

# Python, datetime, dateutil. Manipulation de dates au format ISO long.

## Chargement des modules et définition de deux time zone

In [11]:

```
from dateutil.tz import gettz
from dateutil.relativedelta import relativedelta
import datetime as dt

tzi_br = gettz("Europe/Brussels")
tzi_ny = gettz("America/New_York")
```

## Date actuelle dans les deux TZ

In [12]:

```
date_br = dt.datetime.now(tz=tzi_br)
date_ny = dt.datetime.now(tz=tzi_ny)
print(date_br.isoformat())
print(date_ny.isoformat())
```

```
2020-04-10T20:13:11.999706+02:00
2020-04-10T14:13:11.999706-04:00
```

## Conversion d'une date donnée dans les deux TZ

In [13]:

```
date = dt.datetime.fromisoformat('2010-03-08T00:31:00.001233-08:00')
print(date.isoformat())
print(date.astimezone(tzi_br).isoformat())
print(date.astimezone(tzi_ny).isoformat())
```

```
2010-03-08T00:31:00.001233-08:00
2010-03-08T09:31:00.001233+01:00
2010-03-08T03:31:00.001233-05:00
```

## Modification d'une date avec relativedelta

In [14]:

```
date = dt.datetime.fromisoformat('2018-02-28T07:43:36.999999+01:00')
# ajout d'un jour
date_mod = date + relativedelta(days=+1)
print(date, date_mod.isoformat())
# ajout d'une année moins 1 mois
date_mod = date + relativedelta(years=+1, months=-1)
print(date, date_mod.isoformat())
```

```
2018-02-28 07:43:36.999999+01:00 2018-03-01T07:43:36.999999+01:00
2018-02-28 07:43:36.999999+01:00 2019-01-28T07:43:36.999999+01:00
```

## Manipulation des heures, minutes, secondes et microsecondes

In [15]:

```
date_mod = date + relativedelta(hours=-9, minutes=+19, seconds=-20, microseconds=-10000
0)
print(date, date_mod)
```

```
2018-02-28 07:43:36.999999+01:00 2018-02-27 23:02:16.899999+01:00
```

## Différence entre deux dates

In [16]:

```
from datetime import timedelta

date_diff = date_br - date_mod

print(date_diff)
```

```
772 days, 20:10:55.099707
```

## Ajout d'un timedelta à une date

In [17]:

```
date_ny_mod = date_ny + date_diff
print(date_ny_mod.isoformat())
```

```
2022-05-23T10:24:07.099413-04:00
```

In [18]:

```
!jupyter nbconvert --to html date_iso.ipynb
```

```
[NbConvertApp] Converting notebook date_iso.ipynb to html
[NbConvertApp] Writing 284845 bytes to date_iso.html
```