

```
1 Time Series is an important form(type) of data in many different fields (stock
2 market,physics,e commerce industry)
3 Any data that changes with the change in time comes under the category of TSA
4
5 TSA can be irregular without any fixed unit of time or offset
```

In [ ]:

```
1
```

In [1]:

```
1 from datetime import datetime
```

In [5]:

```
1 now = datetime.now()
```

In [6]:

```
1 now
```

Out[6]:

```
datetime.datetime(2021, 9, 11, 12, 27, 24, 422438)
```

In [ ]:

```
1
```

In [7]:

```
1 now.year
```

Out[7]:

```
2021
```

In [9]:

```
1 now.month
```

Out[9]:

```
9
```

In [10]:

```
1 now.day
```

Out[10]:

```
11
```

In [11]:

```
1 now.hour
```

Out[11]:

12

In [12]:

```
1 now.minute
```

Out[12]:

27

In [13]:

```
1 now.second
```

Out[13]:

24

In [14]:

```
1 now.microsecond
```

Out[14]:

422438

In [ ]:

```
1
```

In [15]:

```
1 delta = datetime(2011,1,7) - datetime(2008,6,24)
```

In [16]:

```
1 delta
```

Out[16]:

datetime.timedelta(days=927)

In [17]:

```
1 delta.days
```

Out[17]:

927

In [18]:

```
1 datetime(2021,9,11) - datetime(2021,9,9)
```

Out[18]:

```
datetime.timedelta(days=2)
```

In [ ]:

```
1
```

In [19]:

```
1 stamp = datetime(2021,1,15)
```

In [20]:

```
1 stamp
```

Out[20]:

```
datetime.datetime(2021, 1, 15, 0, 0)
```

In [21]:

```
1 type(stamp)
```

Out[21]:

```
datetime.datetime
```

In [22]:

```
1 str(stamp)
```

Out[22]:

```
'2021-01-15 00:00:00'
```

In [ ]:

```
1
```

In [25]:

```
1 stamp.strftime('%Y-%m-%d')
```

Out[25]:

```
'2021-01-15'
```

In [ ]:

```
1
```

```
1 %Y - Four digit year
2 %y - Two digit year
3 %m - Two digit month [01-12]
4 %d - Two digit day [01-31]
5 %H - Hour(24 hour clock) [00-23]
6 %I - Hour(12 hour clock) [01-12]
```

```
7 %M - Two digit minutes [00-59]
8 %S - Seconds[00-60]
9 %w - weekday as an integer [0 (sunday), 1 (monday) ... 6]
10 %b - this will convert the string month into number
```

In [ ]:

```
1
```

In [26]:

```
1 val = '2012-02-22'
```

In [27]:

```
1 # to convert data from string into date
2 res = datetime.strptime(val, '%Y-%m-%d')
```

In [28]:

```
1 type(res)
```

Out[28]:

datetime.datetime

In [29]:

```
1 res
```

Out[29]:

datetime.datetime(2012, 2, 22, 0, 0)

In [ ]:

```
1
```

In [30]:

```
1 mydates = ['08/Jan/1993', '11/Feb/2000', '20/Mar/1999', '20/Apr/2003']
```

In [31]:

```
1 mydates
```

Out[31]:

['08/Jan/1993', '11/Feb/2000', '20/Mar/1999', '20/Apr/2003']

In [ ]:

```
1
```

In [33]:

```
1 date_result = [datetime.strptime(items, '%d/%b/%Y') for items in mydates]
```

In [34]:

```
1 date_result
```

Out[34]:

```
[datetime.datetime(1993, 1, 8, 0, 0),  
 datetime.datetime(2000, 2, 11, 0, 0),  
 datetime.datetime(1999, 3, 20, 0, 0),  
 datetime.datetime(2003, 4, 20, 0, 0)]
```

In [ ]:

```
1
```

## Time Series Sample Data

In [35]:

```
1 import numpy as np  
2 import pandas as pd
```

In [36]:

```
1 dates = [  
2     datetime(2011,1,2), datetime(2011,1,5),  
3     datetime(2011,1,7), datetime(2011,1,8),  
4     datetime(2011,1,10), datetime(2011,1,12)  
5 ]
```

In [37]:

```
1 dates
```

Out[37]:

```
[datetime.datetime(2011, 1, 2, 0, 0),  
 datetime.datetime(2011, 1, 5, 0, 0),  
 datetime.datetime(2011, 1, 7, 0, 0),  
 datetime.datetime(2011, 1, 8, 0, 0),  
 datetime.datetime(2011, 1, 10, 0, 0),  
 datetime.datetime(2011, 1, 12, 0, 0)]
```

In [38]:

```
1 mydata = pd.Series(np.random.randn(6),index=dates)
```

In [39]:

```
1 mydata
```

Out[39]:

```
2011-01-02    1.810160
2011-01-05    1.654480
2011-01-07    0.212122
2011-01-08   -0.016831
2011-01-10   -1.687907
2011-01-12   -0.068203
dtype: float64
```

In [ ]:

```
1
```