TRANSFORMATIONS

Instructions:

Please share your answers filled inline in the word document. Submit code files wherever applicable.

Please ensure you update all the details:

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Topic: Data Pre-Processing

Problem Statement:

Everything will revolve around the data in Analytics world. Proper data will help you to make useful predictions that improve your business. Sometimes the usage of original data as it is does not help to have accurate solutions. It is needed to convert the data from one form to another form to have better predictions. Explore various techniques to transform the data for better model performance. you can go through this link:

https://360digitmg.com/mindmap-data-science

1) Prepare the dataset by performing the preprocessing techniques, to have the data which improves model performance.

```
import pandas as pd

import numpy as np

from sklearn.preprocessing import MinMaxScaler, StandardScaler

# Creating the DataFrame from the given data

df = pd.read_csv(r"calories_consumed.csv")

# 1. Normalization

scaler = MinMaxScaler()

df_normalized = pd.DataFrame(scaler.fit_transform(df), columns=df.columns)

# 2. Standardization

standard_scaler = StandardScaler()

df_standardized = pd.DataFrame(standard_scaler.fit_transform(df), columns=df.columns)

# 3. Log Transformation (only applicable for positive values)

df_log_transformed = df.apply(np.log)

# 4. Square Root Transformation

df_sqrt_transformed = df.apply(np.sqrt)
```

Display the results

df_normalized, df_standardized, df_log_transformed, df_sqrt_transformed

Name	Type	Size	Value
df	DataFrame	(14, 2)	Column names: Weight gained (grams), Calories Consumed
df_log_transformed	DataFrame	(14, 2)	Column names: Weight gained (grams), Calories Consumed
df_normalized	DataFrame	(14, 2)	Column names: Weight gained (grams), Calories Consumed
df_sqrt_transformed	DataFrame	(14, 2)	Column names: Weight gained (grams), Calories Consumed
df_standardized	DataFrame	(14, 2)	Column names: Weight gained (grams), Calories Consumed
scaler	preprocessing._data.MinMaxScaler	1	MinMaxScaler object of sklearn.preprocessing._data module
standard_scaler	preprocessing._data.StandardScaler	1	StandardScaler object of sklearn.preprocessing._data module

Help | Variable Explorer | Plots | Files

Console 9/A

```
In [7]: df_normalized, df_standardized, df_log_transformed, df_sqrt_transformed
Out[7]:
(    Weight gained (grams)  Calories Consumed
 0                0.044316              0.040
 1                0.132948              0.360
 2                0.807322              0.800
 3                0.132948              0.320
 4                0.229287              0.440
 5                0.046243              0.080
 6                0.063584              0.000
 7                0.000000              0.200
 8                0.518304              0.560
 9                1.000000              1.000
 10               0.036609              0.108
 11               0.084778              0.200
 12               0.277457              0.520
 13               0.614644              0.640,
    Weight gained (grams)  Calories Consumed
 0              -0.776586          -1.160005
 1              -0.490475          -0.056177
 2               1.686452           1.461586
```

```
3               -0.490475          -0.194155
4               -0.179485           0.219780
5               -0.770366          -1.022026
6               -0.714388          -1.297983
7               -0.919641          -0.608091
8                0.753483           0.633715
9                2.308432           2.151478
10              -0.801465          -0.925441
11              -0.645970          -0.608091
12              -0.023991           0.495737
13               1.064473           0.909672,
    Weight gained (grams)  Calories Consumed
0                4.682131           7.313220
1                5.298317           7.740664
2                6.802395           8.131531
3                5.298317           7.696213
4                5.703782           7.824046
5                4.700480           7.377759
6                4.852030           7.244228
7                4.127134           7.549609
8                6.396930           7.937375
9                7.003065           8.268732
10               4.605170           7.420579
11               5.010635           7.549609
12               5.857933           7.901007
13               6.551080           8.006368,
```

	Weight gained (grams)	Calories Consumed
0	10.392305	38.729833
1	14.142136	47.958315
2	30.000000	58.309519
3	14.142136	46.904158
4	17.320508	50.000000
5	10.488088	40.000000
6	11.313708	37.416574
7	7.874008	43.588989
8	24.494897	52.915026
9	33.166248	62.449980
10	10.000000	40.865633
11	12.247449	43.588989
12	18.708287	51.961524
13	26.457513	54.772256)