**Polymorphism > Duck typing**

Behaviours matching with duck is called a duck: ex: it can walk, swim, quacks (sounds made)

The moment you give a name to a variable we are just giving a name to a memory for ex:

X = 5 #x is the name of the memory and it’s type is int

X = ‘bunny’ # what is it’s type?

Let’s look at duck typing now

Create a class Laptop and code method which has and IDE(Integrated development environment) and we are expecting someone will pass an argument as an as shown below.

Graphical user interface, text, application, chat or text message

Description automatically generated

Question is ide is of what type? – is it a type of int, float or str?

So when we say ***execute*** that means it is not there in the existing classes, so the type of ide is something unique- which is user is defining it.

Now in order to create ide we will create our own class Pycharm, def a method and run the code – will it work?

Graphical user interface, application

Description automatically generated

It won’t work because we are not calling anything.

To work with it, first we need to create a object from laptop class as you cannot call code without the laptop

Now with the help of the created object we can call code as shown below.

Graphical user interface, text, application

Description automatically generated

Question : will this work? Can we run it and get the output?

No- as we need to pass the value for ide as mentioned in the method.

So for this we need to create ide from the Pycharm class and then you can pass the ide value to our lap1.code(***ide***). Run the below code and check the output

Graphical user interface, text, application

Description automatically generated

* Type of IDE is pycharm as mentioned in the code, but is it fixed ?
* Can we change the type of IDE later?

Let’s say we have a new IDE ex: VSCode which can do extra stuff and if we feel that it is better than pycharm and now we want to update it.

* Now we will create a new class with execute method within the newly created Myeditor class as shown below.

Diagram

Description automatically generated

Now what if I want to change the type of IDE(take a look at the laptop class above), is the IDE type fixed to pycharm? No it’s not fixed, it is dynamic typing

We can replace this IDE type from Pycharm to VSCode –provided you have the execute method. It’s doesn’t matter which object you are passing, **what matters is that class should have the execute method**

Graphical user interface, application

Description automatically generated

Now if we change from ide = PyCharm() to VSCode()/MYEditor(in the screenshot) it will still run.

Graphical user interface, application

Description automatically generated

Make sure there is a method execute()

So if it walks/quacks/swims like a duck then it is a duck.

Similar way if there is an object ***ide*** and it has a method ***execute*** that’s it, we are not concerned about which class object it is, what we are concerned about is does it have the method execute that’s it. That is duck typing

<https://www.programiz.com/python-programming/examples/hcf>

<https://www.programiz.com/python-programming/examples/lcm>

class PyCharm():

    def show(self):

        print('this is pycharm ide tool')

        print('compiling and running')

class VScode():

    def show(self):

        print('It is a microsoft product')

        print('spell checking')

        print('it is free of cost and good support')

class Laptop:

    def code(self, ide):

        ide.show()

ide = VScode()

lap1 = Laptop()

lap1.code(ide)