Why not use the property decorator
__kiwi__ 4w

If the goal is to minimize writing to the data attributes and avoid changes to known mutables why not do this? This is just a rewrite of your v1 code using decorators to avoid "get_this" and dunder to increase the "security".

```
from copy import deepcopy

class IVP():
    def __init__(self, uI, tI, tF, p):
        """Args:
            uI (float list): initial condition of state.
            tI (float): initial time.
            tF (float): final time.
            p (dictionary): set of fixed parameters.
            f (function): takes as input u,t,p and returns du/dt
        """
        self.__uI = deepcopy(uI)
        self.__tI = tI
        self.__tF = tF
        self.__p  = deepcopy(p)
        # self.__f  = f  # removed at 8.5

    def evalf(self, u, t):
        """Args:
            u (float list): current solution.
            t (float): current time.

        Returns:
            float list: _f(self,u,t).
        """
        raise NotImplementedError("evalf is not implemented for this object")
        # return self.__f(self, u, t)

    @property
    def tI(self):
        """Returns: float: initial time."""
        return self.__tI

    @property
    def tF(self):
        """Returns: float: final time."""
        return self.__tF

    @property
    def uI(self):
        """Returns: float list: initial state"""
        return self.__uI

    @property
    def p(self):
        """Returns: a value from p Dict so use form inst.p(name)"""
        return lambda *k: self.__p[k[0]] if k else "Please provide key name"

    def __len__(self):
        """len is defined as number of states (in _uI)"""
        return len(self.__uI)
```

and the inheriting Coffee class:

```
class coffeeIVP(IVP):
    def evalf(self, Tc, t):
        """Args:
            Tc (float list): current temperature of coffee.
            t (float): current time
        Returns:
            f (float list): returns dTc/dt
        """
        mc = self.p('mc')
        cc = self.p('cc')
        h = self.p('h')
        A = self.p('A')
        Tout = self.p('Tout')
        f = h*A / (mc*cc) * (Tout - Tc[0])
        return [f]
```

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Thanks Andrew. Just for anyone who's interested the following is a little "tutorial" I provide at 6.00.1x.

Getters and Setters are taught in the form they are here because this is a Computer Science course and they are common in other languages like Java. But Python is *a language for consenting adults* and information hiding by default is not pythonic.

So what do we do in Python?

The pythonic way is to make class attributes public **unless there is good reason** to do otherwise. So if class Mine has an attribute deep the way we read or write to it in instance SilverDollar is:

```
class Mine():
    def __init__(self, deep):
        self.deep = deep

SilverDollar = Mine(30)
SilverDollar.deep = 50 # to set x and
SilverDollar.deep  # to get the value of deep
```

No ugly stuff, just `instance_name.variable_name`.

But what if some of our users are idiots so we need to check that deep is a positive number but under 2000 (its a mine not a mountain). Similarly, mines deeper than 1000 are dangerous to miners so we need to hide them from the work & safety people - any mines deeper than 1000 will just return 1000. So, what's the pythonic way? Properties. The class looks like this but the classes user can access the attributes as above preserving the original simple interface:

```
class Mine():
    def __init__(self, deep):
        self.deep = deep

    @property
    def deep(self):
        if self.__deep > 1000:
            return 1000
        return self.__deep

    @deep.setter
    def deep(self, deep):
        if deep > 2000:
            self.__deep = 2000
        elif deep <= 0:
            self.__deep = 0
        else:
            self.__deep = deep

# and try it out by creating an instance
SilverDollar = Mine(-400)
print(SilverDollar.deep)
SilverDollar.deep = 5055
```

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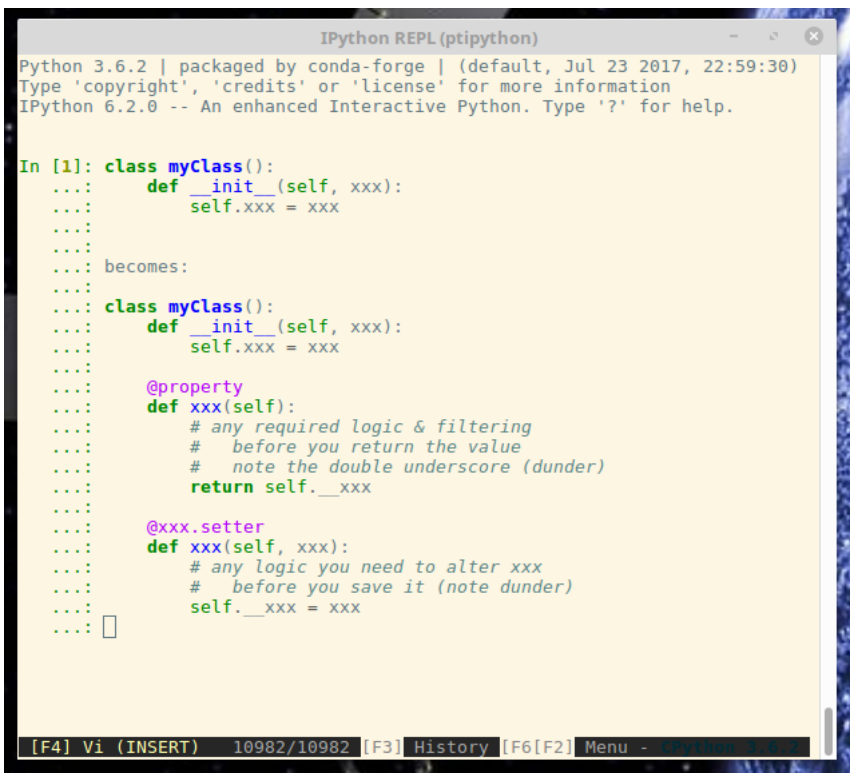
So you start out without information hiding. Then you can add it later if needed but without altering your users' interface. Based on - for more information.



Code at pastebin.com

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wangaj_mit Staff 4w

You're absolutely right that using property decorators and dunder naming would be more idiomatic Python. Our target audience, though, is for those who have just completed 6.00.1x. I don't believe they cover decorators at all, and dunder naming might just be touched upon. In the end, these are somewhat Python-specific concepts and a bit beyond the scope of our prerequisites. But we appreciate the thought!

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