

Python 101

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Types

Some of the main data types are:

- Integer type (`int`)
- Decimal type (`float`)
- Text type (`str`)
- Boolean type (`bool`)

Variables

- A variable is simply a name to which a value can be assigned.
- A variable name must start with a letter or the underscore character
- A variable name cannot start with a number
- A variable name can only contain alphanumeric characters and underscores (A-z, 0-9, and _)
- Variable names are case-sensitive (age, Age and AGE are three different variables)
- A variable can not be a keyword (reserved names)
- A variable can be defined using assignment operator (=)
- Variables are mutable

Variables

var.py

```
a = 12
print(a)

b = 3.1415
print(b)

c = "this is nice"
print(c)
```

output

```
12
3.1415
this is nice
```

Types

| | |
|---------------|---|
| Text type | <code>str</code> |
| Numeric type | <code>int, float, complex</code> |
| Sequence type | <code>list, tuple, range</code> |
| Set/Map type | <code>set, dict, frozenset</code> |
| Boolean type | <code>bool</code> |
| Binary Type | <code>bytes, bytearray, memoryview</code> |

Type of a variable can be checked using `type()` function.

Types

type.py

```
a = 12
print(type(a))

b = 34.76
print(type(b))

b = "variables can be reused"
print(type(b))

c = True
print(type(c))
```

output

```
<class 'int'>
<class 'float'>
<class 'str'>
<class 'bool'>
```

* We will explore other data types later.

Input

`input()` command will return full line entered by the user as `str` data type

io.py

```
print("Enter anything:")  
i = input()  
print("You entered:")  
print(i)
```

output

```
Enter anything:  
47  
You entered:  
47
```

Casting

casting.py

```
print(int(1))  
print(int(3.9))  
print(int("54"))  
print()  
print(float(1))  
print(float(3.9))  
print(float("54"))  
print()  
print(str(1))  
print(str(3.9))  
print(str("54"))
```

output

```
1  
3  
54  
  
1.0  
3.9  
54.0  
  
1  
3.9  
54
```

Note: Empty `print()` statement will print a blank line.

Comment

Comments can be used to explain Python code.

Comments can be used to make the code more readable.

Comments prevent execution of anything that comes after #

io.py

```
# this program doubles the number
x = int(input())
y = x + 1 # this will increase x by 1
print(y)
```

output

```
4
8
```

String

string.py

```
# you can you double quotes
print("WoW")
# or a single quote
print('WoW')
# you can print single quote like this
print("What's that?")
# or like this
print('What\'s that?')
# and you can print double quote like this
print('"This" is good')
# or like this
print("\"This\" is good")
```

output

```
WoW
WoW
What's that?
What's that?
"This" is good
"This" is good
```

Backslash \ is called escape character. But then how will you print backslash?

Arithmetic operators

| | | | |
|----|----------------|----------|---------------|
| + | Addition | $x + y$ | $2 + 3 = 5$ |
| - | Subtraction | $x - y$ | $5 - 1 = 4$ |
| * | Multiplication | $x * y$ | $2 * 3 = 6$ |
| / | Division | x / y | $5 / 2 = 2.5$ |
| % | Modulus | $x \% y$ | $5 \% 2 = 1$ |
| ** | Power | $x ** y$ | $2 ** 3 = 8$ |
| // | Floor division | $x // y$ | $5 // 2 = 2$ |

Adding numbers

add.py

```
print("Enter two numbers:")  
x = int(input())  
y = int(input())  
z = x + y  
print("sum is", z)
```

output

```
Enter two numbers:  
45  
12  
sum is 57
```

Appending strings

append.py

```
print("Enter two string:")  
x = input()  
y = input()  
z = x + y  
print("after appending", z)
```

output

```
Enter two string:  
good  
morning  
after appending goodmorning
```

Converting feet and inches to centimeter

example1.py

```
print("Enter feet:")  
f = int(input())  
print("Enter inches:")  
i = int(input())  
# total_inches  
t = f * 12 + i  
# 1 inch = 2.54 cm  
cm = t * 2.54  
print("Height in centimeter is", cm)
```

output

```
Enter feet:  
5  
Enter inches:  
8  
Height in centimeter is 172.72
```

Centimeters to feet and inches

example2.py

```
print("Enter height in cm:")
cm = int(input())
# 30.48 cm is 1 feet
# 1 cm is 1/30.48 feet
# x cm is x/30.48 feet
feet = cm / 30.48
# This will give us the integer part of it
feet_i = int(feet)
# 1 foot is 12 inches
inches = int(12*(feet - feet_i))
print("Your height is", feet_i, inches)
```

output

```
Enter height in cm:
180
Your height is 5 10
```

Assignments

- Write a program to take temperature as celsius from user and output in fahrenheit.
- Write a program to take temperature as fahrenheit from user and output in celsius.
- Write a program to take cost price and selling price from user and print profit in percentage.
- Write a program to calculate gravity force given the mass of two planet and distance between them.

That's all folks!