# K-Nearest Neighbors (KNN) Implementation

## Explanation

This program implements K-nearest neighbors (KNN) algorithm from scratch using Python.   
It takes two datasets, MNIST\_training.csv and MNIST\_test.csv, and follows the steps below:  
1. Load the training and test data.  
2. Calculate distances (Euclidean, Manhattan, or Cosine similarity) between test and training data.  
3. Find the K-nearest neighbors and decide the majority class.  
4. Compare the prediction with the ground truth in the test data.  
5. Compute accuracy by counting correctly and incorrectly classified samples.  
6. Repeat the process for different values of K and display the accuracy results.

## Results

|  |  |  |  |
| --- | --- | --- | --- |
| K | Correctly Classified | Incorrectly Classified | Accuracy |
| 1 | 42 | 8 | 0.84 |
| 3 | 44 | 6 | 0.88 |
| 5 | 43 | 7 | 0.86 |
| 7 | 45 | 5 | 0.9 |
| 9 | 45 | 5 | 0.9 |