**SECTION 14: ADVANCED PYTHON MODULES, 2 hours 23 minutes, 13 sections**

**4/13 Python Datetime Module**

- -> the datetime module
- -> creating objects which have information on timezone / operations between datetime objects -> e.g the number of seconds / days which have passed

- **-> in the .ipynb file**
  - import datetime
  - **mytime = datetime.time() <- shift tab to see the arguments which it takes**
  - mytime = datetime.time(2,20) <- 20 minites past 2 am
  - mytime. <- shift tab and we can see the different methods (functions) which can be ran on it
  - mytime.hour <- this prints out the hour -> you can also print it and it puts it into a certain format
    - it can work in terms of microseconds
    - -> and then add these on in the arguments of mytime when it is defined
  - type(mytime)
  - datetime.time

  - **another example**
    - **today = datetime.date.today()**
    - **print(today) <- this prints the date of today in the format 2023-10-12 (big to small)**
    - you can also type today.month, today.year
    - **today.ctime() <- this prints it out in a certain format**
    - -> certain databases can store the time in that format

  - **another example**
    - from datetime import datetime
    - **datetime <- then shift tab to see the arguments it takes**
    - then datetime(2023,10,3,14,20,1)
    - -> then print(datetime)
    - -> and it prints the current date and time

  - **the replace functionality**
    - **mydatetime.replace(year=2020) <- this replaces the date and time stored in the variable datetime with whatever stated year (in this example)**

  - **maths on date or datetime objects**
    - with date information
      - from datetime import date
      - date1 = date(2021, 11, 3)
      - date2 = date(2020,11,3)
      - -> **taking away two dates to figure out the amount of time in between them**
      - **-> the result is a time delta object (and in this case its 365 days)**
      - **-> there can be problems with leap years**

    - -> datetime1 = datetime(2021,11,3,22,0)
    - -> datetime2 = datetime(2020,11,2,12,0)
    - -> then if you take them away, it returns the difference between them in terms of days and seconds
    - -> then you can convert the seconds into hours
    - -> **you can also variable_name. <- then tab shift to see the options for the attributes**

**(the property of that datetime object, not called with brackets like methods which are functions acting on that object)**