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# -*- coding: utf-8 -*-  
"""
```

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"""
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```
from yr.libyr import Yr  
import pandas as pd  
import requests  
import json # importerer biblioteker  
from csv import writer  
import datetime as dt
```

```
# Usage kitchen: oven, micro, fridge, heat, other (light etc.)  
# Usage livingroom: heat, tv (if in use??), other (light etc.)  
# Usage bathroom: heat, shower, Washing machine, other (light etc.)  
# Usage bedroom(X6): heat (home, away, night), other (light etc.)
```

```
#https://www.siliconvalleypower.com/residents/save-energy/appliance-energy-use-chart  
#https://www.fjordkraft.no/strom/stromforbruk/elektriske-apparater/  
# energy consumption in based on energy labeling on products with klass A or A+ for the products that have energy labeling  
#kitchen  
oven = 1 #kWh pr time used  
fridge = 0.82 #kWh pr day  
micro_oven = 0.4 #kWh pr day. 800W fore 30min every day  
dishwasher = 0.64 #kWh pr day (241kWh pr year)  
#bath room  
Water_heater = 8 #kWh pr day  
washing_machine = 0.5 #kWh pr time used  
#livingroom  
tv = 1.5 #Wh per minute of use  
#the house  
room_heating = 0.35 #kWh/(C*day). based on annual consumption of 2190kWh. Average temp in trondheim 8 C and average room temp 22 C (panel oven)  
other = 6 #kWh pr day (lighting, charging, pc etc.)
```

```
tv_key = '22181'  
token = 'eyJhbGciOiJIUzI1NiJ9.eyJqdGkiOiI1MTc3In0.G9gRducsNPjd8I01Pn6tmKB6hDr8MOXLr_t9cWYNwYY' # info til CoT
```

```
def heating_house(): #assume 2 panel ovens (Living room and hallway)  
    weather_df = Yr(location_name='Norge/Trøndelag/Trondheim/Trondheim')  
    now_df = weather_df.now()  
    date = dt.datetime.now().strftime('%d-%m-%y') # henter vær og dato  
    temp_df = pd.read_csv('temp_csv/Heating_Room.csv', index_col='Date').at[date, 'Temp'] # henter temperatur  
    temp_val = sum(temp_df)/len(temp_df)  
    temp_val = int(pd.DataFrame(now_df)['temperature']['@value']) # finner lufttemperatur som heltall  
  
    if temp_val < 22: # finner ut hvor mye energi som brukes til oppvarming  
        energy_house = (room_heating * (22 - temp_val))*2  
    else:  
        energy_house = 0  
    if temp_val < 28:  
        energy_bath = (room_heating * (28 - temp_val))  
    else:  
        energy_bath = 0  
    return [energy_house, energy_bath]
```

```
def tv_use(): # resett value når dagen er fredig  
    r = requests.get('https://circusofthings.com/ReadValue', params= # henter tv-verdien fra CoT  
        {'Key': tv_key, 'Token': token})  
  
    tv_time = json.loads(r.content)['Value']  
    tv_consumption = tv * tv_time / 1000 # regner ut tv-en sitt strømforbruk i kWh  
  
    data = {'Key': tv_key, 'Value': 0, 'Token': token}
```

```
p = requests.put('https://circusofthings.com/WriteValue', # resetter verdien som sier om tv-en er i bruk eller ikke
                data = json.dumps(data),
                headers={'Content-Type': 'application/json'})
```

```
return tv_consumption
```

```
# kjøres en gang pr dag
```

```
def energy_use():
```

```
    day = dt.datetime.now().isoweekday()
```

```
    date = dt.datetime.now().strftime('%d-%m-%y') # henter dato og uke og dag
```

```
    week_num = dt.datetime.now().isocalendar()[1]
```

```
    bedroom = pd.read_csv('temp_csv/Heating_Room.csv')['kWh']
```

```
    heating_bedroom=0
```

```
    for i in range(len(bedroom)):
```

```
        heating_bedroom += bedroom[i]
```

```
    total = 0
```

```
    total += heating_bedroom*6 # legger på strømforbruk fra ulike apparater til totalen
```

```
    # kitchen consumption
```

```
    total += fridge
```

```
    #bathroom consumption
```

```
    total += washing_machine * 3 # assume the washing mashine is used 3 times a day
```

```
    total += Water_heater #assume one shower pr person every day
```

```
    total += heating_house()[1] #hating bathroom
```

```
    #tv
```

```
    total += tv_use()
```

```
    #the house
```

```
    total += heating_house()[0] #heating livingroom and hallway
```

```
    total += other
```

```
    #monday to friday
```

```
    if day in range(1,6):
```

```
        # kitchen consumption
```

```
        total += oven*6 #assume the oven is used once a day per person to make dinner
```

```
        total += micro_oven
```

```
        total += dishwasher
```

```
    #saturday
```

```
    elif day == 6:
```

```
        # kitchen consumption
```

```
        total += oven*9 #oven is used per person to make dinner + half the house to make breakfast
```

```
        total += micro_oven*4 # microoven is used more on saturday
```

```
        total += dishwasher*1.5
```

```
    #sunday
```

```
    else:
```

```
        # kitchen consumption
```

```
        total += oven*12 #assume the oven is used to make dinner and breakfaste by all
```

```
        total += micro_oven
```

```
        total += dishwasher*1.5
```

```
    total = round(total, 2)
```

```
    with open('csvfiler/Electricety_consumption.csv', 'a') as el:
```

```
        consum_df = writer(el)
```

```
        consum_df.writerow([week_num, date, total]) #skriver ukenummer, totalt strømforbruk og dato til csv fil
```

```
    ec = pd.read_csv('csvfiler/Electricety_consumption.csv')
```

```
    print('forbruk')
```

```
    print(ec)
```

```
    return ec
```

```
#les ute temp legg på strøm når kaldere
```

```
#les hjemme status, hjemme mer strøm, + nat oppdater en verdi som rom kan lese av (reg tas av pi).
```