DAY-16 PYTHON DATE TIME

Python *datetime*

Python has got *datetime* module to handle date and time.

import datetime

print(dir(datetime))

```
['MAXYEAR', 'MINYEAR', '__builtins__', '__cached__',
'__doc__', '__file__', '__loader__', '__name__',
'__package__', '__spec__', 'date', 'datetime',
'datetime_CAPI', 'sys', 'time', 'timedelta', 'timezone',
'tzinfo']
```

With dir or help built-in commands it is possible to know the available functions in a certain module. As you can see, in the datetime module there are many functions, but we will focus on *date*, *datetime*, *time* and *timedelta*. Let se see them one by one.

Getting *datetime* Information

```
from datetime import datetime
now = datetime.now()
print(now)                          # 2021-07-08 07:34:46.549883
day = now.day                       # 8
month = now.month                   # 7
year = now.year                     # 2021
hour = now.hour                     # 7
minute = now.minute                 # 38
second = now.second
timestamp = now.timestamp()
print(day, month, year, hour, minute)
print('timestamp', timestamp)
print(f'{day}/{month}/{year}, {hour}:{minute}')  # 8/7/2021,
7:38
```

Timestamp or Unix timestamp is the number of seconds elapsed from 1st of January 1970 UTC.

Formatting Date Output Using *strftime*

```
from datetime import datetime
new_year = datetime(2020, 1, 1)
print(new_year)       # 2020-01-01 00:00:00
day = new_year.day
month = new_year.month
year = new_year.year
hour = new_year.hour
minute = new_year.minute
second = new_year.second
```

Copyright © 2025 Skill Foundry

```
print(day, month, year, hour, minute) #1 1 2020 0 0
print(f'{day}/{month}/{year}, {hour}:{minute}')  # 1/1/2020,
0:0
```

Formatting date time using *strftime* method and the documentation can be found here.

```
from datetime import datetime
# current date and time
now = datetime.now()
t = now.strftime("%H:%M:%S")
print("time:", t)
time_one = now.strftime("%m/%d/%Y, %H:%M:%S")
# mm/dd/YY H:M:S format
print("time one:", time_one)
time_two = now.strftime("%d/%m/%Y, %H:%M:%S")
# dd/mm/YY H:M:S format
print("time two:", time_two)
```

```
time: 01:05:01
time one: 12/05/2019, 01:05:01
time two: 05/12/2019, 01:05:01
```

Here are all the *strftime* symbols we use to format time. An example of all the formats for this module.

Copyright © 2025 Skill Foundry

Directive	Description	Example
%a	Weekday, short version	Wed
%A	Weekday, full version	Wednesday
%w	Weekday as a number 0-6, 0 is Sunday	3
%d	Day of month 01-31	31
%b	Month name, short version	Dec
%B	Month name, full version	December
%m	Month as a number 01-12	12
%y	Year, short version, without century	18
%Y	Year, full version	2018
%H	Hour 00-23	17
%I	Hour 00-12	05
%p	AM/PM	PM
%M	Minute 00-59	41
%S	Second 00-59	08
%f	Microsecond 000000-999999	548513
%z	UTC offset	+0100
%Z	Timezone	CST
%j	Day number of year 001-366	365
%U	Week number of year, Sunday as the first day of week, 00-53	52
%W	Week number of year, Monday as the first day of week, 00-53	52
%c	Local version of date and time	Mon Dec 31 17:41:00 2018
%x	Local version of date	12/31/18
%X	Local version of time	17:41:00
%%	A % character	%

String to Time Using *strptime*

Here is a documentation hat helps to understand the format.

```
from datetime import datetime
date_string = "5 December, 2019"
print("date_string =", date_string)
date_object = datetime.strptime(date_string, "%d %B, %Y")
print("date_object =", date_object)
```

```
date_string = 5 December, 2019
date_object = 2019-12-05 00:00:00
```

Using *date* from *datetime*

Copyright © 2025 Skill Foundry

```
from datetime import date
d = date(2020, 1, 1)
print(d)
print('Current date:', d.today())    # 2019-12-05
# date object of today's date
today = date.today()
print("Current year:", today.year)   # 2019
print("Current month:", today.month) # 12
print("Current day:", today.day)     # 5
```

Time Objects to Represent Time

```
from datetime import time
# time(hour = 0, minute = 0, second = 0)
a = time()
print("a =", a)
# time(hour, minute and second)
b = time(10, 30, 50)
print("b =", b)
# time(hour, minute and second)
c = time(hour=10, minute=30, second=50)
print("c =", c)
# time(hour, minute, second, microsecond)
d = time(10, 30, 50, 200555)
print("d =", d)
```

output
a = 00:00:00
b = 10:30:50
c = 10:30:50
d = 10:30:50.200555

Difference Between Two Points in Time Using

```
today = date(year=2019, month=12, day=5)
new_year = date(year=2020, month=1, day=1)
time_left_for_newyear = new_year - today
# Time left for new year:  27 days, 0:00:00
print('Time left for new year: ', time_left_for_newyear)

t1 = datetime(year = 2019, month = 12, day = 5, hour = 0,
minute = 59, second = 0)
t2 = datetime(year = 2020, month = 1, day = 1, hour = 0,
minute = 0, second = 0)
diff = t2 - t1
print('Time left for new year:', diff) # Time left for new
year: 26 days, 23: 01: 00
```

Difference Between Two Points in Time Using *timedelta*

```
from datetime import timedelta
t1 = timedelta(weeks=12, days=10, hours=4, seconds=20)
```

Copyright © 2025 Skill Foundry

```
t2 = timedelta(days=7, hours=5, minutes=3, seconds=30)
t3 = t1 - t2
print("t3 =", t3)
```

```
    date_string = 5 December, 2019
    date_object = 2019-12-05 00:00:00
    t3 = 86 days, 22:56:50
```

🍪 You are an extraordinary. You are 16 steps a head to your way to greatness. Now do some exercises for your brain and muscles.

Copyright © 2025 Skill Foundry

💻 Exercises: Day 16

1. Get the current day, month, year, hour, minute and timestamp from datetime module
2. Format the current date using this format: "%m/%d/%Y, %H:%M:%S")
3. Today is 5 December, 2019. Change this time string to time.
4. Calculate the time difference between now and new year.
5. Calculate the time difference between 1 January 1970 and now.
6. Think, what can you use the datetime module for? Examples:
    - Time series analysis
    - To get a timestamp of any activities in an application
    - Adding posts on a blog

🥕 CONGRATULATIONS ! 🥕

Copyright © 2025 Skill Foundry