Date & Time

%b|%B = Jan, Feb, ..|January … %d = day of the month %m = month in 2 digit %Y = Year in 4 digit	%p = AM, PM %a|%A = Sun, Mon, ..|Sunday, Monday .. %f = microsec 2021-08-05 15:25:56:792554 = "%Y-%m-%d %H:%M:%S:%f"

```
import time

print(str(time.ctime(time.time())))


Wed Jan 10 19:31:54 2024
```

```
import time

time.time()

1704933135.4301782


time.gmtime()

time.struct_time(tm_year=2024, tm_mon=1, tm_mday=11, tm_hour=0,
tm_min=32, tm_sec=56, tm_wday=3, tm_yday=11, tm_isdst=0)
```

```
import time

gmt = time.gmtime()

>>> time.strftime("The date is: %Y-%m-%d", gmt)
'The date is: 2024-01-11'

>>> time.strftime("The date is: %b %d, %Y", gmt)
'The date is: Jan 11, 2024'

>>> time.strftime("It is now: %I %M%p", gmt)
'It is now: 12 32AM'
```

```
import time

>>> time.strptime("Saturday, March 8, 2014", "%A, %B %d, %Y")
time.struct_time(tm_year=2014, tm_mon=3, tm_mday=8, tm_hour=0,
tm_min=0, tm_sec=0, tm_wday=5, tm_yday=67, tm_isdst=-1)

>>> dt=time.strptime("Saturday, March 8, 2014", "%A, %B %d, %Y")

>>> time.mktime(dt)
1394254800.0

>>>time.gmtime(1394254800.0)
time.struct_time(tm_year=2024, tm_mon=1, tm_mday=26,
tm_hour=2, tm_min=22, tm_sec=13, tm_wday=4, tm_yday=26,
tm_isdst=0)
```

```
# Get current date and time

import datetime

datetime_object = datetime.datetime.now()
print(datetime_object)

2018-12-19 09:26:03.478039


# Get current date
import datetime

date_object = datetime.date.today()
print(date_object)

2018-12-19
```

```
# We can only import date class from the datetime module.

from datetime import date

a = date(2019, 4, 13)
print(a)

# same as
# d = datetime.date(2019, 4, 13)
# print(d)

2019-04-13
```

```
# Get date from epoch timestamp

from datetime import date

timestamp = date.fromtimestamp(1326244364)
print("Date =", timestamp)

O/P:
Date = 2012-01-11
```

```
# Handling timezone
from datetime import datetime
import pytz

local = datetime.now()
print("Local:", local.strftime("%m/%d/%Y, %H:%M:%S"))

tz_NY = pytz.timezone('America/New_York')
datetime_NY = datetime.now(tz_NY)
print("NY:", datetime_NY.strftime("%m/%d/%Y, %H:%M:%S"))

tz_London = pytz.timezone('Europe/London')
datetime_London = datetime.now(tz_London)
print("London:", datetime_London.strftime("%m/%d/%Y, %H:%M:%S"))

O/P:
Local time: 2018-12-20 13:10:44.260462
America/New_York time: 2018-12-20 13:10:44.260462
Europe/London time: 2018-12-20 13:10:44.260462
```

```
# Print hour, minute, second and microsecond

from datetime import time

a = time(11, 34, 56)

print("hour =", a.hour)
print("minute =", a.minute)
print("second =", a.second)
print("microsecond =", a.microsecond)

hour = 11
minute = 34
second = 56
microsecond = 0
```

```
# Get date from a timestamp

from datetime import datetime

#datetime(year, month, day)
a = datetime(2018, 11, 28)
print(a)

# datetime(year, month, day, hour, minute, second, microsecond)
b = datetime(2017, 11, 28, 23, 55, 59, 342380)
print(b)

O/P:
2018-11-28 00:00:00
2017-11-28 23:55:59.342380
```

```
# Print today's year, month and day

from datetime import date

# date object of today's date
today = date.today()

print("Current year:", today.year)
print("Current month:", today.month)
print("Current day:", today.day)


O/P:
Current year: 2024
Current month: 1
Current day: 15
```

```
# Get current date

from datetime import time

# time(hour = 0, minute = 0, second = 0)
a = time()
print("a =", a)

# time(hour, minute and second)
b = time(11, 34, 56)
print("b =", b)

# time(hour, minute and second)
c = time(hour = 11, minute = 34, second = 56)
print("c =", c)

# time(hour, minute, second, microsecond)
d = time(11, 34, 56, 234566)
print("d =", d)

O/P:
a = 00:00:00
b = 11:34:56
c = 11:34:56
d = 11:34:56.234566
```

```
# Print year, month, hour, minute, timestamp

from datetime import datetime

a = datetime(2017, 11, 28, 23, 55, 59, 342380)
print("year =", a.year)
print("month =", a.month)
print("hour =", a.hour)
print("minute =", a.minute)
print("timestamp =", a.timestamp())

O/P:
year = 2017
month = 11
day = 28
hour = 23
minute = 55
timestamp = 1511913359.34238
```

```
# Print difference between two dates and time

from datetime import datetime, date

t1 = date(year = 2018, month = 7, day = 12)
t2 = date(year = 2017, month = 12, day = 23)
t3 = t1 - t2
print("t3 =", t3)

t4 = datetime(year = 2018, month = 7, day = 12, hour = 7, minute =
9, second = 33)
t5 = datetime(year = 2019, month = 6, day = 10, hour = 5, minute =
55, second = 13)
t6 = t4 - t5
print("t6 =", t6)

print("type of t3 =", type(t3))
print("type of t6 =", type(t6))

O/P:
t3 = 201 days, 0:00:00
t6 = -333 days, 1:14:20
type of t3 = <class 'datetime.timedelta'>
type of t6 = <class 'datetime.timedelta'>
```

```
# Print difference between two timedelta objects

from datetime import timedelta

t1 = timedelta(weeks = 2, days = 5, hours = 1, seconds = 33)
t2 = timedelta(days = 4, hours = 11, minutes = 4, seconds = 54)
t3 = t1 - t2

print("t3 =", t3)

O/P: t3 = 14 days, 13:55:39

# Printing negative time delta

from datetime import timedelta

t1 = timedelta(seconds = 33)
t2 = timedelta(seconds = 54)
t3 = t1 - t2

print("t3 =", t3)
print("t3 =", abs(t3))

O/P:
t3 = -1 day, 23:59:39
t3 = 0:00:21
```

```
# strftime() & strptime()

from datetime import datetime

# current date and time
now = datetime.now()

t = now.strftime("%H:%M:%S")
print("time:", t)

s1 = now.strftime("%m/%d/%Y, %H:%M:%S")
# mm/dd/YY H:M:S format
print("s1:", s1)

s2 = now.strftime("%d/%m/%Y, %H:%M:%S")
# dd/mm/YY H:M:S format
print("s2:", s2)


O/P:
time: 04:34:52
s1: 12/26/2018, 04:34:52
s2: 26/12/2018, 04:34:52


from datetime import datetime

date_string = "21 June, 2018"
print("date_string =", date_string)

date_object = datetime.strptime(date_string, "%d %B, %Y")
print("date_object =", date_object)

O/P:
date_string = 21 June, 2018
date_object = 2018-06-21 00:00:00
```

```
from datetime import datetime, timedelta
from pytz import timezone

def convert_timezone(date1, z1, z2):
    '''
Converts time from zone z1 to zone z2
Input format: 02/13/2014 22:39:51:463914
    '''

    if z1 == "EST" and z2 == "EST":
        dateobj = datetime.strptime(date1, "%m/%d/%Y %H:%M:%S:%f")
        date2 = datetime.strftime(dateobj, "%m/%d/%Y %H:%M")
    else:
        eastern_tz = timezone('US/Eastern')
        # convert z2 to EST
        if z1 == "EST" and z2 == "Singapore":
            other_tz = timezone('Asia/Singapore')
        if z1 == "EST" and z2 == "GB":
            other_tz = timezone('Europe/London')

        t_temp = datetime.strptime(date1,"%m/%d/%Y %H:%M:%S:%f")
        other_tz_local = other_tz.localize(t_temp)
        t_eastern_local = other_tz_local.astimezone(eastern_tz)
        date2 = t_eastern_local ## convert timezone to EST

        return date2
```

```
from datetime import datetime, timedelta
from pytz import timezone

def find_time_diff(d, d2):
    '''
Calculates Time diff up to one decimal round
    '''
    d1_obj = datetime.strptime(d1, "%m/%d/%Y %H:%M:%S:%f")
    d2_obj = datetime.strptime(d2, "%m/%d/%Y %H:%M:%S:%f")
    d_diff = (d2_obj - d1_obj)

    return (round(d_diff.total_seconds()/(60*60),1))
```

Ref:

https://ioflood.com/blog/python-timedelta/#:~:text=Python%27s%20timedelta%20is%20a%20function,between%20two%20dates%2C%20and%20more.&text=In%20this%20code%2C%20we%27re,the%20current%20date%20using%20datetime.

https://www.geeksforgeeks.org/calculate-time-difference-in-python/