

The wizarding world of Harry Potter

Python W200 Project Assignment

Introduction:

The project is based on famous book series “Harry Potter” written by J.K Rowling. Harry Potter is the boy wizard who survived the brutal attack by Voldemort when he was still a baby. His mother died protecting Harry, and the encounter left Voldemort weakened. Voldemort is back with full powers and wants to take a revenge and kill Harry. Harry must kill Voldemort before he kills him. Harry learnt that Voldemort had created 6 Horcruxes. A horcrux is a part of soul and life that gets separated and stored in an object.



Game Objective:

Dumbledore has already destroyed one horcrux (Marvolo Gaunt's Ring). Harry must destroy 5 horcruxes before Voldemort can be killed. The game objective is to capture the horcruxes, then get into a duel with Voldemort and win.

5 Horcruxes to be killed:

1. Tom Riddle's Diary
2. Salazar Slytherin's Locket
3. Helga Hufflepuff's cup
4. Rowena Ravenclaw's diadem
5. Nagini the snake

Main battle with Voldemort will commence after capturing the above 5 horcruxes.

Game progression:

Harry

Horcrux-1 (Tom Riddle's Diary):

Objective: Clear Trivia Questions

Harry Potter trivia (5 Questions):

- Loop the user until all 5 are correct
- End of each loop (After 5 questions), health will be deducted proportional to incorrect answers
 - 5 incorrect = -500
 - 4 incorrect = -400
 - 3 incorrect = -300
 - 2 incorrect = -200
 - 1 incorrect = -100
 - All correct = +1000

Horcrux-2 (Salazar Slytherin's Locket):

Objective: Win Duel with Bellatrix Lestrange

Bonus question before duel. Right answer gets additional 1000 Health points. Wrong answer doesn't do any damage.

Duel:

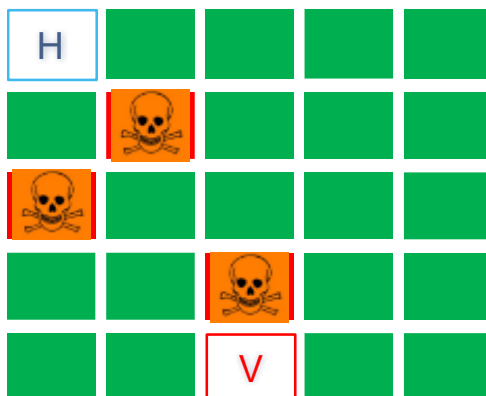
- A toss is made to choose who fires first (equal probability)
- 5 Spells are given (User does not know the power of spells)
- Bellatrix also fires similar spells
- Upon firing each spell, a damage is done. If Harry's health < 0 , Harry is dead and the game is over
- If Bellatrix health < 0 ,

Upon completing stage-2, Harry gets additional 2000 points in health

Horcrux-3 (Helga Hufflepuff's cup):

Objective: Pass the minefield to collect the cup

Harry is in a 5x5 board and he need to reach "V" to get the Horcrux. He can go one step down (or) one step horizontal and one step down. Below map shows obstacles that will kill Harry (It will not be shown to the user).



Maximum 2 tries are allowed.

After unsuccessful attempt in 1st try, 500 health points are deducted.

After unsuccessful attempt in 2nd, game is over.

A successful attempt will fetch a 2000 health points.

If 1st attempt is successful, user gets an additional life

Horcrux-4 (Rowena Ravenclaw's diadem):

Objective: Pass the super-minefield to collect the diadem

This mine field is more difficult due to 7x7 matrix. It looks like below:



Maximum 2 tries are allowed.

After unsuccessful attempt in 1st try, 500 health points are deducted.

After unsuccessful attempt in 2nd, if there is no additional life, game is over. Else, 500 health points deducted

If there is additional life, user is allowed 3rd attempt. If failed, game is over.

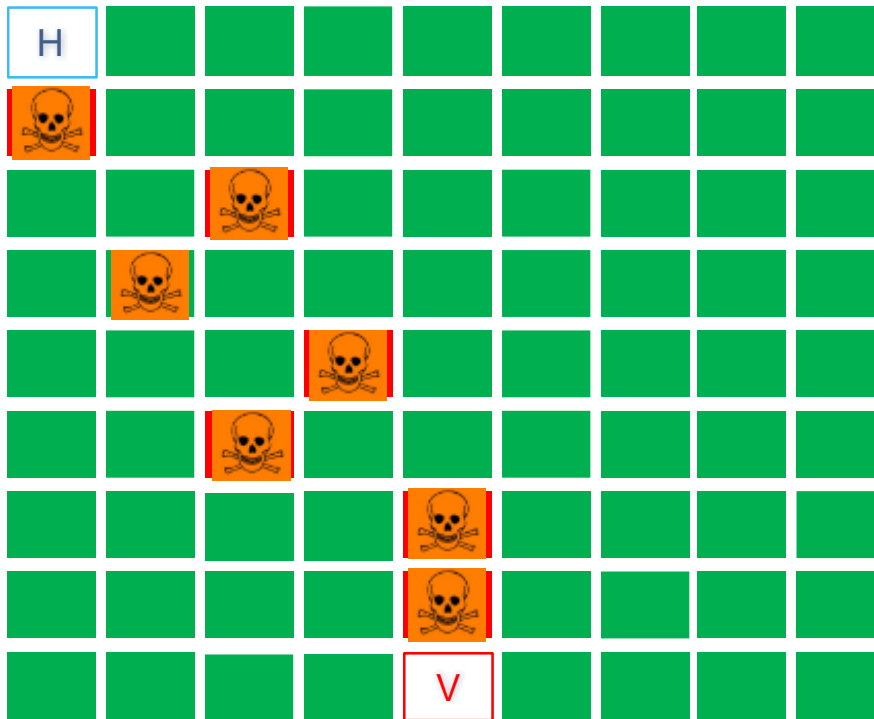
A successful attempt will fetch 3000 health points.

A successful attempt in first iteration will get additional life.

Horcrux-5 (Nagini, the snake):

Objective: Pass the ultra-minefield to kill Nagini

This one takes the user to a 9x9 matrix, with only few paths allowed.



Maximum 2 tries are allowed.

After unsuccessful attempt in 1st try, 500 health points are deducted.

After unsuccessful attempt in 2nd, if there is no additional life, game is over. Else, 500 health points deducted

If there is additional life, user is allowed 3rd attempt. if there is no additional life, game is over. Else, 500 health points deducted

If there is additional life, user is allowed 4th and final attempt.

A successful attempt will fetch 3000 health points.

A successful attempt in first iteration will get additional life.

FINAL FRONTIER: Kill VOLDEMORT

Objective: Kill Voldemort in Duel

Duel with Voldemort:

- A toss is made to choose who fires first (equal probability)
- 5 Spells are given (User does not know the power of spells)
- Voldemort also fires spells (The spell order from Voldemort is fixed in the code)
- Upon firing each spell, a damage is done. If Harry's health < 0, Harry is dead.
 - If Harry has additional life, duel restarts with default health of 2000.
- If Voldemort's health < 0, Voldemort is dead. Voldemort has a default additional life. So, the duel repeats.

Spells and their damage:

The strength of each spell is dependent on Wizard's ability and skillset. Also, the power of each spell varies. There are 4 unforgivable curses (Avada Kedavra, Sectum Sempra, Crucio and Imperio) that has higher damage power. The *Avada Kedavra* curse, for example, is far more dangerous than *Stupify* Curse. However, extremely powerful spells are beyond the ability of most witches and wizards. To restrict the usage of more powerful spells, user will be allowed to use it only for limited number of times.

Note: The values noted below are indicative only. They can be changed in the final code.

Spell	Max usage	Damage
<i>Avada Kedavra</i>	1	1000
<i>Sectum Sempra</i>	3	500
<i>Crucio</i>	3	300
<i>Aguamenti</i>	10	10
<i>Confringo</i>	10	50
<i>Oppugno</i>	10	50
<i>Tarantallegra</i>	10	50
<i>Stupify</i>	10	15
<i>Imperio</i>	3	200

Selecting Wands:

As the old saying goes, the wizard does not pick the wand, it's the wand that chooses the wizard. Wand's power depends on who is holding it. Below damage details are not visible to the user. User is asked to pick the wand from below list and will proceed to the game.

Note: The values are indicative only. It can be changed in the final code implementation

Wand	Damage Magnification
Phoenix Feather, 11" (Potter's Wand)	2X
Thestral tail core, 15" (Elder Wand - Dumbledore)	3X
Dragon heartstring, 18" (Voldemort Wand)	0.5x (Reduction)
Hawthorn 10" (Malfoy wand)	0.5x (Reduction)
Mahogany 11" (James Potter Wand)	1X
Walnut, 12.75" (Bellatrix Lestrange Wand)	0.5x (Reduction)

Classes :

- **Wizard**

- Attributes:
 - *Health* (Determines the health of the object. Dead if Health = 0)
 - *Life* (Number of lives pending). You can get extra life by collecting some trophy element
 - *Wand* (Type of wand determines the power of spells)
 - *Stage* (What stage of the game wizard is in)
 - *Name*
- Methods:
 - `__init__`
 - `select_wand`
 - `take_damage`
 - `cast_spell`
 - `__str__`

- **Spell**

- Attributes:
 - `Spell_damage`
- Methods:
 - `Get_spell_damage`
 - `IsSpellPossible`

- **Quiz:**

- Attributes:
 - `Quiz_Questions`
 - `Possible_answers`
 - `Quiz_dict{'id': 'answer'}`
- Methods:
 - `Get_Trivia_Question`
 - `Get_Trivia_Answer`

- **Board:**

- Attributes:
 - `Size`
 - `Wizard_id`
 - `Position`
 - `BoardList`
 - `WizardList`
- Methods:
 - `__init__`
 - `insert_wizard`
 - `make_move`
 - `valid_entries`
 - `print_board`
 -

- **Duel:**
 - Attributes:
 - Wizard1
 - Wizard2
 - Spell
 - Spell_damage
 - Methods:
 - __init__
 -

Pseudo Code/Code so far:

```
class Duel:
    def __init__(self,wizard1,wizard2):
        pass

class Wizard:
    def __init__(self,name,health=10,life=1):
        self.health = health
        self.life = life
        self.stage = 1
        self.wand = 1
        self.name = name
    def __str__(self):
        return self.name
    def select_wand(self):
        """ Displays choice of wands for user to pick """
        print("Please pick a wand from the below list.")
        print("Choose wisely! Wand impacts the power of spells \n")
        print("1. Phoenix Feather, 11 inches")
        print("2. Thestral tail core, 15 inches")
        print("3. Dragon heartstring, 18 inches")
        print("4. Hawthorn 10 inches")
        print("5. Mahogany 11 inches")
        print("6. Walnut, 12.75 inches")
        wand = int(input("Enter the wand number: "))
        if(wand == 1):
            print("Good Choice! This is Harry Potter's selection too")
```



```

elif(wand == 2):
    print("Great choice! This is the elder wand!")
elif(wand == 3):
    print("Meh! This was originally Voldemort's wand. Not so great in Harry's hands. Let's see how it performs!")
elif(wand == 4):
    print("Meh! This is Draco Malfoy's wand! Not so great in Harry's hands. Let's see how it performs!")
elif(wand == 5):
    print("Good choice! This is James Potter's wand.")
elif(wand == 6):
    print("Meh! This is Bellatrix's wand! Not so great in Harry's hands. Let's see how it performs")
else:
    raise Exception("Wrong wand")
self.wand = wand
def take_damage(self,damage):
    self.health -= damage
    if self.health < 0:
        self.life -= 1
        if self.life == 0:
            print("You are dead! You do not have any more life pending! ")
            self.health = 0
        else:
            print("You are dead! But you have one more life")
            self.health = 1000
    return self.health
def cast_spell(self,spell,wizard2):
    spell_damage = spell.get_spell_damage(spell,self.stage)
    # Check the user's wand and get the real spell
    if spell_damage == -1:
        print("This spell cannot be used currently")
    else:
        wizard2.take_damage(spell_damage)
class Spell:
    def get_spell_damage(spell,stage):
        """ Read from spell.json to get the spell and its damage """
        # Temporary place holder
        spell_damage = 100
        # Check if the spell can be used at this stage

```

```

    if(IsSpellPossible(spell,stage)):
        return spell_damage
    else:
        return -1

def IsSpellPossible(spell,stage):
    """ Read from spell.json to get the stage allowed"""
    min_stage = 1
    if stage <= min_stage:
        return False
    else:
        return True

class Quiz:
    def __init__(self,stage):
        pass
    def get_trivia_question(stage):
        """ Read from trivia.json for all specific stage questions"""
        """ Need to randomly pick the question from bunch and ask"""
        # Returns trivia question string, question id and choices in a list
        pass
    def check_trivia_answer(qid,user_answer):
        """ Compares real answer with user answer"""
        real_answer = "Hedwig"
        if user_answer != real_answer:
            print("Sorry, that is incorrect answer!")
            return False
        else:
            print("That's right!")
            return True

class Board:
    def __init__(self,size):
        """ Initialize the Minefield object with attributes"""
        self.size = size
        self.wz_id = "H"
        self.position = [0,0]
        self.BoardList = list()
        self.WizardList = list()

```

```

templist = list()
for x in range(size):
    x = x+1
    for y in range(x):
        templist.append('-')
    self.BoardList.append(templist)
    templist = []
def insert_wizard(self,wizard,position):
    """ Inserts the wizard in to the minefield"""
    wizard_name = wizard.name
    i = position[0]
    j = position[1]
    # Position it in the requested row
    if self.BoardList[i][j] == '-':
        self.BoardList[i][j] = wizard_name
    else:
        self.BoardList[i][j] += wizard_name
    self.WizardList.append(wizard)
def print_board(self):
    for k in self.BoardList:
        print(k)
def make_move(self):
    pass
import os
import random
import time
import numpy as np
import itertools

Potter = Wizard("H",1000)
Voldemort = Wizard("V",5000,7)
Bellatrix = Wizard("B",600)
Quirrell = Wizard("Q",400)

print("J.K Rowling created the wizarding world of Harry Potter.\n")
time.sleep(3)
print("Harry Potter is the boy wizard who survived the brutal attack by Voldemort when he was still a baby.\n")

```

```
time.sleep(2)
print("His mother died protecting Harry, and the encounter left Voldemort weakened. \n")
time.sleep(2)
print("Voldemort is back with full powers and wants to take a revenge and kill Harry. \n")
time.sleep(2)
print("Harry must kill Voldemort before he kills him. Harry just learnt that Voldemort has created 6 Horcruxes. \n")
time.sleep(2)
print("A horcrux is a part of soul and life that gets separated and stored in an object.")
time.sleep(2)
print("Dumbledore has killed 1 Horcrux that was stored in Marvolo Gaunt's Ring.")
time.sleep(2)
print("Remaining 5 Horcruxes need to be destroyed.")
time.sleep(2)
print("Harry just found them to be in the below :")
print("1. Tom Riddle's Diary")
print("2. Salazar Slytherin's Locket")
print("3. Helga Hufflepuff's cup")
print("4. Rowena Ravenclaw's diadem")
print("5. Nagini the snake")

time.sleep(3)
print("You are Harry Potter! Find the horcruxes, destroy them and kill Voldemort. Good Luck! ")
time.sleep(3)

Potter.select_wand()

print("You are now entering Stage-1")

time.sleep(3)

B1 = Board(5)
B1.print_board()
h_position = (0,0)
v_position = (4,2)
B1.insert_wizard(Potter,h_position)
B1.print_board()
```

```
B1.insert_wizard(Voldemort,v_position)
B1.print_board()
```