

Number Formatting

```
number = 210
# decimal places
print( f"nu mber: {numbe r:.2 -
f} ")
# hex conversion
print( f"hex: {numbe r:# 0x} ")
# binary conversion
print( f"bi nary: {numbe -
r:b }")
# octal conversion
print( f"octal: {numbe r:o }")
# scientific notation
print( f"sc ien tific: {numbe -
r:e }")
# total number of characters
print( f"Nu mber: {numbe r:0 -
9}")
# use comma separator
apple_ mar ketcap = 2.626 *
10e12
print( f"{a ppl e_m ark etcap =
:,}") # comma separator
#set 2 decimal places and add a
percentage sign to the end
percentage = 10.394 39423
print( f"{p erc entage = :.2%}")
# percentage
#set 4 decimal places
number= 10.394 39423
print( f"{n umb er:.4f }")
#Output:
number: 420.00
hex: 0x1a4
binary: 110100100
octal: 644
scient ific: 4.2000 00e+02
Number: 000000420
apple_ mar ketcap = 26,260 ,00 -
0,0 00, 000.0
```

Number Formatting (cont)

```
> percentage = 1039.44%
10.3944
```

Repr & Str

```
# __repr__ = developer friendly
# __str__ = user friendly
# write !r to tell Python to
print out the repr method
instead.
from datacl asses import
dataclass
@dataclass
class Person:
    name : str
    age : int
    def __str__(self) ->
str:
        return f"{s -
elf.name} is {self.age} years
old"
Elon = Person ("Elon Musk", 51)
print( f"{E lon }") # str
print( f"{E lon !r} ") # repr
#output:
Elon Musk is 51 years old
Person (na me= 'Elon Musk',
age=51)
```

Date formatting

```
import datetime
today = dateti me.d at eti -
me.u tc now()
print( f"da tetime :
{today }\n ")
# no micros econds
print( f"date time:
{today :%m /%d/%Y %H:%M: %S} ")
# date only
print( f"date:
{today :%m /%d /%Y }")
# time only
print( f"time:
{today :%H :%M :%S.%f }")
```

Date formatting (cont)

```
> # time with AM/PM
print(f"time: {today:%H:%M:%S %p}")
# 24-hour format
print(f"time: {today:%H:%M}")
# Locale's appropriate date and time repres-
entation
print(f"locale appropriate: {today:%c}")
# weekday
print(f"weekday: {today:%A}")
# day of the year
print(f"day of year: {today:%j}")
# how far are we into the year?
day_of_year = f"{today:%j}"
print(f"progress % year: {(int(day_of_yea-
r)/365 * 100:.2f)%}")
#output
datetime : 2022-09-13 05:44:17.546036
date time: 09/13/2022 05:44:17
date: 09/13/2022
time: 05:44:17.546036
time: 05:44:17 AM
time: 05:44
locale appropriate: Tue Sep 13 05:44:17
2022
weekday: Tuesday
day of year: 256
progress % year: 70.14%
```

strftime Format Codes: [https://docs.pytho-
n.org/3/library/datetime.html#strftime-and-
strptime-format-codes](https://docs.python.org/3/library/datetime.html#strftime-and-strptime-format-codes)

Debugging

```
# works in Python 3.8+
x = 10
y = 20
print( f"x = {x}, y = {y}")
print( f"{x = }, {y = }")
# math operations
print( f"{x * y = }")
#output:
x = 10, y = 20
x = 10, y = 20
x * y = 200
```

Multi-line f-string

```
company_name = "Tesla"
employ ee_ count = 100000
mission = "To accelerate the
world's transition to sustai -
nable energy "
print( f"""
Company: {compa ny_ name}
# of employees: {emplo yee _co -
unt:,}
Mission: {mission}
" " ")
#output:
Company: Tesla
# of employees: 100,000
Mission: To accelerate the
world's transition to sustai -
nable energy
```

Alignment

```
number = 4
# n stands for the width of
space to print the variable
number starting from the string
"is" (inclusive of the variable
itself)
print( f"number is {numbe -
r:4 }")
#number is 4
for number in range(1, 5):
    pri nt( f"the number is
{numbe r:{ num ber }}")
# the number is 1
# the number is 2
# the number is 3
# the number is 4
left = "left text"
center = " center text!"
right = " right text"
# left:>20 means given a width
of 20 characters print out the
string "left text" starting from
the left.
print( f"{l eft :>2 0}") # left
align
# left text
# center:^20 that means to leave
whatever space is left on the
left and right. Since the string
"center text!" is 12 charac -
ters, the left and right would
have four characters of white
space.
print( f"{c ent er: ^20 }") #
center align
# center text!
print( f"{r igh t:< 20} ") #
right align
#right text
```

Alignment (cont)

> # If we put all three strings together with their formatting options, we would have a width of 60 to place the left, center, and right string variables.

```
print(f"{left : <20}{center : ^20}{right : >20}")
#left text center text! right text
```