[320] Inheritance

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Review

Review Classes + Special Methods

```
class Dog:
    def __init__(self, name):
        self.name = name

    def bark(self, mult, ucase):
        msg = "bark " * mult
        if ucase:
            msg = msg.upper()
        print(self.name + ": " + msg)

sam = Dog("Fido")
fido = Dog("Sam")
```

```
fido.bark(5, False)                   # 1
fido.bark(fido, 5, True)              # 2
fido.bark(fido, 5, True, None)        # 3
```

which call produces the following error?

```
TypeError: bark() takes 3 positional arguments but 4 were given
```

Review Classes + Special Methods

```python
class Dog:
    def __init__(self, name):
        self.name = name

    def bark(self, mult, ucase):
        msg = "bark " * mult
        if ucase:
            msg = msg.upper()
        print(self.name + ": " + msg)

sam = Dog("Fido")
fido = Dog("Sam")
```

```python
fido.bark(5, False)                    # 1
fido.bark(fido, 5, True)               # 2
fido.bark(fido, 5, True, None)         # 3
```

which call is correct?

Review Classes + Special Methods

```
class Dog:
    def __init__(self, name):
        self.name = name

    def bark(self, mult, ucase):
        msg = "bark " * mult
        if ucase:
            msg = msg.upper()
        print(self.name + ": " + msg)

sam = Dog("Fido")
fido = Dog("Sam")

fido.bark(5, False)                # 1
```

what is printed?

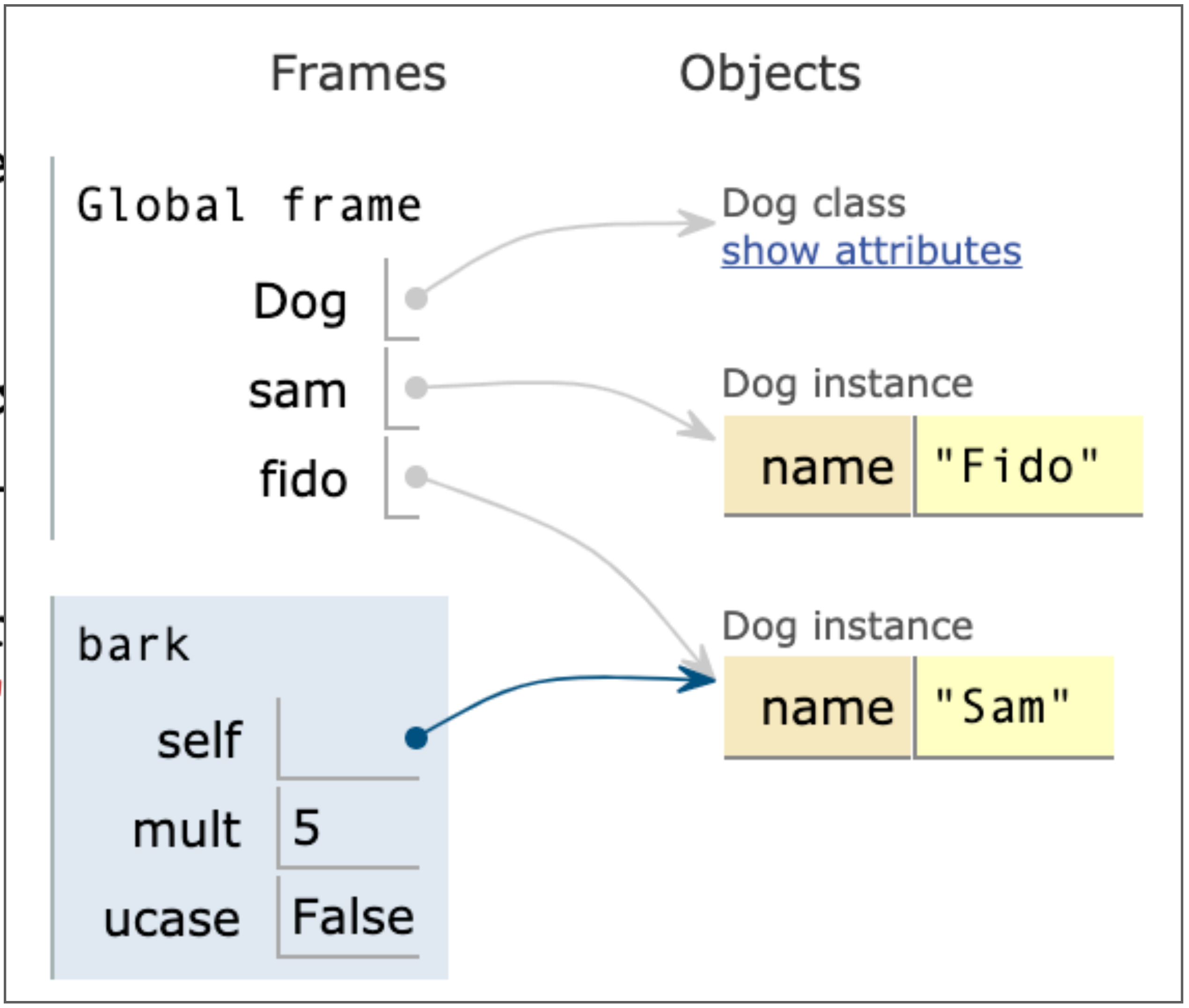
```
(1) Fido: bark bark bark bark bark
(2) Fido: BARK BARK BARK BARK BARK
(3) Sam: bark bark bark bark bark
```

Review Classes + Special Methods

```
class Dog:
    def __init__(self, name
        self.name = name

    def bark(self, mult, uc
        msg = "bark " * mul
        if ucase:
            msg = msg.upper
        print(self.name + "

sam = Dog("Fido")
fido = Dog("Sam")
```



name	"Fido"

name	"Sam"

mult	5
ucase	False

```
fido.bark(5, False)                    # 1
```

what is printed?

```
(1) Fido: bark bark bark bark bark
(2) Fido: BARK BARK BARK BARK BARK
(3) Sam: bark bark bark bark bark
```

Review Classes + Special Methods

Special methods usually get called

1. explicitly
2. implicitly

What does **print(...)** use to represent an object?

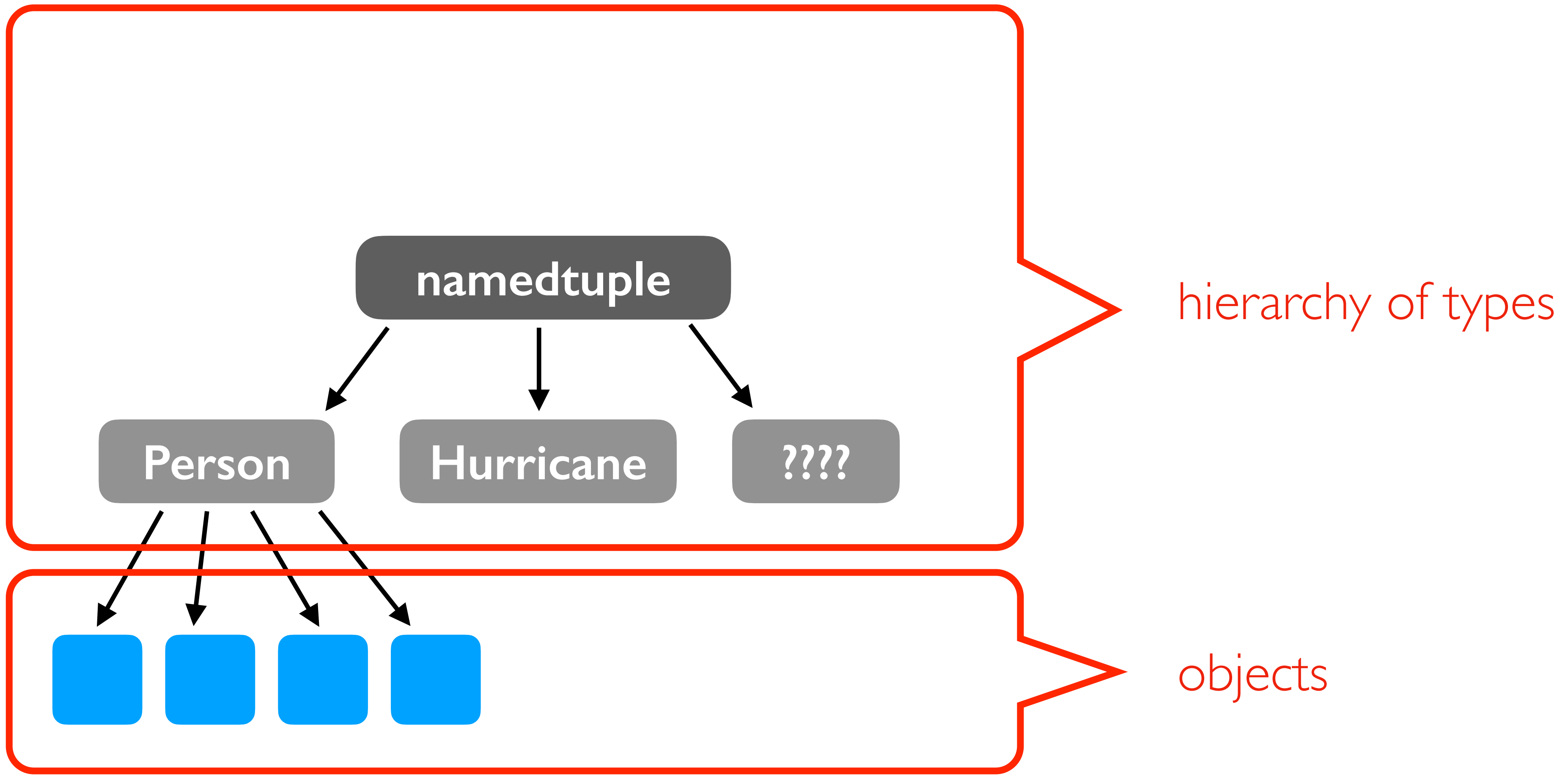
1. __str__
2. __repr__
3. _repr_html_

What special method must be implemented for **sorting** to work?

1. __repr__
2. __order__
3. __lt__
4. __gt__

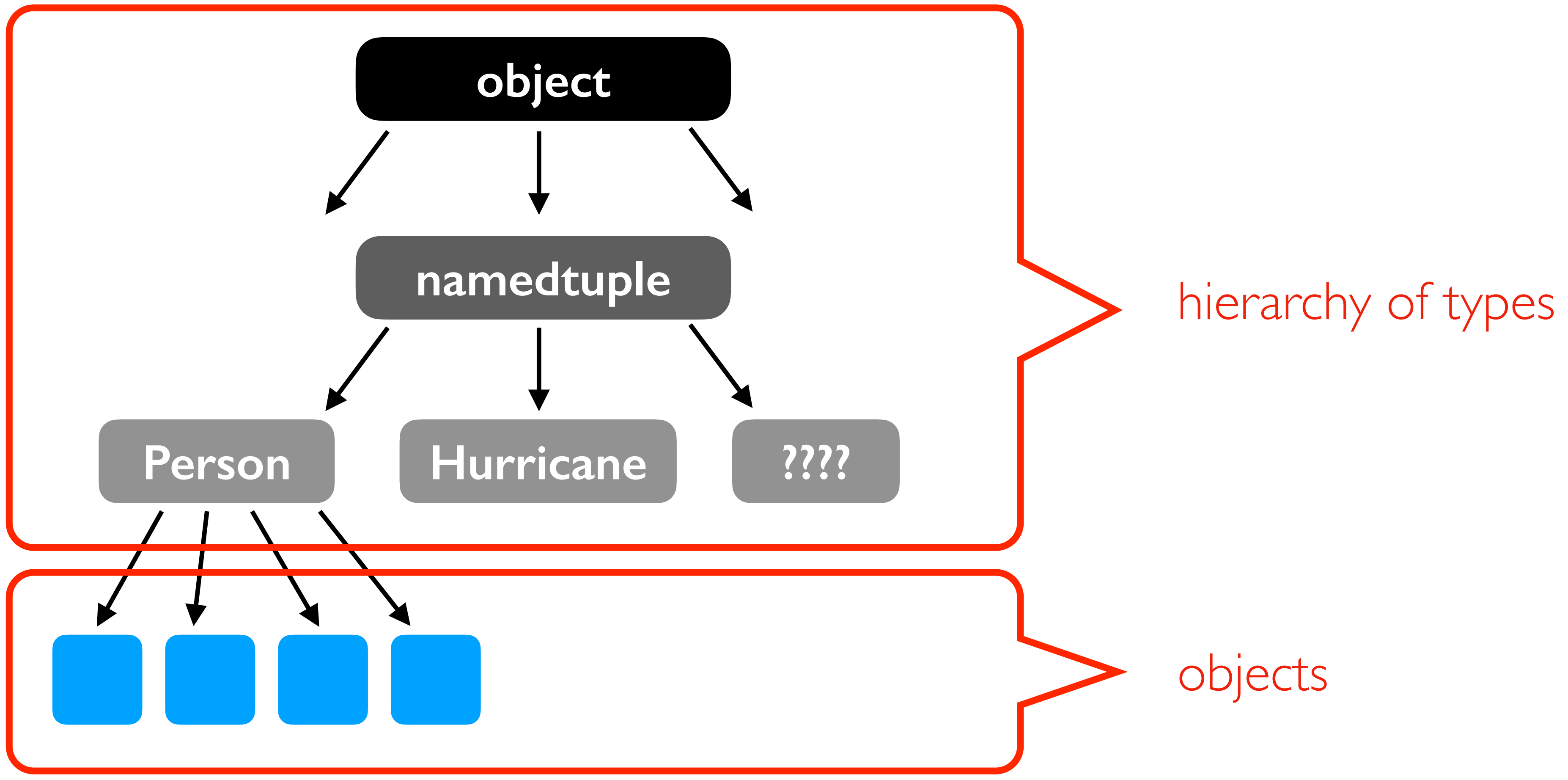
Inheritance

Types, Sub Types, and Objects



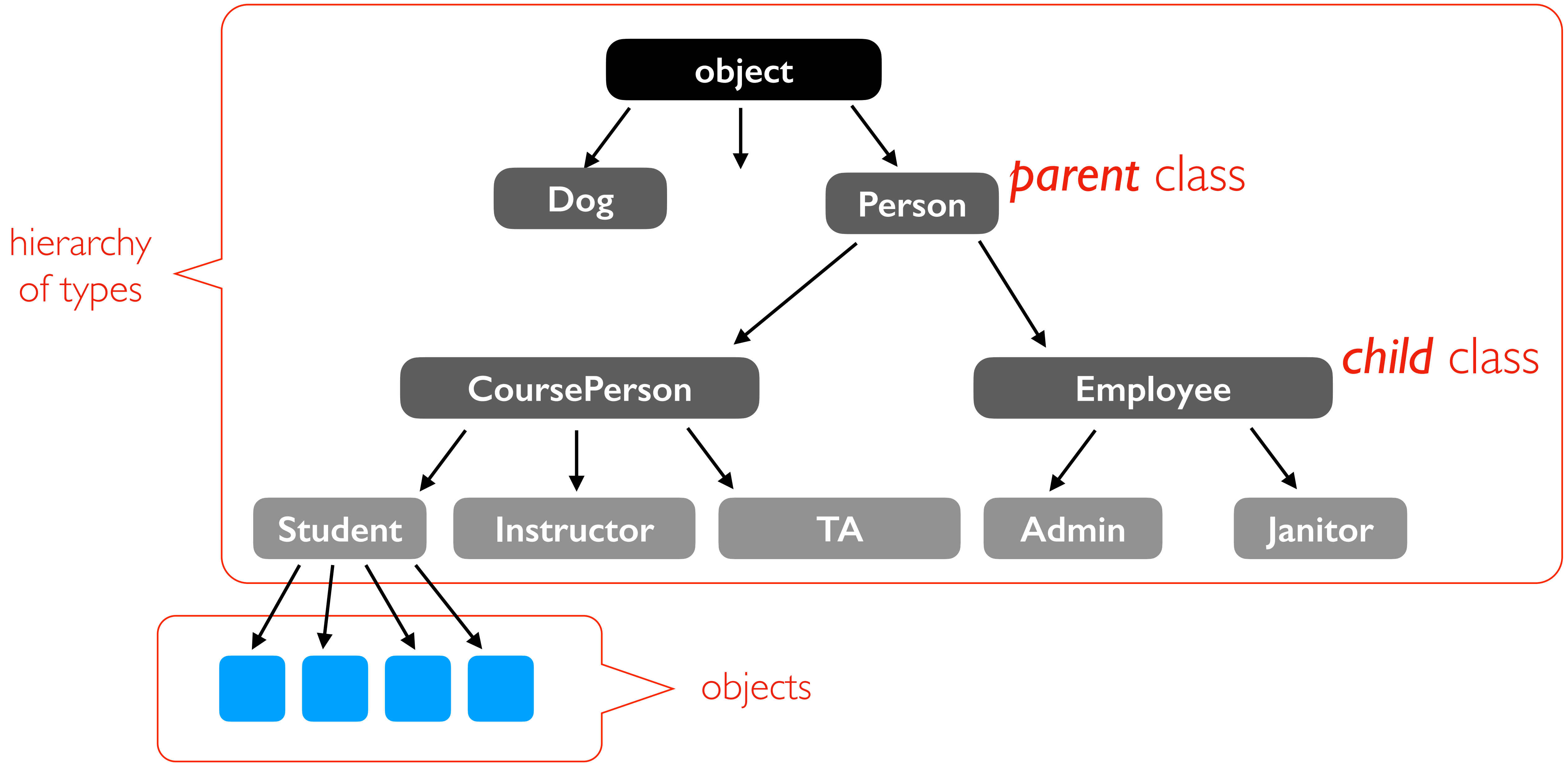
classes (and types in general) form a hierarchy

Types, Sub Types, and Objects



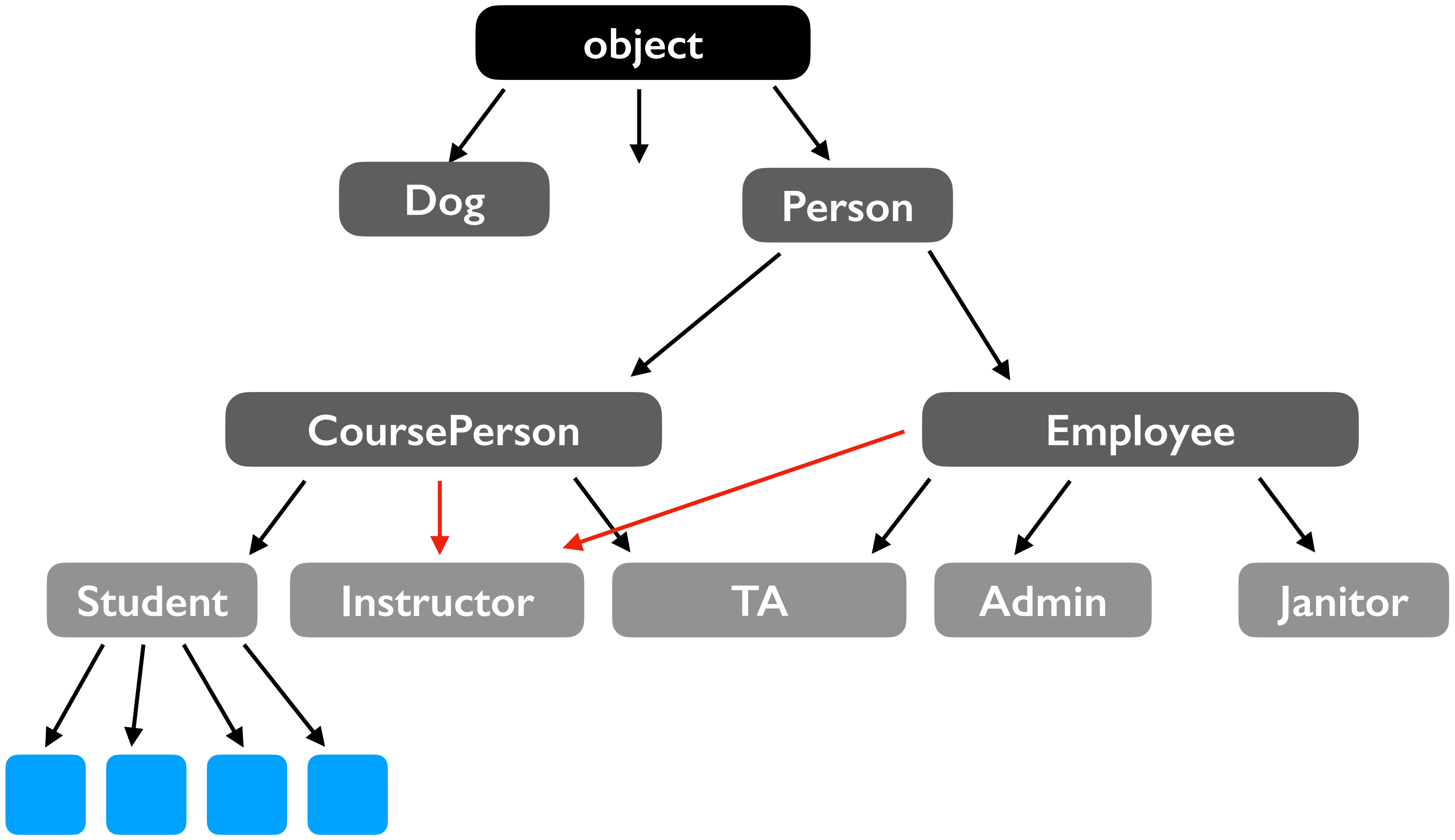
weird naming: the top type is called ***"object"***

Types, Sub Types, and Objects



we can design the hierarchy with ***inheritance***

Types, Sub Types, and Objects



multiple inheritance

Coding Examples

Principals

- method inheritance
- method resolution order
- overriding methods, constructor
- calling overridden methods
- abc's (abstract base classes)