```
!unzip /content/sensor.csv.zip
```

Archive: /content/sensor.csv.zip
    inflating: sensor.csv

```
import pandas as pd
```

```
data = pd.read_csv(r"/content/sensor.csv")
```

```
data['Unnamed: 0']
data.drop(['Unnamed: 0'], axis=1, inplace = True)
```

```
data.head()
```

	timestamp	sensor_00	sensor_01	sensor_02	sensor_03	sensor_04	sensor_05	se
0	2018-04-01 00:00:00	2.465394	47.09201	53.2118	46.310760	634.3750	76.45975	
1	2018-04-01 00:01:00	2.465394	47.09201	53.2118	46.310760	634.3750	76.45975	
2	2018-04-01 00:02:00	2.444734	47.35243	53.2118	46.397570	638.8889	73.54598	
3	2018-04-01 00:03:00	2.460474	47.09201	53.1684	46.397568	628.1250	76.98898	
4	2018-04-01 00:04:00	2.445718	47.13541	53.2118	46.397568	636.4583	76.58897	

5 rows × 54 columns

```
data.info()
```

```
 #   Column      Non-Null Count   Dtype
---  ------      --------------   -----
 0   timestamp   220320 non-null  object
 1   sensor_00   210112 non-null  float64
 2   sensor_01   219951 non-null  float64
 3   sensor_02   220301 non-null  float64
 4   sensor_03   220301 non-null  float64
 5   sensor_04   220301 non-null  float64
 6   sensor_05   220301 non-null  float64
 7   sensor_06   215522 non-null  float64
 8   sensor_07   214869 non-null  float64
 9   sensor_08   215213 non-null  float64
 10  sensor_09   215725 non-null  float64
 11  sensor_10   220301 non-null  float64
 12  sensor_11   220301 non-null  float64
 13  sensor_12   220301 non-null  float64
 14  sensor_13   220301 non-null  float64
 15  sensor_14   220299 non-null  float64
 16  sensor_15   0 non-null       float64
 17  sensor_16   220289 non-null  float64
 18  sensor_17   220274 non-null  float64
 19  sensor_18   220274 non-null  float64
 20  sensor_19   220304 non-null  float64
 21  sensor_20   220304 non-null  float64
 22  sensor_21   220304 non-null  float64
 23  sensor_22   220279 non-null  float64
 24  sensor_23   220304 non-null  float64
 25  sensor_24   220304 non-null  float64
 26  sensor_25   220284 non-null  float64
 27  sensor_26   220300 non-null  float64
 28  sensor_27   220304 non-null  float64
 29  sensor_28   220304 non-null  float64
 30  sensor_29   220248 non-null  float64
 31  sensor_30   220059 non-null  float64
 32  sensor_31   220304 non-null  float64
 33  sensor_32   220252 non-null  float64
 34  sensor_33   220304 non-null  float64
 35  sensor_34   220304 non-null  float64
 36  sensor_35   220304 non-null  float64
```

```
 41  sensor_40       220293 non-null  float64
 42  sensor_41       220293 non-null  float64
 43  sensor_42       220293 non-null  float64
 44  sensor_43       220293 non-null  float64
 45  sensor_44       220293 non-null  float64
 46  sensor_45       220293 non-null  float64
 47  sensor_46       220293 non-null  float64
 48  sensor_47       220293 non-null  float64
 49  sensor_48       220293 non-null  float64
 50  sensor_49       220293 non-null  float64
 51  sensor_50       143303 non-null  float64
 52  sensor_51       204937 non-null  float64
 53  machine_status  220320 non-null  object
dtypes: float64(52), object(2)
memory usage: 90.8+ MB
```

```python
data.drop(['sensor_15'],axis=1,inplace=True)
```
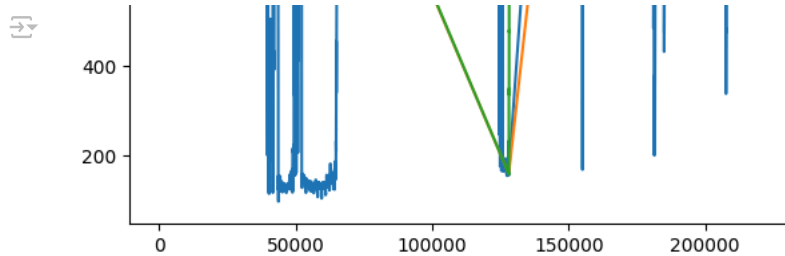
```python
data.isna().sum() #checks for missing values , and no missing values
```

```
timestamp            0
sensor_00        10208
sensor_01          369
sensor_02           19
sensor_03           19
sensor_04           19
sensor_05           19
sensor_06         4798
sensor_07         5451
sensor_08         5107
sensor_09         4595
sensor_10           19
sensor_11           19
sensor_12           19
sensor_13           19
sensor_14           21
sensor_16           31
sensor_17           46
sensor_18           46
sensor_19           16
sensor_20           16
sensor_21           16
sensor_22           41
sensor_23           16
sensor_24           16
sensor_25           36
sensor_26           20
sensor_27           16
sensor_28           16
sensor_29           72
sensor_30          261
sensor_31           16
sensor_32           68
sensor_33           16
sensor_34           16
sensor_35           16
sensor_36           16
sensor_37           16
sensor_38           27
sensor_39           27
sensor_40           27
sensor_41           27
sensor_42           27
sensor_43           27
sensor_44           27
sensor_45           27
sensor_46           27
sensor_47           27
sensor_48           27
sensor_49           27
sensor_50        77017
sensor_51        15383
machine_status       0
dtype: int64
```
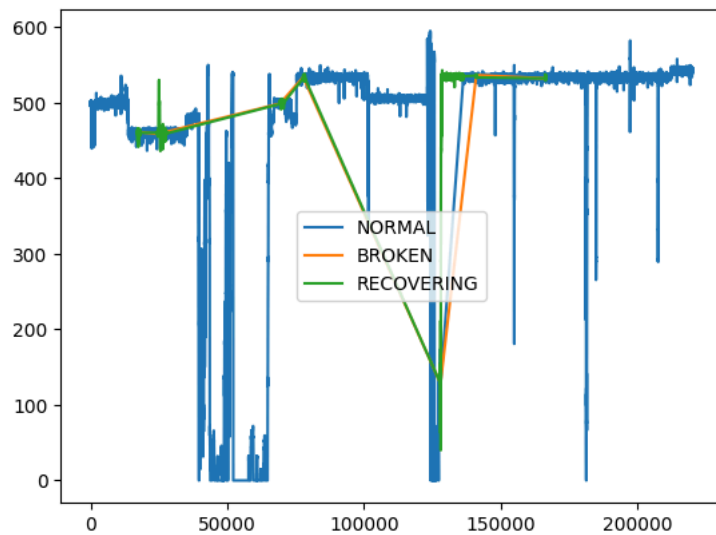
```python
import matplotlib.pyplot as plt
for i in range(52):
  print("sensor", i)
  num = str(i)
  if i <10:
    num = "0" + str(i)
  if i==15:
    continue
  plt.plot(data.loc[data['machine_status']== 'NORMAL', 'sensor_'+num], label='NORMAL')
  plt.plot(data.loc[data['machine_status']== 'BROKEN', 'sensor_'+num], label='BROKEN')
  plt.plot(data.loc[data['machine_status']== 'RECOVERING', 'sensor_'+num], label='RECOVERING')
  plt.legend()
  plt.show()
```

sensor 22

sensor 23