# Wizards

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| Action | |
| Content | |
| Course | Software: C++ |
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| Language | Python |
| Lecture Notes | |
| Media Vault | |
| Projects | |
| Related to Mega Project (Code) | |
| School | |
| Status | |
| Tags | OOP |

> I built a class named Wizards which begin by reading the text file and constructs a dictionary with spell name and it's power:

```
# open file
        xfile = open("spells.txt")

        # construct a dictionary with spell name and it's power (every wizard with his own spells)
        self.spells_pow_dic = {}
        for line in xfile:
            line = line.rstrip()
            words = line.split()
            # if first letter is A this means the corrsponding spell is common and can be used by the two wizards
            # so i add this common spell two times, one for harry and one for voldmort (i.e HCrucio, VCrucio)
            # I did this so I can know wether the user has entered the right spell for right wizard or not
            if words[0] =='A':
                name = 'H' + words[1]
                self.spells_pow_dic[name] = words[2]
                name = 'V' + words[1]
                self.spells_pow_dic[name] = words[2]
            # if first litter isn't A then the spell is added once for the corrsponding wizard
            else:
                name = words[0] + words[1]
                self.spells_pow_dic[name] = words[2]
        # close the file
        xfile.close()
```

To illustrate this part better, here is the constructed dictionary:

```
{'HAvadaKedavra': '100', 'VAvadaKedavra': '100', 'HCrucio': '40', 'VCrucio': '40', 'HImperio': '20', 'VImperio': '20', 'Hsheild': '0', 'Vsheild': '0', 'HReducto': '60', 'HFiendfyre': '50', 'HNeb
```

> Then I initialized the the wizards health and energy

```
# initialized the the wizards health and energy
self.h_health = 100
self.h_energy = 500
self.v_health = 100
self.v_energy = 500
```

> Then I built a battle function to handle the battle

```
def battle(self):
        while self.h_health > 0 and self.v_health > 0:
            # take spells names from user
            spells = input("Enter the two spills (H then V): ")
            spells_lst = spells.split()


            # get spells power from constructed dictionary above and check if user enterd right spell for right wizard
            if 'H' + spells_lst[0] in list(self.spells_pow_dic.keys()) and 'V' + spells_lst[1] in list(self.spells_pow_dic.keys()):
                h_spell_pow = self.spells_pow_dic.get('H' + spells_lst[0])
                v_spell_pow = self.spells_pow_dic.get('V' + spells_lst[1])
            else:
                print("You entered a spell that doesn't belong to the wizard!")
                continue

            # calculate new energy
            self.h_energy = self.h_energy - int(h_spell_pow)
            self.v_energy = self.v_energy - int(v_spell_pow)

            # calculate new health
            if int(h_spell_pow) != 0 and int(v_spell_pow) != 0:
                if int(h_spell_pow) > int(v_spell_pow):
                    self.v_health = self.v_health - (int(h_spell_pow) - int(v_spell_pow))
                else:
                    self.h_health = self.h_health - (int(v_spell_pow) - int(h_spell_pow))


            if self.h_health < 0:
                self.h_health = 0
            if self.v_health < 0:
                self.v_health = 0

            # print the result of this round using print_results function
            self.print_results()

        # check end of the battle and printing the winner name
        if self.h_health <= 0:
            print("Voldmort is the winner")
```

```
        elif self.v_health <= 0:
            print("Harry Potter is the winner")
```

> First it takes spells names from user and gets its power from the constructed dictionary above and check if user entered right spell for right wizard

```
# take spells names from user
spells = input("Enter the two spills (H then V): ")
spells_lst = spells.split()

# get spells power from constructed dictionary above and check if user enterd right spell for right wizard
if 'H' + spells_lst[0] in list(self.spells_pow_dic.keys()) and 'V' + spells_lst[1] in list(self.spells_pow_dic.keys()):
    h_spell_pow = self.spells_pow_dic.get('H' + spells_lst[0])
    v_spell_pow = self.spells_pow_dic.get('V' + spells_lst[1])
else:
    print("You entered a spell that doesn't belong to the wizard!")
    continue
```

> Then it calculates new energy and new health

```
# calculate new energy
self.h_energy = self.h_energy - int(h_spell_pow)
self.v_energy = self.v_energy - int(v_spell_pow)

# calculate new health
if int(h_spell_pow) != 0 and int(v_spell_pow) != 0:
  if int(h_spell_pow) > int(v_spell_pow):
        self.v_health = self.v_health - (int(h_spell_pow) - int(v_spell_pow))
  else:
        self.h_health = self.h_health - (int(v_spell_pow) - int(h_spell_pow))
```

> Then it checks if health is below 0, if true it assigns it to 0

```
if self.h_health < 0:
    self.h_health = 0
if self.v_health < 0:
    self.v_health = 0
```

> Then it calls the print_result function to print the results of this round on the screen

```
self.print_results()
```

> Finally it checks the end of the battle (health ≤0) and prints the winner's name

```
if self.h_health <= 0:
     print("Voldmort is the winner")
elif self.v_health <= 0:
     print("Harry Potter is the winner")
```

> print_results function

```
def print_results(self):
        print("       Harry            Voldmort")
        print("Health: %d             %d" % (self.h_health, self.v_health))
        print("Energy: %d             %d" % (self.h_energy, self.v_energy))
```

> in the main file we create an object of this class and call the battle function

```
from Wizards import Wizards

wizards = Wizards()
wizards.battle()
```

> Sample of the output

```
Enter the two spills (H then V): Crucio Crucio
       Harry            Voldmort
Health: 100              100
Energy: 460              460

Enter the two spills (H then V): Reducto Taboo
       Harry            Voldmort
Health: 80               100
Energy: 400              380

Enter the two spills (H then V): sheild AvadaKedavra
       Harry            Voldmort
```

```
Health: 80              100
Energy: 400              280

Enter the two spills (H then V): Reducto Confringo
       Harry            Voldmort
Health: 80              95
Energy: 340              225

Enter the two spills (H then V): Imperio AvadaKedavra
       Harry            Voldmort
Health: 0              95
Energy: 320              125

Voldmort is the winner
```

## another output sample

```
Enter the two spills (H then V): Expulso Taboo
You entered a spell that doesn't belong to the wizard!

Enter the two spills (H then V): Crucio Crucio
       Harry            Voldmort
Health: 100              100
Energy: 460              460

Enter the two spills (H then V): Reducto Taboo
       Harry            Voldmort
Health: 80              100
Energy: 400              380

Enter the two spills (H then V): Expulso Expulso
You entered a spell that doesn't belong to the wizard!

Enter the two spills (H then V): sheild AvadaKedavra
       Harry            Voldmort
Health: 80              100
Energy: 400              280

Enter the two spills (H then V): Reducto Confringo
       Harry            Voldmort
Health: 80              95
Energy: 340              225

Enter the two spills (H then V): Imperio AvadaKedavra
       Harry            Voldmort
Health: 0              95
Energy: 320              125
Voldmort is the winner
```

## another output sample

```
Enter the two spills (H then V): Crucio Crucio
       Harry            Voldmort
Health: 100              100
Energy: 460              460
Enter the two spills (H then V): Reducto Taboo
       Harry            Voldmort
Health: 80              100
Energy: 400              380
Enter the two spills (H then V): sheild AvadaKedavra
       Harry            Voldmort
Health: 80              100
Energy: 400              280
Enter the two spills (H then V): Reducto Confringo
       Harry            Voldmort
Health: 80              95
Energy: 340              225
Enter the two spills (H then V): Imperio Taboo
       Harry            Voldmort
Health: 20              95
Energy: 320              145
Enter the two spills (H then V): Fiendfyre AvadaKedavra
       Harry            Voldmort
Health: 0              95
Energy: 270              45

Voldmort is the winner
```

## The text file

```
A AvadaKedavra 100
A Crucio 40
A Imperio 20
A sheild 0
H Reducto 60
H Fiendfyre 50
H Nebulus 40
V Taboo 80
V Expulso 60
V Confringo 55
```