Python Classes

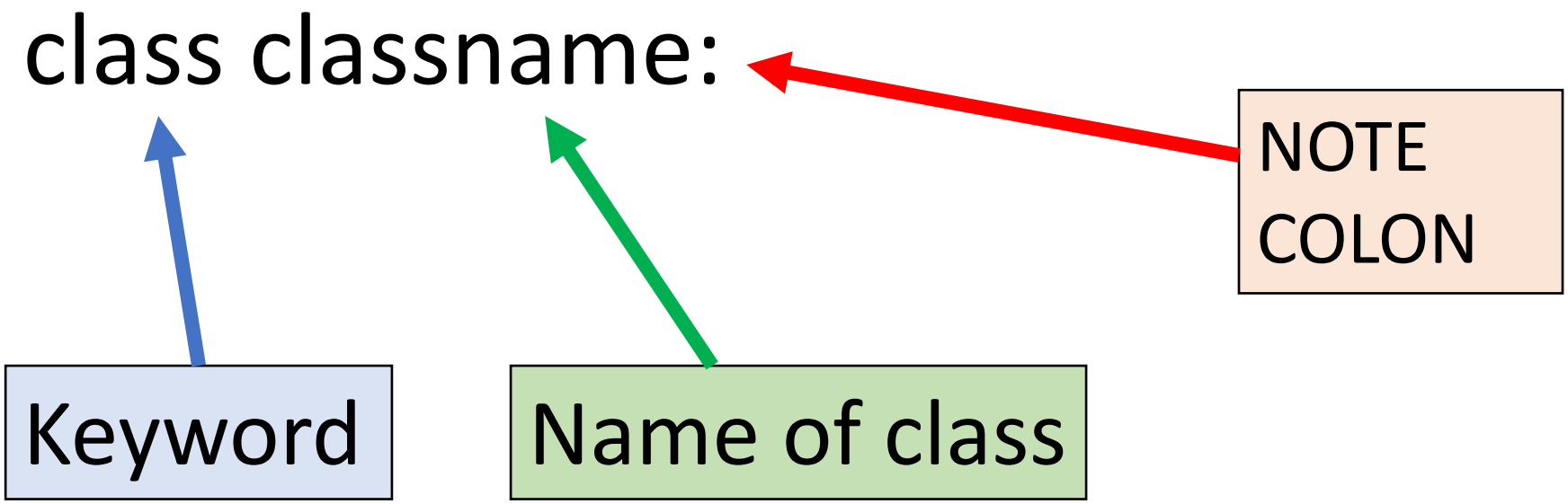
What is a class in Python

Python is an object oriented programming language.

Almost everything in Python is an object, with its properties and methods.

A Class is like an object constructor, or a "blueprint" for creating objects.

Create a class



Class name: same rules for naming as variable, function and program

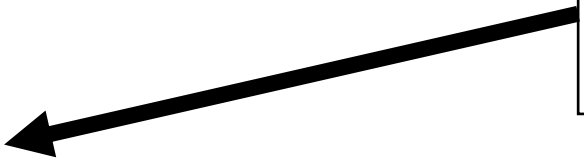
Program-simple

```
class ex1:
    x=5

def main():
    p1 = ex1()
    a = p1.x
    print('-> ',a)
    return
main()
```

OBJECT

Instance of object



Get value from object

Program

```
class ex1:
    x=5
def main():
    p1 = ex1()
    a = p1.x
    print('-> ',a)
    return
main()
```

init and self

init:

This is a function that initializes the class, all classes have this command.

self: initializes variables in the function within the class

The __init__ method + self

Format

def __init__ (…)

self.

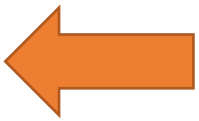
Note 2 underscores before and after the init

Note self will have a dot

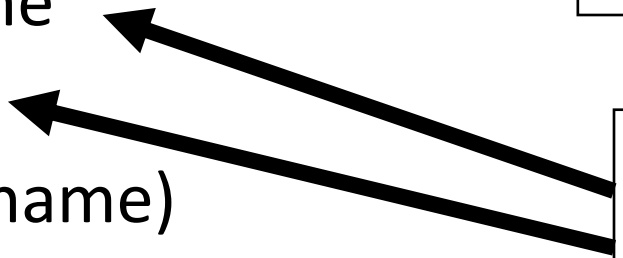
Program

```
class Person:
    def __init__(self,name,age):
        self.name = name
        self.age = age
def main():
    indiv = Person('john smith',40)
    psname = indiv.name
    psage = indiv.age
    print('Name is: ',psname)
    print('Age is: ',psage)
    return
main()
```

Create object



Instance of object



Get from object

Program

```
class Person:
    def __init__(self,name,age):
        self.name = name
        self.age = age
def main():
    ename = input('Enter name: ')
    eage = input('Enter age: ')
    indiv = Person(ename,eage)
    psname = indiv.name
    psage = indiv.age
    print('Name is: ',psname)
    print('Age is: ',psage)
    return
main()
```

Method

Add method to the class

Method are statements that will manipulate the content of the class variables

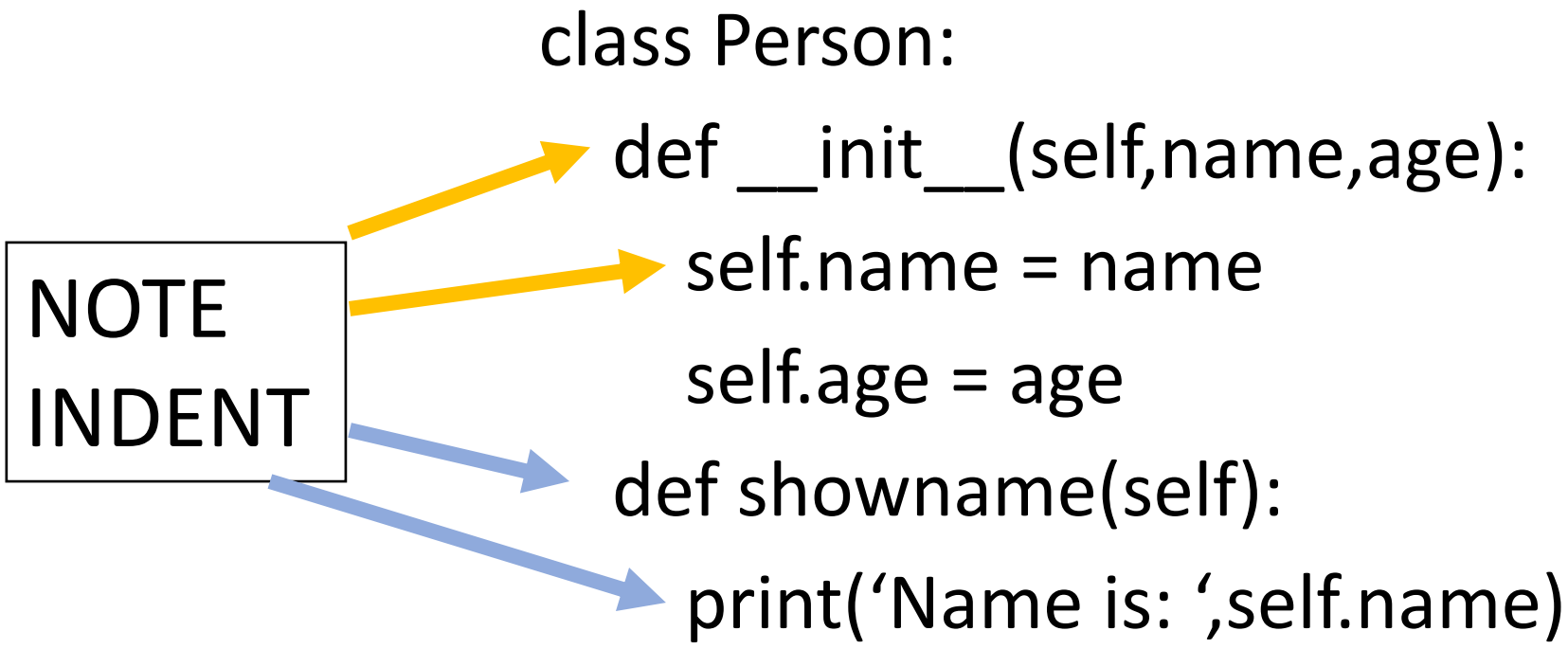
There can be many methods

Methods

Functions that will do a tasks

Data manipulation with in the class

Add functions to class



Program example

```
class Person:
    def __init__(self,name,age):
        self.name = name
        self.age = age
    def showname(self):
        print('Name is: ',self.name)
def main():
    ename = input('Enter name: ')
    eage = input('Enter age: ')
    indiv = Person(ename,eage)
    psname = indiv.name
    psage = indiv.age
    indiv.showname()
    print('Age is: ',psage)
    return
main()
```

METHOD

Call the Class Method

Program

```
class Person:
    def __init__(self,name,age):
        self.name = name
        self.age = age
    def showname(self):
        print('Name is: ',self.name)
def main():
    ename = input('Enter name: ')
    eage = input('Enter age: ')
    indiv = Person(ename,eage)
    psname = indiv.name
    psage = indiv.age
    indiv.showname()
    print('Age is: ',psage)
    return
main()
```

Add a method (add 1 to age)

```
def incage(self):
    fage = float(self.age)
    fage = fage + 1
    print('Next year age is: ', fage)
```

Example Program

```
class Person:
    def __init__(self,name,age):
        self.name = name
        self.age = age
    def showname(self):
        print('Name is: ',self.name)
    def incage(self):
        fage = float(self.age)
        fage = fage + 1
        print('Next year age is: ', fage)
def main():
    ename = input('Enter name: ')
    eage = input('Enter age: ')
    indiv = Person(ename,eage)
    psname = indiv.name
    psage = indiv.age
    indiv.showname()
    indiv.incage()
    return
main()
```

METHOD

Call Class Method

Program

```
class Person:
    def __init__(self,name,age):
        self.name = name
        self.age = age
    def showname(self):
        print('Name is: ',self.name)
    def incage(self):
        fage = float(self.age)
        fage = fage + 1
        print('Next year age is: ', fage)
def main():
    ename = input('Enter name: ')
    eage = input('Enter age: ')
    indiv = Person(ename,eage)
    psname = indiv.name
    psage = indiv.age
    indiv.showname()
    indiv.incage()
    return
main()
```

Modify Object data - example program

```
class Person:
    def __init__(self,name,age):
        self.name = name
        self.age = age
    def showname(self):
        print('Name is: ',self.name)
    def incage(self):
        fage = float(self.age)
        fage = fage + 1
        print('Next year age is: ', fage)
    def showdata(self):
        print('Name is: ',self.name)
        print('Age is: ',self.age)
```

New Method

Modify Object data - example program

```
def main():
    ename = input('Enter name: ')
    eage = input('Enter age: ')
    indiv = Person(ename,eage)
    psname = indiv.name
    psage = indiv.age
    indiv.showname()
    indiv.incage()
    indiv.showdata()
    print('--------------')
    eage = input('Enter corrected age: ')
    indiv.age = eage
    indiv.showdata()
    return
main()
```

Modify object data

Program

```
class Person:
    def __init__(self,name,age):
        self.name = name
        self.age = age
    def showname(self):
        print('Name is: ',self.name)
    def incage(self):
        fage = float(self.age)
        fage = fage + 1
        print('Next year age is: ', fage)
    def showdata(self):
        print('Name is: ',self.name)
        print('Age is: ',self.age)
```

```
def main():
    ename = input('Enter name: ')
    eage = input('Enter age: ')
    indiv = Person(ename,eage)
    psname = indiv.name
    psage = indiv.age
    indiv.showname()
    indiv.incage()
    indiv.showdata()
    print('--------------')
    eage = input('Enter corrected
age: ')
    indiv.age = 50
    indiv.showdata()
    return
main()
```

Make class a Module

Save class

```
class Person:
    def __init__(self,name,age):
        self.name = name
        self.age = age
    def showname(self):
        print('Name is: ',self.name)
    def incage(self):
        fage = float(self.age)
        fage = fage + 1
        print('Next year age is: ', fage)
    def showdata(self):
        print('Name is: ',self.name)
        print('Age is: ',self.age)
```

Where

…\Python\Python39-32\Lib\site-packages

Save as: Person.py

Call into program

```
from Person import Person
def main():
    ename = input('Enter name: ')
    eage = input('Enter age: ')
    indiv = Person(ename,eage)
    psname = indiv.name
    psage = indiv.age
    indiv.showname()
    indiv.incage()
    indiv.showdata()
    print('--------------')
    eage = input('Enter corrected age: ')
    indiv.age = 50
    indiv.showdata()
    return
main()
```

Another example

xclass01 to xclass07

done