Normalization with decimal scaling in data mining – Examples

Decimal scaling with Examples

Decimal scaling is a data normalization technique like **Z score**, **Min-Max**, and normalization with **standard deviation**. Decimal scaling is a data normalization technique. In this technique, we move the decimal point of values of the attribute. This movement of decimal points totally depends on the maximum value among all values in the attribute.

The formula of decimal scaling:

A value v of attribute A is can be normalized by the following formula

Normalized value of attribute = $(v^i / 10^j)$

If you are interested in an excel file of decimal scaling, then you can read the **excel file** with calculations.

Example of Decimal scaling :

CGPA	Formula	CGPA Normalized after Decimal scaling
2	2/10	0.2

Categories

3	3/10	0.3

We will check the maximum value among our attribute CGPA. Here maximum value is 3 so we can convert it to a decimal by dividing by 10. Why 10?

we will count total numbers in our maximum value and then put 1 and after 1 we can put zeros equal to the length of the maximum value.

Here 3 is the maximum value and total numbers in this value are only 1. so we will put one zero after one.

Example 2:

Salary bonus	**Formula**	**CGPA Normalized after Decimal scaling**
400	400 / 1000	0.4
310	310 / 1000	0.31

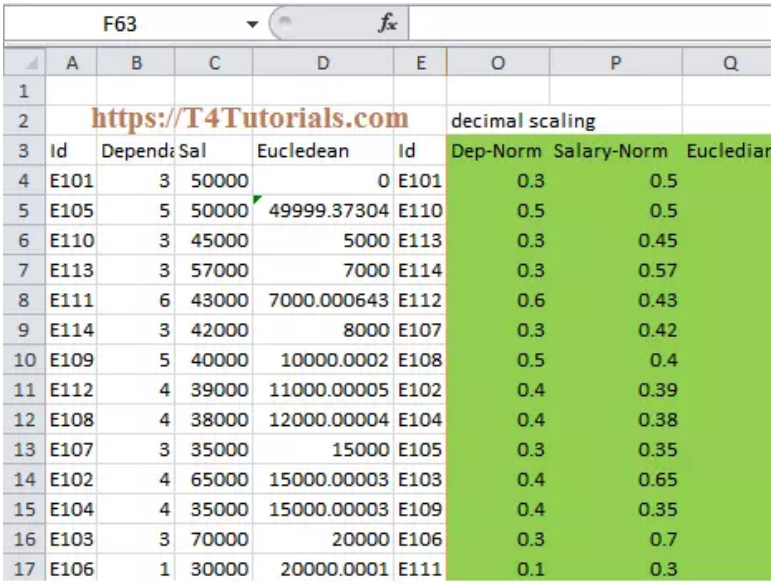
We will check the maximum value of our attribute "**salary bonus**". Here maximum value is 400 so we can convert it into a decimal by dividing it with 1000. Why 1000?

400 contains three digits and we so we can put three zeros after 1. So, it looks like 1000.

Example 3:

Salary	**Formula**	**CGPA Normalized after Decimal scaling**
40,000	40,000 / 100000	0.4
31, 000	31,000 / 100000	0.31

Download Excel File Calculations



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	A	B	C	D	E	O	P	Q
1								
2		https://T4Tutorials.com				decimal scaling		
3	Id	Dependa	Sal	Eucledean	Id	Dep-Norm	Salary-Norm	Euclediar
4	E101	3	50000	0	E101	0.3	0.5	
5	E105	5	50000	49999.37304	E110	0.5	0.5	
6	E110	3	45000	5000	E113	0.3	0.45	
7	E113	3	57000	7000	E114	0.3	0.57	
8	E111	6	43000	7000.000643	E112	0.6	0.43	
9	E114	3	42000	8000	E107	0.3	0.42	
10	E109	5	40000	10000.0002	E108	0.5	0.4	
11	E112	4	39000	11000.00005	E102	0.4	0.39	
12	E108	4	38000	12000.00004	E104	0.4	0.38	
13	E107	3	35000	15000	E105	0.3	0.35	
14	E102	4	65000	15000.00003	E103	0.4	0.65	
15	E104	4	35000	15000.00003	E109	0.4	0.35	
16	E103	3	70000	20000	E106	0.3	0.7	
17	E106	1	30000	20000.0001	E111	0.1	0.3	

EXAMPLE 2

ATTRIBUTE	FORMULA OF DECIMAL SCALING	ATTRIBUTE NORMALIZED AFTER DECIMAL SCALING
CGPA	**FORMULA**	**CGPA AFTER DECIMAL SCALING NORMALIZATION**
10	10/100	0.1
90	90/100	0.9
SALARY	**FORMULA**	**Salary AFTER DECIMAL SCALING NORMALIZATION**
40,000	40,000/100000	0.4
31,000	31,000/100	0.31

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