

# Working with Dates and Times in Python: Takeaways

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## Syntax

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### IMPORTING MODULES AND DEFINITIONS

- Importing a whole module:

```
import csv  
csv.reader()
```

- Importing a whole module with an alias:

```
import csv as c  
c.reader()
```

- Importing a single definition:

```
from csv import reader  
reader()
```

- Importing multiple definitions:

```
from csv import reader, writer  
reader()  
writer()
```

- Importing all definitions:

```
from csv import *
```

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### WORKING WITH THE `DATETIME` MODULE

- All examples below presume the following import code:

```
import datetime as dt
```

- Creating `datetime.datetime` object given a month, year, and day:

```
eg_1 = dt.datetime(1985, 3, 13)
```

- Creating a `datetime.datetime` object from a string:

```
eg_2 = dt.datetime.strptime("24/12/1984", "%d/%m/%Y")
```

- Converting a `datetime.datetime` object to a string:

```
dt_object = dt.datetime(1984, 12, 24)
dt_string = dt_object.strftime("%d/%m/%Y")
```

- Instantiating a `datetime.time` object:

```
eg_3 = datetime.time(hour=0, minute=0, second=0, microsecond=0)
```

- Retrieving a part of a date stored in the `datetime.datetime` object:

```
eg_1.day
```

- Creating a `datetime.time` object from a `datetime.datetime` object:

```
d2_dt = dt.datetime(1946, 9, 10)
d2 = d2_dt.time()
```

- Creating a `datetime.time` object from a string:

```
d3_str = "17 February 1963"
d3_dt = dt.datetime.strptime(d3_str, "%d %B %Y")
d3 = d3_dt.time()
```

- Instantiating a `datetime.timedelta` object:

```
eg_4 = dt.timedelta(weeks=3)
```

- Adding a time period to a `datetime.datetime` object:

```
d1 = dt.date(1963, 2, 26)
d1_plus_1wk = d1 + dt.timedelta(weeks=1)
```

## Concepts

- The `datetime` module contains the following classes:
  - `datetime.datetime` : For working with date and time data
  - `datetime.time` : For working with time data only
  - `datetime.timedelta` : For representing time periods

- Time objects behave similarly to datetime objects for the following reasons:
  - They have attributes like `time.hour` and `time.second` that you can use to access individual time components.
  - They have a `time.strftime()` method, which you can use to create a formatted string representation of the object.
- The timedelta type represents a period of time, e.g. 30 minutes or two days.
- Common format codes when working with `datetime.datetime.strptime` :

Strftime Code	Meaning	Examples
<code>%d</code>	Day of the month as a zero-padded number <sup>1</sup>	<code>04</code>
<code>%A</code>	Day of the week as a word <sup>2</sup>	<code>Monday</code>
<code>%m</code>	Month as a zero-padded number <sup>1</sup>	<code>09</code>
<code>%Y</code>	Year as a four-digit number	<code>1901</code>
<code>%y</code>	Year as a two-digit number with zero-padding <sup>1, 3</sup>	<code>01</code> (2001) <code>88</code> (1988)
<code>%B</code>	Month as a word <sup>2</sup>	<code>September</code>
<code>%H</code>	Hour in 24 hour time as zero-padded number <sup>1</sup>	<code>05</code> (5 a.m.) <code>15</code> (3 p.m.)
<code>%p</code>	a.m. or p.m. <sup>2</sup>	<code>AM</code>
<code>%I</code>	Hour in 12 hour time as zero-padded number <sup>1</sup>	<code>05</code> (5 a.m., or 5 p.m. if <code>AM</code> / <code>PM</code> indicates otherwise)
<code>%M</code>	Minute as a zero-padded number <sup>1</sup>	<code>07</code>

1. The `strptime` parser will parse non-zero padded numbers without raising an error.

2. Date parts containing words will be interpreted using the locale settings on your computer, so `strptime` won't be able to parse 'febrero' (february in Spanish) if your locale is set to an english language locale.

3. Year values from 00-68 will be interpreted as 2000-2068, with values 70-99 interpreted as 1970-1999.

- Operations between timedelta, datetime, and time objects (datetime can be substituted with time):

Operation	Explanation	Resultant Type

<code>datetime - datetime</code>	Calculate the time between two specific dates/times	timedelta
<code>datetime - timedelta</code>	Subtract a time period from a date or time.	datetime
<code>datetime + timedelta</code>	Add a time period to a date or time.	datetime
<code>timedelta + timedelta</code>	Add two periods of time together	timedelta
<code>timedelta - timedelta</code>	Calculate the difference between two time periods.	timedelta

## Resources

- [Python Documentation – Datetime module](#)
- [Python Documentation: Strftime/Strptime Codes](#)
- [strftime.org](http://strftime.org)



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