

## Installing Python

<https://www.python.org/downloads/>

## Download Anaconda

<https://www.anaconda.com/download/>

## Download Visual Code

<https://code.visualstudio.com/download>

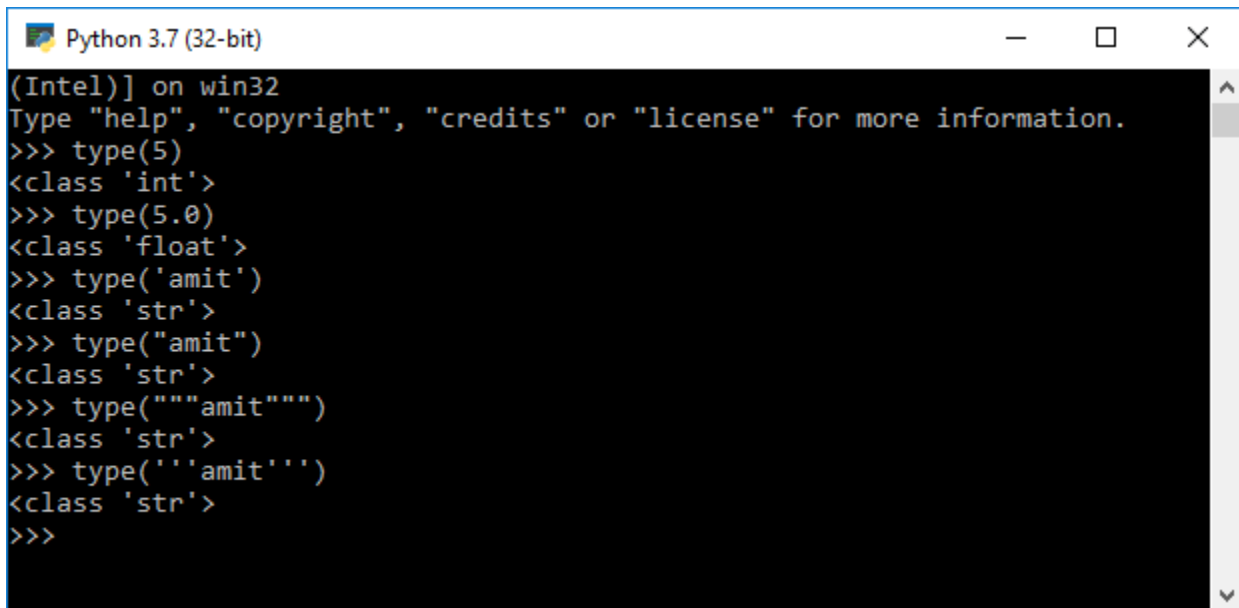
Python has two version

- 2.7
- 3.x

## Basic Points in Python

No specific data type, but internally maintained

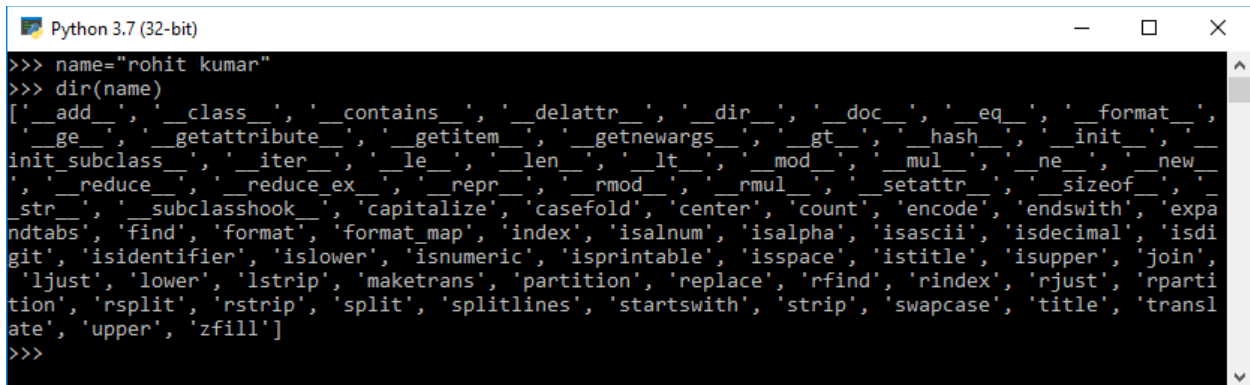
- a. Use **type()** function to get data type of some value



```
Python 3.7 (32-bit)
(Intel)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> type(5)
<class 'int'>
>>> type(5.0)
<class 'float'>
>>> type('amit')
<class 'str'>
>>> type("amit")
<class 'str'>
>>> type("""amit""")
<class 'str'>
>>> type(''amit'')
<class 'str'>
>>>
```

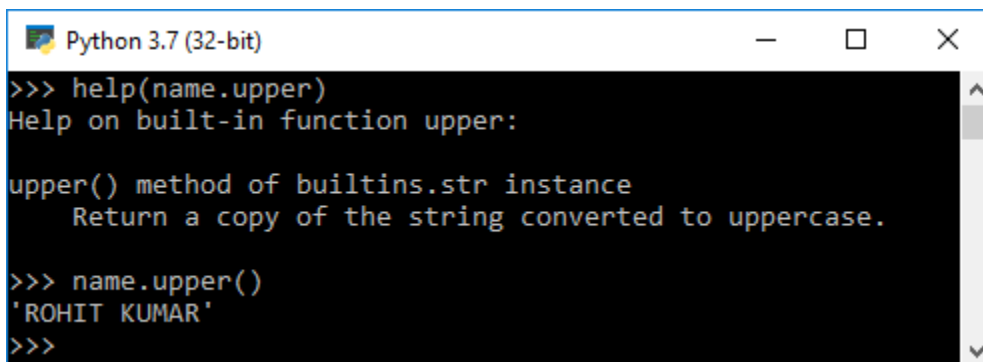
Use **dir()** function to get list of possible functions on an item. Functions can be of two types

- Special functions or dunderers
- General functions



```
Python 3.7 (32-bit)
>>> name="rohit kumar"
>>> dir(name)
['_add_', '__class__', '__contains__', '__delattr__', '__dir__', '__doc__', '__eq__', '__format__',
'__ge__', '__getattr__', '__getitem__', '__getnewargs__', '__gt__', '__hash__', '__init__', '__
init_subclass__', '__iter__', '__le__', '__len__', '__lt__', '__mod__', '__mul__', '__ne__', '__new
__', '__reduce__', '__reduce_ex__', '__repr__', '__rmod__', '__rmul__', '__setattr__', '__sizeof__', '__
str__', '__subclasshook__', 'capitalize', 'casefold', 'center', 'count', 'encode', 'endswith', 'expa
ndtabs', 'find', 'format', 'format_map', 'index', 'isalnum', 'isalpha', 'isascii', 'isdecimal', 'isdi
git', 'isidentifier', 'islower', 'isnumeric', 'isprintable', 'isspace', 'istitle', 'isupper', 'join',
'ljust', 'lower', 'lstrip', 'maketrans', 'partition', 'replace', 'rfind', 'rindex', 'rjust', 'rparti
tion', 'rsplit', 'rstrip', 'split', 'splitlines', 'startswith', 'strip', 'swapcase', 'title', 'transl
ate', 'upper', 'zfill']
>>>
```

Use **help()** to know the syntax and usage of a function



```
Python 3.7 (32-bit)
>>> help(name.upper)
Help on built-in function upper:

upper() method of builtins.str instance
    Return a copy of the string converted to uppercase.

>>> name.upper()
'ROHIT KUMAR'
>>>
```

Getting data input using **input()** function. Returns the data a string.

Syntax

input()

input(message)

## Conversion functions

- `int()`
- `float()`
- `str()`

Note: Python is based on REPL (Read-Eval-Print-Loop). Python is interpreted.

Printing some data using `print()` function. One space is automatically added.

Syntax

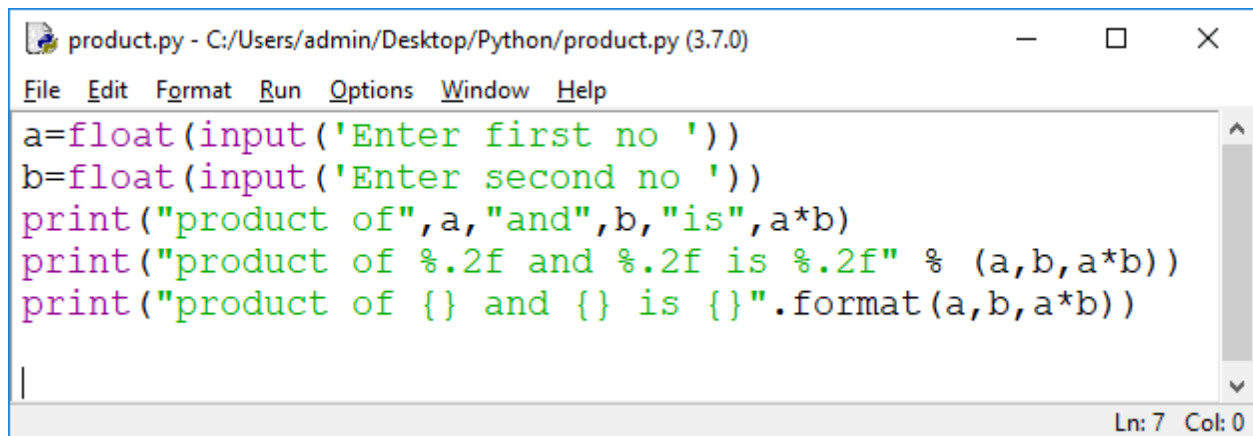
`print(x,y,z)`

`print("formatted string" % (x,y,z))`

Test Case

WAP to input two numbers and show product of those numbers.

Note: Use IDLE and save file as `product.py`



The screenshot shows a Python IDLE window titled "product.py - C:/Users/admin/Desktop/Python/product.py (3.7.0)". The menu bar includes File, Edit, Format, Run, Options, Window, and Help. The code editor contains the following Python code:

```
a=float(input('Enter first no '))
b=float(input('Enter second no '))
print("product of",a,"and",b,"is",a*b)
print("product of %.2f and %.2f is %.2f" % (a,b,a*b))
print("product of {} and {} is {}".format(a,b,a*b))
```

The status bar at the bottom right indicates "Ln: 7 Col: 0".

## Operators in Python

### 1. Arithmetic

- a. +
- b. -
- c. \*
- d. %
- e. /      division
- f. //     floor division or integer division
- g. \*\*

### 2. Relational. Returns True or False

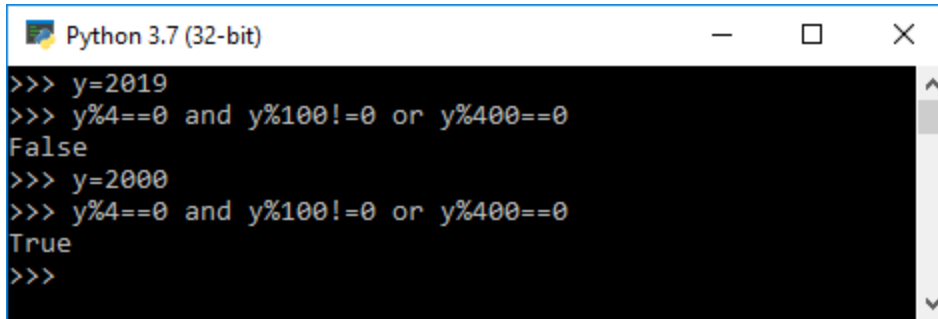
- a. ==
- b. !=
- c. >
- d. >=
- e. <
- f. <=

### 3. Logical

- a. and
- b. or
- c. not

### 4. Bitwise

- a. &      bitwise and
- b. |      bitwise or
- c. ^      bitwise xor
- d. ~      bitwise not – add 1 and change the sign bit
- e. <<     left shift ... multiplied by 2
- f. >>     right shift ... divide by 2 e.g. 50>>3=6



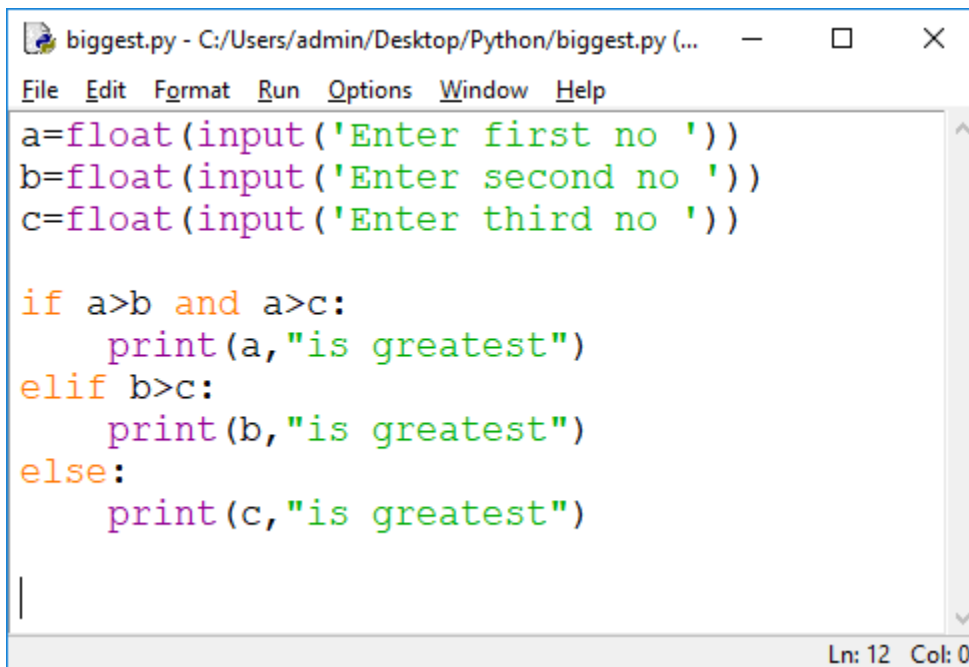
```
>>> y=2019
>>> y%4==0 and y%100!=0 or y%400==0
False
>>> y=2000
>>> y%4==0 and y%100!=0 or y%400==0
True
>>>
```

### Using if for conditional statements

- Use colon (:) with indentation of 4 spaces
- Use if-elif for ladder

Example

WAP to input three numbers and show the biggest no



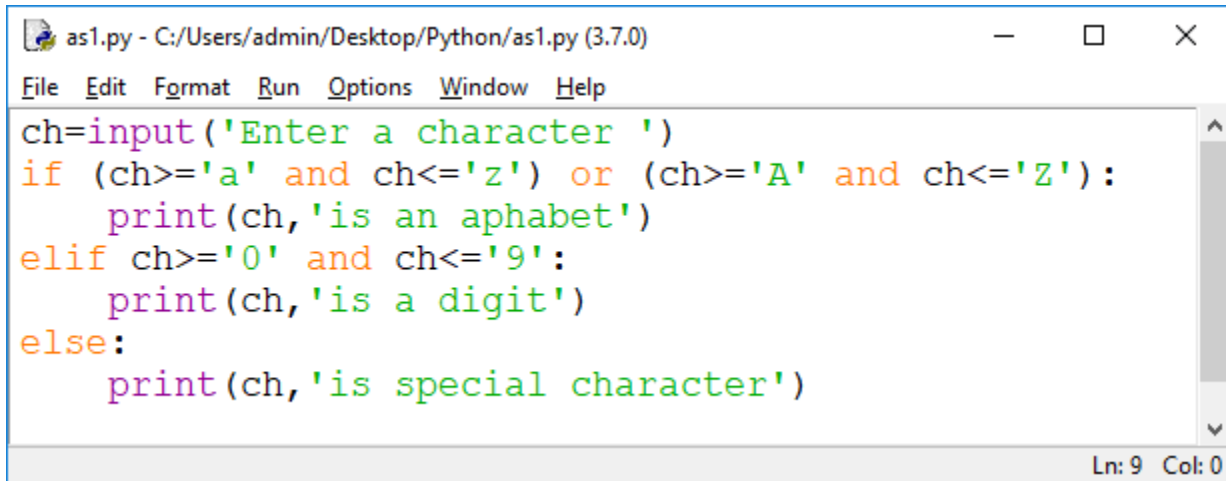
```
biggest.py - C:/Users/admin/Desktop/Python/biggest.py (...
File Edit Format Run Options Window Help
a=float(input('Enter first no '))
b=float(input('Enter second no '))
c=float(input('Enter third no '))

if a>b and a>c:
    print(a,"is greatest")
elif b>c:
    print(b,"is greatest")
else:
    print(c,"is greatest")

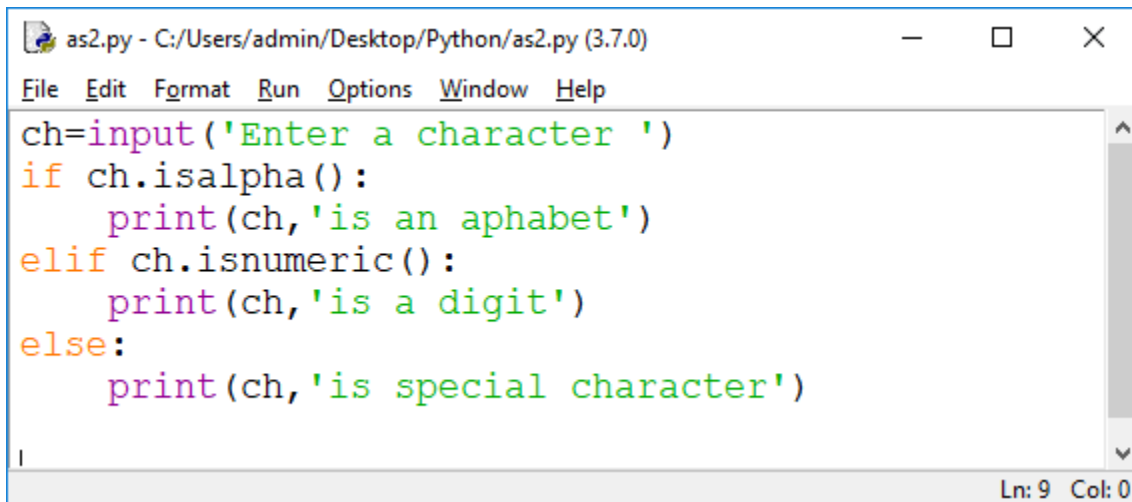
|
Ln: 12 Col: 0
```

## Assignment

WAP to input a character and check it to be alphabet, digit or special character.



```
as1.py - C:/Users/admin/Desktop/Python/as1.py (3.7.0)
File Edit Format Run Options Window Help
ch=input('Enter a character ')
if (ch>='a' and ch<='z') or (ch>='A' and ch<='Z'):
    print(ch, 'is an alphabet')
elif ch>='0' and ch<='9':
    print(ch, 'is a digit')
else:
    print(ch, 'is special character')
Ln: 9 Col: 0
```



```
as2.py - C:/Users/admin/Desktop/Python/as2.py (3.7.0)
File Edit Format Run Options Window Help
ch=input('Enter a character ')
if ch.isalpha():
    print(ch, 'is an alphabet')
elif ch.isnumeric():
    print(ch, 'is a digit')
else:
    print(ch, 'is special character')
Ln: 9 Col: 0
```

## Looping Statements

1. while
2. for

## Syntax of while

while condition:

statements

Use break statement to come out of loop.

## Home Assignments

1. WAP to input a three digit number and show the number on 10<sup>th</sup> position
2. WAP to input a year and check it to be leap year
3. WAP to input a character and check it to be vowel or consonant