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PS C:\Users\USER> & C:/Python312/python.exe c:/Users/USER/Desktop/wine_analysis.py
First 5 rows of the dataset:
  alcohol  malic_acid  ash  alcalinity_of_ash  ...  hue  od280/od315_of_diluted_wines  proline  class
0    14.23      1.71  2.43          15.6  ...  1.04              3.92    1065.0      0
1    13.20      1.78  2.14          11.2  ...  1.05              3.40    1050.0      0
2    13.16      2.36  2.67          18.6  ...  1.03              3.17    1185.0      0
3    14.37      1.95  2.50          16.8  ...  0.86              3.45    1480.0      0
4    13.24      2.59  2.87          21.0  ...  1.04              2.93     735.0      0

[5 rows x 14 columns]

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Dataset Description:
  alcohol  malic_acid  ash  ...  od280/od315_of_diluted_wines  proline  class
count  178.000000  178.000000  178.000000  ...  178.000000  178.000000  178.000000
mean    13.000618   2.336348   2.366517  ...    2.611685   746.893258   0.938202
std      0.811827   1.117146   0.274344  ...    0.709990   314.907474   0.775035
min     11.030000   0.740000   1.360000  ...    1.270000   278.000000   0.000000
25%     12.362500   1.602500   2.210000  ...    1.937500   500.500000   0.000000
50%     13.050000   1.865000   2.360000  ...    2.780000   673.500000   1.000000
75%     13.677500   3.082500   2.557500  ...    3.170000   985.000000   2.000000
max     14.830000   5.800000   3.230000  ...    4.000000  1680.000000   2.000000

[8 rows x 14 columns]

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Generated MAC Address: c4:9d:07:6e:0c:da
Silhouette Score (PCA Reduced Data): 0.56
Silhouette Score (t-SNE Reduced Data): 0.62
Silhouette Score (Original Data): 0.28

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