

Introduction

There exists two ways to print a variable content:

1. Use it as an argument of `print`.

```
var = 5  
print("Var: ", var)
```

Then, the `__print__` method of instances is called.

2. Insert it in a string with special formatting option, and print this string.

Method 1: no formatting

This method is fully compliant with the **unpacking** technic:

```
In [1]: data = "abcdefg"
        print(*data)
        print(*data, sep="/")
```

```
a b c d e f g
a/b/c/d/e/f/g
```

```
In [2]: data = [1, 2, 3, 4]
        print(*data)
        print(*data, end="/")
```

```
1 2 3 4
1 2 3 4/
```

Method 2: advanced formatting

Advanced formatting is interesting in a scientific approach because it presents the variable value according to its type. One can see [this tutorial](#) for specific use cases. Most of them are covered hereafter.

Key idea

Variable name is enclosed in curly brackets `{}` and a prefix `f` is added in front of the string.

```
In [3]: var = 35.123456
        sentence = f"Value of 'var' is {var}"
        print(sentence)
```

Value of 'var' is 35.123456

Symbols `<`, `>` and `^` produces text-alignment: left, right and center. If any character precedes one of these symbols, the character is used in a **padding way**.

Floats

If the variable is to be printed as a float, an additional formatting using the 'f' letter is used inside the curly brackets. One can specify:

- Number of decimal figures
- Minimal number of characters

```
In [4]: var = 35.123456
print(f"{var:<9.2f}")
print(f"{var:_.2f}")      # padding
print(f"{var:_.>9.2f}")   # padding
print(f"{var:_^9.2f}")    # padding
```

```
35.12
35.12
____35.12
__35.12__
```

Scientific notation

Similar to float values representation, yet with letter 'e':

```
In [5]: var = 35.123456  
print(f"{var:_.2e}")  
  
_3.51e+01
```

Percentages

Percentage mode involves the symbol '%': what is printed is the product of the variable by 100.

```
In [6]: var = 0.35123456  
print(f"{var:_.2%}")  
  
__35.12%
```

Int

The total number of characters is specified.

```
In [7]: var = 12356  
print(f"{var:0>9}")
```

000012356

Beware! For Python an integer that ends with `.` is a float!

Other ways to specify arguments

Positional arguments

```
In [8]: data = range(5)
        print("third value = {2}".format(*data))

        third value = 2
```

Named arguments

```
In [9]: data = {"key1": 0, "key2": 1}
        print("'key1' = {key1}".format(**data))

        'key1' = 0
```

Advanced: call `str` or `repr`

By default, the `__format__` method of instances is called. One can change to use:

- `str: {var!s}` (overload of `__str__`)
- `repr: {var!r}` (overload of `__repr__`)


```
In [10]: class Fake(float):

    def __repr__(self):
        return "This is my Float (repr)\n"

    def __str__(self):
        return "This is my Float (str)\n"

    def __format__(self, *args, **kwargs):
        return super().__format__(f"{123456.32145:2.3f}")

var = Fake()
print(f"This is formatted: {var}")
print(f"This is printed: {var!s}")
print(f"This is represented: {var!r}")
```

This is formatted:

0.0

This is printed: This is my Float (str)

This is represented: This is my Float (repr)

