graphs

November 19, 2023

```python
import pandas as pd

def stats(data):
    print(data[['DHT','DS18B20','LM35DZ','thermistor','humidity']].describe())
    print(data[['DHT','DS18B20','LM35DZ','thermistor']].values.
 mean(),"-",data[['DHT','DS18B20','LM35DZ','thermistor']].values.std())
```
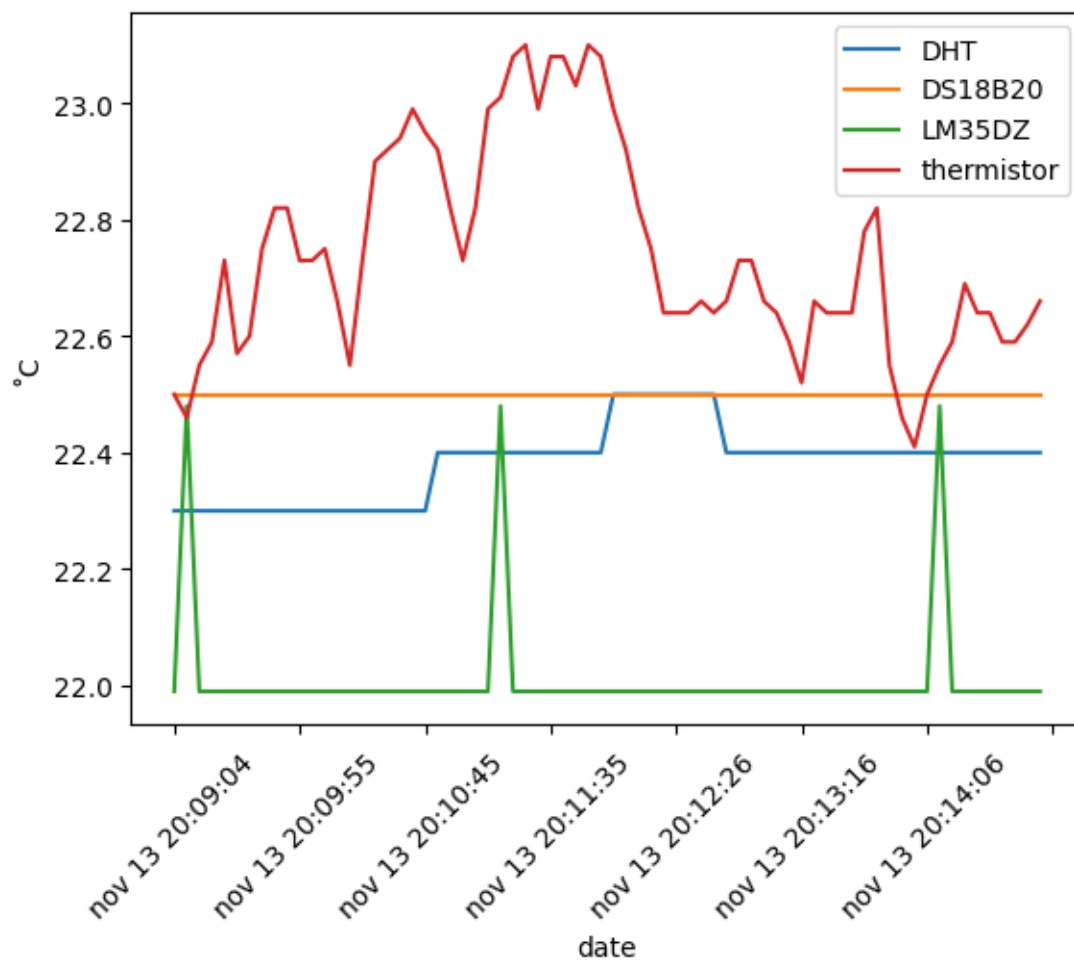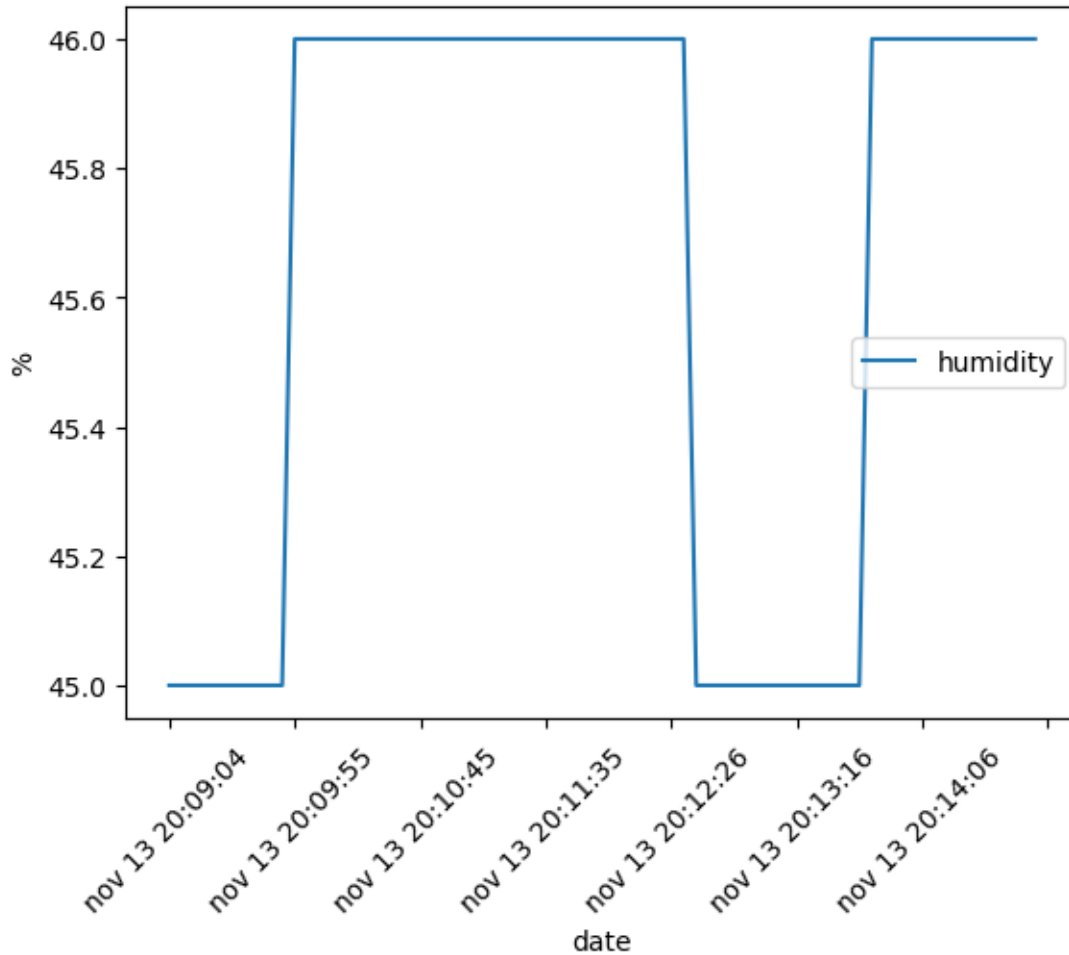
```python
df = pd.read_csv('measurements/short1.
 txt',names=['date','DHT','DS18B20','LM35DZ','thermistor','humidity'])
df.loc[:, df.columns != 'humidity'].plot(x='date', rot=45,ylabel='°C')
df[['date','humidity']].plot(x='date', rot=45,ylabel='%')
stats(df)
```

```
             DHT  DS18B20      LM35DZ  thermistor    humidity
count  70.000000     70.0  70.000000   70.000000   70.000000
mean   22.382857     22.5  22.011000   22.742429   45.657143
std     0.063637      0.0   0.099959    0.181223    0.478091
min    22.300000     22.5  21.990000   22.410000   45.000000
25%    22.300000     22.5  21.990000   22.625000   45.000000
50%    22.400000     22.5  21.990000   22.710000   46.000000
75%    22.400000     22.5  21.990000   22.880000   46.000000
max    22.500000     22.5  22.480000   23.100000   46.000000
22.409071428571433 - 0.2849370768346976
```
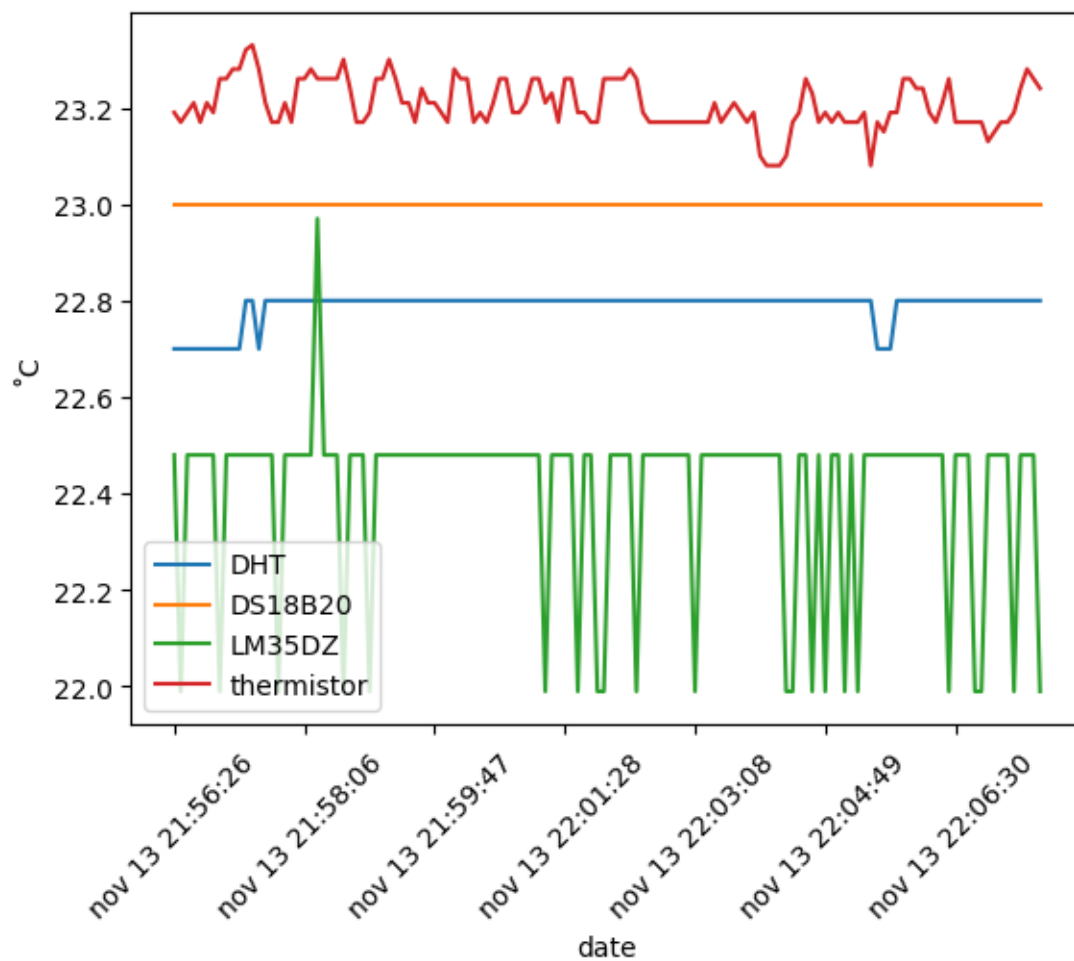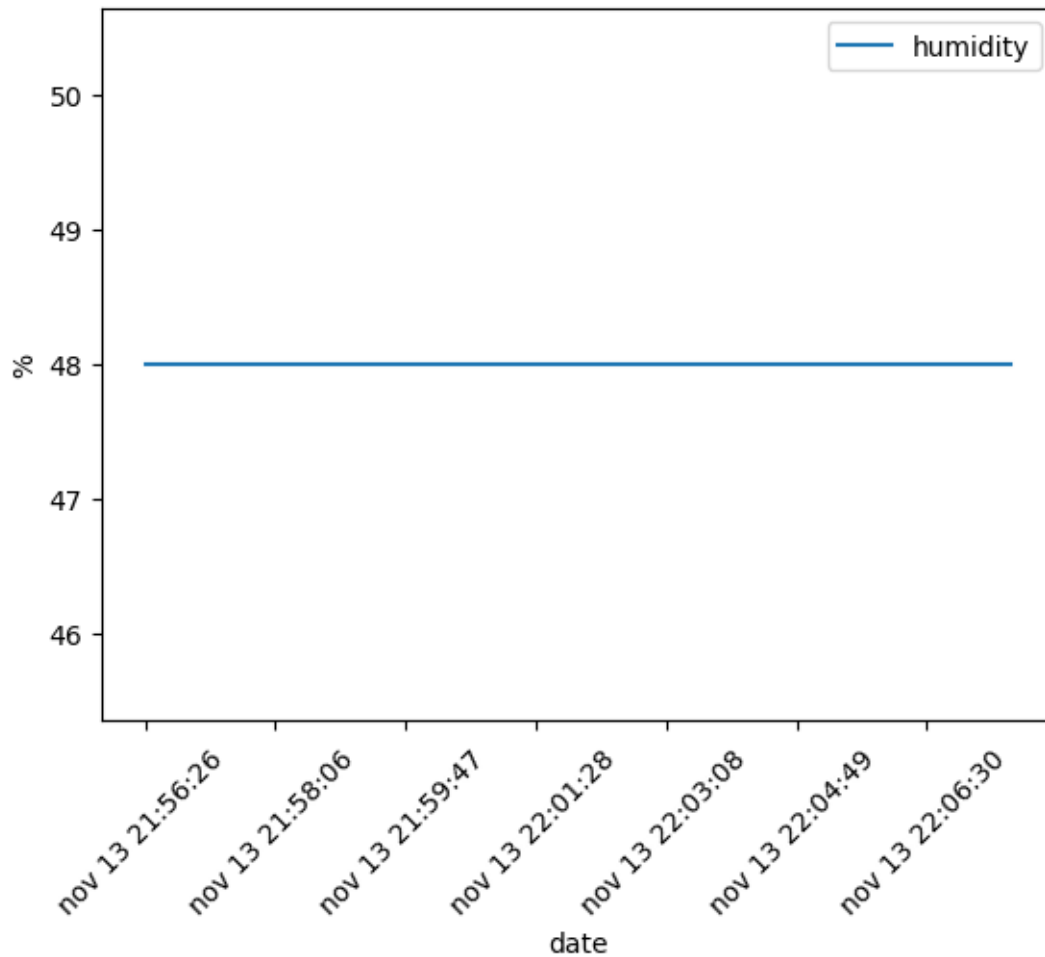
```
df = pd.read_csv('measurements/short2.
  txt',names=['date','DHT','DS18B20','LM35DZ','thermistor','humidity'])
df.loc[:, df.columns != 'humidity'].plot(x='date', rot=45,ylabel='˚C')
df[['date','humidity']].plot(x='date', rot=45,ylabel='%')
stats(df)
```

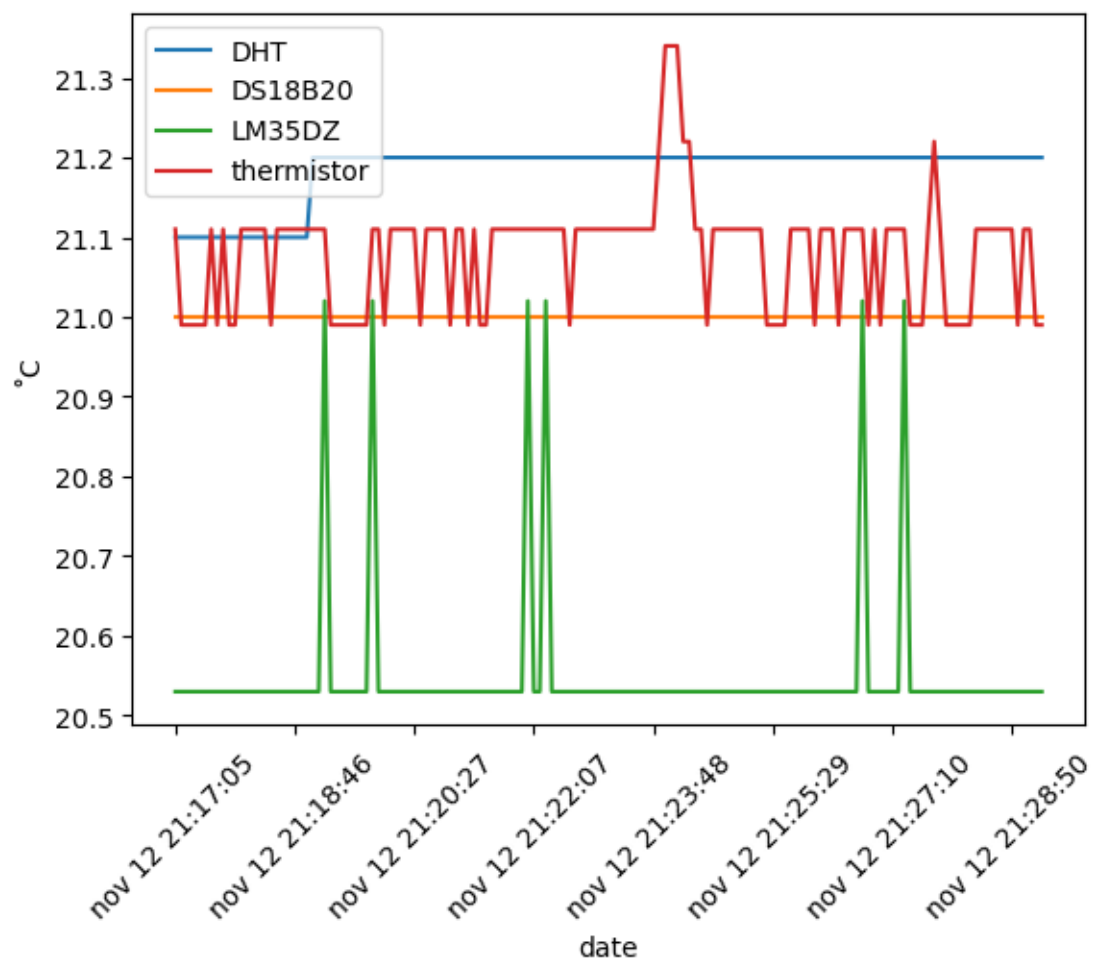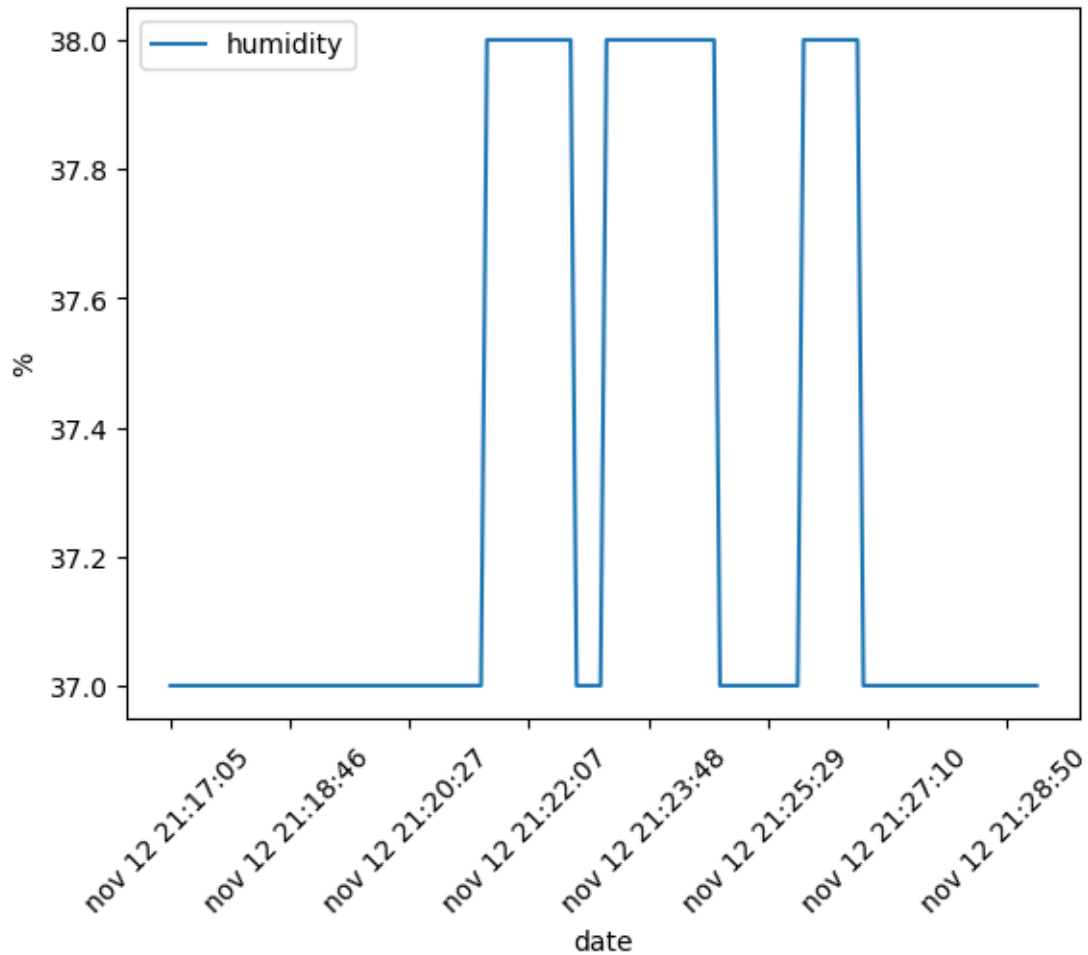|	DHT	DS18B20	LM35DZ	thermistor	humidity
count	134.000000	134.0	134.000000	134.000000	134.0
mean	22.788806	23.0	22.403209	23.206642	48.0
std	0.031648	0.0	0.188626	0.050112	0.0
min	22.700000	23.0	21.990000	23.080000	48.0
25%	22.800000	23.0	22.480000	23.170000	48.0
50%	22.800000	23.0	22.480000	23.190000	48.0
75%	22.800000	23.0	22.480000	23.260000	48.0
max	22.800000	23.0	22.970000	23.330000	48.0

22.84966417910448 - 0.31299390686048356

```
df = pd.read_csv('measurements/short3.
 ↪txt',names=['date','DHT','DS18B20','LM35DZ','thermistor','humidity'])
df.loc[:, df.columns != 'humidity'].plot(x='date', rot=45,ylabel='˚C')
df[['date','humidity']].plot(x='date', rot=45,ylabel='%')
stats(df)
```

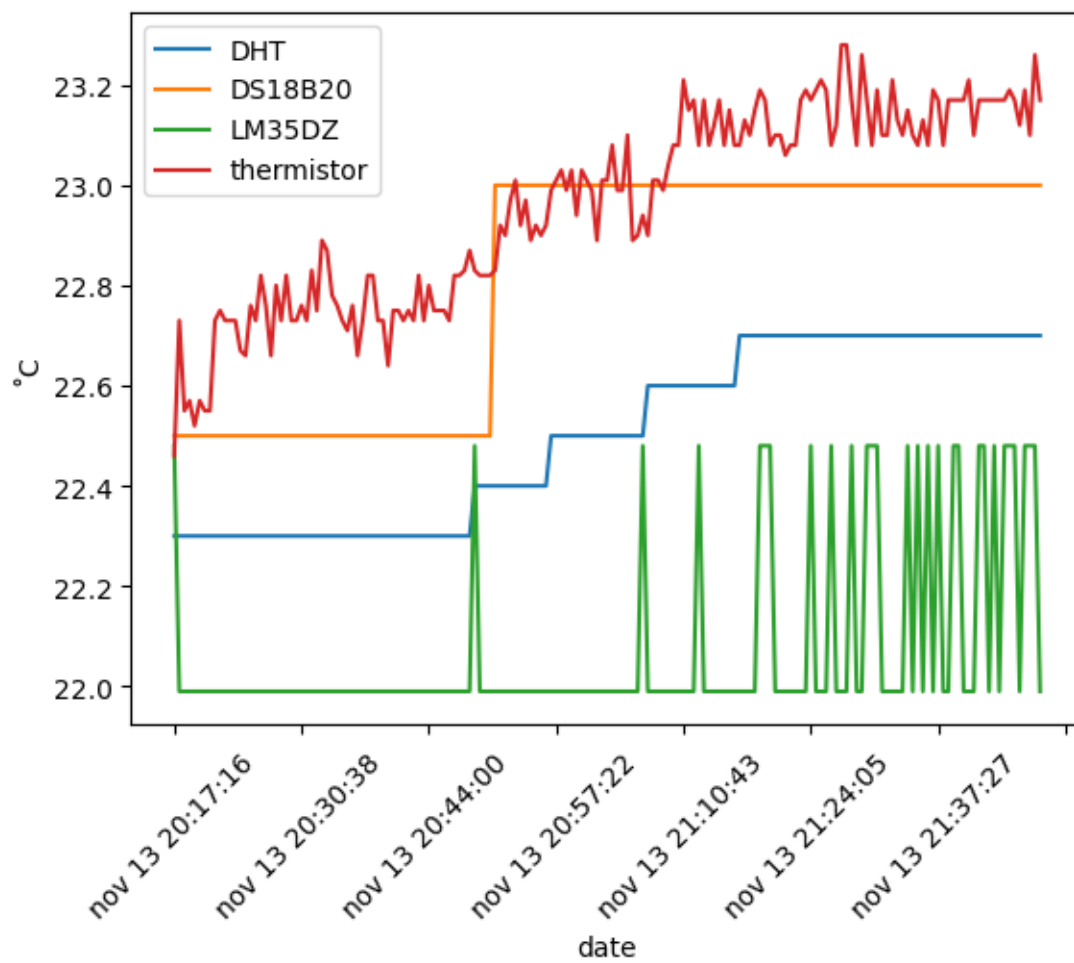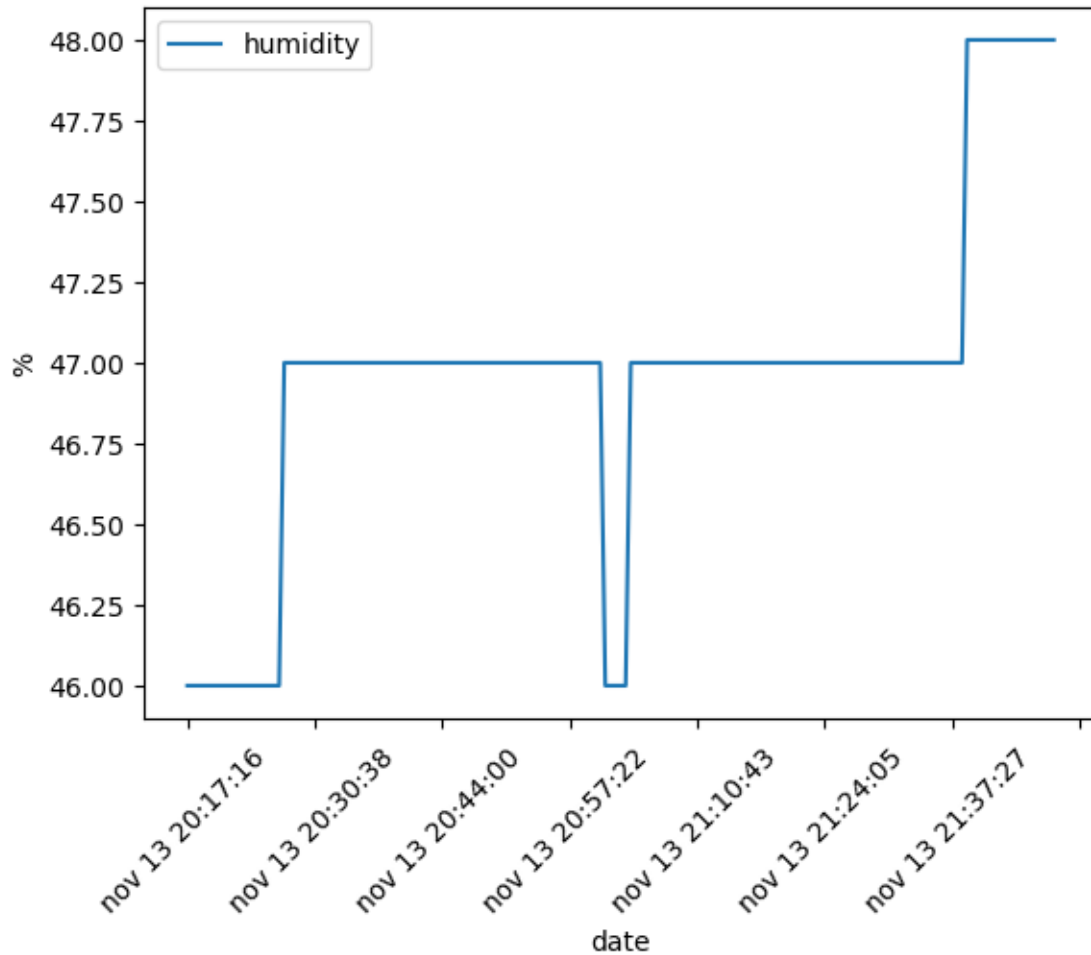|	DHT	DS18B20	LM35DZ	thermistor	humidity
count	146.000000	146.0	146.000000	146.000000	146.000000
mean	21.184247	21.0	20.550137	21.082397	37.301370
std	0.036556	0.0	0.097606	0.070224	0.460433
min	21.100000	21.0	20.530000	20.990000	37.000000
25%	21.200000	21.0	20.530000	20.990000	37.000000
50%	21.200000	21.0	20.530000	21.110000	37.000000
75%	21.200000	21.0	20.530000	21.110000	38.000000
max	21.200000	21.0	21.020000	21.340000	38.000000

20.95419520547945 - 0.2502034163756629

```
df = pd.read_csv('measurements/medium-indoor.
 ↪txt',names=['date','DHT','DS18B20','LM35DZ','thermistor','humidity'])
df.loc[:, df.columns != 'humidity'].plot(x='date', rot=45,ylabel='˚C')
df[['date','humidity']].plot(x='date', rot=45,ylabel='%')
stats(df)
```

	DHT	DS18B20	LM35DZ	thermistor	humidity
count	171.000000	171.000000	171.000000	171.000000	171.000000
mean	22.502924	22.815789	22.070234	22.958655	46.964912
std	0.173010	0.241897	0.181853	0.195047	0.495803
min	22.300000	22.500000	21.990000	22.460000	46.000000
25%	22.300000	22.500000	21.990000	22.760000	47.000000
50%	22.500000	23.000000	21.990000	23.010000	47.000000
75%	22.700000	23.000000	21.990000	23.130000	47.000000
max	22.700000	23.000000	22.480000	23.280000	48.000000

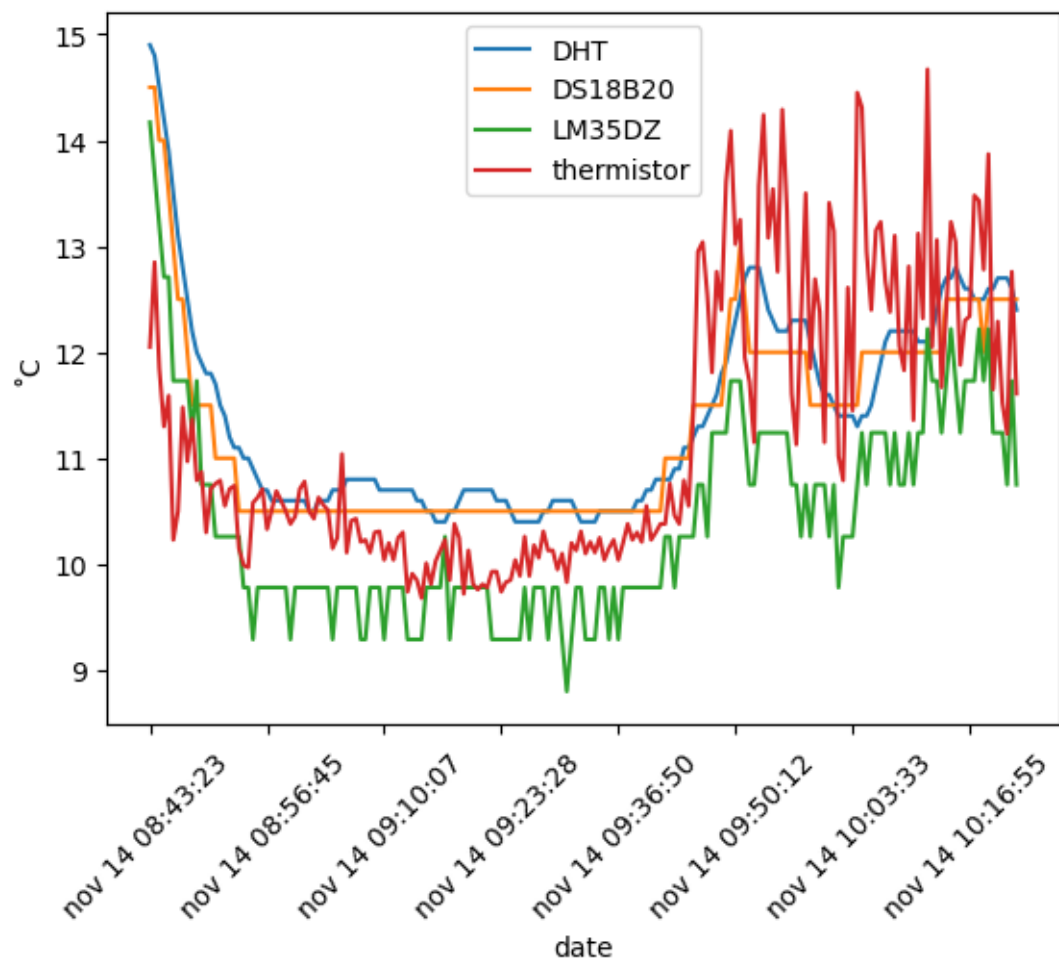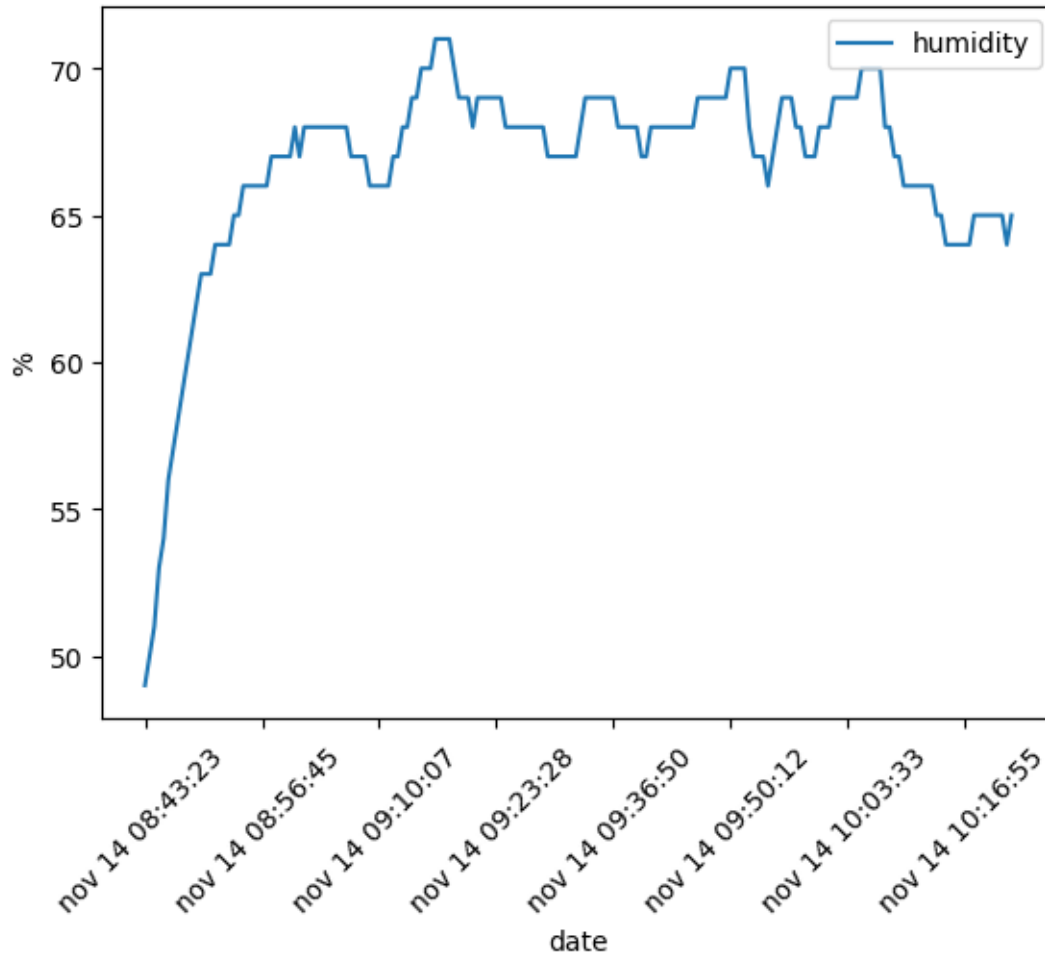22.586900584795323 - 0.39471995632066426

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```
[ ]: df = pd.read_csv('measurements/medium-outdoor.
     ↪txt',names=['date','DHT','DS18B20','LM35DZ','thermistor','humidity'])
     df.loc[:, df.columns != 'humidity'].plot(x='date', rot=45,ylabel='˚C')
     df[['date','humidity']].plot(x='date', rot=45,ylabel='%')
     stats(df)
```

	DHT	DS18B20	LM35DZ	thermistor	humidity
count	186.000000	186.000000	186.000000	186.000000	186.000000
mean	11.405376	11.266129	10.407097	11.205215	66.725806
std	0.964938	0.903676	0.955900	1.290284	3.506763
min	10.400000	10.500000	8.800000	9.680000	49.000000
25%	10.600000	10.500000	9.780000	10.202500	66.000000
50%	11.000000	11.000000	10.260000	10.630000	68.000000
75%	12.200000	12.000000	11.240000	12.315000	69.000000
max	14.900000	14.500000	14.170000	14.670000	71.000000

11.070954301075268 - 1.1081199704361213

```
df = pd.read_csv('measurements/long.
↪txt',names=['date','DHT','DS18B20','LM35DZ','thermistor','humidity'])
df.loc[:, df.columns != 'humidity'].plot(x='date', rot=45,ylabel='˚C')
df[['date','humidity']].plot(x='date', rot=45,ylabel='%')
stats(df)
```

	DHT	DS18B20	LM35DZ	thermistor	humidity
count	55.000000	55.000000	55.000000	55.000000	55.000000
mean	12.918182	13.072727	12.175273	12.842909	54.818182
std	0.695512	0.722766	0.761382	0.531614	4.690775
min	11.900000	12.000000	11.240000	11.780000	47.000000
25%	12.500000	12.500000	11.730000	12.450000	52.000000
50%	12.900000	13.000000	11.730000	12.780000	54.000000
75%	13.200000	13.250000	12.710000	13.175000	55.500000
max	14.500000	14.500000	14.170000	14.110000	65.000000

12.752272727272727 - 0.7592486227016682