

```
In [1]: import numpy as np
import pandas as pd
from sklearn.preprocessing import MinMaxScaler
import scipy.stats as stats
```

```
In [2]: path = '25_Nguyen Van Linh_Ch2_As1.csv'
df = pd.read_csv(path)
df.head(10)
```

Out[2]:

	Rank	Name	Platform	Year	Genre	Publisher	NA_Sales	EU_Sales	JP_Sales	Other_Sales	Global_Sales
0	1	Wii Sports	Wii	2006.0	Sports	Nintendo	41.49	29.02	3.77	8.46	82.74
1	2	Super Mario Bros.	NES	1985.0	Platform	Nintendo	29.08	3.58	6.81	0.77	40.24
2	3	Mario Kart Wii	Wii	2008.0	Racing	Nintendo	15.85	12.88	3.79	3.31	35.82
3	4	Wii Sports Resort	Wii	2009.0	Sports	Nintendo	15.75	11.01	3.28	2.96	33.00
4	5	Pokemon Red/Pokemon Blue	GB	1996.0	Role-Playing	Nintendo	11.27	8.89	10.22	1.00	31.37
5	6	Tetris	GB	1989.0	Puzzle	Nintendo	23.20	2.26	4.22	0.58	30.26
6	7	New Super Mario Bros.	DS	2006.0	Platform	Nintendo	11.38	9.23	6.50	2.90	30.01
7	8	Wii Play	Wii	2006.0	Misc	Nintendo	14.03	9.20	2.93	2.85	29.02
8	9	New Super Mario Bros. Wii	Wii	2009.0	Platform	Nintendo	14.59	7.06	4.70	2.26	28.62
9	10	Duck Hunt	NES	1984.0	Shooter	Nintendo	26.93	0.63	0.28	0.47	28.31

```
In [3]: data = df[['NA_Sales', 'EU_Sales']]
print(data)
```

	NA_Sales	EU_Sales
0	41.49	29.02
1	29.08	3.58
2	15.85	12.88
3	15.75	11.01
4	11.27	8.89
...
16593	0.01	0.00
16594	0.01	0.00
16595	0.00	0.00
16596	0.00	0.01
16597	0.01	0.00

[16598 rows x 2 columns]

Min-Max Normalization

```
In [4]: scaler = MinMaxScaler()
print(scaler.fit(data))
MinMaxScaler()
data_ternormalisasi = scaler.transform(data)
print(data_ternormalisasi)
```

```
MinMaxScaler()
[[1.00000000e+00 1.00000000e+00]
 [7.00891781e-01 1.23363198e-01]
 [3.82019764e-01 4.43831840e-01]
 ...
 [0.00000000e+00 0.00000000e+00]
 [0.00000000e+00 3.44589938e-04]
 [2.41021933e-04 0.00000000e+00]]
```

Z-Score

```
In [6]: stats.zscore(df['JP_Sales'])
```

```
Out[6]: 0      11.938058
        1      21.767296
        2      12.002724
        3      10.353740
        4      32.792857
        ...
        16593  -0.251492
        16594  -0.251492
        16595  -0.251492
        16596  -0.251492
        16597  -0.251492
        Name: JP_Sales, Length: 16598, dtype: float64
```

```
In [ ]:
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