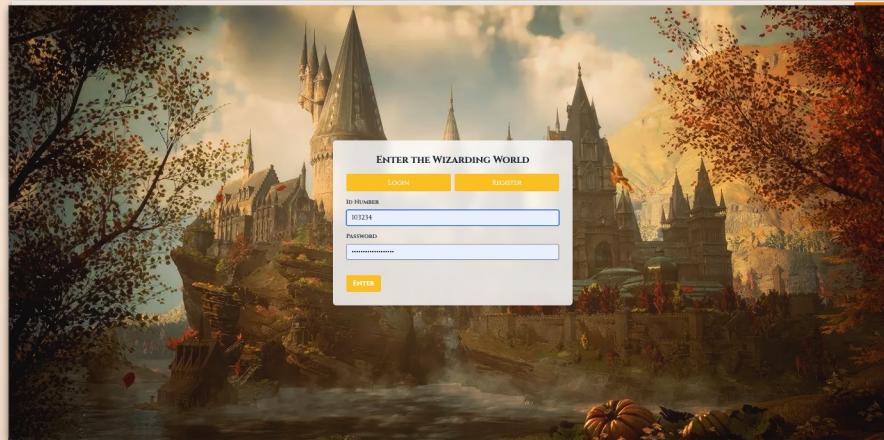
# APP FUNCTIONALITIES

Student  
Views  
Learned Spell



# APP FUNCTIONALITIES

Authenticating  
As  
Professor



# Professor Dashboard

PROFESSOR SEVERUS SNAPE'S DASHBOARD

LOGOUT

GENDER: MALE      SPECIES: HUMAN

BLOOD TYPE: HALF-BLOOD      WAND: UNKNOWN

PATRONUS: Doe      SCHOOL: HOGWARTS SCHOOL OF WIZARDS

EDIT

**POTIONS COURSE**

SPILLS TAUGHT:

FIX THAT GROWS ANTLERS ON THE HEAD	EXPLODING CHARM	BLASTING CURSE
DRACOFLORIS SPELL	DISARMING CHARM	FUMOS DUO
ILEGIBILIS	LANGLOCK	MAGICUS EXTREMOS
WAND-EXTINGUISHING CHARM	PARTIS TEMPORUS	PROTEGO MAXIMA
REVELIO CHARM	SOFTENING CHARM	VERDILLIOUS

STUDENTS ENROLLED:

- OLIVERWOOD
- ANGELINAJOHNSON
- QUIRINUSQUIDRELL
- PADMAPATIL
- MICHAELCORNER
- RONALDWEASLEYCOMBE
- TIBBYSOOT
- GREGORYGOYLE
- NARCISAMALFOY
- MILICENTBULstrode
- FATFRANC
- RONALDCHEVREY
- ROSEGRANGERWEASLEY

# APP FUNCTIONALITIES

Professor  
Edits  
Personal Info

PROFESSOR SEVERUS SNAPE'S DASHBOARD

GENDER: MALE      SPECIES: HUMAN

BLOOD TYPE: HALF-BLOOD      WAND: UNKNOWN

PATRONUS: Doe

[EDIT](#)

**POTIONS COURSE**

SPILLS TAUGHT:

HIX THAT GROWS ANTLERS      EXPLODING CHARM

ON THE HEAD

DRACONIATORS SPELL      DISARMING CHARM

ILLICIBILIS      LANGLOCK

WAND-EXTINGUISHING CHARM

REVELIO CHARM      PARTIS TEMPORUS

SOFTENING CHARM      PROTEGO MAXIMA

VERDILLIOUS

**WIZARDS**

NAME: SEVERUS SNAPE      GENDER: MALE

BLOOD TYPE: HALF-BLOOD      SPECIES: HUMAN

EYE COLOR: BLACK      PATRONUS: Doe

WAND:

[CLEAR](#)      [UPDATE CHANGES](#)

- TERENCE BOOGIE
- GREGORY GOYLE
- NARCISIA MALFOY
- MILICENT BULstrode
- FAT FRANCIS
- RONALD WEASLEY
- ROSE GRANGER-WASLEY

# Professor Views Course's Spell

PROFESSOR SEVERUS SNAPE'S DASHBOARD

GENDER: MALE      SPECIES: HUMAN  
BLOOD TYPE: HALF-BLOOD      WAND: UNKNOWN  
PATRONUS: DOE      SCHOOL: HOGWARTS SCHOOL OF WIZARDS

[EDIT](#)

POTIONS COURSE

SPELLS TAUGHT:

HEX THAT GROWS ANTLERS ON THE HEAD	EXPLODING CHARM
DRACOONIFORS SPELL	DISARMING CHARM
ILECIBRUS	LANGLOCK
WAND-EXTINQUISHING CHARM	PARTIS TEMPORUS
REVILIO CHARM	SOFTENING CHARM

SPELL DETAILS

NAME: FUMOS DUO  
EFFECT: INCANTATION  
LIGHT: DRAMING CHARM  
DIARMAN AN OPPONENT  
EXPELLAMUS  
SCARLET

CLOSE

FUMOS DUO  
MAGICUS EXTREMOS  
PROTEGO MAXIMA  
VENDILLIOUS

PAOMA PATIL  
MICHAEL CORNER  
MARINA EDGECOMBE  
MARINA BURKE  
GREGORY GOYLE  
NARCISSA MALFOY  
MILICENT BULTRIDGE  
FAT FRANC  
FRANCIS CARVEY  
ROSE GRANGER WEASLEY

# APP FUNCTIONALITIES

Professor  
Views / Passes  
Student

PROFESSOR SEVERUS SNAPE'S DASHBOARD

LOGOUT

GENDER: MALE      SPECIES: HUMAN

BLOOD TYPE: HALF-BLOOD      WAND: UNKNOWN

PATRONUS: DOE

[EDIT](#)

**POTIONS COURSE**

SPELLS TAUGHT:

HEX THAT GROWS ANTLERS      EXPLODING CHARM

ON THE HEAD      DRACONIFORS SPELL

ILLICIBILIS      DISARMING CHARM

WAND-EXTINGUISHING CHARA

REVELIO CHARM      LANGLOCK

PARTIS TEMPORUS      PROTEGO MAXIMA

SOFTENING CHARM      VERDILLIUS

**STUDENT DETAILS**

ATTENDING YEAR	NAME	SPECIES	WANDS
I	OLIVER WOOD	MALE	HUMAN
	PURE-BLOOD OR HALF-BLOOD	UNKNOWN	UNKNOWN
	EYE COLOR:	UNKNOWN	UNKNOWN
	WAND:	UNKNOWN	UNKNOWN
	PATRONUS:	UNKNOWN	UNKNOWN
	MILLS		

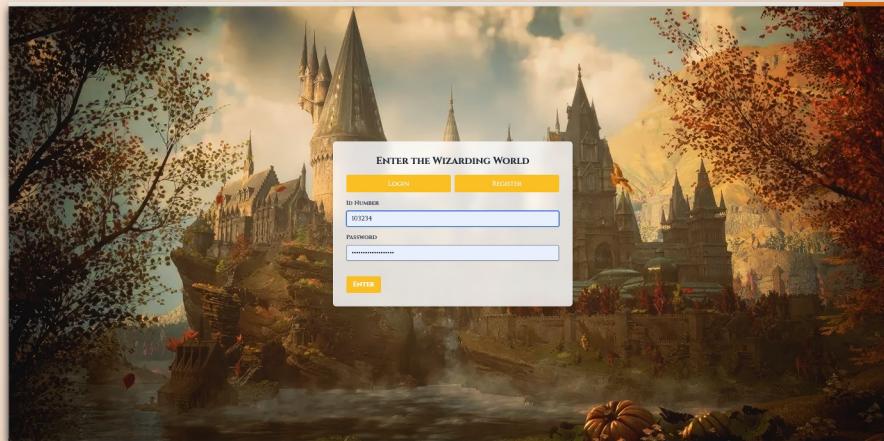
[COURT](#)      [PASS STUDENT](#)

STUDENTS ATTENDING COURSE

- TITAN BOOT
- GREGORY GOYLE
- NARCISIA MALFOY
- MILICENT BULstrode
- FAT FRANCIS
- SPUNKY CHEVREY
- ROSE GRANGER-WASLEY

# APP FUNCTIONALITIES

Authenticating  
As  
Headmaster



# Headmaster Dashboard

## Courses

# APP FUNCTIONALITIES

HEADMASTER ALBUS PERCIVAL WULFRIC BRIAN DUMBLEDORE'S DASHBOARD LOGOUT

NAME: ALBUS PERCIVAL WULFRIC BRIAN DUMBLEDORE  
SPECIES: HUMAN  
WAND: 15' ELDER THISTLE TAIL HAIR CORE  
STARTED HEADMASTER ROLE ON: 1971

GENDER: MALE  
BLOOD TYPE: HALF-BLOOD  
PATRONUS: PHOENIX

**COURSES**

<b>HERBOLGY</b> TYPE: CORE YEAR: 1	<b>POTIONS</b> TYPE: CORE YEAR: 1	<b>TRANSFIGURATION</b> TYPE: CORE YEAR: 1
<b>ASTRONOMY</b> TYPE: CORE YEAR: 2	<b>CHARMS</b> TYPE: CORE YEAR: 2	<b>CARE OF MAGICAL CREATURES</b> TYPE: ELECTIVE YEAR: 3
<b>DIVINATION</b> TYPE: ELECTIVE YEAR: 4	<b>MUGGLE STUDIES</b> TYPE: ELECTIVE YEAR: 4	<b>ARITHMANCY</b> TYPE: ELECTIVE YEAR: 5
<b>DEFENCE AGAINST THE DARK ARTS</b> TYPE: CORE	<b>HISTORY OF MAGIC</b> TYPE: CORE	

# APP FUNCTIONALITIES

# Headmaster Dashboard

# Students

Students						
Name	House	Gender	Blood Type	Species	Magic	Patronus
ALBUS SEVERUS POTTER	Slytherin	Male	Half-Blood	Human	UNKNOWN	UNKNOWN
ALECTO CARROW	Slytherin	Female	Pure Blood or Half-Blood	Human	UNKNOWN	UNKNOWN
AUGUSTA SHRIKE	Gryffindor	Female	Pure Blood or Half-Blood	Human	UNKNOWN	UNKNOWN
AMBROSIO CARROW	Slytherin	Male	Pure Blood or Half-Blood	Human	UNKNOWN	UNKNOWN
ANGELINA JOHNSON	Gryffindor	Female	UNKNOWN	Human	UNKNOWN	UNKNOWN
ANTHONY GOLDSTEIN	Ravenclaw	Male	Half-Blood	Human	UNKNOWN	NON-CORDATEAL
ANGUS FUCH	UNKNOWN	Male	Squid	Human	UNKNOWN	UNKNOWN
ARTHUR WEASLEY	Gryffindor	Male	PURE-BLOOD	Human	UNKNOWN	WEASEL
BARTY CROUCH [JR.]	UNKNOWN	Male	PURE-BLOOD OR HALF-BLOOD	Human	UNKNOWN	UNKNOWN
BELLATRIX LESTRANGE	Slytherin	Female	PURE BLOOD	Human	EW/WALNUT DRAGON HEARTSTRING	UNKNOWN

[PREV](#) [PAGE 1](#) [NEXT](#)

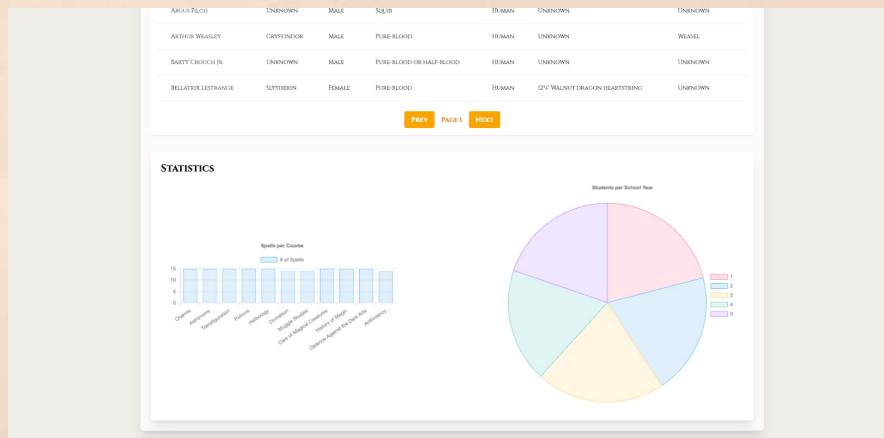
  

Statistics	
Students per House Year	100

# APP FUNCTIONALITIES

## Headmaster Dashboard

### Statistics



# Headmaster Dashboard

## Statistics

# APP FUNCTIONALITIES

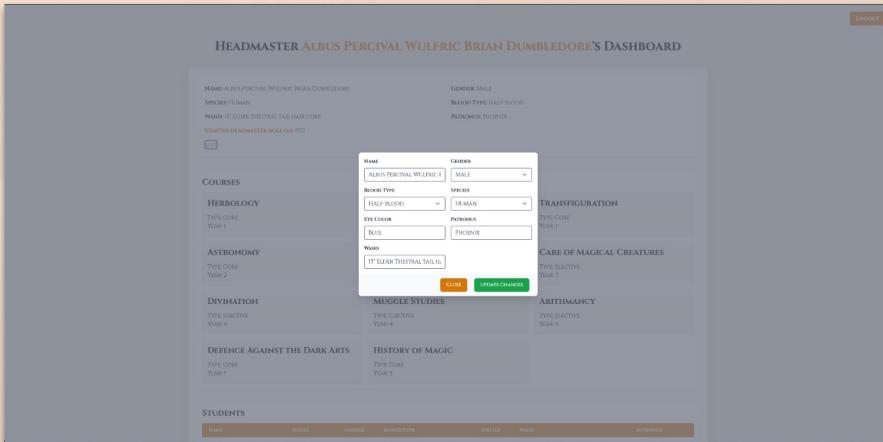
HEADMASTER **ALBUS PERCIVAL WULFRIC BRIAN DUMBLEDORE**'S DASHBOARD

[LOGOUT](#)

COURSES		
<b>HERBOLGY</b> TYPE: CORE YEAR: 1	<b>POTIONS</b> TYPE: CORE YEAR: 1	<b>TRANSFIGURATION</b> TYPE: CORE YEAR: 1
<b>ASTRONOMY</b> TYPE: CORE YEAR: 2	<b>CHARMS</b> TYPE: CORE YEAR: 2	<b>CARE OF MAGICAL CREATURES</b> TYPE: ELECTIVE YEAR: 3
<b>DIVINATION</b> TYPE: ELECTIVE YEAR: 4	<b>MUGGLE STUDIES</b> TYPE: ELECTIVE YEAR: 4	<b>ARITHMANCY</b> TYPE: ELECTIVE YEAR: 5
<b>DEFENCE AGAINST THE DARK ARTS</b> TYPE: CORE	<b>HISTORY OF MAGIC</b> TYPE: CORE	

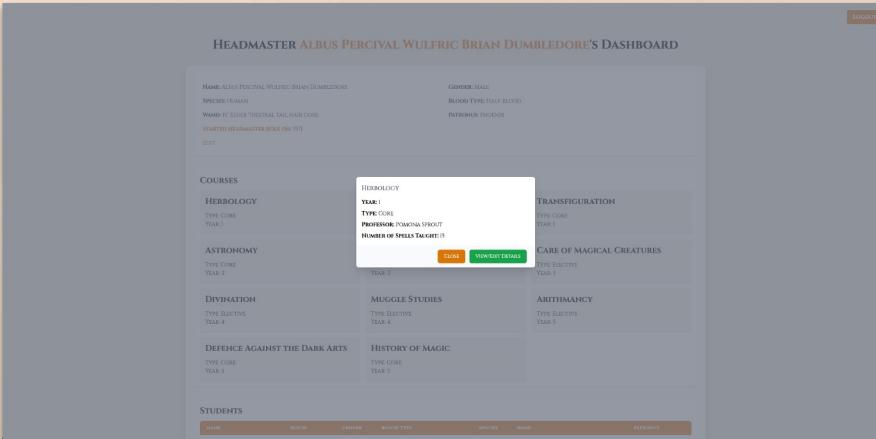
# APP FUNCTIONALITIES

Headmaster  
Edits  
Personal Info



# APP FUNCTIONALITIES

# Headmaster Selects Course



# APP FUNCTIONALITIES

Selected  
Course  
Page

BACK TO WIZARD DASHBOARD

## MUGGLE STUDIES COURSE

NAME: MUGGLE STUDIES  
TYPE: ELECTIVE  
PROFESSOR: CHARITY BURGESS

ATTENDING YEAR: 4  
NUMBER OF STUDENTS ENROLLED: 15  
NUMBER OF SPELLS TAUGHT: 14

**ADD SPELL**

**SPELLS TAUGHT:**

ADPHON'S SPELL	LOCKING SPELL	DESCENDO
KNOCKBACK Jinx	WAND-LIGHTING CHARM	HEDWIGHS SPELL
DODO	MURMULATO CHARM	
INFLATING CHARM	REVERSE SPELL	REPAIRANCE
SILENT-PROMPTING CHARM	VENTUS Jinx	

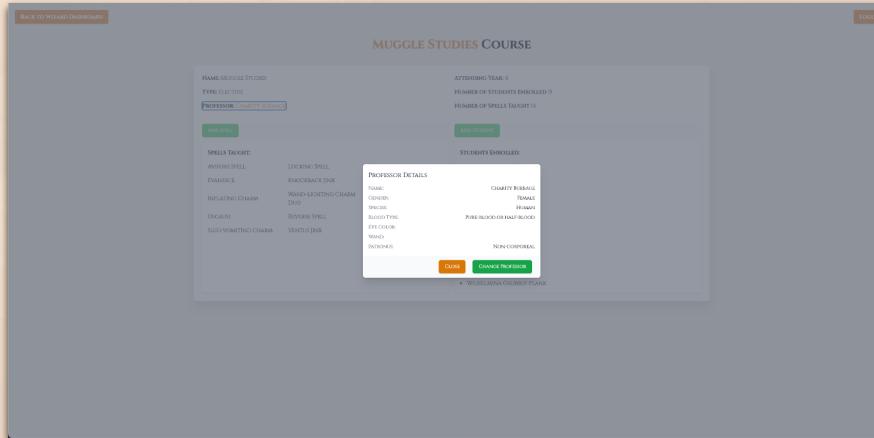
**STUDENTS ENROLLED:**

- HERMIONE JANE GRANGER
- RONALD BILIUS WEASLEY
- SEBASTIAN BLACK
- BLAINE ZAPIN
- CHARLES ANDREW BEEGLE
- MARCUS FLINT
- ROBERT FRED WEALEY
- ANNEKA CARROW
- GEORGIE DEGOVY
- EMILY ANN BEECHEY
- HANNAH AMBOTT
- JAMES ALBUS POTTER
- POPPY POMFREY
- WILHELMINA GOURSEY PLANE

LOGOUT

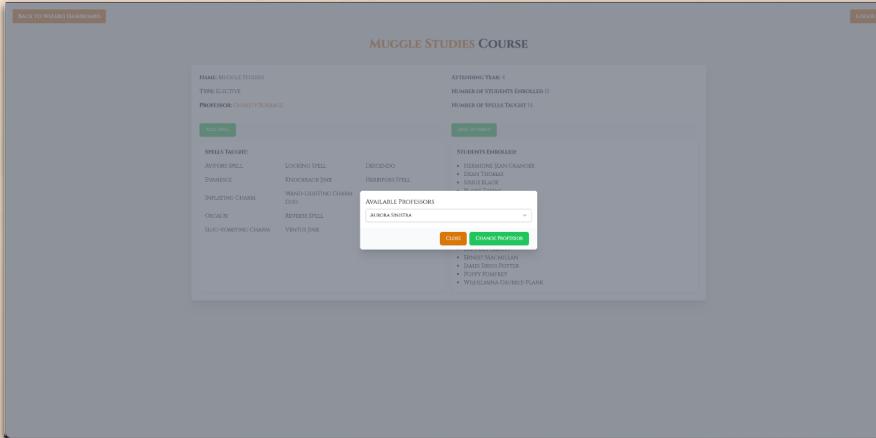
# APP FUNCTIONALITIES

Headmaster  
Views  
Professor's  
Details



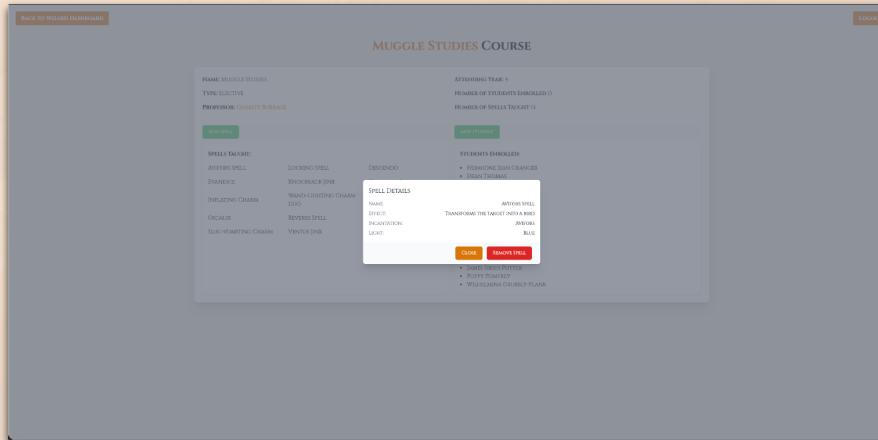
# APP FUNCTIONALITIES

Headmaster  
Changes  
Course's  
Professor



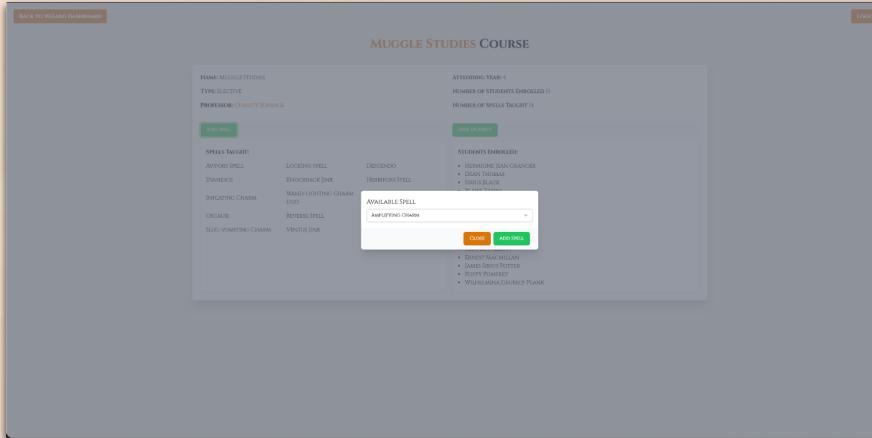
# APP FUNCTIONALITIES

Headmaster  
Views/Removes Spell from  
Course



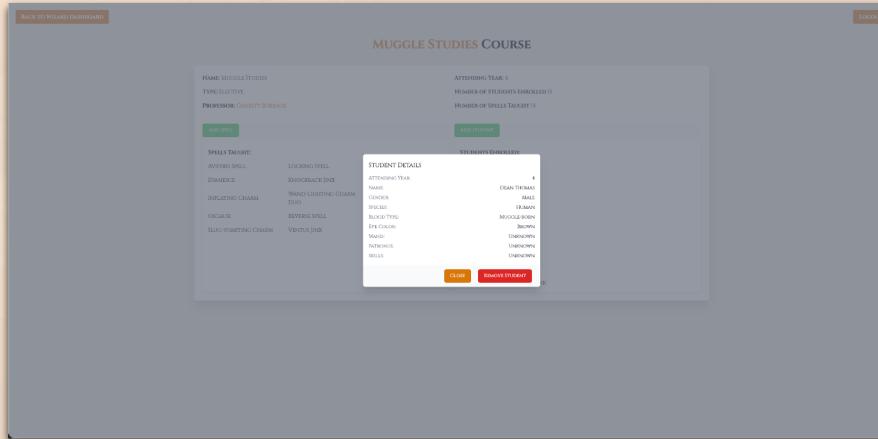
# APP FUNCTIONALITIES

Headmaster  
Adds Spell  
to Course



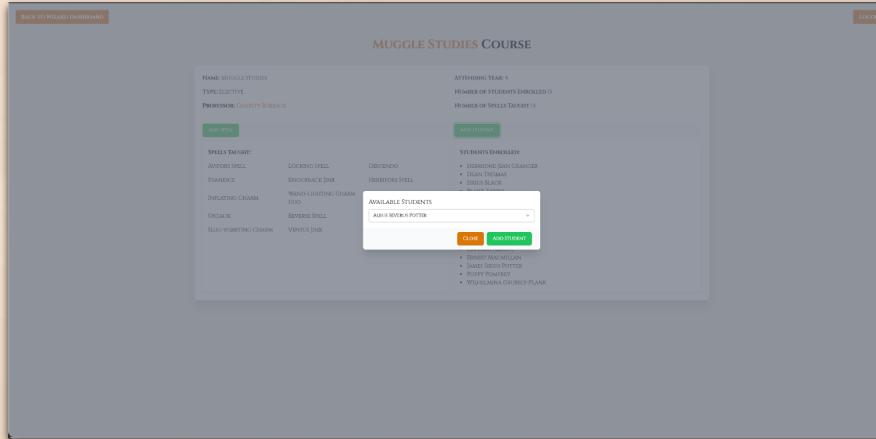
# APP FUNCTIONALITIES

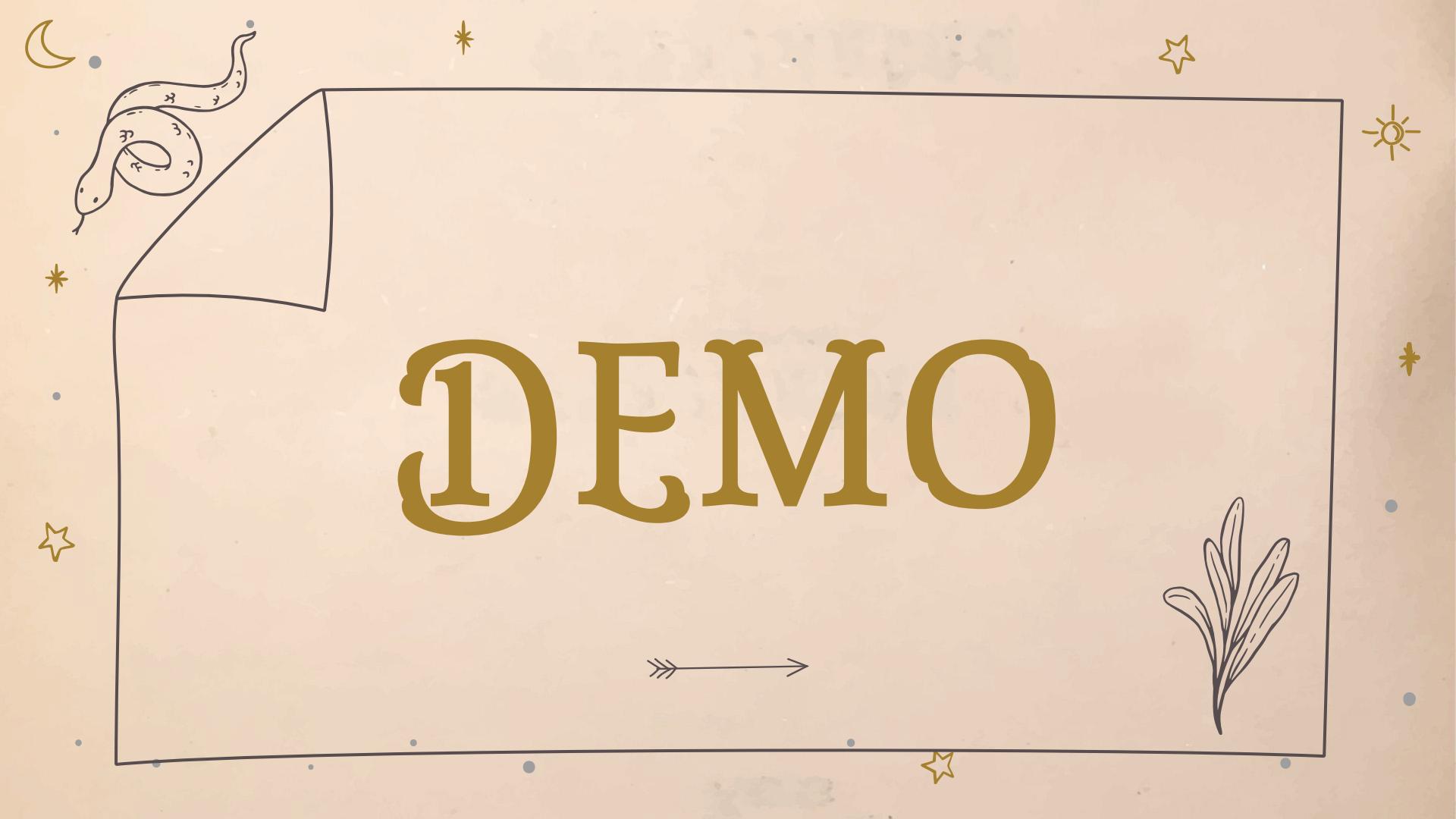
Headmaster  
Views/Removes Student from  
Course



# APP FUNCTIONALITIES

Headmaster  
Adds Student  
to Course





# DEMO



05

## NEXT STEPS



## Next Steps

- User receives notifications
- Professor updates course
- Headmaster manages available spells
- New users/wizards are not included in any course
- User has access to more detailed info on Wizard House



Thank You