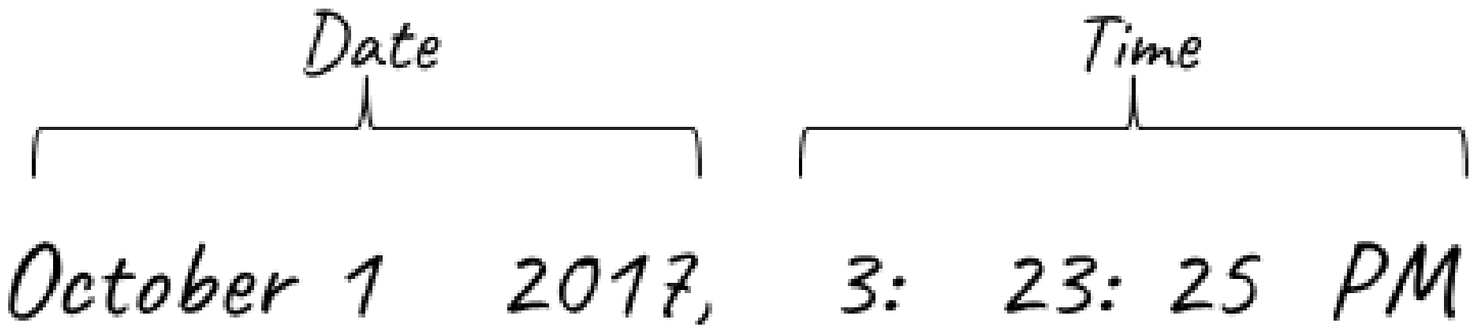
Adding time to the mix

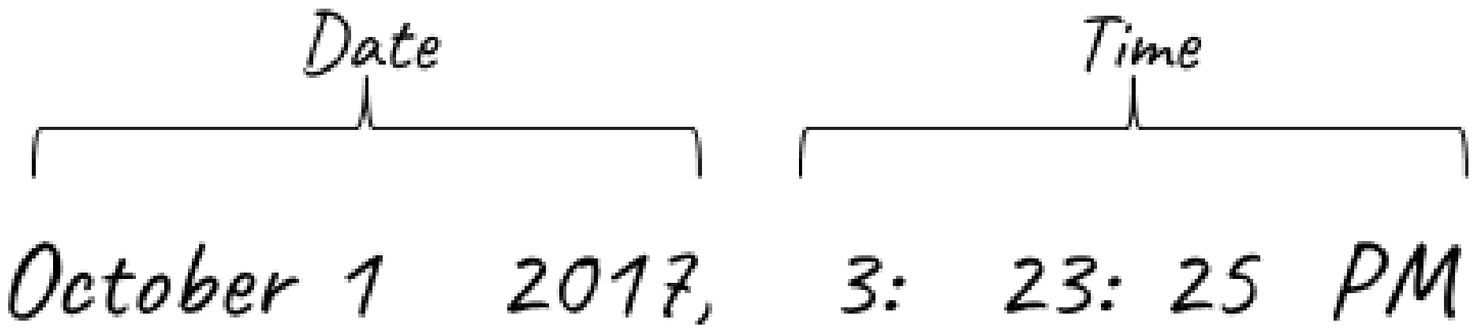
WORKING WITH DATES AND TIMES IN PYTHON

Max Shron
Data Scientist and Author

Dates and Times

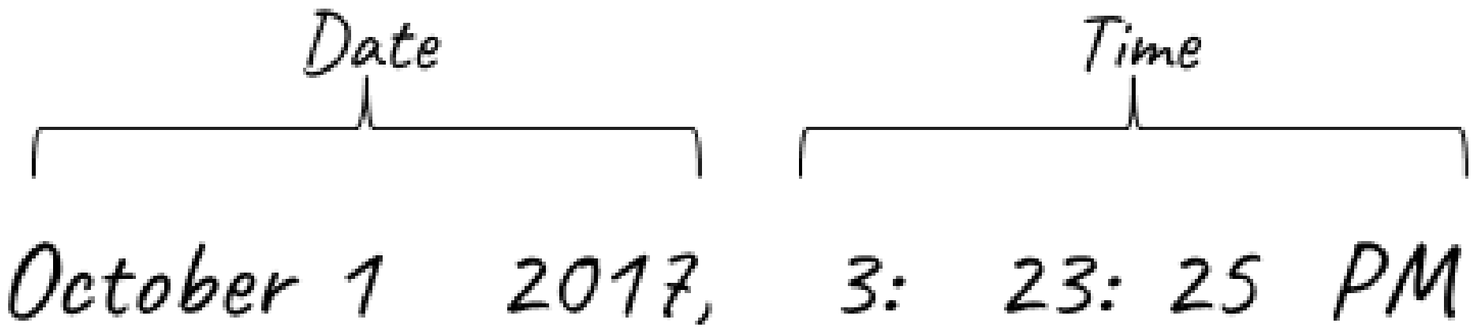


Dates and Times




```
# Import datetime
from datetime import datetime
```

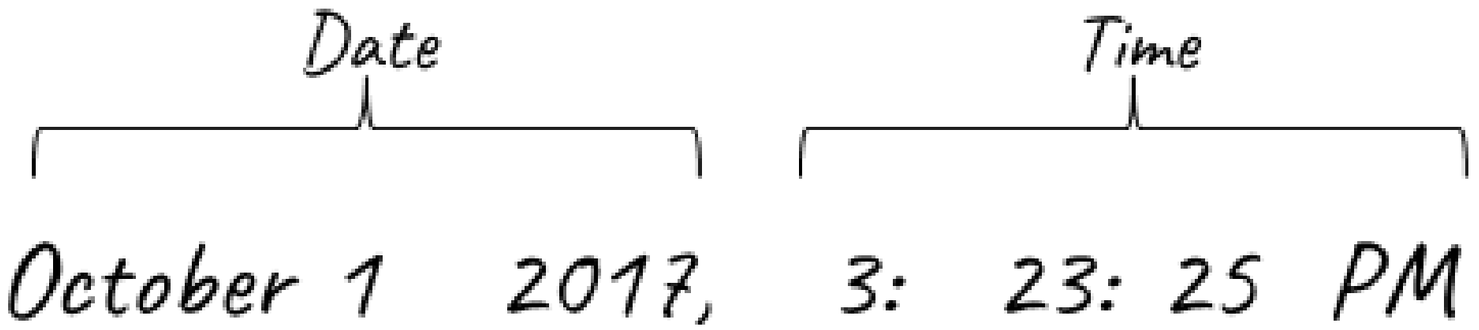
Dates and Times




```
# Import datetime
from datetime import datetime


dt = datetime(
```

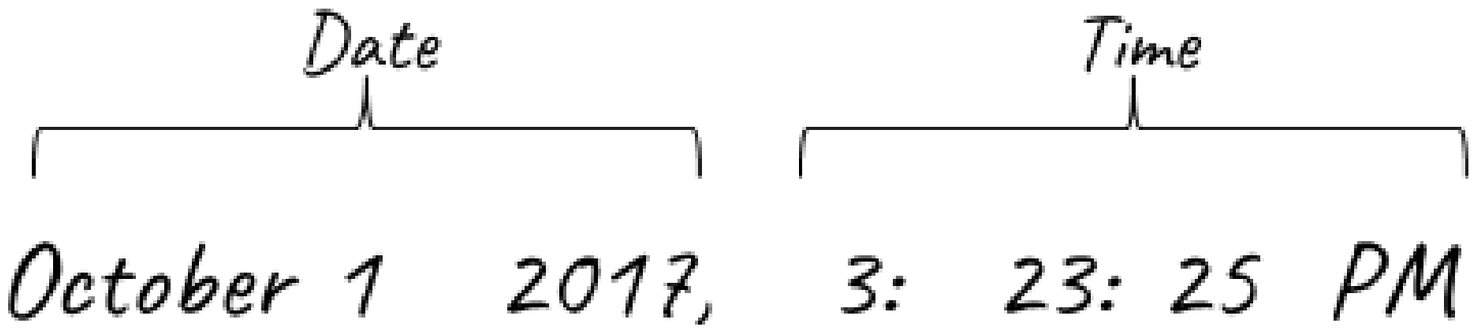
Dates and Times




```
# Import datetime
from datetime import datetime


dt = datetime(2017, 10, 1
```

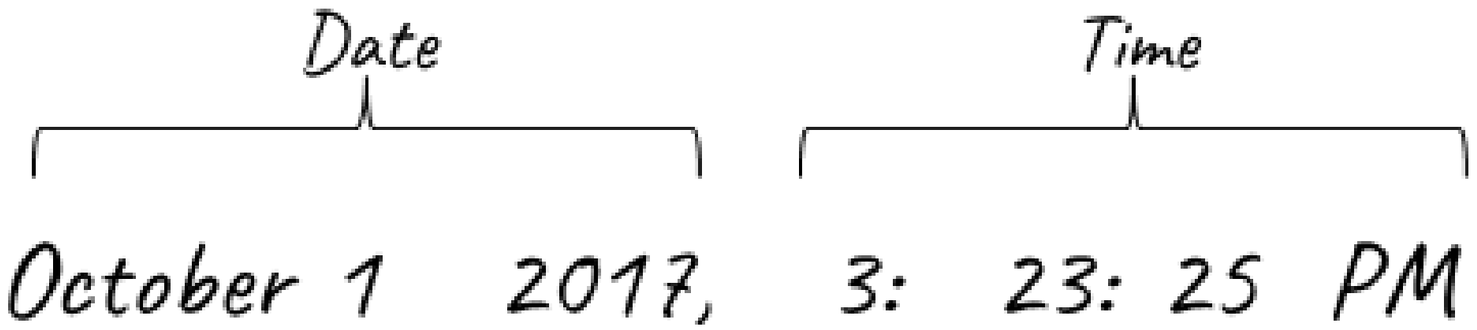
Dates and Times




```
# Import datetime
from datetime import datetime

dt = datetime(2017, 10, 1, 15
```

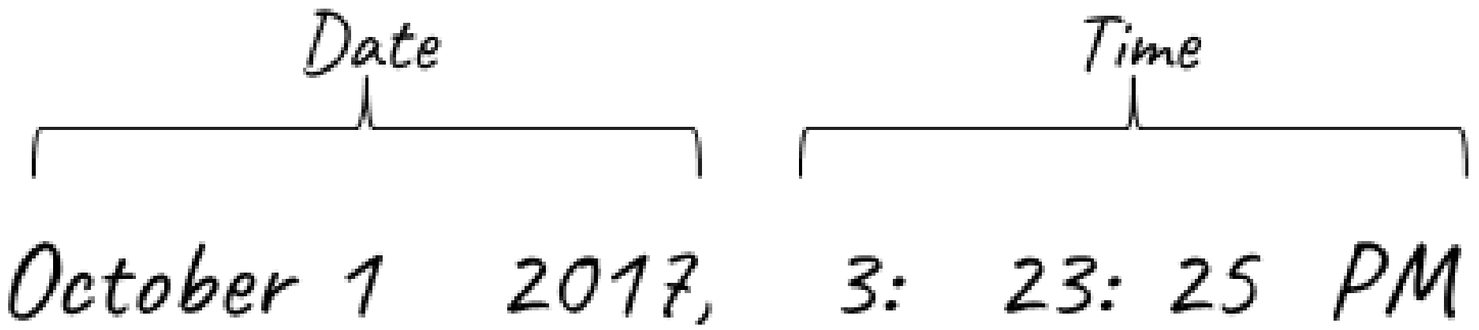
Dates and Times




```
# Import datetime
from datetime import datetime


dt = datetime(2017, 10, 1, 15, 23,
```

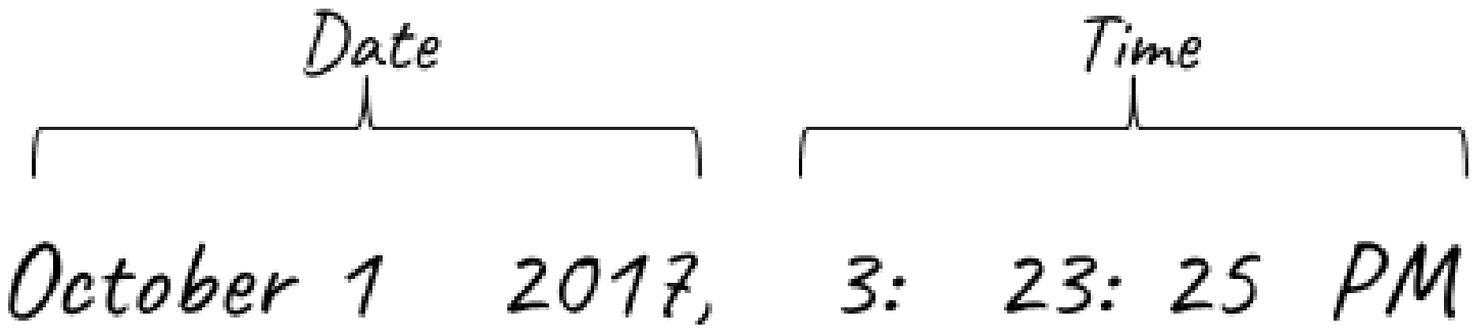
Dates and Times




```
# Import datetime
from datetime import datetime


dt = datetime(2017, 10, 1, 15, 23, 25)
```

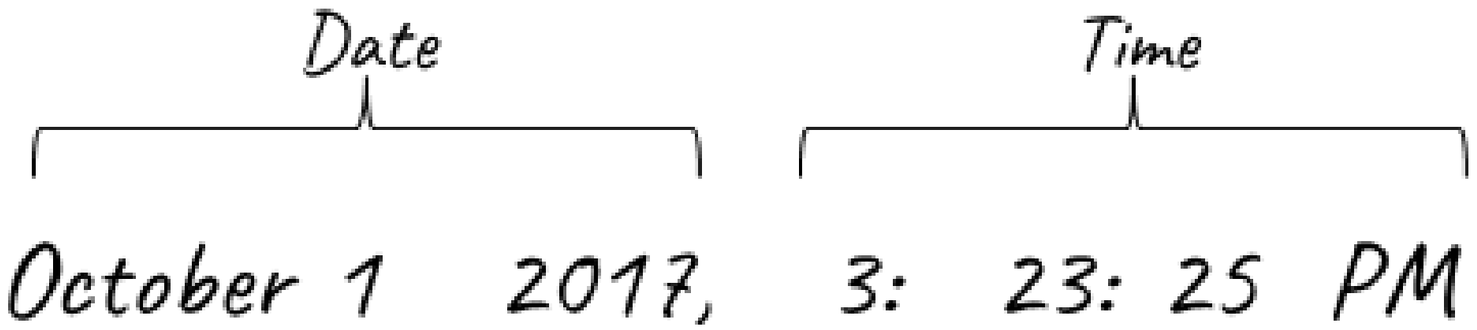
Dates and Times




```
# Import datetime
from datetime import datetime


dt = datetime(2017, 10, 1, 15, 23, 25, 500000)
```

Dates and Times




```
# Import datetime
from datetime import datetime

dt = datetime(year=2017, month=10, day=1,
              hour=15, minute=23, second=25,
              microsecond=500000)
```

Replacing parts of a datetime

```
print(dt)
```

```
2017-10-01 15:23:25.500000
```

```
dt_hr = dt.replace(minute=0, second=0, microsecond=0)
print(dt_hr)
```

```
2017-10-01 15:00:00
```

Capital Bikeshare

Capital Bikeshare Station Installed at the Lincoln Memorial by *Euan Fisk*, licensed *CC B 2.0*

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WORKING WITH DATES AND TIMES IN PYTHON

Printing and parsing datetimes

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Printing datetimes

```
# Create datetime
dt = datetime(2017, 12, 30, 15, 19, 13)
print(dt.strftime("%Y-%m-%d"))
```

```
2017-12-30
```

```
print(dt.strftime("%Y-%m-%d %H:%M:%S"))
```

```
2017-12-30 15:19:13
```

Printing datetimes

```
print(dt.strftime("%H:%M:%S on %d/%m/%Y"))
```

```
15:19:13 on 2017/12/30
```

ISO 8601 Format

```
# ISO 8601 format
print(dt.isoformat())
```

```
2017-12-30T15:19:13
```

Parsing datetimes with strptime

```
# Import datetime
from datetime import datetime
```

Parsing datetimes with strptime

```
# Import datetime
from datetime import datetime

dt = datetime.strptime(
```

Parsing datetimes with strptime

```
# Import datetime
from datetime import datetime

dt = datetime.strptime("12/30/2017 15:19:13"
```

Parsing datetimes with strptime

```
# Import datetime
from datetime import datetime

dt = datetime.strptime("12/30/2017  15:19:13",
                       "%m/%d/%Y %H:%M:%S")
```

Parsing datetimes with strptime

```
# What did we make?
print(type(dt))
```

```
<class 'datetime.datetime'>
```

```
# Print out datetime object
print(dt)
```

```
2017-12-30 15:19:13
```

Parsing datetimes with strptime

```
# Import datetime
from datetime import datetime


# Incorrect format string
dt = datetime.strptime("2017-12-30 15:19:13", "%Y-%m-%d")
```

```
ValueError: unconverted data remains:  15:19:13
```

Parsing datetimes with Pandas

```
# A timestamp
ts = 1514665153.0

# Convert to datetime and print
print(datetime.fromtimestamp(ts))
```

```
2017-12-30 15:19:13
```

Printing and parsing datetimes

WORKING WITH DATES AND TIMES IN PYTHON

Working with durations

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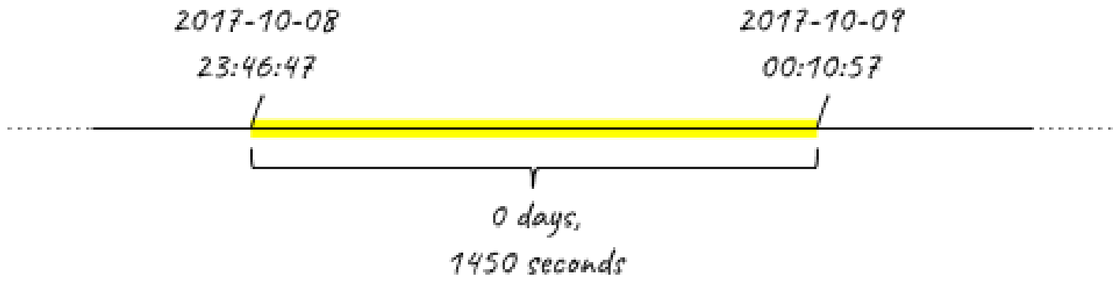
Working with durations

Working with durations


```
# Create example datetimes
start = datetime(2017, 10, 8, 23, 46, 47)
end = datetime(2017, 10, 9, 0, 10, 57)
```

```
# Subtract datetimes to create a timedelta
duration = end - start
```

Working with durations




```
# Subtract datetimes to create a timedelta
print(duration.total_seconds())
```

```
1450.0
```

Creating timedeltas

```
# Import timedelta
from datetime import timedelta
```

```
# Create a timedelta
delta1 = timedelta(seconds=1)
```

Creating timedeltas

```
print(start)
```

```
2017-10-08 23:46:47
```

```
# One second later
print(start + delta1)
```

```
2017-10-08 23:46:48
```

Creating timedeltas

```
# Create a one day and one second timedelta
delta2 = timedelta(days=1, seconds=1)
```

```
print(start)
```

```
2017-10-08 23:46:47
```

```
# One day and one second later
print(start + delta2)
```

```
2017-10-09 23:46:48
```

Negative timedeltas

```
# Create a negative timedelta of one week
delta3 = timedelta(weeks=-1)
```

```
print(start)
```

```
2017-10-08 23:46:47
```

```
# One week earlier
print(start + delta3)
```

```
2017-10-01 23:46:47
```

Negative timedeltas

```
# Same, but we'll subtract this time
delta4 = timedelta(weeks=1)
```

```
print(start)
```

```
2017-10-08 23:46:47
```

```
# One week earlier
print(start - delta4)
```

```
2017-10-01 23:46:47
```

Working with durations

WORKING WITH DATES AND TIMES IN PYTHON