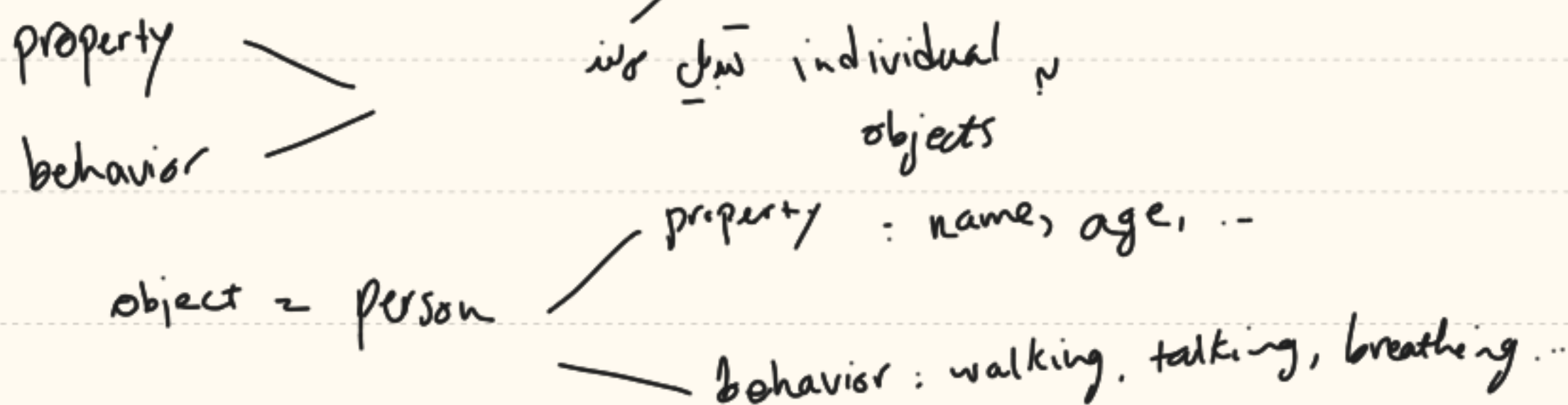


object oriented programming



in other programming paradigms → objects only represent the data

in python OOP → objects represent the overall structure of the program.

Defining a class in python

class

```
def __init__(self, name, age):
```

```
    self.name = name
```

```
    self.age = age
```

class instance

attribute

object

represent the instance of the class

allows access to the attributes

python level data

What does all that mean?

step back :

primitive data structure : strings, numbers, lists

self

primitive

track

attribute

instance

class

more manageable

method

contain

real data

instance

--init-- = sets the initial state of the object by assigning

the values of the object's property.

① instance attribute VS ② class attribute

① attribute

②

[module is a python file that contains python code, such as variables, functions, classes ...]

instantiating a class in python:

creating a new object from a class is called instantiating.

memory address

method

class and instance attributes

when you instantiate the Dog class, python creates a new instance of Dog and passes it to `self`

instance methods

are functions that you define inside a class and can only call on an instance of that class. always takes `self` as its first parameter.

Tip when writing custom classes, it is useful to write a method that returns a string containing useful information about the an instance of the class. \rightarrow `__str__()`

dunder methods: `--init--()`, `--str--()`

methods like these are called dunder method because they begin & end with double underscores. very important part of OOP

How to inherit from another class?

inheritance is the process by which one class takes on the attributes and methods of another. Newly formed class: child class

the classes that you derive child classes: Parent class

`class child(Parent)` \rightarrow inherit

✓ child class takes on the attributes and methods of the Parent class

✓ child class can override and extend the attributes and methods of

✓ child class can also have attributes & methods unique to themselves.

`isinstance(obj, class)` \leftarrow True/False

✓ all objects created from a child class are instances of the parent class.

Parent class functionality Extension.

inherit, parent class method, child class

override method, customized child class method

✓ تفسیراتی نہ در Parent class به وجود می آید در child class هم اعمال می شود به سبب سبکی که

این attribute ها یا method در child class override شده اند.

برای این که این اتفاق نیفتد در child class تفسیراتی نه در parent class می دهیم را کت هیچ سبکی

miss نه، به جابجایی که هنگام override کردن در child class output explicit return داشته باشیم.

↳ you need to call the dog's class . speak() from inside the

child class's . speak() using the same arguments that you passed to

Jack Russell Terrier . speak() .

super() ⇒ you can access the parent class from inside a method

of a child class by using `super()`

```
class Jack Russell Terrier(Dog):
```

```
    def speak(self, sound = 'idle'):
```

```
        return super().speak(sound)
```

python searches the parent class for .speak() method

and calls it with the variable sound.

super() function search the parent class for a method or

an attribute and it traverses the entire class hierarchy for a matching method and attribute