

OOP TASK

Introduction

Hermione Granger, now the Minister of Magic, has introduced Muggle technology into the wizarding world. To keep track of all her magical contacts, she needs a new "Magical Contact Book." you have been tasked with developing this book. Your Magical Contact Book will store information about witches, wizards, and magical creatures, including their wand details, house at Hogwarts, and other relevant details.

Requirements:

Create the Base Class: **MagicalContact**

- This class will serve as the base class for all contacts in the book.
- Attributes:
 - **name** (string): The name of the magical being. This attribute should be encapsulated (private).
 - **email** (string): The contact's email address. This attribute should be encapsulated (private).
 - **phone_number** (string): The contact's phone number. This attribute should be encapsulated (private).
- Methods:
 - **get_name()**: Returns the name of the contact.
 - **get_email()**: Returns the email of the contact.
 - **get_phone_number()**: Returns the phone number of the contact.
 - **set_email(email)**: Allows updating the email address securely.
 - **set_phone_number(phone_number)**: Allows updating the phone number securely.
 - **describe()**: Prints a description of the contact, e.g., "Name: Dobby the free elf, dobby_2806@free_elfmail.elf, Phone: +44 01234567890 "

Create the **MagicUser** Class (inherits from **MagicalContact**):

- Represents a witch or wizard with additional attributes.
- Attributes:
 - **__wand** (dictionary): A dictionary containing details about the wand (private):
 - **core**: Core material of the wand (e.g., "phoenix feather").

- **wood**: Wood type of the wand (e.g., "Holly").
 - **length**: Length of the wand (e.g., "11 inches").
- **__house** (string): The Hogwarts house to which the wizard or witch belongs (e.g., "Gryffindor") (private).
 - The house must be one of the four Hogwarts houses: "Gryffindor," "Hufflepuff," "Ravenclaw," or "Slytherin." If an invalid house is provided, the object should not be created and should raise a **ValueError**.
- **Methods**:
 - **get_wand()**: Returns the wand details as a formatted string (e.g., "11 inches, Holly, phoenix feather").
 - **get_house()**: Returns the house.
 - **describe()**: Overrides the base method to include wand and house details in the description. The wand description should be in the format: "12", Holly, phoenix feather".

Create the **MagicalCreature** Class (inherits from **MagicalContact**):

- Represents a magical creature with its own attributes.
- **Attributes**:
 - **__species** (string): The species of the magical creature (e.g., "Hippogriff") (private).
 - **__is_tame** (boolean): Indicates whether the creature is tame or not (private).
- **Methods**:
 - **get_species()**: Returns the species of the creature.
 - **is_tame()**: Returns whether the creature is tame.
 - **describe()**: Overrides the base method to include species and tameness in the description.

Create the **MagicalContactBook** Class:

- Manages a collection of contacts.
- **Attributes**:
 - **__contacts** (list): A list of **MagicalContact** objects (private).
- **Methods**:
 - **add_contact(contact)**: Adds a new contact to the contact book.
 - **list_contacts()**: Lists all contacts in the book, calling the **describe()** method on each.
 - **find_contact(name)**: Searches for a contact by name and returns their description if found.

Submission:

- You must work on this assignment using GitHub. Create a new repository for your project.
- Name your repository something descriptive like **magical-contact-book**.
- Ensure that your code is well-organized, with each class in its own file if necessary.
- Include a **README.md** file that describes your project and how to run it (Optional).
- Make sure your repository is public at the time you submit it.
- Submit the link to your GitHub repository as your submission.
- No ChatGPT, when you master the easy stuff, then and only then can you automate it away.

Acknowledgment:

This task is curtesy of IEEE & their Protons program