

# KeyboardInput

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## 1 Keyboard input to Python

Python programs can read input from the keyboard. They do this with the function `input()`, as is shown in the following example.

```
[1]: name = input("What's your name?")
      print("Nice to meet you " + name + "!")
      age = input("How old are you?")
      print("So, you are already",age,"years old",name,"\b!")
```

What's your name? Tim

Nice to meet you Tim!

How old are you? 137

So, you are already 137 years old Tim!

We can check the type of the input as below:

```
[2]: print("Type of name is",type(name))
      print("Type of age is",type(age))
```

Type of name is <class 'str'>

Type of age is <class 'str'>

Everything (whether numbers or letters) is read as strings. This means the following code will not work (try it!):

```
[3]: retirementAge = 67
      #
      name = input("What's your name?")
      print("Nice to meet you " + name + "!")
      age = input("How old are you?")
      #
      retireIn = retirementAge - age
      if retireIn > 0:
          print("I guess you will retire in",retireIn,"years,",name,"\b.")
      else:
          print("I guess you retired",-retireIn,"years ago,",name,"\b.")
```

What's your name? Tim

Nice to meet you Tim!

How old are you? 137

```
↳
-----
TypeError                                Traceback (most recent call↳
↳last)
```

```
<ipython-input-3-97554a4d31b9> in <module>
      5 age = input("How old are you?")
      6 #
----> 7 retireIn = retirementAge - age
      8 if retireIn > 0:
      9     print("I guess you will retire in",retireIn,"years,",name,"\b.")
```

TypeError: unsupported operand type(s) for -: 'int' and 'str'

Changing the relevant string's type to int or float as appropriate fixes the problem.

```
[4]: name = input("What's your name?")
print("Nice to meet you " + name + "!")
age = input("How old are you?")
#
retireIn = retirementAge - int(age)
if retireIn > 0:
    print("I guess you will retire in",retireIn,"years,",name,"\b.")
else:
    print("I guess you retired",-retireIn,"years ago,",name,"\b.")
```

What's your name? Tim

Nice to meet you Tim!

How old are you? 137

I guess you retired 70 years ago, Tim.

Usually a good idea to check that inputs are sensible. Here we check that the age entered is in the range  $0 < \text{age} < 120$  years. If the age is out of range, we ask that it be re-entered. If an out-of-range answer is given more than 3 times in a row, print an error message and stop the program!

```
[5]: import sys
#
# Alternative one
name = input("What's your name?")
```

```

print("Nice to meet you " + name + "!")
#
count = 0
maxCount = 3
while count < maxCount:
    age = input("How old are you?")
    if int(age) > 0 and int(age) < 120:
        break
    count += 1
else:
    print("Too many incorrect inputs!")
    sys.exit()
#
retireIn = retirementAge - int(age)
if retireIn > 0:
    print("I guess you will retire in",retireIn,"years,",name,"\b.")
else:
    print("I guess you retired",-retireIn,"years ago,",name,"\b.")

```

What's your name? Tim

Nice to meet you Tim!

How old are you? 137

How old are you? 136

How old are you? 135

Too many incorrect inputs!

An exception has occurred, use %tb to see the full traceback.

SystemExit

C:\Users\green\Anaconda3\lib\site-  
packages\IPython\core\interactiveshell.py:3327: UserWarning: To exit: use  
'exit', 'quit', or Ctrl-D.  
warn("To exit: use 'exit', 'quit', or Ctrl-D.", stacklevel=1)

[6]: *# The following command will give the last full traceback, only relevant if it*  
*↳ was caused by an error at this point!*  
%tb

↳ -----

SystemExit  
↳last)

Traceback (most recent call

```
<ipython-input-5-e6c6f04c5b0f> in <module>
    14 else:
    15     print("Too many incorrect inputs!")
---> 16     sys.exit()
    17 #
    18 retireIn = retirementAge - int(age)
```

SystemExit:

```
[7]: import sys
#
# Alternative two
name = input("What's your name?")
print("Nice to meet you " + name + "!")
#
for count in range(0, maxCount):
    age = input("How old are you?")
    if int(age) > 0 and int(age) < 120:
        break
#
if count < maxCount - 1:
    retireIn = retirementAge - int(age)
    if retireIn > 0:
        print("I guess you will retire in",retireIn,"years,",name,"\b.")
    else:
        print("I guess you retired",-retireIn,"years ago,",name,"\b.")
else:
    print("Too many incorrect inputs!")
    sys.exit()
```

What's your name? Tim

Nice to meet you Tim!

How old are you? 45

I guess you will retire in 22 years, Tim.

```
[8]: %tb
```

↳ -----

```
SystemExit                                Traceback (most recent call_
↳last)
```

```
<ipython-input-5-e6c6f04c5b0f> in <module>
    14 else:
    15     print("Too many incorrect inputs!")
----> 16     sys.exit()
    17 #
    18 retireIn = retirementAge - int(age)
```

```
SystemExit:
```