

Personalized cancer diagnosis

1. Business Problem

1.1. Description

Source: <https://www.kaggle.com/c/msk-redefining-cancer-treatment/>

Data: Memorial Sloan Kettering Cancer Center (MSKCC)

Download training_variants.zip and training_text.zip from Kaggle.

Context:

Source: <https://www.kaggle.com/c/msk-redefining-cancer-treatment/discussion/35336#198462>

Problem statement :

Classify the given genetic variations/mutations based on evidence from text-based clinical literature.

1.2. Source/Useful Links

Some articles and reference blogs about the problem statement

1. <https://www.forbes.com/sites/matthewherper/2017/06/03/a-new-cancer-drug-helped-almost-everyone-who-took-it-almost-heres-what-it-teaches-us/#2a44ee2f6b25>
2. <https://www.youtube.com/watch?v=UwbuW7oK8rk>
3. <https://www.youtube.com/watch?v=qxXRKVompl8>

Objectives and constraints.

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- No low-latency requirement.
- Interpretability is important.
- Errors can be very costly.
- Probability of a data-point belonging to each class is needed.

2. Machine Learning Problem Formulation

2.1. Data

2.1.1. Data Overview

- Source: <https://www.kaggle.com/c/msk-redefining-cancer-treatment/data>
- We have two data files: one contains the information about the genetic mutations and the other contains the clinical evidence (text) that human experts/pathologists use to classify the genetic mutations.
- Both these data files have a common column called ID
- Data file's information:
 - training_variants (ID , Gene, Variations, Class)
 - training_text (ID, Text)

2.1.2. Example Data Point

training_variants

```
ID,Gene,Variation,Class
0,FAM58A,Truncating Mutations,1
1,CBL,W802*,2
2,CBL,Q249E,2
...
```

training_text

```
ID,Text
0||Cyclin-dependent kinases (CDKs) regulate a variety of fundamental cellular processes. CDK10 stands out as
activating cyclin has been identified and no kinase activity revealed.
ing increases ETS2 (v-ets erythroblastosis virus E26 oncogene
homolog 2)-driven activation of the MAPK pathway, which confers tamoxifen resistance to breast cancer cells.
The precise mechanisms by which CDK10 modulates ETS2 activity, and more generally the functions of CDK10,
remain elusive. Here we demonstrate that CDK10 is a cyclin-dependent kinase by identifying cyclin M as an
activating cyclin. Cyclin M, an orphan cyclin, is the product of FAM58A, whose mutations cause STAR syndrome, a
human developmental anomaly whose features include toe syndactyly, telecanthus, and anogenital and renal
malformations. We show that STAR syndrome-associated cyclin M mutants are unable to interact with CDK10.
```

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Cyclin M silencing phenocopies CDK10 silencing in increasing c-Raf and in conferring tamoxifen resistance to breast cancer cells. CDK10/cyclin M phosphorylates ETS2 in vitro, and in cells it positively controls ETS2 degradation by the proteasome. ETS2 protein levels are increased in cells derived from a STAR patient, and this increase is attributable to decreased cyclin M levels. Altogether, our results reveal an additional regulatory mechanism for ETS2, which plays key roles in cancer and development. They also shed light on the molecular mechanisms underlying STAR syndrome. Cyclin-dependent kinases (CDKs) play a pivotal role in the control of a number of fundamental cellular processes (1). The human genome contains 21 genes encoding proteins that can be considered as members of the CDK family owing to their sequence similarity with bona fide CDKs, those known to be activated by cyclins (2). Although discovered almost 20 y ago (3, 4), CDK10 remains one of the two CDKs without an identified cyclin partner. This knowledge gap has largely impeded the exploration of its biological functions. CDK10 can act as a positive cell cycle regulator in some cells (5, 6) or as a tumor suppressor in others (7, 8). CDK10 interacts with the ETS2 (v-ets erythroblastosis virus E26 oncogene homolog 2) transcription factor and inhibits its transcriptional activity through an unknown mechanism (9). CDK10 knockdown derepresses ETS2, which increases the expression of the c-Raf protein kinase, activates the MAPK pathway, and induces resistance of MCF7 cells to tamoxifen (6). ...

2.2. Mapping the real-world problem to an ML problem

2.2.1. Type of Machine Learning Problem

There are nine different classes a genetic mutation can be classified into => Multi class cla

2.2.2. Performance Metric

Source: <https://www.kaggle.com/c/msk-redefining-cancer-treatment#evaluation>

Metric(s):

- Multi class log-loss
- Confusion matrix

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2.2.3. Machine Learning Objectives and Constraints

Objective: Predict the probability of each data-point belonging to each of the nine classes.

Constraints:

* Interpretability * Class probabilities are needed. * Penalize the errors in class probabilities => Metric is Log-loss. * No Latency constraints.

2.3. Train, CV and Test Datasets

Split the dataset randomly into three parts train, cross validation and test with 64%,16%, 20% of data respectively

3. Exploratory Data Analysis

```
import pandas as pd
import matplotlib.pyplot as plt
import re
import time
import warnings
import numpy as np
from nltk.corpus import stopwords
from sklearn.decomposition import TruncatedSVD
from sklearn.preprocessing import normalize
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.manifold import TSNE
import seaborn as sns
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import confusion_matrix
from sklearn.metrics.classification import accuracy_score, log_loss
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.linear_model import SGDClassifier
from imblearn.over_sampling import SMOTE
from collections import Counter
from scipy.sparse import hstack
from sklearn.multiclass import OneVsRestClassifier
from sklearn.svm import SVC
from sklearn.model_selection import StratifiedKFold
from collections import Counter, defaultdict
from sklearn.calibration import CalibratedClassifierCV
from sklearn.naive_bayes import MultinomialNB
from sklearn.naive_bayes import GaussianNB
from sklearn.model_selection import train_test_split
from sklearn.model_selection import GridSearchCV
import math
from sklearn.metrics import normalized_mutual_info_score
from sklearn.ensemble import RandomForestClassifier
warnings.filterwarnings("ignore")
```

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```

from mixend.classifier import stackingclassifier

from sklearn import model_selection
from sklearn.linear_model import LogisticRegression

from google.colab import drive
drive.mount("drive", force_remount=True)

Mounted at drive

train_path="/content/drive/My Drive/training_variants"
training_path="/content/drive/My Drive/training_text"

```

3.1. Reading Data

3.1.1. Reading Gene and Variation Data

```

data = pd.read_csv(train_path)
print('Number of data points : ', data.shape[0])
print('Number of features : ', data.shape[1])
print('Features : ', data.columns.values)
data.head()

```

```

Number of data points : 3321
Number of features : 4
Features : ['ID' 'Gene' 'Variation' 'Class']

```

	ID	Gene	Variation	Class
0	0	FAM58A	Truncating Mutations	1
1	1	CBL	W802*	2
2	2	CBL	Q249E	2
3	3	CBL	N454D	3
			99V	4

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training/training_variants is a comma separated file containing the description of the genetic mutations used for training.

Fields are

- **ID** : the id of the row used to link the mutation to the clinical evidence

- **Gene** : the gene where this genetic mutation is located
- **Variation** : the aminoacid change for this mutations
- **Class** : 1-9 the class this genetic mutation has been classified on

3.1.2. Reading Text Data

```
# note the separator in this file
data_text = pd.read_csv(training_path, sep="\\|\\|", engine="python", names=["ID", "TEXT"], skiprows=
print('Number of data points : ', data_text.shape[0])
print('Number of features : ', data_text.shape[1])
print('Features : ', data_text.columns.values)
data_text.head()
```

```
Number of data points : 3321
Number of features : 2
Features : ['ID' 'TEXT']
```

	ID	TEXT
0	0	Cyclin-dependent kinases (CDKs) regulate a var...
1	1	Abstract Background Non-small cell lung canc...
2	2	Abstract Background Non-small cell lung canc...
3	3	Recent evidence has demonstrated that acquired...
4	4	Oncogenic mutations in the monomeric Casitas B...

3.1.3. Preprocessing of text

```
# https://gist.github.com/sebleier/554280
# we are removing the words from the stop words list: 'no', 'nor', 'not'
stopwords= ['i', 'me', 'my', 'myself', 'we', 'our', 'ours', 'ourselves', 'you', "you're", "yo
    "you'll", "you'd", 'your', 'yours', 'yourself', 'yourselves', 'he', 'him', 'his',
    'she', "she's", 'her', 'hers', 'herself', 'it', "it's", 'its', 'itself', 'they',
    'theirs', 'themselves', 'what', 'which', 'who', 'whom', 'this', 'that', "that'll"
    'am', 'is', 'are', 'was', 'were', 'be', 'been', 'being', 'have', 'has', 'had', 'h
    'did', 'doing', 'a', 'an', 'the', 'and', 'but', 'if', 'or', 'because', 'as', 'unt
    'at', 'bv', 'for', 'with', 'about', 'against', 'between', 'into', 'through', 'dur
    'from', 'up', 'down', 'in', 'out', 'on', 'off', 'over', '
    'there', 'when', 'where', 'why', 'how', 'all', 'any', 'bo
    'most', 'other', 'some', 'such', 'only', 'own', 'same', 'so', 'than', 'too', 'ver
    's', 't', 'can', 'will', 'just', 'don', "don't", 'should', "should've", 'now', 'd
    've', 'y', 'ain', 'aren', "aren't", 'couldn', "couldn't", 'didn', "didn't", 'does
    "hadn't", 'hasn', "hasn't", 'haven', "haven't", 'isn', "isn't", 'ma', 'mightn', "
    "mustn't", 'needn', "needn't", 'shan', "shan't", 'shouldn', "shouldn't", 'wasn',
    'won', "won't", 'wouldn', "wouldn't"]
```

Saved successfully!



```

def nlp_preprocessing(total_text, index, column):
    if type(total_text) is not int:
        string = ""
        # replace every special char with space
        total_text = re.sub('[^a-zA-Z0-9\n]', ' ', total_text)
        # replace multiple spaces with single space
        total_text = re.sub('\s+', ' ', total_text)
        # converting all the chars into lower-case.
        total_text = total_text.lower()

        for word in total_text.split():
            # if the word is a not a stop word then retain that word from the data
            if not word in stopwords:
                string += word + " "

        data_text[column][index] = string

#text processing stage.
start_time = time.clock()
for index, row in data_text.iterrows():
    if type(row['TEXT']) is str:
        nlp_preprocessing(row['TEXT'], index, 'TEXT')
    else:
        print("there is no text description for id:",index)
print('Time took for preprocessing the text :',time.clock() - start_time, "seconds")

there is no text description for id: 1109
there is no text description for id: 1277
there is no text description for id: 1407
there is no text description for id: 1639
there is no text description for id: 2755
Time took for preprocessing the text : 104.652745 seconds

#merging both gene_variations and text data based on ID
result = pd.merge(data, data_text,on='ID', how='left')
result.head()

```

	ID	Gene	Variation	Class	TEXT
0	0	FAM58A	Truncating Mutations	1	cyclin dependent kinases cdks regulate variety...
1	1	CBL	N454D	2	abstract background non small cell lung cancer...
2	2	CBL	L399V	2	abstract background non small cell lung cancer...
3	3	CBL	N454D	3	recent evidence demonstrated acquired uniparen...
4	4	CBL	L399V	4	oncogenic mutations monomeric casitas b lineag...

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```
result[result.isnull().any(axis=1)]
```

	ID	Gene	Variation	Class	TEXT
1109	1109	FANCA	S1088F	1	NaN
1277	1277	ARID5B	Truncating Mutations	1	NaN
1407	1407	FGFR3	K508M	6	NaN
1639	1639	FLT1	Amplification	6	NaN
2755	2755	BRAF	G596C	7	NaN

```
result.loc[result['TEXT'].isnull(),'TEXT'] = result['Gene'] + ' ' + result['Variation']
```

```
result[result['ID']==1109]
```

	ID	Gene	Variation	Class	TEXT
1109	1109	FANCA	S1088F	1	FANCA S1088F

3.1.4. Test, Train and Cross Validation Split

3.1.4.1. Splitting data into train, test and cross validation (64:20:16)

```
y_true = result['Class'].values
result.Gene = result.Gene.str.replace('\s+', '_')
result.Variation = result.Variation.str.replace('\s+', '_')

# split the data into test and train by maintaining same distribution of output variable 'y_t
X_train, test_df, y_train, y_test = train_test_split(result, y_true, stratify=y_true, test_si
# split the train data into train and cross validation by maintaining same distribution of ou
train_df, cv_df, y_train, y_cv = train_test_split(X_train, y_train, stratify=y_train, test_si
```

We split the data into train, test and cross validation data sets, preserving the ratio of class distribution in the original data set

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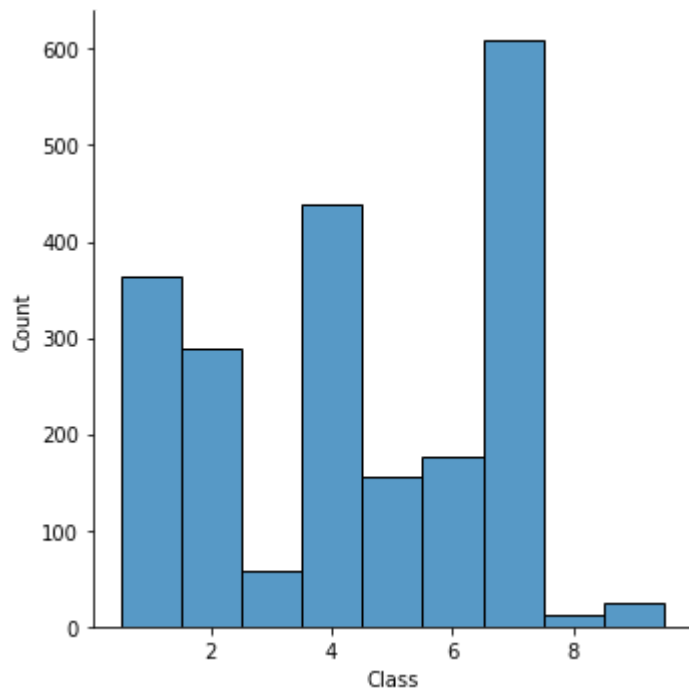
```
n data:', train_df.shape[0])
data:', test_df.shape[0])
s validation data:', cv_df.shape[0])
```

```
Number of data points in train data: 2124
Number of data points in test data: 665
Number of data points in cross validation data: 532
```



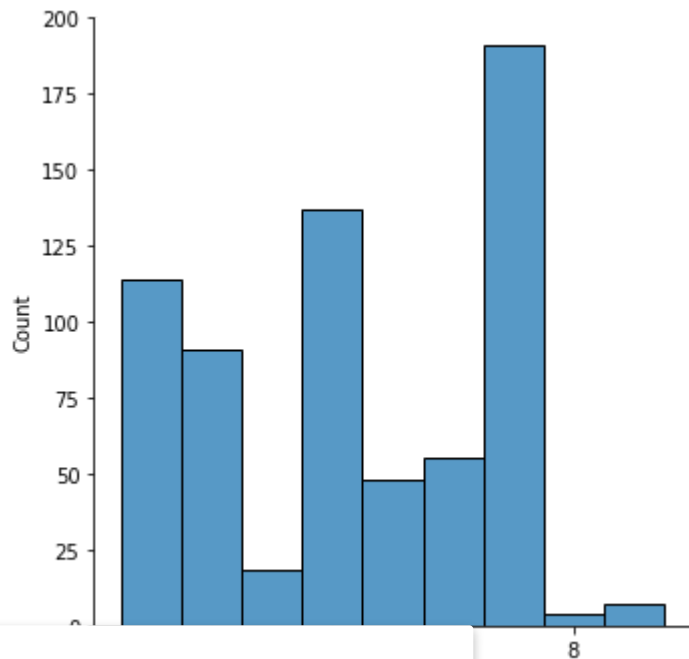
```
sns.displot(train_df,x="Class",discrete=True)
```

<seaborn.axisgrid.FacetGrid at 0x7f511130c250>



```
sns.displot(test_df,x="Class",discrete=True)
```

<seaborn.axisgrid.FacetGrid at 0x7f510f2672d0>

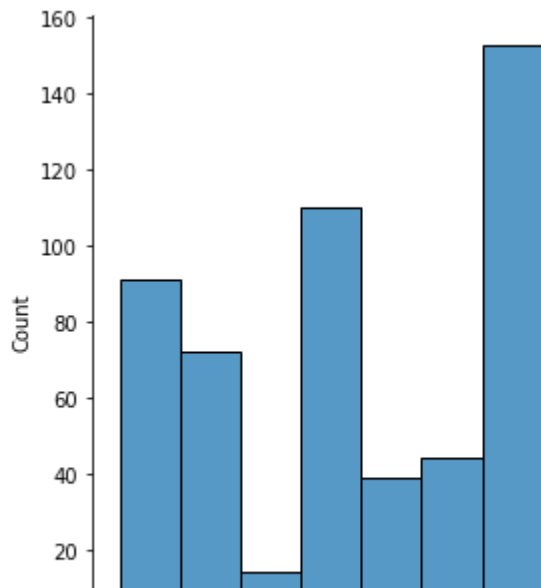


Saved successfully!



```
sns.displot(cv_df,x="Class",discrete=True)
```

<seaborn.axisgrid.FacetGrid at 0x7f5111bc0710>



3.1.4.2. Distribution of y_i's in Train, Test and Cross Validation datasets

```
# it returns a dict, keys as class labels and values as the number of data points in that class
train_class_distribution = train_df['Class'].sort_values()
test_class_distribution = test_df['Class'].sort_values()
cv_class_distribution = cv_df['Class'].sort_values()
```

```
my_colors = 'rgbkymc'
train_class_distribution.plot(kind='bar')
plt.xlabel('Class')
plt.ylabel('Data points per Class')
plt.title('Distribution of y_i in train data')
plt.grid()
plt.show()
```

```
# ref: argsort https://docs.scipy.org/doc/numpy/reference/generated/numpy.argsort.html
# -(train_class_distribution.values): the minus sign will give us in decreasing order
sorted_yi = np.argsort(-train_class_distribution.values)
for i in sorted_yi:
    print('Number of data points in class', i+1, ':', train_class_distribution.values[i], '(',
```

```
print('-'*80)
my_colors = 'rgbkymc'
train_class_distribution.plot(kind='bar')
```

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```
plt.ylabel('Data points per Class')
plt.title('Distribution of y_i in test data')
plt.grid()
plt.show()
```

```
# ref: argsort https://docs.scipy.org/doc/numpy/reference/generated/numpy.argsort.html
# -(train_class_distribution.values): the minus sign will give us in decreasing order
```

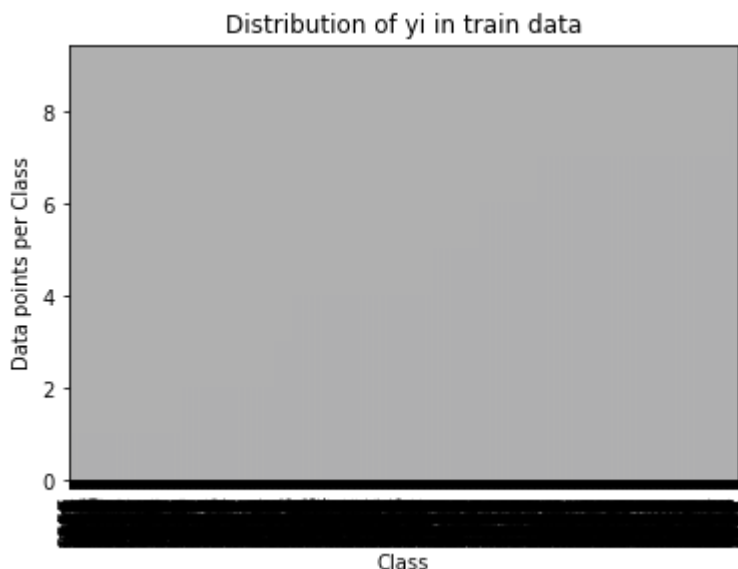
```
sorted_yi = np.argsort(-test_class_distribution.values)
for i in sorted_yi:
    print('Number of data points in class', i+1, ':', test_class_distribution.values[i], '(',

print('-'*80)
my_colors = 'rbgkymc'
cv_class_distribution.plot(kind='bar')
plt.xlabel('Class')
plt.ylabel('Data points per Class')
plt.title('Distribution of yi in cross validation data')
plt.grid()
plt.show()

# ref: argsort https://docs.scipy.org/doc/numpy/reference/generated/numpy.argsort.html
# -(train_class_distribution.values): the minus sign will give us in decreasing order
sorted_yi = np.argsort(-cv_class_distribution.values)
for i in sorted_yi:
    print('Number of data points in class', i+1, ':', cv_class_distribution.values[i], '(', np
```

Saved successfully!





```

Number of data points in class 2124 : 9 ( 0.424 %)
Number of data points in class 2101 : 9 ( 0.424 %)
Number of data points in class 2102 : 9 ( 0.424 %)
Number of data points in class 2103 : 9 ( 0.424 %)
Number of data points in class 2104 : 9 ( 0.424 %)
Number of data points in class 2105 : 9 ( 0.424 %)
Number of data points in class 2106 : 9 ( 0.424 %)
Number of data points in class 2107 : 9 ( 0.424 %)
Number of data points in class 2108 : 9 ( 0.424 %)
Number of data points in class 2109 : 9 ( 0.424 %)
Number of data points in class 2110 : 9 ( 0.424 %)
Number of data points in class 2111 : 9 ( 0.424 %)
Number of data points in class 2123 : 9 ( 0.424 %)
Number of data points in class 2113 : 9 ( 0.424 %)
Number of data points in class 2114 : 9 ( 0.424 %)
Number of data points in class 2115 : 9 ( 0.424 %)
Number of data points in class 2116 : 9 ( 0.424 %)
Number of data points in class 2117 : 9 ( 0.424 %)
Number of data points in class 2118 : 9 ( 0.424 %)
Number of data points in class 2119 : 9 ( 0.424 %)
Number of data points in class 2120 : 9 ( 0.424 %)
Number of data points in class 2121 : 9 ( 0.424 %)
Number of data points in class 2122 : 9 ( 0.424 %)
Number of data points in class 2112 : 9 ( 0.424 %)
Number of data points in class 2089 : 8 ( 0.377 %)
Number of data points in class 2090 : 8 ( 0.377 %)
Number of data points in class 2092 : 8 ( 0.377 %)
Number of data points in class 2093 : 8 ( 0.377 %)
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Number of data points in class 2096 : 8 ( 0.377 %)
Number of data points in class 2097 : 8 ( 0.377 %)
Number of data points in class 2098 : 8 ( 0.377 %)
Number of data points in class 2099 : 8 ( 0.377 %)
Number of data points in class 2100 : 8 ( 0.377 %)
Number of data points in class 2095 : 8 ( 0.377 %)
Number of data points in class 1686 : 7 ( 0.33 %)
Number of data points in class 1685 : 7 ( 0.33 %)
Number of data points in class 1684 : 7 ( 0.33 %)
Number of data points in class 1683 : 7 ( 0.33 %)

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Number of data points in class 1682 : 7 (0.33 %)
Number of data points in class 1681 : 7 (0.33 %)
Number of data points in class 1680 : 7 (0.33 %)
Number of data points in class 1677 : 7 (0.33 %)
Number of data points in class 1678 : 7 (0.33 %)
Number of data points in class 1676 : 7 (0.33 %)
Number of data points in class 1675 : 7 (0.33 %)
Number of data points in class 1674 : 7 (0.33 %)
Number of data points in class 1673 : 7 (0.33 %)
Number of data points in class 1687 : 7 (0.33 %)
Number of data points in class 1679 : 7 (0.33 %)
Number of data points in class 1688 : 7 (0.33 %)
Number of data points in class 1699 : 7 (0.33 %)
Number of data points in class 1690 : 7 (0.33 %)
Number of data points in class 1705 : 7 (0.33 %)
Number of data points in class 1704 : 7 (0.33 %)
Number of data points in class 1703 : 7 (0.33 %)
Number of data points in class 1702 : 7 (0.33 %)
Number of data points in class 1701 : 7 (0.33 %)
Number of data points in class 1700 : 7 (0.33 %)
Number of data points in class 1672 : 7 (0.33 %)
Number of data points in class 1698 : 7 (0.33 %)
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Number of data points in class 1660 : 7 (0.33 %)
Number of data points in class 1669 : 7 (0.33 %)
Number of data points in class 1649 : 7 (0.33 %)
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Number of data points in class 1643 : 7 (0.33 %)
Number of data points in class 1642 : 7 (0.33 %)
Number of data points in class 1641 : 7 (0.33 %)
Number of data points in class 1640 : 7 (0.33 %)
Number of data points in class 1639 : 7 (0.33 %)
Number of data points in class 1638 : 7 (0.33 %)
Number of data points in class 1637 : 7 (0.33 %)
Number of data points in class 1636 : 7 (0.33 %)

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1635 : 7 (0.33 %)
1650 : 7 (0.33 %)
1670 : 7 (0.33 %)
Number of data points in class 1651 : 7 (0.33 %)
Number of data points in class 1653 : 7 (0.33 %)
Number of data points in class 1668 : 7 (0.33 %)
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Number of data points in class 1662 : 7 ( 0.33 %)
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Number of data points in class 1707 : 7 ( 0.33 %)
Number of data points in class 1718 : 7 ( 0.33 %)
Number of data points in class 1709 : 7 ( 0.33 %)
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Number of data points in class 1765 : 7 ( 0.33 %)
Number of data points in class 1767 : 7 ( 0.33 %)
Number of data points in class 1782 : 7 ( 0.33 %)
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Number of data points in class 1770 : 7 ( 0.33 %)
Number of data points in class 1769 : 7 ( 0.33 %)
Number of data points in class 1768 : 7 ( 0.33 %)
Number of data points in class 1766 : 7 ( 0.33 %)
Number of data points in class 1747 : 7 ( 0.33 %)
Number of data points in class 1746 : 7 ( 0.33 %)
Number of data points in class 1745 : 7 ( 0.33 %)
Number of data points in class 1724 : 7 ( 0.33 %)
Number of data points in class 1723 : 7 ( 0.33 %)
Number of data points in class 1722 : 7 ( 0.33 %)
Number of data points in class 1721 : 7 ( 0.33 %)
Number of data points in class 1720 : 7 ( 0.33 %)
Number of data points in class 1719 : 7 ( 0.33 %)
```

Saved successfully!



```
Number of data points in class 1634 : 7 ( 0.33 %)
Number of data points in class 1717 : 7 ( 0.33 %)
Number of data points in class 1716 : 7 ( 0.33 %)
Number of data points in class 1715 : 7 ( 0.33 %)
Number of data points in class 1714 : 7 ( 0.33 %)
Number of data points in class 1713 : 7 ( 0.33 %)
Number of data points in class 1712 : 7 ( 0.33 %)
Number of data points in class 1711 : 7 ( 0.33 %)
Number of data points in class 1710 : 7 ( 0.33 %)
Number of data points in class 1725 : 7 ( 0.33 %)
Number of data points in class 1726 : 7 ( 0.33 %)
Number of data points in class 1727 : 7 ( 0.33 %)
Number of data points in class 1728 : 7 ( 0.33 %)
Number of data points in class 1744 : 7 ( 0.33 %)
Number of data points in class 1743 : 7 ( 0.33 %)
Number of data points in class 1742 : 7 ( 0.33 %)
Number of data points in class 1741 : 7 ( 0.33 %)
Number of data points in class 1740 : 7 ( 0.33 %)
Number of data points in class 1739 : 7 ( 0.33 %)
Number of data points in class 1738 : 7 ( 0.33 %)
Number of data points in class 1708 : 7 ( 0.33 %)
Number of data points in class 1737 : 7 ( 0.33 %)
Number of data points in class 1735 : 7 ( 0.33 %)
Number of data points in class 1734 : 7 ( 0.33 %)
Number of data points in class 1733 : 7 ( 0.33 %)
Number of data points in class 1732 : 7 ( 0.33 %)
Number of data points in class 1731 : 7 ( 0.33 %)
Number of data points in class 1730 : 7 ( 0.33 %)
Number of data points in class 1729 : 7 ( 0.33 %)
Number of data points in class 1736 : 7 ( 0.33 %)
Number of data points in class 1633 : 7 ( 0.33 %)
Number of data points in class 1621 : 7 ( 0.33 %)
Number of data points in class 1631 : 7 ( 0.33 %)
Number of data points in class 1532 : 7 ( 0.33 %)
Number of data points in class 1531 : 7 ( 0.33 %)
Number of data points in class 1530 : 7 ( 0.33 %)
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Number of data points in class 1521 : 7 ( 0.33 %)
Number of data points in class 1520 : 7 ( 0.33 %)
Number of data points in class 1519 : 7 ( 0.33 %)
Number of data points in class 1518 : 7 ( 0.33 %)
Number of data points in class 1533 : 7 ( 0.33 %)
Number of data points in class 1517 : 7 ( 0.33 %)
Number of data points in class 1534 : 7 ( 0.33 %)
Number of data points in class 1536 : 7 ( 0.33 %)
Number of data points in class 1551 : 7 ( 0.33 %)
Number of data points in class 1550 : 7 ( 0.33 %)
Number of data points in class 1549 : 7 ( 0.33 %)
Number of data points in class 1548 : 7 ( 0.33 %)
Number of data points in class 1547 : 7 ( 0.33 %)
Number of data points in class 1546 : 7 ( 0.33 %)
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Saved successfully!



Number of data points in class 1545 : 7 (0.33 %)
Number of data points in class 1544 : 7 (0.33 %)
Number of data points in class 1543 : 7 (0.33 %)
Number of data points in class 1542 : 7 (0.33 %)
Number of data points in class 1541 : 7 (0.33 %)
Number of data points in class 1540 : 7 (0.33 %)
Number of data points in class 1539 : 7 (0.33 %)
Number of data points in class 1538 : 7 (0.33 %)
Number of data points in class 1537 : 7 (0.33 %)
Number of data points in class 1535 : 7 (0.33 %)
Number of data points in class 1552 : 7 (0.33 %)
Number of data points in class 1516 : 7 (0.33 %)
Number of data points in class 1514 : 7 (0.33 %)
Number of data points in class 1494 : 7 (0.33 %)
Number of data points in class 1493 : 7 (0.33 %)
Number of data points in class 1492 : 7 (0.33 %)
Number of data points in class 1491 : 7 (0.33 %)
Number of data points in class 1490 : 7 (0.33 %)
Number of data points in class 1489 : 7 (0.33 %)
Number of data points in class 1488 : 7 (0.33 %)
Number of data points in class 1487 : 7 (0.33 %)
Number of data points in class 1486 : 7 (0.33 %)
Number of data points in class 1485 : 7 (0.33 %)
Number of data points in class 1484 : 7 (0.33 %)
Number of data points in class 1483 : 7 (0.33 %)
Number of data points in class 1482 : 7 (0.33 %)
Number of data points in class 1481 : 7 (0.33 %)
Number of data points in class 1480 : 7 (0.33 %)
Number of data points in class 1495 : 7 (0.33 %)
Number of data points in class 1515 : 7 (0.33 %)
Number of data points in class 1496 : 7 (0.33 %)
Number of data points in class 1498 : 7 (0.33 %)
Number of data points in class 1513 : 7 (0.33 %)
Number of data points in class 1512 : 7 (0.33 %)
Number of data points in class 1511 : 7 (0.33 %)
Number of data points in class 1510 : 7 (0.33 %)
Number of data points in class 1509 : 7 (0.33 %)
Number of data points in class 1508 : 7 (0.33 %)
Number of data points in class 1507 : 7 (0.33 %)
Number of data points in class 1506 : 7 (0.33 %)
Number of data points in class 1505 : 7 (0.33 %)
Number of data points in class 1504 : 7 (0.33 %)
Number of data points in class 1503 : 7 (0.33 %)
Number of data points in class 1502 : 7 (0.33 %)
Number of data points in class 1501 : 7 (0.33 %)
Number of data points in class 1500 : 7 (0.33 %)
Number of data points in class 1499 : 7 (0.33 %)

Saved successfully!



1497 : 7 (0.33 %)
1553 : 7 (0.33 %)
1554 : 7 (0.33 %)
Number of data points in class 1555 : 7 (0.33 %)
Number of data points in class 1611 : 7 (0.33 %)
Number of data points in class 1610 : 7 (0.33 %)
Number of data points in class 1609 : 7 (0.33 %)
Number of data points in class 1608 : 7 (0.33 %)
Number of data points in class 1607 : 7 (0.33 %)
Number of data points in class 1606 : 7 (0.33 %)
Number of data points in class 1605 : 7 (0.33 %)


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Number of data points in class 1605 : 7 ( 0.33 %)
Number of data points in class 1604 : 7 ( 0.33 %)
Number of data points in class 1603 : 7 ( 0.33 %)
Number of data points in class 1602 : 7 ( 0.33 %)
Number of data points in class 1601 : 7 ( 0.33 %)
Number of data points in class 1600 : 7 ( 0.33 %)
Number of data points in class 1599 : 7 ( 0.33 %)
Number of data points in class 1598 : 7 ( 0.33 %)
Number of data points in class 1597 : 7 ( 0.33 %)
Number of data points in class 1612 : 7 ( 0.33 %)
Number of data points in class 1596 : 7 ( 0.33 %)
Number of data points in class 1613 : 7 ( 0.33 %)
Number of data points in class 1615 : 7 ( 0.33 %)
Number of data points in class 1630 : 7 ( 0.33 %)
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Number of data points in class 1628 : 7 ( 0.33 %)
Number of data points in class 1627 : 7 ( 0.33 %)
Number of data points in class 1626 : 7 ( 0.33 %)
Number of data points in class 1625 : 7 ( 0.33 %)
Number of data points in class 1624 : 7 ( 0.33 %)
Number of data points in class 1623 : 7 ( 0.33 %)
Number of data points in class 1622 : 7 ( 0.33 %)
Number of data points in class 1783 : 7 ( 0.33 %)
Number of data points in class 1620 : 7 ( 0.33 %)
Number of data points in class 1619 : 7 ( 0.33 %)
Number of data points in class 1618 : 7 ( 0.33 %)
Number of data points in class 1617 : 7 ( 0.33 %)
Number of data points in class 1616 : 7 ( 0.33 %)
Number of data points in class 1614 : 7 ( 0.33 %)
Number of data points in class 1595 : 7 ( 0.33 %)
Number of data points in class 1594 : 7 ( 0.33 %)
Number of data points in class 1592 : 7 ( 0.33 %)
Number of data points in class 1570 : 7 ( 0.33 %)
Number of data points in class 1569 : 7 ( 0.33 %)
Number of data points in class 1568 : 7 ( 0.33 %)
Number of data points in class 1567 : 7 ( 0.33 %)
Number of data points in class 1566 : 7 ( 0.33 %)
Number of data points in class 1565 : 7 ( 0.33 %)
Number of data points in class 1564 : 7 ( 0.33 %)
Number of data points in class 1563 : 7 ( 0.33 %)
Number of data points in class 1562 : 7 ( 0.33 %)
Number of data points in class 1561 : 7 ( 0.33 %)
Number of data points in class 1560 : 7 ( 0.33 %)
Number of data points in class 1559 : 7 ( 0.33 %)
Number of data points in class 1558 : 7 ( 0.33 %)
Number of data points in class 1557 : 7 ( 0.33 %)
Number of data points in class 1556 : 7 ( 0.33 %)
Number of data points in class 1571 : 7 ( 0.33 %)
Number of data points in class 1572 : 7 ( 0.33 %)
Number of data points in class 1573 : 7 ( 0.33 %)
Number of data points in class 1574 : 7 ( 0.33 %)
Number of data points in class 1591 : 7 ( 0.33 %)
Number of data points in class 1590 : 7 ( 0.33 %)
Number of data points in class 1589 : 7 ( 0.33 %)
Number of data points in class 1588 : 7 ( 0.33 %)
Number of data points in class 1587 : 7 ( 0.33 %)
Number of data points in class 1585 : 7 ( 0.33 %)
Number of data points in class 1584 : 7 ( 0.33 %)
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Saved successfully!



```
Number of data points in class 1632 : 7 ( 0.33 %)
Number of data points in class 1583 : 7 ( 0.33 %)
Number of data points in class 1581 : 7 ( 0.33 %)
Number of data points in class 1580 : 7 ( 0.33 %)
Number of data points in class 1579 : 7 ( 0.33 %)
Number of data points in class 1578 : 7 ( 0.33 %)
Number of data points in class 1577 : 7 ( 0.33 %)
Number of data points in class 1576 : 7 ( 0.33 %)
Number of data points in class 1575 : 7 ( 0.33 %)
Number of data points in class 1582 : 7 ( 0.33 %)
Number of data points in class 1784 : 7 ( 0.33 %)
Number of data points in class 1586 : 7 ( 0.33 %)
Number of data points in class 1786 : 7 ( 0.33 %)
Number of data points in class 1993 : 7 ( 0.33 %)
Number of data points in class 1992 : 7 ( 0.33 %)
Number of data points in class 1991 : 7 ( 0.33 %)
Number of data points in class 1990 : 7 ( 0.33 %)
Number of data points in class 1989 : 7 ( 0.33 %)
Number of data points in class 1988 : 7 ( 0.33 %)
Number of data points in class 1987 : 7 ( 0.33 %)
Number of data points in class 1986 : 7 ( 0.33 %)
Number of data points in class 1985 : 7 ( 0.33 %)
Number of data points in class 1984 : 7 ( 0.33 %)
Number of data points in class 1983 : 7 ( 0.33 %)
Number of data points in class 1982 : 7 ( 0.33 %)
Number of data points in class 1981 : 7 ( 0.33 %)
Number of data points in class 1980 : 7 ( 0.33 %)
Number of data points in class 1979 : 7 ( 0.33 %)
Number of data points in class 1994 : 7 ( 0.33 %)
Number of data points in class 1978 : 7 ( 0.33 %)
Number of data points in class 1995 : 7 ( 0.33 %)
Number of data points in class 1997 : 7 ( 0.33 %)
Number of data points in class 2012 : 7 ( 0.33 %)
Number of data points in class 2011 : 7 ( 0.33 %)
Number of data points in class 2010 : 7 ( 0.33 %)
Number of data points in class 2009 : 7 ( 0.33 %)
Number of data points in class 2008 : 7 ( 0.33 %)
Number of data points in class 2007 : 7 ( 0.33 %)
Number of data points in class 2006 : 7 ( 0.33 %)
Number of data points in class 2005 : 7 ( 0.33 %)
Number of data points in class 2004 : 7 ( 0.33 %)
Number of data points in class 2003 : 7 ( 0.33 %)
Number of data points in class 2002 : 7 ( 0.33 %)
Number of data points in class 2001 : 7 ( 0.33 %)
Number of data points in class 2000 : 7 ( 0.33 %)
Number of data points in class 1999 : 7 ( 0.33 %)
Number of data points in class 1998 : 7 ( 0.33 %)
Number of data points in class 1996 : 7 ( 0.33 %)
Number of data points in class 2013 : 7 ( 0.33 %)
Number of data points in class 1977 : 7 ( 0.33 %)
Number of data points in class 1975 : 7 ( 0.33 %)
Number of data points in class 1955 : 7 ( 0.33 %)
Number of data points in class 1954 : 7 ( 0.33 %)
Number of data points in class 1953 : 7 ( 0.33 %)
Number of data points in class 1952 : 7 ( 0.33 %)
Number of data points in class 1951 : 7 ( 0.33 %)
Number of data points in class 1950 : 7 ( 0.33 %)
Number of data points in class 1949 : 7 ( 0.33 %)
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Saved successfully!



```
Number of data points in class 1948 : 7 ( 0.33 %)
Number of data points in class 1947 : 7 ( 0.33 %)
Number of data points in class 1946 : 7 ( 0.33 %)
Number of data points in class 1945 : 7 ( 0.33 %)
Number of data points in class 1944 : 7 ( 0.33 %)
Number of data points in class 1943 : 7 ( 0.33 %)
Number of data points in class 1942 : 7 ( 0.33 %)
Number of data points in class 1941 : 7 ( 0.33 %)
Number of data points in class 1956 : 7 ( 0.33 %)
Number of data points in class 1976 : 7 ( 0.33 %)
Number of data points in class 1957 : 7 ( 0.33 %)
Number of data points in class 1959 : 7 ( 0.33 %)
Number of data points in class 1974 : 7 ( 0.33 %)
Number of data points in class 1973 : 7 ( 0.33 %)
Number of data points in class 1972 : 7 ( 0.33 %)
Number of data points in class 1971 : 7 ( 0.33 %)
Number of data points in class 1970 : 7 ( 0.33 %)
Number of data points in class 1969 : 7 ( 0.33 %)
Number of data points in class 1968 : 7 ( 0.33 %)
Number of data points in class 1967 : 7 ( 0.33 %)
Number of data points in class 1966 : 7 ( 0.33 %)
Number of data points in class 1965 : 7 ( 0.33 %)
Number of data points in class 1964 : 7 ( 0.33 %)
Number of data points in class 1963 : 7 ( 0.33 %)
Number of data points in class 1962 : 7 ( 0.33 %)
Number of data points in class 1961 : 7 ( 0.33 %)
Number of data points in class 1960 : 7 ( 0.33 %)
Number of data points in class 1958 : 7 ( 0.33 %)
Number of data points in class 2014 : 7 ( 0.33 %)
Number of data points in class 2015 : 7 ( 0.33 %)
Number of data points in class 2016 : 7 ( 0.33 %)
Number of data points in class 2070 : 7 ( 0.33 %)
Number of data points in class 2069 : 7 ( 0.33 %)
Number of data points in class 2068 : 7 ( 0.33 %)
Number of data points in class 2067 : 7 ( 0.33 %)
Number of data points in class 2066 : 7 ( 0.33 %)
Number of data points in class 2065 : 7 ( 0.33 %)
Number of data points in class 2064 : 7 ( 0.33 %)
Number of data points in class 2063 : 7 ( 0.33 %)
Number of data points in class 2062 : 7 ( 0.33 %)
Number of data points in class 2061 : 7 ( 0.33 %)
Number of data points in class 2060 : 7 ( 0.33 %)
Number of data points in class 2059 : 7 ( 0.33 %)
Number of data points in class 2058 : 7 ( 0.33 %)
Number of data points in class 2057 : 7 ( 0.33 %)
Number of data points in class 2056 : 7 ( 0.33 %)
Number of data points in class 2071 : 7 ( 0.33 %)
2055 : 7 ( 0.33 %)
2072 : 7 ( 0.33 %)
2074 : 7 ( 0.33 %)
Number of data points in class 1785 : 7 ( 0.33 %)
Number of data points in class 2088 : 7 ( 0.33 %)
Number of data points in class 2087 : 7 ( 0.33 %)
Number of data points in class 2086 : 7 ( 0.33 %)
Number of data points in class 2085 : 7 ( 0.33 %)
Number of data points in class 2084 : 7 ( 0.33 %)
Number of data points in class 2083 : 7 ( 0.33 %)
Number of data points in class 2082 : 7 ( 0.33 %)
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Saved successfully!



```
Number of data points in class 2082 : 7 ( 0.33 %)
Number of data points in class 2081 : 7 ( 0.33 %)
Number of data points in class 2080 : 7 ( 0.33 %)
Number of data points in class 2079 : 7 ( 0.33 %)
Number of data points in class 2078 : 7 ( 0.33 %)
Number of data points in class 2077 : 7 ( 0.33 %)
Number of data points in class 2076 : 7 ( 0.33 %)
Number of data points in class 2075 : 7 ( 0.33 %)
Number of data points in class 2073 : 7 ( 0.33 %)
Number of data points in class 2054 : 7 ( 0.33 %)
Number of data points in class 2053 : 7 ( 0.33 %)
Number of data points in class 2052 : 7 ( 0.33 %)
Number of data points in class 2031 : 7 ( 0.33 %)
Number of data points in class 2030 : 7 ( 0.33 %)
Number of data points in class 2029 : 7 ( 0.33 %)
Number of data points in class 2028 : 7 ( 0.33 %)
Number of data points in class 2027 : 7 ( 0.33 %)
Number of data points in class 2026 : 7 ( 0.33 %)
Number of data points in class 2025 : 7 ( 0.33 %)
Number of data points in class 2024 : 7 ( 0.33 %)
Number of data points in class 2023 : 7 ( 0.33 %)
Number of data points in class 2022 : 7 ( 0.33 %)
Number of data points in class 2021 : 7 ( 0.33 %)
Number of data points in class 2020 : 7 ( 0.33 %)
Number of data points in class 2019 : 7 ( 0.33 %)
Number of data points in class 2018 : 7 ( 0.33 %)
Number of data points in class 2017 : 7 ( 0.33 %)
Number of data points in class 2032 : 7 ( 0.33 %)
Number of data points in class 2033 : 7 ( 0.33 %)
Number of data points in class 2034 : 7 ( 0.33 %)
Number of data points in class 2035 : 7 ( 0.33 %)
Number of data points in class 2051 : 7 ( 0.33 %)
Number of data points in class 2050 : 7 ( 0.33 %)
Number of data points in class 2049 : 7 ( 0.33 %)
Number of data points in class 2048 : 7 ( 0.33 %)
Number of data points in class 2047 : 7 ( 0.33 %)
Number of data points in class 2046 : 7 ( 0.33 %)
Number of data points in class 2045 : 7 ( 0.33 %)
Number of data points in class 1940 : 7 ( 0.33 %)
Number of data points in class 2044 : 7 ( 0.33 %)
Number of data points in class 2042 : 7 ( 0.33 %)
Number of data points in class 2041 : 7 ( 0.33 %)
Number of data points in class 2040 : 7 ( 0.33 %)
Number of data points in class 2039 : 7 ( 0.33 %)
Number of data points in class 2038 : 7 ( 0.33 %)
Number of data points in class 2037 : 7 ( 0.33 %)
Number of data points in class 2036 : 7 ( 0.33 %)
Number of data points in class 2043 : 7 ( 0.33 %)
Number of data points in class 1939 : 7 ( 0.33 %)
Number of data points in class 1593 : 7 ( 0.33 %)
Number of data points in class 1937 : 7 ( 0.33 %)
Number of data points in class 1840 : 7 ( 0.33 %)
Number of data points in class 1839 : 7 ( 0.33 %)
Number of data points in class 1838 : 7 ( 0.33 %)
Number of data points in class 1837 : 7 ( 0.33 %)
Number of data points in class 1836 : 7 ( 0.33 %)
Number of data points in class 1835 : 7 ( 0.33 %)
Number of data points in class 1834 : 7 ( 0.33 %)
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Saved successfully!



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Number of data points in class 1833 : 7 ( 0.33 %)
Number of data points in class 1832 : 7 ( 0.33 %)
Number of data points in class 1831 : 7 ( 0.33 %)
Number of data points in class 1830 : 7 ( 0.33 %)
Number of data points in class 1829 : 7 ( 0.33 %)
Number of data points in class 1828 : 7 ( 0.33 %)
Number of data points in class 1827 : 7 ( 0.33 %)
Number of data points in class 1826 : 7 ( 0.33 %)
Number of data points in class 1841 : 7 ( 0.33 %)
Number of data points in class 1825 : 7 ( 0.33 %)
Number of data points in class 1842 : 7 ( 0.33 %)
Number of data points in class 1844 : 7 ( 0.33 %)
Number of data points in class 1859 : 7 ( 0.33 %)
Number of data points in class 1858 : 7 ( 0.33 %)
Number of data points in class 1857 : 7 ( 0.33 %)
Number of data points in class 1856 : 7 ( 0.33 %)
Number of data points in class 1855 : 7 ( 0.33 %)
Number of data points in class 1854 : 7 ( 0.33 %)
Number of data points in class 1853 : 7 ( 0.33 %)
Number of data points in class 1852 : 7 ( 0.33 %)
Number of data points in class 1851 : 7 ( 0.33 %)
Number of data points in class 1850 : 7 ( 0.33 %)
Number of data points in class 1849 : 7 ( 0.33 %)
Number of data points in class 1848 : 7 ( 0.33 %)
Number of data points in class 1847 : 7 ( 0.33 %)
Number of data points in class 1846 : 7 ( 0.33 %)
Number of data points in class 1845 : 7 ( 0.33 %)
Number of data points in class 1843 : 7 ( 0.33 %)
Number of data points in class 1824 : 7 ( 0.33 %)
Number of data points in class 1823 : 7 ( 0.33 %)
Number of data points in class 1822 : 7 ( 0.33 %)
Number of data points in class 1800 : 7 ( 0.33 %)
Number of data points in class 1799 : 7 ( 0.33 %)
Number of data points in class 1798 : 7 ( 0.33 %)
Number of data points in class 1797 : 7 ( 0.33 %)
Number of data points in class 1796 : 7 ( 0.33 %)
Number of data points in class 1795 : 7 ( 0.33 %)
Number of data points in class 1794 : 7 ( 0.33 %)
Number of data points in class 1793 : 7 ( 0.33 %)
Number of data points in class 1792 : 7 ( 0.33 %)
Number of data points in class 1791 : 7 ( 0.33 %)
Number of data points in class 1790 : 7 ( 0.33 %)
Number of data points in class 1789 : 7 ( 0.33 %)
Number of data points in class 1788 : 7 ( 0.33 %)
Number of data points in class 1938 : 7 ( 0.33 %)
Number of data points in class 1787 : 7 ( 0.33 %)
Number of data points in class 1801 : 7 ( 0.33 %)
Number of data points in class 1802 : 7 ( 0.33 %)
Number of data points in class 1803 : 7 ( 0.33 %)
Number of data points in class 1804 : 7 ( 0.33 %)
Number of data points in class 1821 : 7 ( 0.33 %)
Number of data points in class 1820 : 7 ( 0.33 %)
Number of data points in class 1818 : 7 ( 0.33 %)
Number of data points in class 1817 : 7 ( 0.33 %)
Number of data points in class 1816 : 7 ( 0.33 %)
Number of data points in class 1815 : 7 ( 0.33 %)
Number of data points in class 1814 : 7 ( 0.33 %)
Number of data points in class 1860 : 7 ( 0.33 %)
```

Saved successfully!



```
Number of data points in class 1813 : 7 ( 0.33 %)
Number of data points in class 1811 : 7 ( 0.33 %)
Number of data points in class 1810 : 7 ( 0.33 %)
Number of data points in class 1809 : 7 ( 0.33 %)
Number of data points in class 1808 : 7 ( 0.33 %)
Number of data points in class 1807 : 7 ( 0.33 %)
Number of data points in class 1806 : 7 ( 0.33 %)
Number of data points in class 1805 : 7 ( 0.33 %)
Number of data points in class 1812 : 7 ( 0.33 %)
Number of data points in class 1861 : 7 ( 0.33 %)
Number of data points in class 1819 : 7 ( 0.33 %)
Number of data points in class 1863 : 7 ( 0.33 %)
Number of data points in class 1917 : 7 ( 0.33 %)
Number of data points in class 1916 : 7 ( 0.33 %)
Number of data points in class 1915 : 7 ( 0.33 %)
Number of data points in class 1914 : 7 ( 0.33 %)
Number of data points in class 1913 : 7 ( 0.33 %)
Number of data points in class 1912 : 7 ( 0.33 %)
Number of data points in class 1911 : 7 ( 0.33 %)
Number of data points in class 1910 : 7 ( 0.33 %)
Number of data points in class 1909 : 7 ( 0.33 %)
Number of data points in class 1908 : 7 ( 0.33 %)
Number of data points in class 1907 : 7 ( 0.33 %)
Number of data points in class 1906 : 7 ( 0.33 %)
Number of data points in class 1905 : 7 ( 0.33 %)
Number of data points in class 1904 : 7 ( 0.33 %)
Number of data points in class 1903 : 7 ( 0.33 %)
Number of data points in class 1918 : 7 ( 0.33 %)
Number of data points in class 1902 : 7 ( 0.33 %)
Number of data points in class 1935 : 7 ( 0.33 %)
Number of data points in class 1921 : 7 ( 0.33 %)
Number of data points in class 1936 : 7 ( 0.33 %)
Number of data points in class 1862 : 7 ( 0.33 %)
Number of data points in class 1934 : 7 ( 0.33 %)
Number of data points in class 1933 : 7 ( 0.33 %)
Number of data points in class 1932 : 7 ( 0.33 %)
Number of data points in class 1931 : 7 ( 0.33 %)
Number of data points in class 1930 : 7 ( 0.33 %)
Number of data points in class 1929 : 7 ( 0.33 %)
Number of data points in class 1928 : 7 ( 0.33 %)
Number of data points in class 1927 : 7 ( 0.33 %)
Number of data points in class 1926 : 7 ( 0.33 %)
Number of data points in class 1925 : 7 ( 0.33 %)
Number of data points in class 1924 : 7 ( 0.33 %)
Number of data points in class 1923 : 7 ( 0.33 %)
Number of data points in class 1922 : 7 ( 0.33 %)
Number of data points in class 1920 : 7 ( 0.33 %)
Number of data points in class 1901 : 7 ( 0.33 %)
Number of data points in class 1919 : 7 ( 0.33 %)
Number of data points in class 1873 : 7 ( 0.33 %)
Number of data points in class 1880 : 7 ( 0.33 %)
Number of data points in class 1878 : 7 ( 0.33 %)
Number of data points in class 1877 : 7 ( 0.33 %)
Number of data points in class 1876 : 7 ( 0.33 %)
Number of data points in class 1875 : 7 ( 0.33 %)
Number of data points in class 1874 : 7 ( 0.33 %)
Number of data points in class 1872 : 7 ( 0.33 %)
Number of data points in class 1881 : 7 ( 0.33 %)
```

Saved successfully!



```
number of data points in class 1881 : 7 ( 0.33 %)
Number of data points in class 1871 : 7 ( 0.33 %)
Number of data points in class 1869 : 7 ( 0.33 %)
Number of data points in class 1868 : 7 ( 0.33 %)
Number of data points in class 1867 : 7 ( 0.33 %)
Number of data points in class 1866 : 7 ( 0.33 %)
Number of data points in class 1900 : 7 ( 0.33 %)
Number of data points in class 1864 : 7 ( 0.33 %)
Number of data points in class 1865 : 7 ( 0.33 %)
Number of data points in class 1870 : 7 ( 0.33 %)
Number of data points in class 1882 : 7 ( 0.33 %)
Number of data points in class 1879 : 7 ( 0.33 %)
Number of data points in class 1884 : 7 ( 0.33 %)
Number of data points in class 1899 : 7 ( 0.33 %)
Number of data points in class 1898 : 7 ( 0.33 %)
Number of data points in class 1897 : 7 ( 0.33 %)
Number of data points in class 1896 : 7 ( 0.33 %)
Number of data points in class 1895 : 7 ( 0.33 %)
Number of data points in class 1883 : 7 ( 0.33 %)
Number of data points in class 1893 : 7 ( 0.33 %)
Number of data points in class 1892 : 7 ( 0.33 %)
Number of data points in class 1894 : 7 ( 0.33 %)
Number of data points in class 1890 : 7 ( 0.33 %)
Number of data points in class 1889 : 7 ( 0.33 %)
Number of data points in class 1888 : 7 ( 0.33 %)
Number of data points in class 1887 : 7 ( 0.33 %)
Number of data points in class 1886 : 7 ( 0.33 %)
Number of data points in class 1885 : 7 ( 0.33 %)
Number of data points in class 1891 : 7 ( 0.33 %)
Number of data points in class 1364 : 6 ( 0.282 %)
Number of data points in class 1365 : 6 ( 0.282 %)
Number of data points in class 1363 : 6 ( 0.282 %)
Number of data points in class 1362 : 6 ( 0.282 %)
Number of data points in class 1361 : 6 ( 0.282 %)
Number of data points in class 1359 : 6 ( 0.282 %)
Number of data points in class 1360 : 6 ( 0.282 %)
Number of data points in class 1358 : 6 ( 0.282 %)
Number of data points in class 1389 : 6 ( 0.282 %)
Number of data points in class 1356 : 6 ( 0.282 %)
Number of data points in class 1355 : 6 ( 0.282 %)
Number of data points in class 1354 : 6 ( 0.282 %)
Number of data points in class 1353 : 6 ( 0.282 %)
Number of data points in class 1352 : 6 ( 0.282 %)
Number of data points in class 1351 : 6 ( 0.282 %)
Number of data points in class 1350 : 6 ( 0.282 %)
Number of data points in class 1366 : 6 ( 0.282 %)
Number of data points in class 1349 : 6 ( 0.282 %)
Number of data points in class 1357 : 6 ( 0.282 %)
Number of data points in class 1367 : 6 ( 0.282 %)
Number of data points in class 1384 : 6 ( 0.282 %)
Number of data points in class 1369 : 6 ( 0.282 %)
Number of data points in class 1388 : 6 ( 0.282 %)
Number of data points in class 1387 : 6 ( 0.282 %)
Number of data points in class 1386 : 6 ( 0.282 %)
Number of data points in class 1385 : 6 ( 0.282 %)
Number of data points in class 1383 : 6 ( 0.282 %)
Number of data points in class 1382 : 6 ( 0.282 %)
Number of data points in class 1381 : 6 ( 0.282 %)
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Saved successfully!



Number of data points in class 1380 : 6 (0.282 %)
Number of data points in class 1368 : 6 (0.282 %)
Number of data points in class 1379 : 6 (0.282 %)
Number of data points in class 1377 : 6 (0.282 %)
Number of data points in class 1376 : 6 (0.282 %)
Number of data points in class 1375 : 6 (0.282 %)
Number of data points in class 1374 : 6 (0.282 %)
Number of data points in class 1373 : 6 (0.282 %)
Number of data points in class 1372 : 6 (0.282 %)
Number of data points in class 1371 : 6 (0.282 %)
Number of data points in class 1370 : 6 (0.282 %)
Number of data points in class 1378 : 6 (0.282 %)
Number of data points in class 1348 : 6 (0.282 %)
Number of data points in class 1311 : 6 (0.282 %)
Number of data points in class 1345 : 6 (0.282 %)
Number of data points in class 1321 : 6 (0.282 %)
Number of data points in class 1320 : 6 (0.282 %)
Number of data points in class 1319 : 6 (0.282 %)
Number of data points in class 1318 : 6 (0.282 %)
Number of data points in class 1317 : 6 (0.282 %)
Number of data points in class 1316 : 6 (0.282 %)
Number of data points in class 1315 : 6 (0.282 %)
Number of data points in class 1314 : 6 (0.282 %)
Number of data points in class 1322 : 6 (0.282 %)
Number of data points in class 1313 : 6 (0.282 %)
Number of data points in class 1310 : 6 (0.282 %)
Number of data points in class 1309 : 6 (0.282 %)
Number of data points in class 1308 : 6 (0.282 %)
Number of data points in class 1307 : 6 (0.282 %)
Number of data points in class 1306 : 6 (0.282 %)
Number of data points in class 1305 : 6 (0.282 %)
Number of data points in class 1390 : 6 (0.282 %)
Number of data points in class 1304 : 6 (0.282 %)
Number of data points in class 1312 : 6 (0.282 %)
Number of data points in class 1323 : 6 (0.282 %)
Number of data points in class 1324 : 6 (0.282 %)
Number of data points in class 1325 : 6 (0.282 %)
Number of data points in class 1344 : 6 (0.282 %)
Number of data points in class 1343 : 6 (0.282 %)
Number of data points in class 1342 : 6 (0.282 %)
Number of data points in class 1341 : 6 (0.282 %)
Number of data points in class 1340 : 6 (0.282 %)
Number of data points in class 1339 : 6 (0.282 %)
Number of data points in class 1338 : 6 (0.282 %)
Number of data points in class 1337 : 6 (0.282 %)
Number of data points in class 1336 : 6 (0.282 %)
Number of data points in class 1335 : 6 (0.282 %)
Number of data points in class 1334 : 6 (0.282 %)
Number of data points in class 1333 : 6 (0.282 %)
Number of data points in class 1332 : 6 (0.282 %)
Number of data points in class 1331 : 6 (0.282 %)
Number of data points in class 1330 : 6 (0.282 %)
Number of data points in class 1329 : 6 (0.282 %)
Number of data points in class 1328 : 6 (0.282 %)
Number of data points in class 1327 : 6 (0.282 %)
Number of data points in class 1326 : 6 (0.282 %)
Number of data points in class 1347 : 6 (0.282 %)
Number of data points in class 1391 : 6 (0.282 %)

Saved successfully!




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Number of data points in class 1346 : 6 ( 0.282 %)
Number of data points in class 1393 : 6 ( 0.282 %)
Number of data points in class 1457 : 6 ( 0.282 %)
Number of data points in class 1456 : 6 ( 0.282 %)
Number of data points in class 1455 : 6 ( 0.282 %)
Number of data points in class 1454 : 6 ( 0.282 %)
Number of data points in class 1453 : 6 ( 0.282 %)
Number of data points in class 1452 : 6 ( 0.282 %)
Number of data points in class 1451 : 6 ( 0.282 %)
Number of data points in class 1450 : 6 ( 0.282 %)
Number of data points in class 1458 : 6 ( 0.282 %)
Number of data points in class 1449 : 6 ( 0.282 %)
Number of data points in class 1447 : 6 ( 0.282 %)
Number of data points in class 1446 : 6 ( 0.282 %)
Number of data points in class 1445 : 6 ( 0.282 %)
Number of data points in class 1444 : 6 ( 0.282 %)
Number of data points in class 1443 : 6 ( 0.282 %)
Number of data points in class 1442 : 6 ( 0.282 %)
Number of data points in class 1441 : 6 ( 0.282 %)
Number of data points in class 1440 : 6 ( 0.282 %)
Number of data points in class 1448 : 6 ( 0.282 %)
Number of data points in class 1459 : 6 ( 0.282 %)
Number of data points in class 1460 : 6 ( 0.282 %)
Number of data points in class 1461 : 6 ( 0.282 %)
Number of data points in class 1392 : 6 ( 0.282 %)
Number of data points in class 1479 : 6 ( 0.282 %)
Number of data points in class 1478 : 6 ( 0.282 %)
Number of data points in class 1477 : 6 ( 0.282 %)
Number of data points in class 1476 : 6 ( 0.282 %)
Number of data points in class 1475 : 6 ( 0.282 %)
Number of data points in class 1474 : 6 ( 0.282 %)
Number of data points in class 1473 : 6 ( 0.282 %)
Number of data points in class 1472 : 6 ( 0.282 %)
Number of data points in class 1471 : 6 ( 0.282 %)
Number of data points in class 1470 : 6 ( 0.282 %)
Number of data points in class 1469 : 6 ( 0.282 %)
Number of data points in class 1468 : 6 ( 0.282 %)
Number of data points in class 1467 : 6 ( 0.282 %)
Number of data points in class 1466 : 6 ( 0.282 %)
Number of data points in class 1465 : 6 ( 0.282 %)
Number of data points in class 1464 : 6 ( 0.282 %)
Number of data points in class 1463 : 6 ( 0.282 %)
Number of data points in class 1462 : 6 ( 0.282 %)
Number of data points in class 1439 : 6 ( 0.282 %)
Number of data points in class 1438 : 6 ( 0.282 %)
Number of data points in class 1423 : 6 ( 0.282 %)
Number of data points in class 1436 : 6 ( 0.282 %)
Number of data points in class 1411 : 6 ( 0.282 %)
Number of data points in class 1410 : 6 ( 0.282 %)
Number of data points in class 1409 : 6 ( 0.282 %)
Number of data points in class 1408 : 6 ( 0.282 %)
Number of data points in class 1407 : 6 ( 0.282 %)
Number of data points in class 1406 : 6 ( 0.282 %)
Number of data points in class 1405 : 6 ( 0.282 %)
Number of data points in class 1404 : 6 ( 0.282 %)
Number of data points in class 1412 : 6 ( 0.282 %)
Number of data points in class 1403 : 6 ( 0.282 %)
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Saved successfully!



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number of data points in class 1401 : 6 ( 0.282 %)
Number of data points in class 1400 : 6 ( 0.282 %)
Number of data points in class 1399 : 6 ( 0.282 %)
Number of data points in class 1398 : 6 ( 0.282 %)
Number of data points in class 1397 : 6 ( 0.282 %)
Number of data points in class 1396 : 6 ( 0.282 %)
Number of data points in class 1395 : 6 ( 0.282 %)
Number of data points in class 1437 : 6 ( 0.282 %)
Number of data points in class 1402 : 6 ( 0.282 %)
Number of data points in class 1413 : 6 ( 0.282 %)
Number of data points in class 1394 : 6 ( 0.282 %)
Number of data points in class 1415 : 6 ( 0.282 %)
Number of data points in class 1435 : 6 ( 0.282 %)
Number of data points in class 1414 : 6 ( 0.282 %)
Number of data points in class 1433 : 6 ( 0.282 %)
Number of data points in class 1432 : 6 ( 0.282 %)
Number of data points in class 1431 : 6 ( 0.282 %)
Number of data points in class 1430 : 6 ( 0.282 %)
Number of data points in class 1429 : 6 ( 0.282 %)
Number of data points in class 1428 : 6 ( 0.282 %)
Number of data points in class 1427 : 6 ( 0.282 %)
Number of data points in class 1434 : 6 ( 0.282 %)
Number of data points in class 1425 : 6 ( 0.282 %)
Number of data points in class 1424 : 6 ( 0.282 %)
Number of data points in class 1422 : 6 ( 0.282 %)
Number of data points in class 1421 : 6 ( 0.282 %)
Number of data points in class 1420 : 6 ( 0.282 %)
Number of data points in class 1419 : 6 ( 0.282 %)
Number of data points in class 1418 : 6 ( 0.282 %)
Number of data points in class 1416 : 6 ( 0.282 %)
Number of data points in class 1426 : 6 ( 0.282 %)
Number of data points in class 1417 : 6 ( 0.282 %)
Number of data points in class 1203 : 5 ( 0.235 %)
Number of data points in class 1202 : 5 ( 0.235 %)
Number of data points in class 1201 : 5 ( 0.235 %)
Number of data points in class 1200 : 5 ( 0.235 %)
Number of data points in class 1199 : 5 ( 0.235 %)
Number of data points in class 1198 : 5 ( 0.235 %)
Number of data points in class 1194 : 5 ( 0.235 %)
Number of data points in class 1196 : 5 ( 0.235 %)
Number of data points in class 1195 : 5 ( 0.235 %)
Number of data points in class 1193 : 5 ( 0.235 %)
Number of data points in class 1192 : 5 ( 0.235 %)
Number of data points in class 1191 : 5 ( 0.235 %)
Number of data points in class 1190 : 5 ( 0.235 %)
Number of data points in class 1205 : 5 ( 0.235 %)
Number of data points in class 1197 : 5 ( 0.235 %)
Number of data points in class 1206 : 5 ( 0.235 %)
Number of data points in class 1215 : 5 ( 0.235 %)
Number of data points in class 1208 : 5 ( 0.235 %)
Number of data points in class 1224 : 5 ( 0.235 %)
Number of data points in class 1223 : 5 ( 0.235 %)
Number of data points in class 1222 : 5 ( 0.235 %)
Number of data points in class 1221 : 5 ( 0.235 %)
Number of data points in class 1220 : 5 ( 0.235 %)
Number of data points in class 1219 : 5 ( 0.235 %)
Number of data points in class 1218 : 5 ( 0.235 %)
Number of data points in class 1207 : 5 ( 0.235 %)
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Saved successfully!



Number of data points in class 1217 : 5 (0.235 %)
 Number of data points in class 1189 : 5 (0.235 %)
 Number of data points in class 1214 : 5 (0.235 %)
 Number of data points in class 1213 : 5 (0.235 %)
 Number of data points in class 1212 : 5 (0.235 %)
 Number of data points in class 1211 : 5 (0.235 %)
 Number of data points in class 1210 : 5 (0.235 %)
 Number of data points in class 1209 : 5 (0.235 %)
 Number of data points in class 1216 : 5 (0.235 %)
 Number of data points in class 1188 : 5 (0.235 %)
 Number of data points in class 1178 : 5 (0.235 %)
 Number of data points in class 1186 : 5 (0.235 %)
 Number of data points in class 1164 : 5 (0.235 %)
 Number of data points in class 1163 : 5 (0.235 %)
 Number of data points in class 1162 : 5 (0.235 %)
 Number of data points in class 1161 : 5 (0.235 %)
 Number of data points in class 1160 : 5 (0.235 %)
 Number of data points in class 1159 : 5 (0.235 %)
 Number of data points in class 1158 : 5 (0.235 %)
 Number of data points in class 1165 : 5 (0.235 %)
 Number of data points in class 1157 : 5 (0.235 %)
 Number of data points in class 1155 : 5 (0.235 %)
 Number of data points in class 1154 : 5 (0.235 %)
 Number of data points in class 1153 : 5 (0.235 %)
 Number of data points in class 1152 : 5 (0.235 %)
 Number of data points in class 1151 : 5 (0.235 %)
 Number of data points in class 1150 : 5 (0.235 %)
 Number of data points in class 1149 : 5 (0.235 %)
 Number of data points in class 1156 : 5 (0.235 %)
 Number of data points in class 1187 : 5 (0.235 %)
 Number of data points in class 1166 : 5 (0.235 %)
 Number of data points in class 1168 : 5 (0.235 %)
 Number of data points in class 1185 : 5 (0.235 %)
 Number of data points in class 1184 : 5 (0.235 %)
 Number of data points in class 1183 : 5 (0.235 %)
 Number of data points in class 1182 : 5 (0.235 %)
 Number of data points in class 1181 : 5 (0.235 %)
 Number of data points in class 1180 : 5 (0.235 %)
 Number of data points in class 1179 : 5 (0.235 %)
 Number of data points in class 1225 : 5 (0.235 %)
 Number of data points in class 1177 : 5 (0.235 %)
 Number of data points in class 1175 : 5 (0.235 %)
 Number of data points in class 1174 : 5 (0.235 %)
 Number of data points in class 1173 : 5 (0.235 %)
 Number of data points in class 1172 : 5 (0.235 %)
 Number of data points in class 1171 : 5 (0.235 %)
 Number of data points in class 1170 : 5 (0.235 %)

Saved successfully!



1169 : 5 (0.235 %)
 1176 : 5 (0.235 %)
 1167 : 5 (0.235 %)
 Number of data points in class 1204 : 5 (0.235 %)
 Number of data points in class 1228 : 5 (0.235 %)
 Number of data points in class 1284 : 5 (0.235 %)
 Number of data points in class 1283 : 5 (0.235 %)
 Number of data points in class 1282 : 5 (0.235 %)
 Number of data points in class 1281 : 5 (0.235 %)
 Number of data points in class 1280 : 5 (0.235 %)
 Number of data points in class 1279 : 5 (0.235 %)

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Number of data points in class 1278 : 5 ( 0.235 %)  
Number of data points in class 1285 : 5 ( 0.235 %)  
Number of data points in class 1277 : 5 ( 0.235 %)  
Number of data points in class 1275 : 5 ( 0.235 %)  
Number of data points in class 1274 : 5 ( 0.235 %)  
Number of data points in class 1273 : 5 ( 0.235 %)  
Number of data points in class 1272 : 5 ( 0.235 %)  
Number of data points in class 1271 : 5 ( 0.235 %)  
Number of data points in class 1270 : 5 ( 0.235 %)  
Number of data points in class 1269 : 5 ( 0.235 %)  
Number of data points in class 1276 : 5 ( 0.235 %)  
Number of data points in class 1268 : 5 ( 0.235 %)  
Number of data points in class 1286 : 5 ( 0.235 %)  
Number of data points in class 1288 : 5 ( 0.235 %)  
Number of data points in class 1227 : 5 ( 0.235 %)  
Number of data points in class 1303 : 5 ( 0.235 %)  
Number of data points in class 1302 : 5 ( 0.235 %)  
Number of data points in class 1301 : 5 ( 0.235 %)  
Number of data points in class 1300 : 5 ( 0.235 %)  
Number of data points in class 1299 : 5 ( 0.235 %)  
Number of data points in class 1298 : 5 ( 0.235 %)  
Number of data points in class 1287 : 5 ( 0.235 %)  
Number of data points in class 1297 : 5 ( 0.235 %)  
Number of data points in class 1295 : 5 ( 0.235 %)  
Number of data points in class 1294 : 5 ( 0.235 %)  
Number of data points in class 1293 : 5 ( 0.235 %)  
Number of data points in class 1292 : 5 ( 0.235 %)  
Number of data points in class 1291 : 5 ( 0.235 %)  
Number of data points in class 1290 : 5 ( 0.235 %)  
Number of data points in class 1289 : 5 ( 0.235 %)  
Number of data points in class 1296 : 5 ( 0.235 %)  
Number of data points in class 1267 : 5 ( 0.235 %)  
Number of data points in class 1226 : 5 ( 0.235 %)  
Number of data points in class 1265 : 5 ( 0.235 %)  
Number of data points in class 1244 : 5 ( 0.235 %)  
Number of data points in class 1243 : 5 ( 0.235 %)  
Number of data points in class 1242 : 5 ( 0.235 %)  
Number of data points in class 1241 : 5 ( 0.235 %)  
Number of data points in class 1240 : 5 ( 0.235 %)  
Number of data points in class 1239 : 5 ( 0.235 %)  
Number of data points in class 1238 : 5 ( 0.235 %)  
Number of data points in class 1245 : 5 ( 0.235 %)  
Number of data points in class 1236 : 5 ( 0.235 %)  
Number of data points in class 1234 : 5 ( 0.235 %)  
Number of data points in class 1233 : 5 ( 0.235 %)  
Number of data points in class 1232 : 5 ( 0.235 %)  
Number of data points in class 1231 : 5 ( 0.235 %)  
Number of data points in class 1230 : 5 ( 0.235 %)  
Number of data points in class 1229 : 5 ( 0.235 %)  
Number of data points in class 1266 : 5 ( 0.235 %)  
Number of data points in class 1235 : 5 ( 0.235 %)  
Number of data points in class 1246 : 5 ( 0.235 %)  
Number of data points in class 1237 : 5 ( 0.235 %)  
Number of data points in class 1248 : 5 ( 0.235 %)  
Number of data points in class 1263 : 5 ( 0.235 %)  
Number of data points in class 1247 : 5 ( 0.235 %)  
Number of data points in class 1264 : 5 ( 0.235 %)
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Saved successfully!



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Number of data points in class 1262 : 5 ( 0.235 %)
Number of data points in class 1261 : 5 ( 0.235 %)
Number of data points in class 1260 : 5 ( 0.235 %)
Number of data points in class 1258 : 5 ( 0.235 %)
Number of data points in class 1257 : 5 ( 0.235 %)
Number of data points in class 1259 : 5 ( 0.235 %)
Number of data points in class 1255 : 5 ( 0.235 %)
Number of data points in class 1254 : 5 ( 0.235 %)
Number of data points in class 1253 : 5 ( 0.235 %)
Number of data points in class 1252 : 5 ( 0.235 %)
Number of data points in class 1251 : 5 ( 0.235 %)
Number of data points in class 1250 : 5 ( 0.235 %)
Number of data points in class 1249 : 5 ( 0.235 %)
Number of data points in class 1256 : 5 ( 0.235 %)
Number of data points in class 1087 : 4 ( 0.188 %)
Number of data points in class 1093 : 4 ( 0.188 %)
Number of data points in class 1088 : 4 ( 0.188 %)
Number of data points in class 1089 : 4 ( 0.188 %)
Number of data points in class 1090 : 4 ( 0.188 %)
Number of data points in class 1091 : 4 ( 0.188 %)
Number of data points in class 1092 : 4 ( 0.188 %)
Number of data points in class 1094 : 4 ( 0.188 %)
Number of data points in class 1101 : 4 ( 0.188 %)
Number of data points in class 1096 : 4 ( 0.188 %)
Number of data points in class 1097 : 4 ( 0.188 %)
Number of data points in class 1098 : 4 ( 0.188 %)
Number of data points in class 1099 : 4 ( 0.188 %)
Number of data points in class 1100 : 4 ( 0.188 %)
Number of data points in class 1102 : 4 ( 0.188 %)
Number of data points in class 1103 : 4 ( 0.188 %)
Number of data points in class 1086 : 4 ( 0.188 %)
Number of data points in class 1095 : 4 ( 0.188 %)
Number of data points in class 1085 : 4 ( 0.188 %)
Number of data points in class 1067 : 4 ( 0.188 %)
Number of data points in class 1083 : 4 ( 0.188 %)
Number of data points in class 1064 : 4 ( 0.188 %)
Number of data points in class 1065 : 4 ( 0.188 %)
Number of data points in class 1066 : 4 ( 0.188 %)
Number of data points in class 1104 : 4 ( 0.188 %)
Number of data points in class 1068 : 4 ( 0.188 %)
Number of data points in class 1069 : 4 ( 0.188 %)
Number of data points in class 1070 : 4 ( 0.188 %)
Number of data points in class 1071 : 4 ( 0.188 %)
Number of data points in class 1072 : 4 ( 0.188 %)
Number of data points in class 1073 : 4 ( 0.188 %)
Number of data points in class 1074 : 4 ( 0.188 %)
Number of data points in class 1075 : 4 ( 0.188 %)
Number of data points in class 1076 : 4 ( 0.188 %)
Number of data points in class 1077 : 4 ( 0.188 %)
Number of data points in class 1078 : 4 ( 0.188 %)
Number of data points in class 1079 : 4 ( 0.188 %)
Number of data points in class 1080 : 4 ( 0.188 %)
Number of data points in class 1081 : 4 ( 0.188 %)
Number of data points in class 1082 : 4 ( 0.188 %)
Number of data points in class 1084 : 4 ( 0.188 %)
Number of data points in class 1105 : 4 ( 0.188 %)
Number of data points in class 1124 : 4 ( 0.188 %)
Number of data points in class 1107 : 4 ( 0.188 %)
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Saved successfully!



Number of data points in class 1131 : 4 (0.188 %)
Number of data points in class 1132 : 4 (0.188 %)
Number of data points in class 1133 : 4 (0.188 %)
Number of data points in class 1134 : 4 (0.188 %)
Number of data points in class 1135 : 4 (0.188 %)
Number of data points in class 1136 : 4 (0.188 %)
Number of data points in class 1137 : 4 (0.188 %)
Number of data points in class 1138 : 4 (0.188 %)
Number of data points in class 1130 : 4 (0.188 %)
Number of data points in class 1139 : 4 (0.188 %)
Number of data points in class 1141 : 4 (0.188 %)
Number of data points in class 1142 : 4 (0.188 %)
Number of data points in class 1143 : 4 (0.188 %)
Number of data points in class 1145 : 4 (0.188 %)
Number of data points in class 1146 : 4 (0.188 %)
Number of data points in class 1147 : 4 (0.188 %)
Number of data points in class 1148 : 4 (0.188 %)
Number of data points in class 1063 : 4 (0.188 %)
Number of data points in class 1140 : 4 (0.188 %)
Number of data points in class 1106 : 4 (0.188 %)
Number of data points in class 1129 : 4 (0.188 %)
Number of data points in class 1127 : 4 (0.188 %)
Number of data points in class 1108 : 4 (0.188 %)
Number of data points in class 1109 : 4 (0.188 %)
Number of data points in class 1110 : 4 (0.188 %)
Number of data points in class 1111 : 4 (0.188 %)
Number of data points in class 1112 : 4 (0.188 %)
Number of data points in class 1113 : 4 (0.188 %)
Number of data points in class 1114 : 4 (0.188 %)
Number of data points in class 1115 : 4 (0.188 %)
Number of data points in class 1128 : 4 (0.188 %)
Number of data points in class 1116 : 4 (0.188 %)
Number of data points in class 1118 : 4 (0.188 %)
Number of data points in class 1119 : 4 (0.188 %)
Number of data points in class 1120 : 4 (0.188 %)
Number of data points in class 1121 : 4 (0.188 %)
Number of data points in class 1122 : 4 (0.188 %)
Number of data points in class 1123 : 4 (0.188 %)
Number of data points in class 1125 : 4 (0.188 %)
Number of data points in class 1126 : 4 (0.188 %)
Number of data points in class 1117 : 4 (0.188 %)
Number of data points in class 1144 : 4 (0.188 %)
Number of data points in class 1062 : 4 (0.188 %)
Number of data points in class 1060 : 4 (0.188 %)
Number of data points in class 821 : 4 (0.188 %)
Number of data points in class 822 : 4 (0.188 %)
Number of data points in class 823 : 4 (0.188 %)

Saved successfully!



824 : 4 (0.188 %)
825 : 4 (0.188 %)
826 : 4 (0.188 %)
Number of data points in class 827 : 4 (0.188 %)
Number of data points in class 828 : 4 (0.188 %)
Number of data points in class 820 : 4 (0.188 %)
Number of data points in class 829 : 4 (0.188 %)
Number of data points in class 831 : 4 (0.188 %)
Number of data points in class 832 : 4 (0.188 %)
Number of data points in class 833 : 4 (0.188 %)
Number of data points in class 834 : 4 (0.188 %)

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Number of data points in class 837 : 4 ( 0.188 %)
Number of data points in class 835 : 4 ( 0.188 %)
Number of data points in class 836 : 4 ( 0.188 %)
Number of data points in class 837 : 4 ( 0.188 %)
Number of data points in class 838 : 4 ( 0.188 %)
Number of data points in class 830 : 4 ( 0.188 %)
Number of data points in class 839 : 4 ( 0.188 %)
Number of data points in class 819 : 4 ( 0.188 %)
Number of data points in class 817 : 4 ( 0.188 %)
Number of data points in class 799 : 4 ( 0.188 %)
Number of data points in class 800 : 4 ( 0.188 %)
Number of data points in class 801 : 4 ( 0.188 %)
Number of data points in class 802 : 4 ( 0.188 %)
Number of data points in class 803 : 4 ( 0.188 %)
Number of data points in class 804 : 4 ( 0.188 %)
Number of data points in class 805 : 4 ( 0.188 %)
Number of data points in class 806 : 4 ( 0.188 %)
Number of data points in class 818 : 4 ( 0.188 %)
Number of data points in class 807 : 4 ( 0.188 %)
Number of data points in class 809 : 4 ( 0.188 %)
Number of data points in class 810 : 4 ( 0.188 %)
Number of data points in class 811 : 4 ( 0.188 %)
Number of data points in class 812 : 4 ( 0.188 %)
Number of data points in class 813 : 4 ( 0.188 %)
Number of data points in class 814 : 4 ( 0.188 %)
Number of data points in class 815 : 4 ( 0.188 %)
Number of data points in class 816 : 4 ( 0.188 %)
Number of data points in class 808 : 4 ( 0.188 %)
Number of data points in class 798 : 4 ( 0.188 %)
Number of data points in class 840 : 4 ( 0.188 %)
Number of data points in class 842 : 4 ( 0.188 %)
Number of data points in class 865 : 4 ( 0.188 %)
Number of data points in class 866 : 4 ( 0.188 %)
Number of data points in class 867 : 4 ( 0.188 %)
Number of data points in class 868 : 4 ( 0.188 %)
Number of data points in class 869 : 4 ( 0.188 %)
Number of data points in class 870 : 4 ( 0.188 %)
Number of data points in class 871 : 4 ( 0.188 %)
Number of data points in class 872 : 4 ( 0.188 %)
Number of data points in class 864 : 4 ( 0.188 %)
Number of data points in class 873 : 4 ( 0.188 %)
Number of data points in class 875 : 4 ( 0.188 %)
Number of data points in class 876 : 4 ( 0.188 %)
Number of data points in class 877 : 4 ( 0.188 %)
Number of data points in class 878 : 4 ( 0.188 %)
Number of data points in class 879 : 4 ( 0.188 %)
Number of data points in class 880 : 4 ( 0.188 %)
Number of data points in class 881 : 4 ( 0.188 %)
Number of data points in class 882 : 4 ( 0.188 %)
Number of data points in class 874 : 4 ( 0.188 %)
Number of data points in class 841 : 4 ( 0.188 %)
Number of data points in class 863 : 4 ( 0.188 %)
Number of data points in class 861 : 4 ( 0.188 %)
Number of data points in class 843 : 4 ( 0.188 %)
Number of data points in class 844 : 4 ( 0.188 %)
Number of data points in class 845 : 4 ( 0.188 %)
Number of data points in class 846 : 4 ( 0.188 %)
Number of data points in class 847 : 4 ( 0.188 %)
```

Saved successfully!



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Number of data points in class 848 : 4 ( 0.188 %)
Number of data points in class 849 : 4 ( 0.188 %)
Number of data points in class 850 : 4 ( 0.188 %)
Number of data points in class 862 : 4 ( 0.188 %)
Number of data points in class 851 : 4 ( 0.188 %)
Number of data points in class 853 : 4 ( 0.188 %)
Number of data points in class 854 : 4 ( 0.188 %)
Number of data points in class 855 : 4 ( 0.188 %)
Number of data points in class 856 : 4 ( 0.188 %)
Number of data points in class 857 : 4 ( 0.188 %)
Number of data points in class 858 : 4 ( 0.188 %)
Number of data points in class 859 : 4 ( 0.188 %)
Number of data points in class 860 : 4 ( 0.188 %)
Number of data points in class 852 : 4 ( 0.188 %)
Number of data points in class 797 : 4 ( 0.188 %)
Number of data points in class 796 : 4 ( 0.188 %)
Number of data points in class 795 : 4 ( 0.188 %)
Number of data points in class 731 : 4 ( 0.188 %)
Number of data points in class 732 : 4 ( 0.188 %)
Number of data points in class 733 : 4 ( 0.188 %)
Number of data points in class 734 : 4 ( 0.188 %)
Number of data points in class 735 : 4 ( 0.188 %)
Number of data points in class 736 : 4 ( 0.188 %)
Number of data points in class 737 : 4 ( 0.188 %)
Number of data points in class 738 : 4 ( 0.188 %)
Number of data points in class 730 : 4 ( 0.188 %)
Number of data points in class 739 : 4 ( 0.188 %)
Number of data points in class 741 : 4 ( 0.188 %)
Number of data points in class 742 : 4 ( 0.188 %)
Number of data points in class 743 : 4 ( 0.188 %)
Number of data points in class 744 : 4 ( 0.188 %)
Number of data points in class 745 : 4 ( 0.188 %)
Number of data points in class 746 : 4 ( 0.188 %)
Number of data points in class 747 : 4 ( 0.188 %)
Number of data points in class 748 : 4 ( 0.188 %)
Number of data points in class 740 : 4 ( 0.188 %)
Number of data points in class 749 : 4 ( 0.188 %)
Number of data points in class 729 : 4 ( 0.188 %)
Number of data points in class 727 : 4 ( 0.188 %)
Number of data points in class 1061 : 4 ( 0.188 %)
Number of data points in class 710 : 4 ( 0.188 %)
Number of data points in class 711 : 4 ( 0.188 %)
Number of data points in class 712 : 4 ( 0.188 %)
Number of data points in class 713 : 4 ( 0.188 %)
Number of data points in class 714 : 4 ( 0.188 %)
Number of data points in class 715 : 4 ( 0.188 %)
Number of data points in class 716 : 4 ( 0.188 %)
Number of data points in class 728 : 4 ( 0.188 %)
Number of data points in class 717 : 4 ( 0.188 %)
Number of data points in class 719 : 4 ( 0.188 %)
Number of data points in class 720 : 4 ( 0.188 %)
Number of data points in class 721 : 4 ( 0.188 %)
Number of data points in class 722 : 4 ( 0.188 %)
Number of data points in class 723 : 4 ( 0.188 %)
Number of data points in class 724 : 4 ( 0.188 %)
Number of data points in class 725 : 4 ( 0.188 %)
Number of data points in class 726 : 4 ( 0.188 %)
Number of data points in class 718 : 4 ( 0.188 %)
```

Saved successfully!



Number of data points in class 750 : 4 (0.188 %)
Number of data points in class 751 : 4 (0.188 %)
Number of data points in class 752 : 4 (0.188 %)
Number of data points in class 776 : 4 (0.188 %)
Number of data points in class 777 : 4 (0.188 %)
Number of data points in class 778 : 4 (0.188 %)
Number of data points in class 779 : 4 (0.188 %)
Number of data points in class 780 : 4 (0.188 %)
Number of data points in class 781 : 4 (0.188 %)
Number of data points in class 782 : 4 (0.188 %)
Number of data points in class 783 : 4 (0.188 %)
Number of data points in class 775 : 4 (0.188 %)
Number of data points in class 785 : 4 (0.188 %)
Number of data points in class 787 : 4 (0.188 %)
Number of data points in class 788 : 4 (0.188 %)
Number of data points in class 789 : 4 (0.188 %)
Number of data points in class 790 : 4 (0.188 %)
Number of data points in class 791 : 4 (0.188 %)
Number of data points in class 792 : 4 (0.188 %)
Number of data points in class 793 : 4 (0.188 %)
Number of data points in class 794 : 4 (0.188 %)
Number of data points in class 786 : 4 (0.188 %)
Number of data points in class 774 : 4 (0.188 %)
Number of data points in class 773 : 4 (0.188 %)
Number of data points in class 772 : 4 (0.188 %)
Number of data points in class 753 : 4 (0.188 %)
Number of data points in class 754 : 4 (0.188 %)
Number of data points in class 755 : 4 (0.188 %)
Number of data points in class 756 : 4 (0.188 %)
Number of data points in class 757 : 4 (0.188 %)
Number of data points in class 758 : 4 (0.188 %)
Number of data points in class 759 : 4 (0.188 %)
Number of data points in class 760 : 4 (0.188 %)
Number of data points in class 761 : 4 (0.188 %)
Number of data points in class 762 : 4 (0.188 %)
Number of data points in class 763 : 4 (0.188 %)
Number of data points in class 764 : 4 (0.188 %)
Number of data points in class 765 : 4 (0.188 %)
Number of data points in class 766 : 4 (0.188 %)
Number of data points in class 767 : 4 (0.188 %)
Number of data points in class 768 : 4 (0.188 %)
Number of data points in class 769 : 4 (0.188 %)
Number of data points in class 770 : 4 (0.188 %)
Number of data points in class 771 : 4 (0.188 %)
Number of data points in class 883 : 4 (0.188 %)
Number of data points in class 884 : 4 (0.188 %)
Number of data points in class 784 : 4 (0.188 %)

886 : 4 (0.188 %)
998 : 4 (0.188 %)
999 : 4 (0.188 %)

Saved successfully!



Number of data points in class 1000 : 4 (0.188 %)
Number of data points in class 1001 : 4 (0.188 %)
Number of data points in class 1002 : 4 (0.188 %)
Number of data points in class 1003 : 4 (0.188 %)
Number of data points in class 1004 : 4 (0.188 %)
Number of data points in class 1005 : 4 (0.188 %)
Number of data points in class 997 : 4 (0.188 %)
Number of data points in class 1006 : 4 (0.188 %)

```
Number of data points in class 1000 : 4 ( 0.188 %)
Number of data points in class 1008 : 4 ( 0.188 %)
Number of data points in class 1009 : 4 ( 0.188 %)
Number of data points in class 1010 : 4 ( 0.188 %)
Number of data points in class 1011 : 4 ( 0.188 %)
Number of data points in class 1012 : 4 ( 0.188 %)
Number of data points in class 1013 : 4 ( 0.188 %)
Number of data points in class 1014 : 4 ( 0.188 %)
Number of data points in class 1015 : 4 ( 0.188 %)
Number of data points in class 1007 : 4 ( 0.188 %)
Number of data points in class 1016 : 4 ( 0.188 %)
Number of data points in class 996 : 4 ( 0.188 %)
Number of data points in class 994 : 4 ( 0.188 %)
Number of data points in class 976 : 4 ( 0.188 %)
Number of data points in class 977 : 4 ( 0.188 %)
Number of data points in class 978 : 4 ( 0.188 %)
Number of data points in class 979 : 4 ( 0.188 %)
Number of data points in class 980 : 4 ( 0.188 %)
Number of data points in class 981 : 4 ( 0.188 %)
Number of data points in class 982 : 4 ( 0.188 %)
Number of data points in class 983 : 4 ( 0.188 %)
Number of data points in class 995 : 4 ( 0.188 %)
Number of data points in class 984 : 4 ( 0.188 %)
Number of data points in class 985 : 4 ( 0.188 %)
Number of data points in class 987 : 4 ( 0.188 %)
Number of data points in class 988 : 4 ( 0.188 %)
Number of data points in class 989 : 4 ( 0.188 %)
Number of data points in class 990 : 4 ( 0.188 %)
Number of data points in class 991 : 4 ( 0.188 %)
Number of data points in class 992 : 4 ( 0.188 %)
Number of data points in class 993 : 4 ( 0.188 %)
Number of data points in class 1059 : 4 ( 0.188 %)
Number of data points in class 975 : 4 ( 0.188 %)
Number of data points in class 1017 : 4 ( 0.188 %)
Number of data points in class 1019 : 4 ( 0.188 %)
Number of data points in class 1042 : 4 ( 0.188 %)
Number of data points in class 1043 : 4 ( 0.188 %)
Number of data points in class 1044 : 4 ( 0.188 %)
Number of data points in class 1045 : 4 ( 0.188 %)
Number of data points in class 1046 : 4 ( 0.188 %)
Number of data points in class 1047 : 4 ( 0.188 %)
Number of data points in class 1048 : 4 ( 0.188 %)
Number of data points in class 1049 : 4 ( 0.188 %)
Number of data points in class 1041 : 4 ( 0.188 %)
Number of data points in class 1050 : 4 ( 0.188 %)
Number of data points in class 1052 : 4 ( 0.188 %)
Number of data points in class 1053 : 4 ( 0.188 %)
Number of data points in class 1054 : 4 ( 0.188 %)
Number of data points in class 1055 : 4 ( 0.188 %)
Number of data points in class 1056 : 4 ( 0.188 %)
Number of data points in class 1057 : 4 ( 0.188 %)
Number of data points in class 1058 : 4 ( 0.188 %)
Number of data points in class 885 : 4 ( 0.188 %)
Number of data points in class 1051 : 4 ( 0.188 %)
Number of data points in class 1018 : 4 ( 0.188 %)
Number of data points in class 1040 : 4 ( 0.188 %)
Number of data points in class 1038 : 4 ( 0.188 %)
Number of data points in class 1020 : 4 ( 0.188 %)
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Saved successfully!



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Number of data points in class 1021 : 4 ( 0.188 %)
Number of data points in class 1022 : 4 ( 0.188 %)
Number of data points in class 1023 : 4 ( 0.188 %)
Number of data points in class 1024 : 4 ( 0.188 %)
Number of data points in class 1025 : 4 ( 0.188 %)
Number of data points in class 1026 : 4 ( 0.188 %)
Number of data points in class 1027 : 4 ( 0.188 %)
Number of data points in class 1039 : 4 ( 0.188 %)
Number of data points in class 1028 : 4 ( 0.188 %)
Number of data points in class 1030 : 4 ( 0.188 %)
Number of data points in class 1031 : 4 ( 0.188 %)
Number of data points in class 1032 : 4 ( 0.188 %)
Number of data points in class 1033 : 4 ( 0.188 %)
Number of data points in class 1034 : 4 ( 0.188 %)
Number of data points in class 1035 : 4 ( 0.188 %)
Number of data points in class 1036 : 4 ( 0.188 %)
Number of data points in class 1037 : 4 ( 0.188 %)
Number of data points in class 1029 : 4 ( 0.188 %)
Number of data points in class 974 : 4 ( 0.188 %)
Number of data points in class 986 : 4 ( 0.188 %)
Number of data points in class 972 : 4 ( 0.188 %)
Number of data points in class 910 : 4 ( 0.188 %)
Number of data points in class 911 : 4 ( 0.188 %)
Number of data points in class 912 : 4 ( 0.188 %)
Number of data points in class 913 : 4 ( 0.188 %)
Number of data points in class 914 : 4 ( 0.188 %)
Number of data points in class 915 : 4 ( 0.188 %)
Number of data points in class 973 : 4 ( 0.188 %)
Number of data points in class 917 : 4 ( 0.188 %)
Number of data points in class 909 : 4 ( 0.188 %)
Number of data points in class 918 : 4 ( 0.188 %)
Number of data points in class 920 : 4 ( 0.188 %)
Number of data points in class 921 : 4 ( 0.188 %)
Number of data points in class 922 : 4 ( 0.188 %)
Number of data points in class 923 : 4 ( 0.188 %)
Number of data points in class 924 : 4 ( 0.188 %)
Number of data points in class 925 : 4 ( 0.188 %)
Number of data points in class 926 : 4 ( 0.188 %)
Number of data points in class 927 : 4 ( 0.188 %)
Number of data points in class 919 : 4 ( 0.188 %)
Number of data points in class 908 : 4 ( 0.188 %)
Number of data points in class 907 : 4 ( 0.188 %)
Number of data points in class 906 : 4 ( 0.188 %)
Number of data points in class 887 : 4 ( 0.188 %)
Number of data points in class 888 : 4 ( 0.188 %)
Number of data points in class 889 : 4 ( 0.188 %)
Number of data points in class 890 : 4 ( 0.188 %)
Number of data points in class 891 : 4 ( 0.188 %)
Number of data points in class 892 : 4 ( 0.188 %)
Number of data points in class 893 : 4 ( 0.188 %)
Number of data points in class 894 : 4 ( 0.188 %)
Number of data points in class 895 : 4 ( 0.188 %)
Number of data points in class 896 : 4 ( 0.188 %)
Number of data points in class 897 : 4 ( 0.188 %)
Number of data points in class 898 : 4 ( 0.188 %)
Number of data points in class 899 : 4 ( 0.188 %)
Number of data points in class 900 : 4 ( 0.188 %)
Number of data points in class 901 : 4 ( 0.188 %)
```

Saved successfully!



Number of data points in class 902 : 4 (0.188 %)
Number of data points in class 903 : 4 (0.188 %)
Number of data points in class 904 : 4 (0.188 %)
Number of data points in class 905 : 4 (0.188 %)
Number of data points in class 928 : 4 (0.188 %)
Number of data points in class 929 : 4 (0.188 %)
Number of data points in class 916 : 4 (0.188 %)
Number of data points in class 931 : 4 (0.188 %)
Number of data points in class 954 : 4 (0.188 %)
Number of data points in class 955 : 4 (0.188 %)
Number of data points in class 956 : 4 (0.188 %)
Number of data points in class 957 : 4 (0.188 %)
Number of data points in class 958 : 4 (0.188 %)
Number of data points in class 959 : 4 (0.188 %)
Number of data points in class 960 : 4 (0.188 %)
Number of data points in class 961 : 4 (0.188 %)
Number of data points in class 953 : 4 (0.188 %)
Number of data points in class 962 : 4 (0.188 %)
Number of data points in class 930 : 4 (0.188 %)
Number of data points in class 965 : 4 (0.188 %)
Number of data points in class 966 : 4 (0.188 %)
Number of data points in class 967 : 4 (0.188 %)
Number of data points in class 968 : 4 (0.188 %)
Number of data points in class 969 : 4 (0.188 %)
Number of data points in class 970 : 4 (0.188 %)
Number of data points in class 971 : 4 (0.188 %)
Number of data points in class 963 : 4 (0.188 %)
Number of data points in class 952 : 4 (0.188 %)
Number of data points in class 964 : 4 (0.188 %)
Number of data points in class 950 : 4 (0.188 %)
Number of data points in class 951 : 4 (0.188 %)
Number of data points in class 933 : 4 (0.188 %)
Number of data points in class 934 : 4 (0.188 %)
Number of data points in class 936 : 4 (0.188 %)
Number of data points in class 937 : 4 (0.188 %)
Number of data points in class 938 : 4 (0.188 %)
Number of data points in class 939 : 4 (0.188 %)
Number of data points in class 940 : 4 (0.188 %)
Number of data points in class 941 : 4 (0.188 %)
Number of data points in class 935 : 4 (0.188 %)
Number of data points in class 943 : 4 (0.188 %)
Number of data points in class 949 : 4 (0.188 %)
Number of data points in class 942 : 4 (0.188 %)
Number of data points in class 948 : 4 (0.188 %)
Number of data points in class 947 : 4 (0.188 %)
Number of data points in class 932 : 4 (0.188 %)
Number of data points in class 946 : 4 (0.188 %)
945 : 4 (0.188 %)
944 : 4 (0.188 %)
677 : 3 (0.141 %)
Number of data points in class 676 : 3 (0.141 %)
Number of data points in class 674 : 3 (0.141 %)
Number of data points in class 678 : 3 (0.141 %)
Number of data points in class 673 : 3 (0.141 %)
Number of data points in class 672 : 3 (0.141 %)
Number of data points in class 671 : 3 (0.141 %)
Number of data points in class 670 : 3 (0.141 %)
Number of data points in class 669 : 3 (0.141 %)

Saved successfully!



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Number of data points in class 669 : 3 ( 0.141 %)
Number of data points in class 668 : 3 ( 0.141 %)
Number of data points in class 667 : 3 ( 0.141 %)
Number of data points in class 666 : 3 ( 0.141 %)
Number of data points in class 675 : 3 ( 0.141 %)
Number of data points in class 657 : 3 ( 0.141 %)
Number of data points in class 664 : 3 ( 0.141 %)
Number of data points in class 663 : 3 ( 0.141 %)
Number of data points in class 662 : 3 ( 0.141 %)
Number of data points in class 661 : 3 ( 0.141 %)
Number of data points in class 660 : 3 ( 0.141 %)
Number of data points in class 659 : 3 ( 0.141 %)
Number of data points in class 658 : 3 ( 0.141 %)
Number of data points in class 656 : 3 ( 0.141 %)
Number of data points in class 655 : 3 ( 0.141 %)
Number of data points in class 654 : 3 ( 0.141 %)
Number of data points in class 653 : 3 ( 0.141 %)
Number of data points in class 679 : 3 ( 0.141 %)
Number of data points in class 665 : 3 ( 0.141 %)
Number of data points in class 680 : 3 ( 0.141 %)
Number of data points in class 696 : 3 ( 0.141 %)
Number of data points in class 682 : 3 ( 0.141 %)
Number of data points in class 681 : 3 ( 0.141 %)
Number of data points in class 709 : 3 ( 0.141 %)
Number of data points in class 708 : 3 ( 0.141 %)
Number of data points in class 707 : 3 ( 0.141 %)
Number of data points in class 706 : 3 ( 0.141 %)
Number of data points in class 705 : 3 ( 0.141 %)
Number of data points in class 703 : 3 ( 0.141 %)
Number of data points in class 702 : 3 ( 0.141 %)
Number of data points in class 701 : 3 ( 0.141 %)
Number of data points in class 700 : 3 ( 0.141 %)
Number of data points in class 699 : 3 ( 0.141 %)
Number of data points in class 698 : 3 ( 0.141 %)
Number of data points in class 697 : 3 ( 0.141 %)
Number of data points in class 704 : 3 ( 0.141 %)
Number of data points in class 694 : 3 ( 0.141 %)
Number of data points in class 683 : 3 ( 0.141 %)
Number of data points in class 695 : 3 ( 0.141 %)
Number of data points in class 684 : 3 ( 0.141 %)
Number of data points in class 685 : 3 ( 0.141 %)
Number of data points in class 687 : 3 ( 0.141 %)
Number of data points in class 688 : 3 ( 0.141 %)
Number of data points in class 686 : 3 ( 0.141 %)
Number of data points in class 689 : 3 ( 0.141 %)
Number of data points in class 690 : 3 ( 0.141 %)
Number of data points in class 691 : 3 ( 0.141 %)
Number of data points in class 692 : 3 ( 0.141 %)
Number of data points in class 693 : 3 ( 0.141 %)
Number of data points in class 460 : 2 ( 0.094 %)
Number of data points in class 457 : 2 ( 0.094 %)
Number of data points in class 458 : 2 ( 0.094 %)
Number of data points in class 459 : 2 ( 0.094 %)
Number of data points in class 456 : 2 ( 0.094 %)
Number of data points in class 461 : 2 ( 0.094 %)
Number of data points in class 467 : 2 ( 0.094 %)
Number of data points in class 463 : 2 ( 0.094 %)
Number of data points in class 464 : 2 ( 0.094 %)
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Saved successfully!



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Number of data points in class 465 : 2 ( 0.094 %)
Number of data points in class 466 : 2 ( 0.094 %)
Number of data points in class 468 : 2 ( 0.094 %)
Number of data points in class 469 : 2 ( 0.094 %)
Number of data points in class 455 : 2 ( 0.094 %)
Number of data points in class 462 : 2 ( 0.094 %)
Number of data points in class 454 : 2 ( 0.094 %)
Number of data points in class 441 : 2 ( 0.094 %)
Number of data points in class 452 : 2 ( 0.094 %)
Number of data points in class 438 : 2 ( 0.094 %)
Number of data points in class 439 : 2 ( 0.094 %)
Number of data points in class 440 : 2 ( 0.094 %)
Number of data points in class 470 : 2 ( 0.094 %)
Number of data points in class 442 : 2 ( 0.094 %)
Number of data points in class 443 : 2 ( 0.094 %)
Number of data points in class 453 : 2 ( 0.094 %)
Number of data points in class 444 : 2 ( 0.094 %)
Number of data points in class 446 : 2 ( 0.094 %)
Number of data points in class 447 : 2 ( 0.094 %)
Number of data points in class 448 : 2 ( 0.094 %)
Number of data points in class 449 : 2 ( 0.094 %)
Number of data points in class 450 : 2 ( 0.094 %)
Number of data points in class 451 : 2 ( 0.094 %)
Number of data points in class 445 : 2 ( 0.094 %)
Number of data points in class 471 : 2 ( 0.094 %)
Number of data points in class 484 : 2 ( 0.094 %)
Number of data points in class 473 : 2 ( 0.094 %)
Number of data points in class 492 : 2 ( 0.094 %)
Number of data points in class 493 : 2 ( 0.094 %)
Number of data points in class 494 : 2 ( 0.094 %)
Number of data points in class 495 : 2 ( 0.094 %)
Number of data points in class 496 : 2 ( 0.094 %)
Number of data points in class 497 : 2 ( 0.094 %)
Number of data points in class 491 : 2 ( 0.094 %)
Number of data points in class 498 : 2 ( 0.094 %)
Number of data points in class 500 : 2 ( 0.094 %)
Number of data points in class 501 : 2 ( 0.094 %)
Number of data points in class 502 : 2 ( 0.094 %)
Number of data points in class 503 : 2 ( 0.094 %)
Number of data points in class 504 : 2 ( 0.094 %)
Number of data points in class 505 : 2 ( 0.094 %)
Number of data points in class 499 : 2 ( 0.094 %)
Number of data points in class 490 : 2 ( 0.094 %)
Number of data points in class 489 : 2 ( 0.094 %)
Number of data points in class 488 : 2 ( 0.094 %)
Number of data points in class 474 : 2 ( 0.094 %)
Number of data points in class 475 : 2 ( 0.094 %)
Number of data points in class 476 : 2 ( 0.094 %)
Number of data points in class 477 : 2 ( 0.094 %)
Number of data points in class 478 : 2 ( 0.094 %)
Number of data points in class 479 : 2 ( 0.094 %)
Number of data points in class 480 : 2 ( 0.094 %)
Number of data points in class 481 : 2 ( 0.094 %)
Number of data points in class 482 : 2 ( 0.094 %)
Number of data points in class 483 : 2 ( 0.094 %)
Number of data points in class 437 : 2 ( 0.094 %)
Number of data points in class 485 : 2 ( 0.094 %)
Number of data points in class 506 : 2 ( 0.094 %)
```

Saved successfully!



Number of data points in class 486 : 2 (0.094 %)
Number of data points in class 487 : 2 (0.094 %)
Number of data points in class 472 : 2 (0.094 %)
Number of data points in class 436 : 2 (0.094 %)
Number of data points in class 422 : 2 (0.094 %)
Number of data points in class 434 : 2 (0.094 %)
Number of data points in class 382 : 2 (0.094 %)
Number of data points in class 383 : 2 (0.094 %)
Number of data points in class 384 : 2 (0.094 %)
Number of data points in class 385 : 2 (0.094 %)
Number of data points in class 386 : 2 (0.094 %)
Number of data points in class 387 : 2 (0.094 %)
Number of data points in class 381 : 2 (0.094 %)
Number of data points in class 388 : 2 (0.094 %)
Number of data points in class 390 : 2 (0.094 %)
Number of data points in class 391 : 2 (0.094 %)
Number of data points in class 392 : 2 (0.094 %)
Number of data points in class 393 : 2 (0.094 %)
Number of data points in class 394 : 2 (0.094 %)
Number of data points in class 395 : 2 (0.094 %)
Number of data points in class 389 : 2 (0.094 %)
Number of data points in class 396 : 2 (0.094 %)
Number of data points in class 380 : 2 (0.094 %)
Number of data points in class 378 : 2 (0.094 %)
Number of data points in class 364 : 2 (0.094 %)
Number of data points in class 365 : 2 (0.094 %)
Number of data points in class 366 : 2 (0.094 %)
Number of data points in class 367 : 2 (0.094 %)
Number of data points in class 368 : 2 (0.094 %)
Number of data points in class 369 : 2 (0.094 %)
Number of data points in class 379 : 2 (0.094 %)
Number of data points in class 370 : 2 (0.094 %)
Number of data points in class 372 : 2 (0.094 %)
Number of data points in class 373 : 2 (0.094 %)
Number of data points in class 374 : 2 (0.094 %)
Number of data points in class 375 : 2 (0.094 %)
Number of data points in class 376 : 2 (0.094 %)
Number of data points in class 377 : 2 (0.094 %)
Number of data points in class 371 : 2 (0.094 %)
Number of data points in class 397 : 2 (0.094 %)
Number of data points in class 398 : 2 (0.094 %)
Number of data points in class 399 : 2 (0.094 %)
Number of data points in class 419 : 2 (0.094 %)
Number of data points in class 420 : 2 (0.094 %)
Number of data points in class 421 : 2 (0.094 %)
Number of data points in class 423 : 2 (0.094 %)
Number of data points in class 424 : 2 (0.094 %)
Number of data points in class 425 : 2 (0.094 %)
Number of data points in class 418 : 2 (0.094 %)
Number of data points in class 426 : 2 (0.094 %)
Number of data points in class 428 : 2 (0.094 %)
Number of data points in class 429 : 2 (0.094 %)
Number of data points in class 430 : 2 (0.094 %)
Number of data points in class 431 : 2 (0.094 %)
Number of data points in class 432 : 2 (0.094 %)
Number of data points in class 433 : 2 (0.094 %)
Number of data points in class 427 : 2 (0.094 %)
Number of data points in class 417 : 2 (0.094 %)

Saved successfully!



```
number of data points in class 417 : 2 ( 0.094 %)
Number of data points in class 416 : 2 ( 0.094 %)
Number of data points in class 415 : 2 ( 0.094 %)
Number of data points in class 400 : 2 ( 0.094 %)
Number of data points in class 401 : 2 ( 0.094 %)
Number of data points in class 402 : 2 ( 0.094 %)
Number of data points in class 403 : 2 ( 0.094 %)
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Number of data points in class 411 : 2 ( 0.094 %)
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Number of data points in class 414 : 2 ( 0.094 %)
Number of data points in class 435 : 2 ( 0.094 %)
Number of data points in class 507 : 2 ( 0.094 %)
Number of data points in class 530 : 2 ( 0.094 %)
Number of data points in class 509 : 2 ( 0.094 %)
Number of data points in class 602 : 2 ( 0.094 %)
Number of data points in class 603 : 2 ( 0.094 %)
Number of data points in class 604 : 2 ( 0.094 %)
Number of data points in class 605 : 2 ( 0.094 %)
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Number of data points in class 616 : 2 ( 0.094 %)
Number of data points in class 600 : 2 ( 0.094 %)
Number of data points in class 598 : 2 ( 0.094 %)
Number of data points in class 584 : 2 ( 0.094 %)
Number of data points in class 585 : 2 ( 0.094 %)
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Number of data points in class 588 : 2 ( 0.094 %)
Number of data points in class 589 : 2 ( 0.094 %)
Number of data points in class 599 : 2 ( 0.094 %)
Number of data points in class 590 : 2 ( 0.094 %)
Number of data points in class 592 : 2 ( 0.094 %)
Number of data points in class 593 : 2 ( 0.094 %)
Number of data points in class 594 : 2 ( 0.094 %)
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Number of data points in class 597 : 2 ( 0.094 %)
Number of data points in class 591 : 2 ( 0.094 %)
Number of data points in class 617 : 2 ( 0.094 %)
Number of data points in class 618 : 2 ( 0.094 %)
Number of data points in class 619 : 2 ( 0.094 %)
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Saved successfully!



Number of data points in class 640 : 2 (0.094 %)
Number of data points in class 641 : 2 (0.094 %)
Number of data points in class 642 : 2 (0.094 %)
Number of data points in class 643 : 2 (0.094 %)
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Number of data points in class 639 : 2 (0.094 %)
Number of data points in class 646 : 2 (0.094 %)
Number of data points in class 648 : 2 (0.094 %)
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Number of data points in class 650 : 2 (0.094 %)
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Number of data points in class 652 : 2 (0.094 %)
Number of data points in class 508 : 2 (0.094 %)
Number of data points in class 647 : 2 (0.094 %)
Number of data points in class 638 : 2 (0.094 %)
Number of data points in class 637 : 2 (0.094 %)
Number of data points in class 636 : 2 (0.094 %)
Number of data points in class 620 : 2 (0.094 %)
Number of data points in class 621 : 2 (0.094 %)
Number of data points in class 622 : 2 (0.094 %)
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Number of data points in class 624 : 2 (0.094 %)
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Number of data points in class 633 : 2 (0.094 %)
Number of data points in class 634 : 2 (0.094 %)
Number of data points in class 635 : 2 (0.094 %)
Number of data points in class 583 : 2 (0.094 %)
Number of data points in class 582 : 2 (0.094 %)
Number of data points in class 625 : 2 (0.094 %)
Number of data points in class 580 : 2 (0.094 %)
Number of data points in class 528 : 2 (0.094 %)
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Number of data points in class 527 : 2 (0.094 %)
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Number of data points in class 537 : 2 (0.094 %)
Number of data points in class 538 : 2 (0.094 %)

Saved successfully!



539 : 2 (0.094 %)
540 : 2 (0.094 %)
541 : 2 (0.094 %)
Number of data points in class 542 : 2 (0.094 %)
Number of data points in class 536 : 2 (0.094 %)
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Number of data points in class 526 : 2 (0.094 %)
Number of data points in class 523 : 2 (0.094 %)
Number of data points in class 510 : 2 (0.094 %)
Number of data points in class 581 : 2 (0.094 %)
Number of data points in class 511 : 2 (0.094 %)

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Number of data points in class 512 : 2 ( 0.094 %)
Number of data points in class 513 : 2 ( 0.094 %)
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Number of data points in class 525 : 2 ( 0.094 %)
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Number of data points in class 544 : 2 ( 0.094 %)
Number of data points in class 524 : 2 ( 0.094 %)
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Number of data points in class 572 : 2 ( 0.094 %)
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Number of data points in class 571 : 2 ( 0.094 %)
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Number of data points in class 549 : 2 ( 0.094 %)
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Number of data points in class 547 : 2 ( 0.094 %)
Number of data points in class 555 : 2 ( 0.094 %)
Number of data points in class 548 : 2 ( 0.094 %)
Number of data points in class 116 : 1 ( 0.047 %)
Number of data points in class 123 : 1 ( 0.047 %)
Number of data points in class 117 : 1 ( 0.047 %)
Number of data points in class 118 : 1 ( 0.047 %)
Number of data points in class 119 : 1 ( 0.047 %)
Number of data points in class 120 : 1 ( 0.047 %)
Number of data points in class 121 : 1 ( 0.047 %)
Number of data points in class 122 : 1 ( 0.047 %)
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Saved successfully!



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number of data points in class 129 : 1 ( 0.047 %)
Number of data points in class 125 : 1 ( 0.047 %)
Number of data points in class 126 : 1 ( 0.047 %)
Number of data points in class 127 : 1 ( 0.047 %)
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Number of data points in class 133 : 1 ( 0.047 %)
Number of data points in class 115 : 1 ( 0.047 %)
Number of data points in class 132 : 1 ( 0.047 %)
Number of data points in class 124 : 1 ( 0.047 %)
Number of data points in class 114 : 1 ( 0.047 %)
Number of data points in class 99 : 1 ( 0.047 %)
Number of data points in class 112 : 1 ( 0.047 %)
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Number of data points in class 134 : 1 ( 0.047 %)
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Number of data points in class 93 : 1 ( 0.047 %)
Number of data points in class 160 : 1 ( 0.047 %)
Number of data points in class 136 : 1 ( 0.047 %)
Number of data points in class 159 : 1 ( 0.047 %)
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Saved successfully!



Number of data points in class 157 : 1 (0.047 %)
 Number of data points in class 138 : 1 (0.047 %)
 Number of data points in class 139 : 1 (0.047 %)
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 Number of data points in class 158 : 1 (0.047 %)
 Number of data points in class 92 : 1 (0.047 %)
 Number of data points in class 20 : 1 (0.047 %)
 Number of data points in class 90 : 1 (0.047 %)
 Number of data points in class 25 : 1 (0.047 %)
 Number of data points in class 26 : 1 (0.047 %)
 Number of data points in class 27 : 1 (0.047 %)
 Number of data points in class 28 : 1 (0.047 %)
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 Number of data points in class 31 : 1 (0.047 %)
 Number of data points in class 32 : 1 (0.047 %)
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 Number of data points in class 42 : 1 (0.047 %)
 Number of data points in class 43 : 1 (0.047 %)
 Number of data points in class 24 : 1 (0.047 %)
 Number of data points in class 44 : 1 (0.047 %)
 Number of data points in class 23 : 1 (0.047 %)
 Number of data points in class 21 : 1 (0.047 %)

2 : 1 (0.047 %)

Saved successfully!



3 : 1 (0.047 %)

4 : 1 (0.047 %)

Number of data points in class 5 : 1 (0.047 %)

Number of data points in class 6 : 1 (0.047 %)

Number of data points in class 7 : 1 (0.047 %)

Number of data points in class 8 : 1 (0.047 %)

Number of data points in class 9 : 1 (0.047 %)

Number of data points in class 10 : 1 (0.047 %)

Number of data points in class 11 : 1 (0.047 %)

Number of data points in class 12 : 1 (0.047 %)

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Number of data points in class 13 : 1 ( 0.047 %)
Number of data points in class 14 : 1 ( 0.047 %)
Number of data points in class 15 : 1 ( 0.047 %)
Number of data points in class 16 : 1 ( 0.047 %)
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Number of data points in class 18 : 1 ( 0.047 %)
Number of data points in class 19 : 1 ( 0.047 %)
Number of data points in class 180 : 1 ( 0.047 %)
Number of data points in class 22 : 1 ( 0.047 %)
Number of data points in class 91 : 1 ( 0.047 %)
Number of data points in class 45 : 1 ( 0.047 %)
Number of data points in class 47 : 1 ( 0.047 %)
Number of data points in class 71 : 1 ( 0.047 %)
Number of data points in class 72 : 1 ( 0.047 %)
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Number of data points in class 89 : 1 ( 0.047 %)
Number of data points in class 70 : 1 ( 0.047 %)
Number of data points in class 46 : 1 ( 0.047 %)
Number of data points in class 69 : 1 ( 0.047 %)
Number of data points in class 67 : 1 ( 0.047 %)
Number of data points in class 48 : 1 ( 0.047 %)
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Number of data points in class 64 : 1 ( 0.047 %)
Number of data points in class 65 : 1 ( 0.047 %)
Number of data points in class 66 : 1 ( 0.047 %)
Number of data points in class 68 : 1 ( 0.047 %)
Number of data points in class 181 : 1 ( 0.047 %)
Number of data points in class 253 : 1 ( 0.047 %)
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Saved successfully!



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Number of data points in class 183 : 1 ( 0.047 %)
Number of data points in class 300 : 1 ( 0.047 %)
Number of data points in class 301 : 1 ( 0.047 %)
Number of data points in class 302 : 1 ( 0.047 %)
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Number of data points in class 299 : 1 ( 0.047 %)
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Number of data points in class 298 : 1 ( 0.047 %)
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Number of data points in class 277 : 1 ( 0.047 %)
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Saved successfully!



Number of data points in class 357 : 1 (0.047 %)
Number of data points in class 358 : 1 (0.047 %)
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Number of data points in class 362 : 1 (0.047 %)
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Number of data points in class 275 : 1 (0.047 %)
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220 : 1 (0.047 %)
221 : 1 (0.047 %)
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Number of data points in class 223 : 1 (0.047 %)
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Number of data points in class 225 : 1 (0.047 %)
Number of data points in class 206 : 1 (0.047 %)
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Number of data points in class 184 : 1 (0.047 %)

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Number of data points in class 184 : 1 ( 0.047 %)
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Number of data points in class 230 : 1 ( 0.047 %)
Number of data points in class 231 : 1 ( 0.047 %)
Number of data points in class 232 : 1 ( 0.047 %)
Number of data points in class 233 : 1 ( 0.047 %)
Number of data points in class 234 : 1 ( 0.047 %)
Number of data points in class 235 : 1 ( 0.047 %)
Number of data points in class 236 : 1 ( 0.047 %)
Number of data points in class 237 : 1 ( 0.047 %)
Number of data points in class 238 : 1 ( 0.047 %)
Number of data points in class 239 : 1 ( 0.047 %)
Number of data points in class 240 : 1 ( 0.047 %)
Number of data points in class 241 : 1 ( 0.047 %)
```

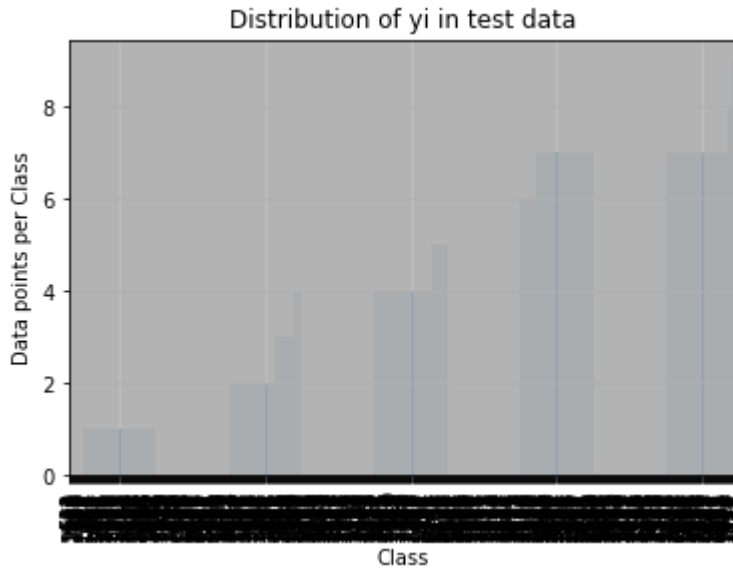
Saved successfully!




```

Number of data points in class 242 : 1 ( 0.047 %)
Number of data points in class 243 : 1 ( 0.047 %)
Number of data points in class 244 : 1 ( 0.047 %)
Number of data points in class 245 : 1 ( 0.047 %)
Number of data points in class 246 : 1 ( 0.047 %)
Number of data points in class 247 : 1 ( 0.047 %)
Number of data points in class 248 : 1 ( 0.047 %)
Number of data points in class 250 : 1 ( 0.047 %)
Number of data points in class 1 : 1 ( 0.047 %)

```



```

Number of data points in class 665 : 9 ( 1.353 %)
Number of data points in class 659 : 9 ( 1.353 %)
Number of data points in class 660 : 9 ( 1.353 %)
Number of data points in class 664 : 9 ( 1.353 %)
Number of data points in class 662 : 9 ( 1.353 %)
Number of data points in class 663 : 9 ( 1.353 %)
Number of data points in class 661 : 9 ( 1.353 %)
Number of data points in class 658 : 8 ( 1.203 %)
Number of data points in class 657 : 8 ( 1.203 %)
Number of data points in class 656 : 8 ( 1.203 %)
Number of data points in class 655 : 8 ( 1.203 %)
Number of data points in class 532 : 7 ( 1.053 %)
Number of data points in class 531 : 7 ( 1.053 %)
Number of data points in class 530 : 7 ( 1.053 %)
Number of data points in class 529 : 7 ( 1.053 %)
Number of data points in class 528 : 7 ( 1.053 %)
Number of data points in class 527 : 7 ( 1.053 %)
Number of data points in class 526 : 7 ( 1.053 %)
Number of data points in class 525 : 7 ( 1.053 %)
Number of data points in class 524 : 7 ( 1.053 %)

```

Saved successfully!



```

521 : 7 ( 1.053 %)
522 : 7 ( 1.053 %)
533 : 7 ( 1.053 %)
Number of data points in class 520 : 7 ( 1.053 %)
Number of data points in class 519 : 7 ( 1.053 %)
Number of data points in class 518 : 7 ( 1.053 %)
Number of data points in class 517 : 7 ( 1.053 %)
Number of data points in class 516 : 7 ( 1.053 %)
Number of data points in class 515 : 7 ( 1.053 %)
Number of data points in class 514 : 7 ( 1.053 %)
Number of data points in class 523 : 7 ( 1.053 %)

```

```
Number of data points in class 523 : 7 ( 1.053 %)
Number of data points in class 534 : 7 ( 1.053 %)
Number of data points in class 537 : 7 ( 1.053 %)
Number of data points in class 536 : 7 ( 1.053 %)
Number of data points in class 557 : 7 ( 1.053 %)
Number of data points in class 556 : 7 ( 1.053 %)
Number of data points in class 555 : 7 ( 1.053 %)
Number of data points in class 554 : 7 ( 1.053 %)
Number of data points in class 553 : 7 ( 1.053 %)
Number of data points in class 552 : 7 ( 1.053 %)
Number of data points in class 551 : 7 ( 1.053 %)
Number of data points in class 550 : 7 ( 1.053 %)
Number of data points in class 549 : 7 ( 1.053 %)
Number of data points in class 548 : 7 ( 1.053 %)
Number of data points in class 547 : 7 ( 1.053 %)
Number of data points in class 546 : 7 ( 1.053 %)
Number of data points in class 545 : 7 ( 1.053 %)
Number of data points in class 544 : 7 ( 1.053 %)
Number of data points in class 543 : 7 ( 1.053 %)
Number of data points in class 542 : 7 ( 1.053 %)
Number of data points in class 541 : 7 ( 1.053 %)
Number of data points in class 540 : 7 ( 1.053 %)
Number of data points in class 539 : 7 ( 1.053 %)
Number of data points in class 538 : 7 ( 1.053 %)
Number of data points in class 513 : 7 ( 1.053 %)
Number of data points in class 535 : 7 ( 1.053 %)
Number of data points in class 512 : 7 ( 1.053 %)
Number of data points in class 509 : 7 ( 1.053 %)
Number of data points in class 510 : 7 ( 1.053 %)
Number of data points in class 483 : 7 ( 1.053 %)
Number of data points in class 482 : 7 ( 1.053 %)
Number of data points in class 481 : 7 ( 1.053 %)
Number of data points in class 480 : 7 ( 1.053 %)
Number of data points in class 479 : 7 ( 1.053 %)
Number of data points in class 478 : 7 ( 1.053 %)
Number of data points in class 477 : 7 ( 1.053 %)
Number of data points in class 476 : 7 ( 1.053 %)
Number of data points in class 475 : 7 ( 1.053 %)
Number of data points in class 484 : 7 ( 1.053 %)
Number of data points in class 474 : 7 ( 1.053 %)
Number of data points in class 472 : 7 ( 1.053 %)
Number of data points in class 471 : 7 ( 1.053 %)
Number of data points in class 470 : 7 ( 1.053 %)
Number of data points in class 469 : 7 ( 1.053 %)
Number of data points in class 468 : 7 ( 1.053 %)
Number of data points in class 467 : 7 ( 1.053 %)
Number of data points in class 466 : 7 ( 1.053 %)
Number of data points in class 465 : 7 ( 1.053 %)
Number of data points in class 464 : 7 ( 1.053 %)
Number of data points in class 473 : 7 ( 1.053 %)
Number of data points in class 511 : 7 ( 1.053 %)
Number of data points in class 485 : 7 ( 1.053 %)
Number of data points in class 487 : 7 ( 1.053 %)
Number of data points in class 558 : 7 ( 1.053 %)
Number of data points in class 508 : 7 ( 1.053 %)
Number of data points in class 507 : 7 ( 1.053 %)
Number of data points in class 506 : 7 ( 1.053 %)
Number of data points in class 505 : 7 ( 1.053 %)
```

Saved successfully!



Number of data points in class 504 : 7 (1.053 %)
Number of data points in class 503 : 7 (1.053 %)
Number of data points in class 502 : 7 (1.053 %)
Number of data points in class 501 : 7 (1.053 %)
Number of data points in class 486 : 7 (1.053 %)
Number of data points in class 500 : 7 (1.053 %)
Number of data points in class 496 : 7 (1.053 %)
Number of data points in class 495 : 7 (1.053 %)
Number of data points in class 494 : 7 (1.053 %)
Number of data points in class 493 : 7 (1.053 %)
Number of data points in class 492 : 7 (1.053 %)
Number of data points in class 491 : 7 (1.053 %)
Number of data points in class 490 : 7 (1.053 %)
Number of data points in class 489 : 7 (1.053 %)
Number of data points in class 488 : 7 (1.053 %)
Number of data points in class 498 : 7 (1.053 %)
Number of data points in class 559 : 7 (1.053 %)
Number of data points in class 497 : 7 (1.053 %)
Number of data points in class 561 : 7 (1.053 %)
Number of data points in class 630 : 7 (1.053 %)
Number of data points in class 629 : 7 (1.053 %)
Number of data points in class 628 : 7 (1.053 %)
Number of data points in class 627 : 7 (1.053 %)
Number of data points in class 626 : 7 (1.053 %)
Number of data points in class 625 : 7 (1.053 %)
Number of data points in class 624 : 7 (1.053 %)
Number of data points in class 623 : 7 (1.053 %)
Number of data points in class 622 : 7 (1.053 %)
Number of data points in class 631 : 7 (1.053 %)
Number of data points in class 621 : 7 (1.053 %)
Number of data points in class 619 : 7 (1.053 %)
Number of data points in class 618 : 7 (1.053 %)
Number of data points in class 617 : 7 (1.053 %)
Number of data points in class 616 : 7 (1.053 %)
Number of data points in class 615 : 7 (1.053 %)
Number of data points in class 614 : 7 (1.053 %)
Number of data points in class 613 : 7 (1.053 %)
Number of data points in class 612 : 7 (1.053 %)
Number of data points in class 611 : 7 (1.053 %)
Number of data points in class 620 : 7 (1.053 %)
Number of data points in class 632 : 7 (1.053 %)
Number of data points in class 633 : 7 (1.053 %)
Number of data points in class 634 : 7 (1.053 %)
Number of data points in class 560 : 7 (1.053 %)
Number of data points in class 654 : 7 (1.053 %)
Number of data points in class 653 : 7 (1.053 %)
Number of data points in class 652 : 7 (1.053 %)
Number of data points in class 651 : 7 (1.053 %)
Number of data points in class 650 : 7 (1.053 %)
Number of data points in class 649 : 7 (1.053 %)
Number of data points in class 648 : 7 (1.053 %)
Number of data points in class 647 : 7 (1.053 %)
Number of data points in class 646 : 7 (1.053 %)
Number of data points in class 645 : 7 (1.053 %)
Number of data points in class 644 : 7 (1.053 %)
Number of data points in class 643 : 7 (1.053 %)
Number of data points in class 642 : 7 (1.053 %)
Number of data points in class 641 : 7 (1.053 %)

Saved successfully!



Number of data points in class 640 : 7 (1.053 %)
Number of data points in class 639 : 7 (1.053 %)
Number of data points in class 638 : 7 (1.053 %)
Number of data points in class 637 : 7 (1.053 %)
Number of data points in class 636 : 7 (1.053 %)
Number of data points in class 635 : 7 (1.053 %)
Number of data points in class 610 : 7 (1.053 %)
Number of data points in class 609 : 7 (1.053 %)
Number of data points in class 499 : 7 (1.053 %)
Number of data points in class 607 : 7 (1.053 %)
Number of data points in class 582 : 7 (1.053 %)
Number of data points in class 581 : 7 (1.053 %)
Number of data points in class 580 : 7 (1.053 %)
Number of data points in class 579 : 7 (1.053 %)
Number of data points in class 578 : 7 (1.053 %)
Number of data points in class 577 : 7 (1.053 %)
Number of data points in class 576 : 7 (1.053 %)
Number of data points in class 575 : 7 (1.053 %)
Number of data points in class 574 : 7 (1.053 %)
Number of data points in class 573 : 7 (1.053 %)
Number of data points in class 571 : 7 (1.053 %)
Number of data points in class 570 : 7 (1.053 %)
Number of data points in class 569 : 7 (1.053 %)
Number of data points in class 568 : 7 (1.053 %)
Number of data points in class 567 : 7 (1.053 %)
Number of data points in class 566 : 7 (1.053 %)
Number of data points in class 565 : 7 (1.053 %)
Number of data points in class 564 : 7 (1.053 %)
Number of data points in class 563 : 7 (1.053 %)
Number of data points in class 608 : 7 (1.053 %)
Number of data points in class 562 : 7 (1.053 %)
Number of data points in class 583 : 7 (1.053 %)
Number of data points in class 584 : 7 (1.053 %)
Number of data points in class 572 : 7 (1.053 %)
Number of data points in class 586 : 7 (1.053 %)
Number of data points in class 606 : 7 (1.053 %)
Number of data points in class 585 : 7 (1.053 %)
Number of data points in class 604 : 7 (1.053 %)
Number of data points in class 603 : 7 (1.053 %)
Number of data points in class 602 : 7 (1.053 %)
Number of data points in class 601 : 7 (1.053 %)
Number of data points in class 599 : 7 (1.053 %)
Number of data points in class 598 : 7 (1.053 %)
Number of data points in class 597 : 7 (1.053 %)
Number of data points in class 600 : 7 (1.053 %)
Number of data points in class 605 : 7 (1.053 %)
Number of data points in class 595 : 7 (1.053 %)
594 : 7 (1.053 %)
593 : 7 (1.053 %)
592 : 7 (1.053 %)
Number of data points in class 591 : 7 (1.053 %)
Number of data points in class 590 : 7 (1.053 %)
Number of data points in class 589 : 7 (1.053 %)
Number of data points in class 596 : 7 (1.053 %)
Number of data points in class 588 : 7 (1.053 %)
Number of data points in class 587 : 7 (1.053 %)
Number of data points in class 424 : 6 (0.902 %)
Number of data points in class 425 : 6 (0.902 %)

Saved successfully!



```
Number of data points in class 425 : 6 ( 0.902 %)
Number of data points in class 426 : 6 ( 0.902 %)
Number of data points in class 427 : 6 ( 0.902 %)
Number of data points in class 433 : 6 ( 0.902 %)
Number of data points in class 429 : 6 ( 0.902 %)
Number of data points in class 430 : 6 ( 0.902 %)
Number of data points in class 423 : 6 ( 0.902 %)
Number of data points in class 432 : 6 ( 0.902 %)
Number of data points in class 428 : 6 ( 0.902 %)
Number of data points in class 431 : 6 ( 0.902 %)
Number of data points in class 412 : 6 ( 0.902 %)
Number of data points in class 420 : 6 ( 0.902 %)
Number of data points in class 419 : 6 ( 0.902 %)
Number of data points in class 418 : 6 ( 0.902 %)
Number of data points in class 417 : 6 ( 0.902 %)
Number of data points in class 416 : 6 ( 0.902 %)
Number of data points in class 415 : 6 ( 0.902 %)
Number of data points in class 414 : 6 ( 0.902 %)
Number of data points in class 413 : 6 ( 0.902 %)
Number of data points in class 411 : 6 ( 0.902 %)
Number of data points in class 410 : 6 ( 0.902 %)
Number of data points in class 409 : 6 ( 0.902 %)
Number of data points in class 434 : 6 ( 0.902 %)
Number of data points in class 422 : 6 ( 0.902 %)
Number of data points in class 435 : 6 ( 0.902 %)
Number of data points in class 421 : 6 ( 0.902 %)
Number of data points in class 437 : 6 ( 0.902 %)
Number of data points in class 436 : 6 ( 0.902 %)
Number of data points in class 463 : 6 ( 0.902 %)
Number of data points in class 462 : 6 ( 0.902 %)
Number of data points in class 461 : 6 ( 0.902 %)
Number of data points in class 460 : 6 ( 0.902 %)
Number of data points in class 459 : 6 ( 0.902 %)
Number of data points in class 458 : 6 ( 0.902 %)
Number of data points in class 457 : 6 ( 0.902 %)
Number of data points in class 456 : 6 ( 0.902 %)
Number of data points in class 455 : 6 ( 0.902 %)
Number of data points in class 454 : 6 ( 0.902 %)
Number of data points in class 453 : 6 ( 0.902 %)
Number of data points in class 452 : 6 ( 0.902 %)
Number of data points in class 446 : 6 ( 0.902 %)
Number of data points in class 450 : 6 ( 0.902 %)
Number of data points in class 451 : 6 ( 0.902 %)
Number of data points in class 439 : 6 ( 0.902 %)
Number of data points in class 440 : 6 ( 0.902 %)
Number of data points in class 441 : 6 ( 0.902 %)
Number of data points in class 442 : 6 ( 0.902 %)
Number of data points in class 438 : 6 ( 0.902 %)
Number of data points in class 444 : 6 ( 0.902 %)
Number of data points in class 445 : 6 ( 0.902 %)
Number of data points in class 447 : 6 ( 0.902 %)
Number of data points in class 448 : 6 ( 0.902 %)
Number of data points in class 449 : 6 ( 0.902 %)
Number of data points in class 443 : 6 ( 0.902 %)
Number of data points in class 382 : 5 ( 0.752 %)
Number of data points in class 381 : 5 ( 0.752 %)
Number of data points in class 380 : 5 ( 0.752 %)
Number of data points in class 379 : 5 ( 0.752 %)
```

Saved successfully!



```
Number of data points in class 378 : 5 ( 0.752 %)
Number of data points in class 376 : 5 ( 0.752 %)
Number of data points in class 375 : 5 ( 0.752 %)
Number of data points in class 374 : 5 ( 0.752 %)
Number of data points in class 373 : 5 ( 0.752 %)
Number of data points in class 370 : 5 ( 0.752 %)
Number of data points in class 371 : 5 ( 0.752 %)
Number of data points in class 369 : 5 ( 0.752 %)
Number of data points in class 368 : 5 ( 0.752 %)
Number of data points in class 383 : 5 ( 0.752 %)
Number of data points in class 366 : 5 ( 0.752 %)
Number of data points in class 365 : 5 ( 0.752 %)
Number of data points in class 364 : 5 ( 0.752 %)
Number of data points in class 363 : 5 ( 0.752 %)
Number of data points in class 362 : 5 ( 0.752 %)
Number of data points in class 361 : 5 ( 0.752 %)
Number of data points in class 372 : 5 ( 0.752 %)
Number of data points in class 367 : 5 ( 0.752 %)
Number of data points in class 377 : 5 ( 0.752 %)
Number of data points in class 386 : 5 ( 0.752 %)
Number of data points in class 385 : 5 ( 0.752 %)
Number of data points in class 408 : 5 ( 0.752 %)
Number of data points in class 407 : 5 ( 0.752 %)
Number of data points in class 406 : 5 ( 0.752 %)
Number of data points in class 405 : 5 ( 0.752 %)
Number of data points in class 404 : 5 ( 0.752 %)
Number of data points in class 403 : 5 ( 0.752 %)
Number of data points in class 402 : 5 ( 0.752 %)
Number of data points in class 401 : 5 ( 0.752 %)
Number of data points in class 400 : 5 ( 0.752 %)
Number of data points in class 399 : 5 ( 0.752 %)
Number of data points in class 384 : 5 ( 0.752 %)
Number of data points in class 397 : 5 ( 0.752 %)
Number of data points in class 396 : 5 ( 0.752 %)
Number of data points in class 395 : 5 ( 0.752 %)
Number of data points in class 394 : 5 ( 0.752 %)
Number of data points in class 393 : 5 ( 0.752 %)
Number of data points in class 392 : 5 ( 0.752 %)
Number of data points in class 391 : 5 ( 0.752 %)
Number of data points in class 390 : 5 ( 0.752 %)
Number of data points in class 389 : 5 ( 0.752 %)
Number of data points in class 388 : 5 ( 0.752 %)
Number of data points in class 387 : 5 ( 0.752 %)
Number of data points in class 398 : 5 ( 0.752 %)
Number of data points in class 344 : 4 ( 0.602 %)
Number of data points in class 343 : 4 ( 0.602 %)
Number of data points in class 342 : 4 ( 0.602 %)
Number of data points in class 341 : 4 ( 0.602 %)
Number of data points in class 336 : 4 ( 0.602 %)
Number of data points in class 339 : 4 ( 0.602 %)
Number of data points in class 338 : 4 ( 0.602 %)
Number of data points in class 337 : 4 ( 0.602 %)
Number of data points in class 345 : 4 ( 0.602 %)
Number of data points in class 335 : 4 ( 0.602 %)
Number of data points in class 340 : 4 ( 0.602 %)
Number of data points in class 346 : 4 ( 0.602 %)
Number of data points in class 352 : 4 ( 0.602 %)
Number of data points in class 348 : 4 ( 0.602 %)
```

Saved successfully!



Number of data points in class 349 : 4 (0.602 %)
Number of data points in class 350 : 4 (0.602 %)
Number of data points in class 351 : 4 (0.602 %)
Number of data points in class 353 : 4 (0.602 %)
Number of data points in class 354 : 4 (0.602 %)
Number of data points in class 355 : 4 (0.602 %)
Number of data points in class 356 : 4 (0.602 %)
Number of data points in class 357 : 4 (0.602 %)
Number of data points in class 358 : 4 (0.602 %)
Number of data points in class 360 : 4 (0.602 %)
Number of data points in class 334 : 4 (0.602 %)
Number of data points in class 347 : 4 (0.602 %)
Number of data points in class 359 : 4 (0.602 %)
Number of data points in class 333 : 4 (0.602 %)
Number of data points in class 331 : 4 (0.602 %)
Number of data points in class 252 : 4 (0.602 %)
Number of data points in class 253 : 4 (0.602 %)
Number of data points in class 254 : 4 (0.602 %)
Number of data points in class 255 : 4 (0.602 %)
Number of data points in class 256 : 4 (0.602 %)
Number of data points in class 257 : 4 (0.602 %)
Number of data points in class 258 : 4 (0.602 %)
Number of data points in class 259 : 4 (0.602 %)
Number of data points in class 260 : 4 (0.602 %)
Number of data points in class 261 : 4 (0.602 %)
Number of data points in class 262 : 4 (0.602 %)
Number of data points in class 263 : 4 (0.602 %)
Number of data points in class 264 : 4 (0.602 %)
Number of data points in class 265 : 4 (0.602 %)
Number of data points in class 266 : 4 (0.602 %)
Number of data points in class 267 : 4 (0.602 %)
Number of data points in class 268 : 4 (0.602 %)
Number of data points in class 269 : 4 (0.602 %)
Number of data points in class 270 : 4 (0.602 %)
Number of data points in class 271 : 4 (0.602 %)
Number of data points in class 272 : 4 (0.602 %)
Number of data points in class 273 : 4 (0.602 %)
Number of data points in class 274 : 4 (0.602 %)
Number of data points in class 251 : 4 (0.602 %)
Number of data points in class 250 : 4 (0.602 %)
Number of data points in class 249 : 4 (0.602 %)
Number of data points in class 248 : 4 (0.602 %)
Number of data points in class 332 : 4 (0.602 %)
Number of data points in class 224 : 4 (0.602 %)
Number of data points in class 225 : 4 (0.602 %)
Number of data points in class 226 : 4 (0.602 %)
Number of data points in class 227 : 4 (0.602 %)
228 : 4 (0.602 %)
229 : 4 (0.602 %)
230 : 4 (0.602 %)
Number of data points in class 231 : 4 (0.602 %)
Number of data points in class 232 : 4 (0.602 %)
Number of data points in class 233 : 4 (0.602 %)
Number of data points in class 275 : 4 (0.602 %)
Number of data points in class 234 : 4 (0.602 %)
Number of data points in class 236 : 4 (0.602 %)
Number of data points in class 237 : 4 (0.602 %)
Number of data points in class 238 : 4 (0.602 %)

Saved successfully!



```
Number of data points in class 238 : 4 ( 0.602 %)
Number of data points in class 239 : 4 ( 0.602 %)
Number of data points in class 240 : 4 ( 0.602 %)
Number of data points in class 241 : 4 ( 0.602 %)
Number of data points in class 242 : 4 ( 0.602 %)
Number of data points in class 243 : 4 ( 0.602 %)
Number of data points in class 244 : 4 ( 0.602 %)
Number of data points in class 245 : 4 ( 0.602 %)
Number of data points in class 247 : 4 ( 0.602 %)
Number of data points in class 235 : 4 ( 0.602 %)
Number of data points in class 276 : 4 ( 0.602 %)
Number of data points in class 246 : 4 ( 0.602 %)
Number of data points in class 278 : 4 ( 0.602 %)
Number of data points in class 307 : 4 ( 0.602 %)
Number of data points in class 308 : 4 ( 0.602 %)
Number of data points in class 309 : 4 ( 0.602 %)
Number of data points in class 310 : 4 ( 0.602 %)
Number of data points in class 311 : 4 ( 0.602 %)
Number of data points in class 312 : 4 ( 0.602 %)
Number of data points in class 313 : 4 ( 0.602 %)
Number of data points in class 314 : 4 ( 0.602 %)
Number of data points in class 315 : 4 ( 0.602 %)
Number of data points in class 316 : 4 ( 0.602 %)
Number of data points in class 317 : 4 ( 0.602 %)
Number of data points in class 306 : 4 ( 0.602 %)
Number of data points in class 318 : 4 ( 0.602 %)
Number of data points in class 320 : 4 ( 0.602 %)
Number of data points in class 321 : 4 ( 0.602 %)
Number of data points in class 322 : 4 ( 0.602 %)
Number of data points in class 323 : 4 ( 0.602 %)
Number of data points in class 324 : 4 ( 0.602 %)
Number of data points in class 325 : 4 ( 0.602 %)
Number of data points in class 326 : 4 ( 0.602 %)
Number of data points in class 327 : 4 ( 0.602 %)
Number of data points in class 328 : 4 ( 0.602 %)
Number of data points in class 329 : 4 ( 0.602 %)
Number of data points in class 277 : 4 ( 0.602 %)
Number of data points in class 319 : 4 ( 0.602 %)
Number of data points in class 305 : 4 ( 0.602 %)
Number of data points in class 330 : 4 ( 0.602 %)
Number of data points in class 303 : 4 ( 0.602 %)
Number of data points in class 279 : 4 ( 0.602 %)
Number of data points in class 280 : 4 ( 0.602 %)
Number of data points in class 281 : 4 ( 0.602 %)
Number of data points in class 282 : 4 ( 0.602 %)
Number of data points in class 283 : 4 ( 0.602 %)
Number of data points in class 284 : 4 ( 0.602 %)
Number of data points in class 285 : 4 ( 0.602 %)
Number of data points in class 286 : 4 ( 0.602 %)
Number of data points in class 287 : 4 ( 0.602 %)
Number of data points in class 304 : 4 ( 0.602 %)
Number of data points in class 289 : 4 ( 0.602 %)
Number of data points in class 290 : 4 ( 0.602 %)
Number of data points in class 288 : 4 ( 0.602 %)
Number of data points in class 292 : 4 ( 0.602 %)
Number of data points in class 302 : 4 ( 0.602 %)
Number of data points in class 291 : 4 ( 0.602 %)
Number of data points in class 300 : 4 ( 0.602 %)
```

Saved successfully!




```
Number of data points in class 299 : 4 ( 0.602 %)
Number of data points in class 298 : 4 ( 0.602 %)
Number of data points in class 301 : 4 ( 0.602 %)
Number of data points in class 296 : 4 ( 0.602 %)
Number of data points in class 295 : 4 ( 0.602 %)
Number of data points in class 294 : 4 ( 0.602 %)
Number of data points in class 293 : 4 ( 0.602 %)
Number of data points in class 297 : 4 ( 0.602 %)
Number of data points in class 212 : 3 ( 0.451 %)
Number of data points in class 206 : 3 ( 0.451 %)
Number of data points in class 207 : 3 ( 0.451 %)
Number of data points in class 208 : 3 ( 0.451 %)
Number of data points in class 209 : 3 ( 0.451 %)
Number of data points in class 210 : 3 ( 0.451 %)
Number of data points in class 211 : 3 ( 0.451 %)
Number of data points in class 213 : 3 ( 0.451 %)
Number of data points in class 218 : 3 ( 0.451 %)
Number of data points in class 215 : 3 ( 0.451 %)
Number of data points in class 216 : 3 ( 0.451 %)
Number of data points in class 217 : 3 ( 0.451 %)
Number of data points in class 219 : 3 ( 0.451 %)
Number of data points in class 220 : 3 ( 0.451 %)
Number of data points in class 221 : 3 ( 0.451 %)
Number of data points in class 222 : 3 ( 0.451 %)
Number of data points in class 223 : 3 ( 0.451 %)
Number of data points in class 214 : 3 ( 0.451 %)
Number of data points in class 146 : 2 ( 0.301 %)
Number of data points in class 145 : 2 ( 0.301 %)
Number of data points in class 144 : 2 ( 0.301 %)
Number of data points in class 140 : 2 ( 0.301 %)
Number of data points in class 142 : 2 ( 0.301 %)
Number of data points in class 141 : 2 ( 0.301 %)
Number of data points in class 147 : 2 ( 0.301 %)
Number of data points in class 143 : 2 ( 0.301 %)
Number of data points in class 148 : 2 ( 0.301 %)
Number of data points in class 152 : 2 ( 0.301 %)
Number of data points in class 150 : 2 ( 0.301 %)
Number of data points in class 151 : 2 ( 0.301 %)
Number of data points in class 139 : 2 ( 0.301 %)
Number of data points in class 153 : 2 ( 0.301 %)
Number of data points in class 158 : 2 ( 0.301 %)
Number of data points in class 154 : 2 ( 0.301 %)
Number of data points in class 155 : 2 ( 0.301 %)
Number of data points in class 156 : 2 ( 0.301 %)
Number of data points in class 157 : 2 ( 0.301 %)
Number of data points in class 149 : 2 ( 0.301 %)
Number of data points in class 138 : 2 ( 0.301 %)
Number of data points in class 133 : 2 ( 0.301 %)
Number of data points in class 136 : 2 ( 0.301 %)
Number of data points in class 115 : 2 ( 0.301 %)
Number of data points in class 116 : 2 ( 0.301 %)
Number of data points in class 117 : 2 ( 0.301 %)
Number of data points in class 118 : 2 ( 0.301 %)
Number of data points in class 119 : 2 ( 0.301 %)
Number of data points in class 120 : 2 ( 0.301 %)
Number of data points in class 121 : 2 ( 0.301 %)
Number of data points in class 122 : 2 ( 0.301 %)
Number of data points in class 123 : 2 ( 0.301 %)
```

Saved successfully!



```
Number of data points in class 137 : 2 ( 0.301 %)
Number of data points in class 124 : 2 ( 0.301 %)
Number of data points in class 126 : 2 ( 0.301 %)
Number of data points in class 127 : 2 ( 0.301 %)
Number of data points in class 128 : 2 ( 0.301 %)
Number of data points in class 129 : 2 ( 0.301 %)
Number of data points in class 130 : 2 ( 0.301 %)
Number of data points in class 131 : 2 ( 0.301 %)
Number of data points in class 132 : 2 ( 0.301 %)
Number of data points in class 134 : 2 ( 0.301 %)
Number of data points in class 135 : 2 ( 0.301 %)
Number of data points in class 125 : 2 ( 0.301 %)
Number of data points in class 159 : 2 ( 0.301 %)
Number of data points in class 166 : 2 ( 0.301 %)
Number of data points in class 161 : 2 ( 0.301 %)
Number of data points in class 187 : 2 ( 0.301 %)
Number of data points in class 188 : 2 ( 0.301 %)
Number of data points in class 189 : 2 ( 0.301 %)
Number of data points in class 190 : 2 ( 0.301 %)
Number of data points in class 191 : 2 ( 0.301 %)
Number of data points in class 192 : 2 ( 0.301 %)
Number of data points in class 193 : 2 ( 0.301 %)
Number of data points in class 194 : 2 ( 0.301 %)
Number of data points in class 195 : 2 ( 0.301 %)
Number of data points in class 196 : 2 ( 0.301 %)
Number of data points in class 198 : 2 ( 0.301 %)
Number of data points in class 199 : 2 ( 0.301 %)
Number of data points in class 200 : 2 ( 0.301 %)
Number of data points in class 201 : 2 ( 0.301 %)
Number of data points in class 202 : 2 ( 0.301 %)
Number of data points in class 203 : 2 ( 0.301 %)
Number of data points in class 204 : 2 ( 0.301 %)
Number of data points in class 205 : 2 ( 0.301 %)
Number of data points in class 160 : 2 ( 0.301 %)
Number of data points in class 186 : 2 ( 0.301 %)
Number of data points in class 185 : 2 ( 0.301 %)
Number of data points in class 197 : 2 ( 0.301 %)
Number of data points in class 183 : 2 ( 0.301 %)
Number of data points in class 162 : 2 ( 0.301 %)
Number of data points in class 184 : 2 ( 0.301 %)
Number of data points in class 163 : 2 ( 0.301 %)
Number of data points in class 164 : 2 ( 0.301 %)
Number of data points in class 165 : 2 ( 0.301 %)
Number of data points in class 167 : 2 ( 0.301 %)
Number of data points in class 169 : 2 ( 0.301 %)
Number of data points in class 170 : 2 ( 0.301 %)
Number of data points in class 171 : 2 ( 0.301 %)
Number of data points in class 172 : 2 ( 0.301 %)
Number of data points in class 168 : 2 ( 0.301 %)
Number of data points in class 174 : 2 ( 0.301 %)
Number of data points in class 175 : 2 ( 0.301 %)
Number of data points in class 176 : 2 ( 0.301 %)
Number of data points in class 177 : 2 ( 0.301 %)
Number of data points in class 178 : 2 ( 0.301 %)
Number of data points in class 179 : 2 ( 0.301 %)
Number of data points in class 180 : 2 ( 0.301 %)
Number of data points in class 173 : 2 ( 0.301 %)
Number of data points in class 181 : 2 ( 0.301 %)
```

Saved successfully!



```
number of data points in class 181 : 2 ( 0.301 %)
Number of data points in class 182 : 2 ( 0.301 %)
Number of data points in class 32 : 1 ( 0.15 %)
Number of data points in class 40 : 1 ( 0.15 %)
Number of data points in class 39 : 1 ( 0.15 %)
Number of data points in class 38 : 1 ( 0.15 %)
Number of data points in class 37 : 1 ( 0.15 %)
Number of data points in class 34 : 1 ( 0.15 %)
Number of data points in class 35 : 1 ( 0.15 %)
Number of data points in class 33 : 1 ( 0.15 %)
Number of data points in class 41 : 1 ( 0.15 %)
Number of data points in class 36 : 1 ( 0.15 %)
Number of data points in class 42 : 1 ( 0.15 %)
Number of data points in class 53 : 1 ( 0.15 %)
Number of data points in class 44 : 1 ( 0.15 %)
Number of data points in class 45 : 1 ( 0.15 %)
Number of data points in class 46 : 1 ( 0.15 %)
Number of data points in class 47 : 1 ( 0.15 %)
Number of data points in class 48 : 1 ( 0.15 %)
Number of data points in class 49 : 1 ( 0.15 %)
Number of data points in class 50 : 1 ( 0.15 %)
Number of data points in class 51 : 1 ( 0.15 %)
Number of data points in class 52 : 1 ( 0.15 %)
Number of data points in class 54 : 1 ( 0.15 %)
Number of data points in class 55 : 1 ( 0.15 %)
Number of data points in class 31 : 1 ( 0.15 %)
Number of data points in class 43 : 1 ( 0.15 %)
Number of data points in class 30 : 1 ( 0.15 %)
Number of data points in class 8 : 1 ( 0.15 %)
Number of data points in class 28 : 1 ( 0.15 %)
Number of data points in class 2 : 1 ( 0.15 %)
Number of data points in class 3 : 1 ( 0.15 %)
Number of data points in class 4 : 1 ( 0.15 %)
Number of data points in class 5 : 1 ( 0.15 %)
Number of data points in class 6 : 1 ( 0.15 %)
Number of data points in class 7 : 1 ( 0.15 %)
Number of data points in class 56 : 1 ( 0.15 %)
Number of data points in class 9 : 1 ( 0.15 %)
Number of data points in class 10 : 1 ( 0.15 %)
Number of data points in class 11 : 1 ( 0.15 %)
Number of data points in class 12 : 1 ( 0.15 %)
Number of data points in class 13 : 1 ( 0.15 %)
Number of data points in class 29 : 1 ( 0.15 %)
Number of data points in class 14 : 1 ( 0.15 %)
Number of data points in class 16 : 1 ( 0.15 %)
Number of data points in class 17 : 1 ( 0.15 %)
Number of data points in class 18 : 1 ( 0.15 %)
Number of data points in class 19 : 1 ( 0.15 %)
Number of data points in class 20 : 1 ( 0.15 %)
Number of data points in class 21 : 1 ( 0.15 %)
Number of data points in class 22 : 1 ( 0.15 %)
Number of data points in class 23 : 1 ( 0.15 %)
Number of data points in class 24 : 1 ( 0.15 %)
Number of data points in class 25 : 1 ( 0.15 %)
Number of data points in class 26 : 1 ( 0.15 %)
Number of data points in class 27 : 1 ( 0.15 %)
Number of data points in class 15 : 1 ( 0.15 %)
Number of data points in class 57 : 1 ( 0.15 %)
```

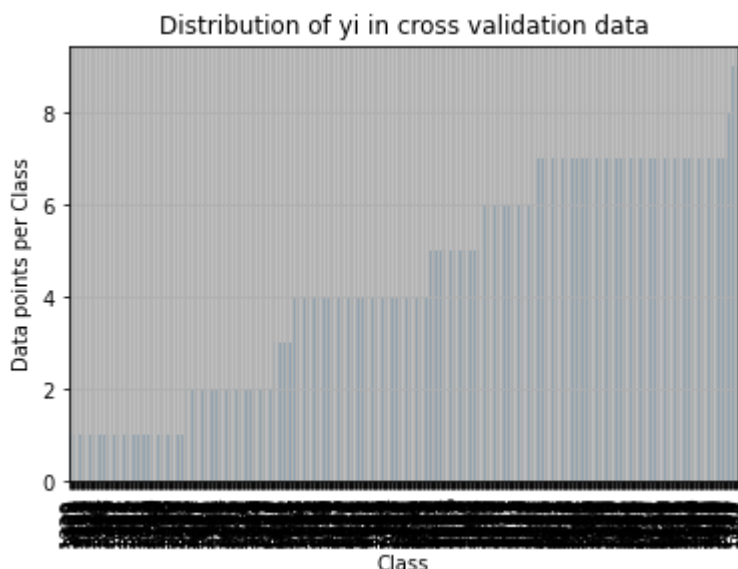
Saved successfully!



Number of data points in class 79 : 1 (0.15 %)
Number of data points in class 59 : 1 (0.15 %)
Number of data points in class 90 : 1 (0.15 %)
Number of data points in class 91 : 1 (0.15 %)
Number of data points in class 92 : 1 (0.15 %)
Number of data points in class 93 : 1 (0.15 %)
Number of data points in class 94 : 1 (0.15 %)
Number of data points in class 95 : 1 (0.15 %)
Number of data points in class 96 : 1 (0.15 %)
Number of data points in class 97 : 1 (0.15 %)
Number of data points in class 98 : 1 (0.15 %)
Number of data points in class 99 : 1 (0.15 %)
Number of data points in class 100 : 1 (0.15 %)
Number of data points in class 101 : 1 (0.15 %)
Number of data points in class 102 : 1 (0.15 %)
Number of data points in class 103 : 1 (0.15 %)
Number of data points in class 104 : 1 (0.15 %)
Number of data points in class 105 : 1 (0.15 %)
Number of data points in class 106 : 1 (0.15 %)
Number of data points in class 107 : 1 (0.15 %)
Number of data points in class 108 : 1 (0.15 %)
Number of data points in class 109 : 1 (0.15 %)
Number of data points in class 110 : 1 (0.15 %)
Number of data points in class 111 : 1 (0.15 %)
Number of data points in class 112 : 1 (0.15 %)
Number of data points in class 113 : 1 (0.15 %)
Number of data points in class 114 : 1 (0.15 %)
Number of data points in class 89 : 1 (0.15 %)
Number of data points in class 58 : 1 (0.15 %)
Number of data points in class 88 : 1 (0.15 %)
Number of data points in class 86 : 1 (0.15 %)
Number of data points in class 60 : 1 (0.15 %)
Number of data points in class 61 : 1 (0.15 %)
Number of data points in class 62 : 1 (0.15 %)
Number of data points in class 63 : 1 (0.15 %)
Number of data points in class 64 : 1 (0.15 %)
Number of data points in class 65 : 1 (0.15 %)
Number of data points in class 66 : 1 (0.15 %)
Number of data points in class 67 : 1 (0.15 %)
Number of data points in class 68 : 1 (0.15 %)
Number of data points in class 69 : 1 (0.15 %)
Number of data points in class 70 : 1 (0.15 %)
Number of data points in class 71 : 1 (0.15 %)
Number of data points in class 72 : 1 (0.15 %)
Number of data points in class 73 : 1 (0.15 %)
Number of data points in class 74 : 1 (0.15 %)
Number of data points in class 75 : 1 (0.15 %)
Number of data points in class 76 : 1 (0.15 %)
Number of data points in class 77 : 1 (0.15 %)
Number of data points in class 78 : 1 (0.15 %)
Number of data points in class 80 : 1 (0.15 %)
Number of data points in class 81 : 1 (0.15 %)
Number of data points in class 82 : 1 (0.15 %)
Number of data points in class 83 : 1 (0.15 %)
Number of data points in class 84 : 1 (0.15 %)
Number of data points in class 85 : 1 (0.15 %)
Number of data points in class 87 : 1 (0.15 %)
Number of data points in class 1 : 1 (0.15 %)

Saved successfully!





Number of data points in class 532 : 9 (1.692 %)

Number of data points in class 527 : 9 (1.692 %)

Number of data points in class 528 : 9 (1.692 %)

Number of data points in class 531 : 9 (1.692 %)

Number of data points in class 530 : 9 (1.692 %)

Number of data points in class 529 : 9 (1.692 %)

Number of data points in class 526 : 8 (1.504 %)

Number of data points in class 525 : 8 (1.504 %)

Number of data points in class 524 : 8 (1.504 %)

Number of data points in class 425 : 7 (1.316 %)

Number of data points in class 424 : 7 (1.316 %)

Number of data points in class 423 : 7 (1.316 %)

Number of data points in class 422 : 7 (1.316 %)

Number of data points in class 421 : 7 (1.316 %)

Number of data points in class 420 : 7 (1.316 %)

Number of data points in class 418 : 7 (1.316 %)

Number of data points in class 426 : 7 (1.316 %)

Number of data points in class 417 : 7 (1.316 %)

Number of data points in class 416 : 7 (1.316 %)

Number of data points in class 415 : 7 (1.316 %)

Number of data points in class 414 : 7 (1.316 %)

Number of data points in class 413 : 7 (1.316 %)

Number of data points in class 412 : 7 (1.316 %)

Number of data points in class 419 : 7 (1.316 %)

Number of data points in class 427 : 7 (1.316 %)

Number of data points in class 429 : 7 (1.316 %)

Number of data points in class 411 : 7 (1.316 %)

Number of data points in class 445 : 7 (1.316 %)

Number of data points in class 444 : 7 (1.316 %)

Number of data points in class 443 : 7 (1.316 %)

Number of data points in class 442 : 7 (1.316 %)

Number of data points in class 441 : 7 (1.316 %)

Number of data points in class 440 : 7 (1.316 %)

Number of data points in class 439 : 7 (1.316 %)

Number of data points in class 428 : 7 (1.316 %)

Number of data points in class 438 : 7 (1.316 %)

Number of data points in class 436 : 7 (1.316 %)

Number of data points in class 435 : 7 (1.316 %)

Number of data points in class 434 : 7 (1.316 %)

Saved successfully!



Number of data points in class 433 : 7 (1.316 %)
Number of data points in class 432 : 7 (1.316 %)
Number of data points in class 431 : 7 (1.316 %)
Number of data points in class 430 : 7 (1.316 %)
Number of data points in class 437 : 7 (1.316 %)
Number of data points in class 410 : 7 (1.316 %)
Number of data points in class 407 : 7 (1.316 %)
Number of data points in class 408 : 7 (1.316 %)
Number of data points in class 385 : 7 (1.316 %)
Number of data points in class 384 : 7 (1.316 %)
Number of data points in class 383 : 7 (1.316 %)
Number of data points in class 382 : 7 (1.316 %)
Number of data points in class 381 : 7 (1.316 %)
Number of data points in class 380 : 7 (1.316 %)
Number of data points in class 379 : 7 (1.316 %)
Number of data points in class 378 : 7 (1.316 %)
Number of data points in class 377 : 7 (1.316 %)
Number of data points in class 376 : 7 (1.316 %)
Number of data points in class 375 : 7 (1.316 %)
Number of data points in class 374 : 7 (1.316 %)
Number of data points in class 373 : 7 (1.316 %)
Number of data points in class 372 : 7 (1.316 %)
Number of data points in class 371 : 7 (1.316 %)
Number of data points in class 386 : 7 (1.316 %)
Number of data points in class 387 : 7 (1.316 %)
Number of data points in class 388 : 7 (1.316 %)
Number of data points in class 389 : 7 (1.316 %)
Number of data points in class 446 : 7 (1.316 %)
Number of data points in class 406 : 7 (1.316 %)
Number of data points in class 405 : 7 (1.316 %)
Number of data points in class 404 : 7 (1.316 %)
Number of data points in class 403 : 7 (1.316 %)
Number of data points in class 402 : 7 (1.316 %)
Number of data points in class 401 : 7 (1.316 %)
Number of data points in class 409 : 7 (1.316 %)
Number of data points in class 400 : 7 (1.316 %)
Number of data points in class 396 : 7 (1.316 %)
Number of data points in class 395 : 7 (1.316 %)
Number of data points in class 394 : 7 (1.316 %)
Number of data points in class 393 : 7 (1.316 %)
Number of data points in class 392 : 7 (1.316 %)
Number of data points in class 391 : 7 (1.316 %)
Number of data points in class 390 : 7 (1.316 %)
Number of data points in class 398 : 7 (1.316 %)
Number of data points in class 447 : 7 (1.316 %)
Number of data points in class 397 : 7 (1.316 %)
Number of data points in class 449 : 7 (1.316 %)
Number of data points in class 504 : 7 (1.316 %)
Number of data points in class 503 : 7 (1.316 %)
Number of data points in class 502 : 7 (1.316 %)
Number of data points in class 501 : 7 (1.316 %)
Number of data points in class 500 : 7 (1.316 %)
Number of data points in class 499 : 7 (1.316 %)
Number of data points in class 498 : 7 (1.316 %)
Number of data points in class 497 : 7 (1.316 %)
Number of data points in class 496 : 7 (1.316 %)
Number of data points in class 495 : 7 (1.316 %)
Number of data points in class 494 : 7 (1.316 %)

Saved successfully!



```
Number of data points in class 493 : 7 ( 1.316 %)
Number of data points in class 492 : 7 ( 1.316 %)
Number of data points in class 491 : 7 ( 1.316 %)
Number of data points in class 490 : 7 ( 1.316 %)
Number of data points in class 505 : 7 ( 1.316 %)
Number of data points in class 506 : 7 ( 1.316 %)
Number of data points in class 507 : 7 ( 1.316 %)
Number of data points in class 508 : 7 ( 1.316 %)
Number of data points in class 448 : 7 ( 1.316 %)
Number of data points in class 523 : 7 ( 1.316 %)
Number of data points in class 522 : 7 ( 1.316 %)
Number of data points in class 521 : 7 ( 1.316 %)
Number of data points in class 520 : 7 ( 1.316 %)
Number of data points in class 519 : 7 ( 1.316 %)
Number of data points in class 518 : 7 ( 1.316 %)
Number of data points in class 489 : 7 ( 1.316 %)
Number of data points in class 517 : 7 ( 1.316 %)
Number of data points in class 515 : 7 ( 1.316 %)
Number of data points in class 514 : 7 ( 1.316 %)
Number of data points in class 513 : 7 ( 1.316 %)
Number of data points in class 512 : 7 ( 1.316 %)
Number of data points in class 511 : 7 ( 1.316 %)
Number of data points in class 510 : 7 ( 1.316 %)
Number of data points in class 509 : 7 ( 1.316 %)
Number of data points in class 516 : 7 ( 1.316 %)
Number of data points in class 488 : 7 ( 1.316 %)
Number of data points in class 399 : 7 ( 1.316 %)
Number of data points in class 486 : 7 ( 1.316 %)
Number of data points in class 465 : 7 ( 1.316 %)
Number of data points in class 464 : 7 ( 1.316 %)
Number of data points in class 463 : 7 ( 1.316 %)
Number of data points in class 462 : 7 ( 1.316 %)
Number of data points in class 461 : 7 ( 1.316 %)
Number of data points in class 460 : 7 ( 1.316 %)
Number of data points in class 459 : 7 ( 1.316 %)
Number of data points in class 466 : 7 ( 1.316 %)
Number of data points in class 457 : 7 ( 1.316 %)
Number of data points in class 455 : 7 ( 1.316 %)
Number of data points in class 454 : 7 ( 1.316 %)
Number of data points in class 453 : 7 ( 1.316 %)
Number of data points in class 452 : 7 ( 1.316 %)
Number of data points in class 451 : 7 ( 1.316 %)
Number of data points in class 487 : 7 ( 1.316 %)
Number of data points in class 450 : 7 ( 1.316 %)
Number of data points in class 456 : 7 ( 1.316 %)
Number of data points in class 467 : 7 ( 1.316 %)
Number of data points in class 458 : 7 ( 1.316 %)
Number of data points in class 469 : 7 ( 1.316 %)
Number of data points in class 485 : 7 ( 1.316 %)
Number of data points in class 468 : 7 ( 1.316 %)
Number of data points in class 483 : 7 ( 1.316 %)
Number of data points in class 482 : 7 ( 1.316 %)
Number of data points in class 481 : 7 ( 1.316 %)
Number of data points in class 479 : 7 ( 1.316 %)
Number of data points in class 478 : 7 ( 1.316 %)
Number of data points in class 480 : 7 ( 1.316 %)
Number of data points in class 484 : 7 ( 1.316 %)
```

Saved successfully!



```
number of data points in class 476 : 7 ( 1.316 %)
Number of data points in class 475 : 7 ( 1.316 %)
Number of data points in class 474 : 7 ( 1.316 %)
Number of data points in class 473 : 7 ( 1.316 %)
Number of data points in class 472 : 7 ( 1.316 %)
Number of data points in class 477 : 7 ( 1.316 %)
Number of data points in class 471 : 7 ( 1.316 %)
Number of data points in class 470 : 7 ( 1.316 %)
Number of data points in class 339 : 6 ( 1.128 %)
Number of data points in class 340 : 6 ( 1.128 %)
Number of data points in class 341 : 6 ( 1.128 %)
Number of data points in class 346 : 6 ( 1.128 %)
Number of data points in class 343 : 6 ( 1.128 %)
Number of data points in class 338 : 6 ( 1.128 %)
Number of data points in class 345 : 6 ( 1.128 %)
Number of data points in class 342 : 6 ( 1.128 %)
Number of data points in class 344 : 6 ( 1.128 %)
Number of data points in class 330 : 6 ( 1.128 %)
Number of data points in class 335 : 6 ( 1.128 %)
Number of data points in class 334 : 6 ( 1.128 %)
Number of data points in class 333 : 6 ( 1.128 %)
Number of data points in class 332 : 6 ( 1.128 %)
Number of data points in class 331 : 6 ( 1.128 %)
Number of data points in class 329 : 6 ( 1.128 %)
Number of data points in class 328 : 6 ( 1.128 %)
Number of data points in class 327 : 6 ( 1.128 %)
Number of data points in class 347 : 6 ( 1.128 %)
Number of data points in class 336 : 6 ( 1.128 %)
Number of data points in class 348 : 6 ( 1.128 %)
Number of data points in class 337 : 6 ( 1.128 %)
Number of data points in class 350 : 6 ( 1.128 %)
Number of data points in class 349 : 6 ( 1.128 %)
Number of data points in class 370 : 6 ( 1.128 %)
Number of data points in class 369 : 6 ( 1.128 %)
Number of data points in class 368 : 6 ( 1.128 %)
Number of data points in class 367 : 6 ( 1.128 %)
Number of data points in class 366 : 6 ( 1.128 %)
Number of data points in class 365 : 6 ( 1.128 %)
Number of data points in class 364 : 6 ( 1.128 %)
Number of data points in class 363 : 6 ( 1.128 %)
Number of data points in class 362 : 6 ( 1.128 %)
Number of data points in class 356 : 6 ( 1.128 %)
Number of data points in class 360 : 6 ( 1.128 %)
Number of data points in class 361 : 6 ( 1.128 %)
Number of data points in class 352 : 6 ( 1.128 %)
Number of data points in class 353 : 6 ( 1.128 %)
Number of data points in class 354 : 6 ( 1.128 %)
Number of data points in class 351 : 6 ( 1.128 %)
Number of data points in class 357 : 6 ( 1.128 %)
Number of data points in class 358 : 6 ( 1.128 %)
Number of data points in class 359 : 6 ( 1.128 %)
Number of data points in class 355 : 6 ( 1.128 %)
Number of data points in class 305 : 5 ( 0.94 %)
Number of data points in class 304 : 5 ( 0.94 %)
Number of data points in class 303 : 5 ( 0.94 %)
Number of data points in class 302 : 5 ( 0.94 %)
Number of data points in class 300 : 5 ( 0.94 %)
Number of data points in class 299 : 5 ( 0.94 %)
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Saved successfully!



Number of data points in class 298 : 5 (0.94 %)
Number of data points in class 296 : 5 (0.94 %)
Number of data points in class 295 : 5 (0.94 %)
Number of data points in class 294 : 5 (0.94 %)
Number of data points in class 306 : 5 (0.94 %)
Number of data points in class 292 : 5 (0.94 %)
Number of data points in class 291 : 5 (0.94 %)
Number of data points in class 290 : 5 (0.94 %)
Number of data points in class 289 : 5 (0.94 %)
Number of data points in class 288 : 5 (0.94 %)
Number of data points in class 297 : 5 (0.94 %)
Number of data points in class 293 : 5 (0.94 %)
Number of data points in class 301 : 5 (0.94 %)
Number of data points in class 309 : 5 (0.94 %)
Number of data points in class 308 : 5 (0.94 %)
Number of data points in class 326 : 5 (0.94 %)
Number of data points in class 325 : 5 (0.94 %)
Number of data points in class 324 : 5 (0.94 %)
Number of data points in class 323 : 5 (0.94 %)
Number of data points in class 322 : 5 (0.94 %)
Number of data points in class 321 : 5 (0.94 %)
Number of data points in class 320 : 5 (0.94 %)
Number of data points in class 319 : 5 (0.94 %)
Number of data points in class 307 : 5 (0.94 %)
Number of data points in class 317 : 5 (0.94 %)
Number of data points in class 316 : 5 (0.94 %)
Number of data points in class 315 : 5 (0.94 %)
Number of data points in class 314 : 5 (0.94 %)
Number of data points in class 313 : 5 (0.94 %)
Number of data points in class 312 : 5 (0.94 %)
Number of data points in class 311 : 5 (0.94 %)
Number of data points in class 318 : 5 (0.94 %)
Number of data points in class 310 : 5 (0.94 %)
Number of data points in class 274 : 4 (0.752 %)
Number of data points in class 273 : 4 (0.752 %)
Number of data points in class 272 : 4 (0.752 %)
Number of data points in class 269 : 4 (0.752 %)
Number of data points in class 270 : 4 (0.752 %)
Number of data points in class 275 : 4 (0.752 %)
Number of data points in class 268 : 4 (0.752 %)
Number of data points in class 271 : 4 (0.752 %)
Number of data points in class 276 : 4 (0.752 %)
Number of data points in class 281 : 4 (0.752 %)
Number of data points in class 278 : 4 (0.752 %)
Number of data points in class 279 : 4 (0.752 %)
Number of data points in class 280 : 4 (0.752 %)
Number of data points in class 282 : 4 (0.752 %)

Saved successfully!



283 : 4 (0.752 %)
284 : 4 (0.752 %)
285 : 4 (0.752 %)
Number of data points in class 287 : 4 (0.752 %)
Number of data points in class 267 : 4 (0.752 %)
Number of data points in class 277 : 4 (0.752 %)
Number of data points in class 286 : 4 (0.752 %)
Number of data points in class 266 : 4 (0.752 %)
Number of data points in class 264 : 4 (0.752 %)
Number of data points in class 201 : 4 (0.752 %)
Number of data points in class 202 : 4 (0.752 %)

```
Number of data points in class 203 : 4 ( 0.752 %)  
Number of data points in class 204 : 4 ( 0.752 %)  
Number of data points in class 205 : 4 ( 0.752 %)  
Number of data points in class 206 : 4 ( 0.752 %)  
Number of data points in class 207 : 4 ( 0.752 %)  
Number of data points in class 208 : 4 ( 0.752 %)  
Number of data points in class 200 : 4 ( 0.752 %)  
Number of data points in class 209 : 4 ( 0.752 %)  
Number of data points in class 211 : 4 ( 0.752 %)  
Number of data points in class 212 : 4 ( 0.752 %)  
Number of data points in class 213 : 4 ( 0.752 %)  
Number of data points in class 214 : 4 ( 0.752 %)  
Number of data points in class 215 : 4 ( 0.752 %)  
Number of data points in class 216 : 4 ( 0.752 %)  
Number of data points in class 217 : 4 ( 0.752 %)  
Number of data points in class 218 : 4 ( 0.752 %)  
Number of data points in class 210 : 4 ( 0.752 %)  
Number of data points in class 199 : 4 ( 0.752 %)  
Number of data points in class 198 : 4 ( 0.752 %)  
Number of data points in class 197 : 4 ( 0.752 %)  
Number of data points in class 265 : 4 ( 0.752 %)  
Number of data points in class 178 : 4 ( 0.752 %)  
Number of data points in class 179 : 4 ( 0.752 %)  
Number of data points in class 180 : 4 ( 0.752 %)  
Number of data points in class 181 : 4 ( 0.752 %)  
Number of data points in class 182 : 4 ( 0.752 %)  
Number of data points in class 183 : 4 ( 0.752 %)  
Number of data points in class 184 : 4 ( 0.752 %)  
Number of data points in class 185 : 4 ( 0.752 %)  
Number of data points in class 186 : 4 ( 0.752 %)  
Number of data points in class 187 : 4 ( 0.752 %)  
Number of data points in class 188 : 4 ( 0.752 %)  
Number of data points in class 189 : 4 ( 0.752 %)  
Number of data points in class 190 : 4 ( 0.752 %)  
Number of data points in class 191 : 4 ( 0.752 %)  
Number of data points in class 192 : 4 ( 0.752 %)  
Number of data points in class 193 : 4 ( 0.752 %)  
Number of data points in class 194 : 4 ( 0.752 %)  
Number of data points in class 195 : 4 ( 0.752 %)  
Number of data points in class 219 : 4 ( 0.752 %)  
Number of data points in class 220 : 4 ( 0.752 %)  
Number of data points in class 196 : 4 ( 0.752 %)  
Number of data points in class 222 : 4 ( 0.752 %)  
Number of data points in class 246 : 4 ( 0.752 %)  
Number of data points in class 247 : 4 ( 0.752 %)  
Number of data points in class 248 : 4 ( 0.752 %)  
Number of data points in class 249 : 4 ( 0.752 %)  
Number of data points in class 250 : 4 ( 0.752 %)  
Number of data points in class 251 : 4 ( 0.752 %)  
Number of data points in class 252 : 4 ( 0.752 %)  
Number of data points in class 253 : 4 ( 0.752 %)  
Number of data points in class 263 : 4 ( 0.752 %)  
Number of data points in class 254 : 4 ( 0.752 %)  
Number of data points in class 256 : 4 ( 0.752 %)  
Number of data points in class 257 : 4 ( 0.752 %)  
Number of data points in class 258 : 4 ( 0.752 %)  
Number of data points in class 259 : 4 ( 0.752 %)
```

Saved successfully!



```
Number of data points in class 260 : 4 ( 0.752 %)
Number of data points in class 261 : 4 ( 0.752 %)
Number of data points in class 262 : 4 ( 0.752 %)
Number of data points in class 221 : 4 ( 0.752 %)
Number of data points in class 255 : 4 ( 0.752 %)
Number of data points in class 244 : 4 ( 0.752 %)
Number of data points in class 245 : 4 ( 0.752 %)
Number of data points in class 242 : 4 ( 0.752 %)
Number of data points in class 223 : 4 ( 0.752 %)
Number of data points in class 224 : 4 ( 0.752 %)
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Number of data points in class 229 : 4 ( 0.752 %)
Number of data points in class 243 : 4 ( 0.752 %)
Number of data points in class 231 : 4 ( 0.752 %)
Number of data points in class 232 : 4 ( 0.752 %)
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Number of data points in class 234 : 4 ( 0.752 %)
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Number of data points in class 240 : 4 ( 0.752 %)
Number of data points in class 241 : 4 ( 0.752 %)
Number of data points in class 233 : 4 ( 0.752 %)
Number of data points in class 168 : 3 ( 0.564 %)
Number of data points in class 164 : 3 ( 0.564 %)
Number of data points in class 165 : 3 ( 0.564 %)
Number of data points in class 166 : 3 ( 0.564 %)
Number of data points in class 167 : 3 ( 0.564 %)
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Number of data points in class 173 : 3 ( 0.564 %)
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Number of data points in class 177 : 3 ( 0.564 %)
Number of data points in class 170 : 3 ( 0.564 %)
Number of data points in class 112 : 2 ( 0.376 %)
Number of data points in class 113 : 2 ( 0.376 %)
Number of data points in class 114 : 2 ( 0.376 %)
Number of data points in class 115 : 2 ( 0.376 %)
Number of data points in class 116 : 2 ( 0.376 %)
Number of data points in class 117 : 2 ( 0.376 %)
Number of data points in class 120 : 2 ( 0.376 %)
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Number of data points in class 111 : 2 ( 0.376 %)
Number of data points in class 121 : 2 ( 0.376 %)
Number of data points in class 122 : 2 ( 0.376 %)
Number of data points in class 125 : 2 ( 0.376 %)
Number of data points in class 123 : 2 ( 0.376 %)
Number of data points in class 124 : 2 ( 0.376 %)
Number of data points in class 118 : 2 ( 0.376 %)
Number of data points in class 110 : 2 ( 0.376 %)
```

Saved successfully!



Number of data points in class 106 : 2 (0.376 %)
Number of data points in class 108 : 2 (0.376 %)
Number of data points in class 92 : 2 (0.376 %)
Number of data points in class 93 : 2 (0.376 %)
Number of data points in class 94 : 2 (0.376 %)
Number of data points in class 95 : 2 (0.376 %)
Number of data points in class 96 : 2 (0.376 %)
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Number of data points in class 100 : 2 (0.376 %)
Number of data points in class 101 : 2 (0.376 %)
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Number of data points in class 105 : 2 (0.376 %)
Number of data points in class 107 : 2 (0.376 %)
Number of data points in class 109 : 2 (0.376 %)
Number of data points in class 126 : 2 (0.376 %)
Number of data points in class 132 : 2 (0.376 %)
Number of data points in class 128 : 2 (0.376 %)
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Number of data points in class 163 : 2 (0.376 %)
Number of data points in class 127 : 2 (0.376 %)
Number of data points in class 148 : 2 (0.376 %)
Number of data points in class 147 : 2 (0.376 %)
Number of data points in class 156 : 2 (0.376 %)
Number of data points in class 145 : 2 (0.376 %)
Number of data points in class 129 : 2 (0.376 %)
Number of data points in class 146 : 2 (0.376 %)
Number of data points in class 130 : 2 (0.376 %)
Number of data points in class 131 : 2 (0.376 %)
Number of data points in class 133 : 2 (0.376 %)
Number of data points in class 135 : 2 (0.376 %)
Number of data points in class 136 : 2 (0.376 %)
Number of data points in class 137 : 2 (0.376 %)
Number of data points in class 134 : 2 (0.376 %)
Number of data points in class 138 : 2 (0.376 %)
Number of data points in class 139 : 2 (0.376 %)
Number of data points in class 140 : 2 (0.376 %)
Number of data points in class 141 : 2 (0.376 %)
Number of data points in class 142 : 2 (0.376 %)
Number of data points in class 143 : 2 (0.376 %)
Number of data points in class 144 : 2 (0.376 %)
Number of data points in class 32 : 1 (0.188 %)
Number of data points in class 27 : 1 (0.188 %)

Saved successfully!



```
Number of data points in class 27 : 1 ( 0.188 %)
Number of data points in class 28 : 1 ( 0.188 %)
Number of data points in class 29 : 1 ( 0.188 %)
Number of data points in class 30 : 1 ( 0.188 %)
Number of data points in class 31 : 1 ( 0.188 %)
Number of data points in class 26 : 1 ( 0.188 %)
Number of data points in class 33 : 1 ( 0.188 %)
Number of data points in class 41 : 1 ( 0.188 %)
Number of data points in class 35 : 1 ( 0.188 %)
Number of data points in class 36 : 1 ( 0.188 %)
Number of data points in class 37 : 1 ( 0.188 %)
Number of data points in class 38 : 1 ( 0.188 %)
Number of data points in class 39 : 1 ( 0.188 %)
Number of data points in class 40 : 1 ( 0.188 %)
Number of data points in class 42 : 1 ( 0.188 %)
Number of data points in class 43 : 1 ( 0.188 %)
Number of data points in class 25 : 1 ( 0.188 %)
Number of data points in class 34 : 1 ( 0.188 %)
Number of data points in class 24 : 1 ( 0.188 %)
Number of data points in class 6 : 1 ( 0.188 %)
Number of data points in class 22 : 1 ( 0.188 %)
Number of data points in class 2 : 1 ( 0.188 %)
Number of data points in class 3 : 1 ( 0.188 %)
Number of data points in class 4 : 1 ( 0.188 %)
Number of data points in class 5 : 1 ( 0.188 %)
Number of data points in class 44 : 1 ( 0.188 %)
Number of data points in class 7 : 1 ( 0.188 %)
Number of data points in class 8 : 1 ( 0.188 %)
Number of data points in class 9 : 1 ( 0.188 %)
Number of data points in class 10 : 1 ( 0.188 %)
Number of data points in class 23 : 1 ( 0.188 %)
Number of data points in class 11 : 1 ( 0.188 %)
Number of data points in class 13 : 1 ( 0.188 %)
Number of data points in class 14 : 1 ( 0.188 %)
Number of data points in class 15 : 1 ( 0.188 %)
Number of data points in class 16 : 1 ( 0.188 %)
Number of data points in class 17 : 1 ( 0.188 %)
Number of data points in class 18 : 1 ( 0.188 %)
Number of data points in class 19 : 1 ( 0.188 %)
Number of data points in class 20 : 1 ( 0.188 %)
Number of data points in class 21 : 1 ( 0.188 %)
Number of data points in class 12 : 1 ( 0.188 %)
Number of data points in class 45 : 1 ( 0.188 %)
Number of data points in class 63 : 1 ( 0.188 %)
Number of data points in class 47 : 1 ( 0.188 %)
Number of data points in class 73 : 1 ( 0.188 %)
Number of data points in class 74 : 1 ( 0.188 %)
Number of data points in class 75 : 1 ( 0.188 %)
Number of data points in class 76 : 1 ( 0.188 %)
Number of data points in class 77 : 1 ( 0.188 %)
Number of data points in class 78 : 1 ( 0.188 %)
Number of data points in class 79 : 1 ( 0.188 %)
Number of data points in class 80 : 1 ( 0.188 %)
Number of data points in class 81 : 1 ( 0.188 %)
Number of data points in class 82 : 1 ( 0.188 %)
Number of data points in class 83 : 1 ( 0.188 %)
```

Saved successfully!



3.2 Prediction using a 'Random' Model

In a 'Random' Model, we generate the NINE class probabilities randomly such that they sum to 1.

```

number of data points in class 20 = 1 ( 0.100 %)

# This function plots the confusion matrices given y_i, y_i_hat.
def plot_confusion_matrix(test_y, predict_y):
    C = confusion_matrix(test_y, predict_y)
    # C = 9,9 matrix, each cell (i,j) represents number of points of class i are predicted cl

    A = (((C.T)/(C.sum(axis=1))).T)
    #divid each element of the confusion matrix with the sum of elements in that column

    # C = [[1, 2],
    #      [3, 4]]
    # C.T = [[1, 3],
    #        [2, 4]]
    # C.sum(axis = 1) axis=0 corresponds to columns and axis=1 corresponds to rows in two dia
    # C.sum(axix =1) = [[3, 7]]
    # ((C.T)/(C.sum(axis=1))) = [[1/3, 3/7]
    #                             [2/3, 4/7]]

    # ((C.T)/(C.sum(axis=1))).T = [[1/3, 2/3]
    #                               [3/7, 4/7]]
    # sum of row elements = 1

    B = (C/C.sum(axis=0))
    #divid each element of the confusion matrix with the sum of elements in that row
    # C = [[1, 2],
    #      [3, 4]]
    # C.sum(axis = 0) axis=0 corresponds to columns and axis=1 corresponds to rows in two dia
    # C.sum(axix =0) = [[4, 6]]
    # (C/C.sum(axis=0)) = [[1/4, 2/6],
    #                       [3/4, 4/6]]

    labels = [1,2,3,4,5,6,7,8,9]
    # representing A in heatmap format
    print("-"*20, "Confusion matrix", "-"*20)
    plt.figure(figsize=(20,7))
    sns.heatmap(C, annot=True, cmap="YlGnBu", fmt=".3f", xticklabels=labels, yticklabels=labe
    plt.xlabel('Predicted Class')
    plt.ylabel('Original Class')

    # representing A in heatmap format
    print("-"*20, "Confusion matrix", "-"*20)
    plt.figure(figsize=(20,7))
    sns.heatmap(B, annot=True, cmap="YlGnBu", fmt=".3f", xticklabels=labels, yticklabels=labe
    plt.xlabel('Predicted Class')
    plt.ylabel('Original Class')
    plt.show()

    # representing B in heatmap format

```

Saved successfully!



```

# representing A in heatmap format
print("-"*20, "Recall matrix (Row sum=1)", "-"*20)
plt.figure(figsize=(20,7))
sns.heatmap(A, annot=True, cmap="YlGnBu", fmt=".3f", xticklabels=labels, yticklabels=labe
plt.xlabel('Predicted Class')
plt.ylabel('Original Class')
plt.show()

# we need to generate 9 numbers and the sum of numbers should be 1
# one solution is to generate 9 numbers and divide each of the numbers by their sum
# ref: https://stackoverflow.com/a/18662466/4084039
test_data_len = test_df.shape[0]
cv_data_len = cv_df.shape[0]

# we create a output array that has exactly same size as the CV data
cv_predicted_y = np.zeros((cv_data_len,9))
for i in range(cv_data_len):
    rand_probs = np.random.rand(1,9)
    cv_predicted_y[i] = ((rand_probs/sum(sum(rand_probs))))[0])
print("Log loss on Cross Validation Data using Random Model",log_loss(y_cv,cv_predicted_y, ep

# Test-Set error.
#we create a output array that has exactly same as the test data
test_predicted_y = np.zeros((test_data_len,9))
for i in range(test_data_len):
    rand_probs = np.random.rand(1,9)
    test_predicted_y[i] = ((rand_probs/sum(sum(rand_probs))))[0])
print("Log loss on Test Data using Random Model",log_loss(y_test,test_predicted_y, eps=1e-15)

predicted_y =np.argmax(test_predicted_y, axis=1)
plot_confusion_matrix(y_test, predicted_y+1)

```

Saved successfully!



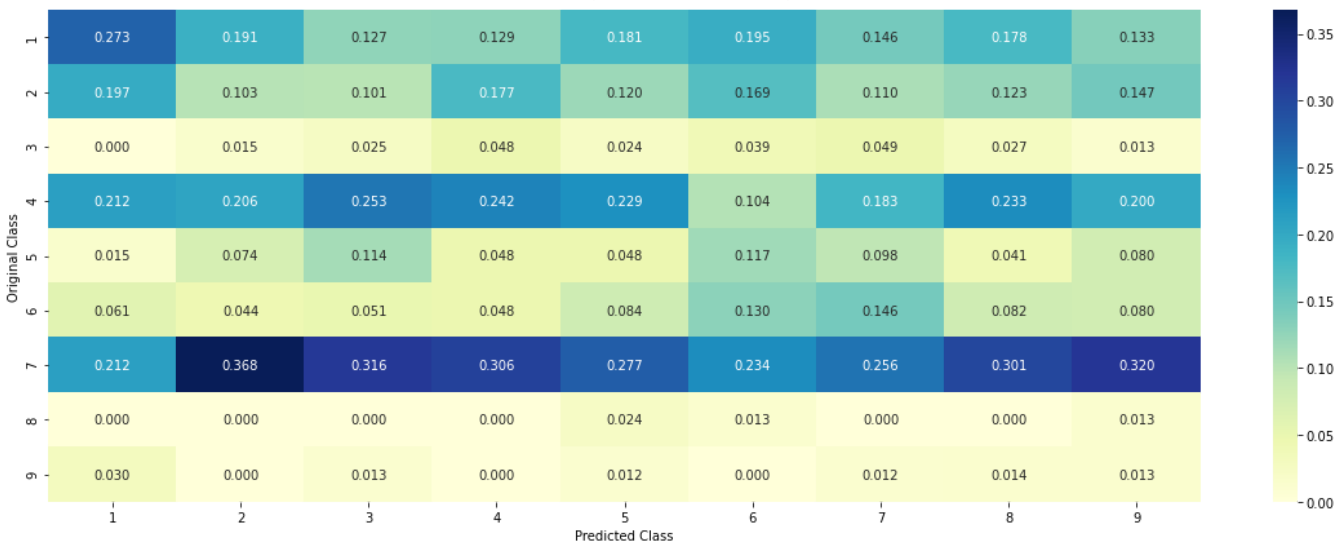
Log loss on Cross Validation Data using Random Model 2.380662275040374

Log loss on Test Data using Random Model 2.4015256913645966

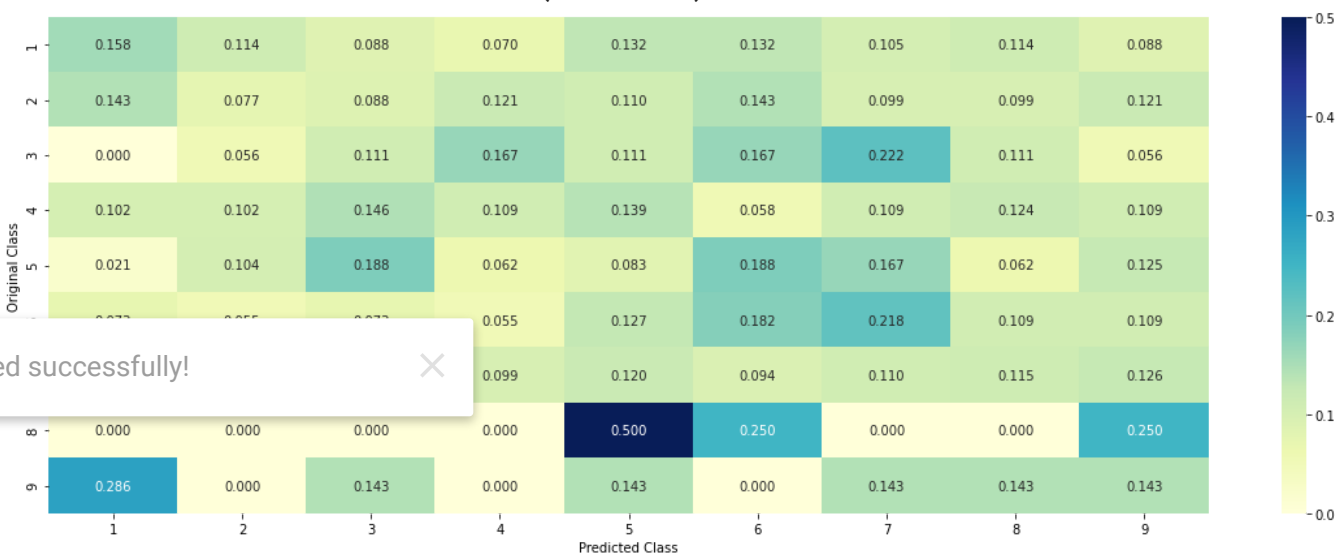
----- Confusion matrix -----



----- Precision matrix (Column Sum=1) -----



----- Recall matrix (Row sum=1) -----



Saved successfully!



3.3 Univariate Analysis

```
# code for response coding with Laplace smoothing.
# alpha : used for laplace smoothing
# feature: ['gene', 'variation']
# df: ['train_df', 'test_df', 'cv_df']
# algorithm
# -----
# Consider all unique values and the number of occurrences of given feature in train data data
# build a vector (1*9) , the first element = (number of times it occurred in class1 + 10*alpha
# gv_dict is like a look up table, for every gene it store a (1*9) representation of it
# for a value of feature in df:
# if it is in train data:
# we add the vector that was stored in 'gv_dict' look up table to 'gv_fea'
# if it is not there is train:
# we add [1/9, 1/9, 1/9, 1/9, 1/9, 1/9, 1/9, 1/9, 1/9] to 'gv_fea'
# return 'gv_fea'
# -----

# get_gv_fea_dict: Get Gene variation Feature Dict
def get_gv_fea_dict(alpha, feature, df):
    # value_count: it contains a dict like
    # print(train_df['Gene'].value_counts())
    # output:
    #      {BRCA1      174
    #       TP53      106
    #       EGFR       86
    #       BRCA2       75
    #       PTEN       69
    #       KIT        61
    #       BRAF        60
    #       ERBB2       47
    #       PDGFRA      46
    #       ...}
    # print(train_df['Variation'].value_counts())
    # output:
    # {
    # Amplification      63
    # Fusions             43
    # Overexpression      43
    # E17K                22
    # Q61L                3
    # S222D               3
    # S222D               3
    # S222D               2
    # P130S               2
```

Saved successfully!



```

# ...
# }
value_count = train_df[feature].value_counts()

# gv_dict : Gene Variation Dict, which contains the probability array for each gene/variation
gv_dict = dict()

# denominator will contain the number of time that particular feature occurred in whole data
for i, denominator in value_count.items():
    # vec will contain (p(yi==1/Gi) probability of gene/variation belongs to particular class)
    # vec is 9 dimensional vector
    vec = []
    for k in range(1,10):
        # print(train_df.loc[(train_df['Class']==1) & (train_df['Gene']=='BRCA1')])
        #
        # ID    Gene    Variation    Class
        # 2470   2470   BRCA1          S1715C      1
        # 2486   2486   BRCA1          S1841R      1
        # 2614   2614   BRCA1          M1R         1
        # 2432   2432   BRCA1          L1657P      1
        # 2567   2567   BRCA1          T1685A      1
        # 2583   2583   BRCA1          E1660G      1
        # 2634   2634   BRCA1          W1718L      1
        # cls_cnt.shape[0] will return the number of rows

        cls_cnt = train_df.loc[(train_df['Class']==k) & (train_df[feature]==i)]

        # cls_cnt.shape[0](numerator) will contain the number of time that particular feature occurred
        vec.append((cls_cnt.shape[0] + alpha*10)/ (denominator + 90*alpha))

    # we are adding the gene/variation to the dict as key and vec as value
    gv_dict[i]=vec
return gv_dict

# Get Gene variation feature
def get_gv_feature(alpha, feature, df):
    # print(gv_dict)
    #
    # {'BRCA1': [0.20075757575757575, 0.03787878787878788, 0.06818181818181817, 0.136363
    # 'TP53': [0.32142857142857145, 0.061224489795918366, 0.061224489795918366, 0.270408
    # 'EGFR': [0.056818181818181816, 0.21590909090909091, 0.0625, 0.06818181818181817,
    # 'BRCA2': [0.13333333333333333, 0.060606060606060608, 0.060606060606060608, 0.07878
    # 'PTEN': [0.069182389937106917, 0.062893081761006289, 0.069182389937106917, 0.46540
    # 'KIT': [0.066225165562913912, 0.25165562913907286, 0.072847682119205295, 0.0728476
    # 6666, 0.17999999999999999, 0.073333333333333334, 0.073333

    gv_dict = get_gv_fea_dict(alpha, feature, df)
    # value_count is similar in get_gv_fea_dict
    value_count = train_df[feature].value_counts()

    # gv_fea: Gene_variation feature, it will contain the feature for each feature value in train_df
    gv_fea = []

    # for every feature values in the given data frame we will check if it is there in the train_df

```

Saved successfully!



```

# for every feature values in the given data frame we will check if it is there in the dict
# if not we will add [1/9,1/9,1/9,1/9,1/9,1/9,1/9,1/9,1/9] to gv_fea
for index, row in df.iterrows():
    if row[feature] in dict(value_count).keys():
        gv_fea.append(gv_dict[row[feature]])
    else:
        gv_fea.append([1/9,1/9,1/9,1/9,1/9,1/9,1/9,1/9,1/9])
# gv_fea.append([-1,-1,-1,-1,-1,-1,-1,-1,-1])
return gv_fea

```

when we calculate the probability of a feature belongs to any particular class, we apply laplace smoothing

- $(\text{numerator} + 10 \times \alpha) / (\text{denominator} + 90 \times \alpha)$

3.2.1 Univariate Analysis on Gene Feature

Q1. Gene, What type of feature it is ?

Ans. Gene is a categorical variable

Q2. How many categories are there and How they are distributed?

```

unique_genes = train_df['Gene'].value_counts()
print('Number of Unique Genes :', unique_genes.shape[0])
# the top 10 genes that occurred most
print(unique_genes.head(10))

```

```

Number of Unique Genes : 240
BRCA1      163
TP53       95
EGFR       89
PTEN       83
BRCA2      82
KIT        64
BRAF       52
ERBB2      42
ALK        42
PDGFRA     40
Name: Gene, dtype: int64

```

Saved successfully!



.shape[0] ,"different categories of genes in the train da

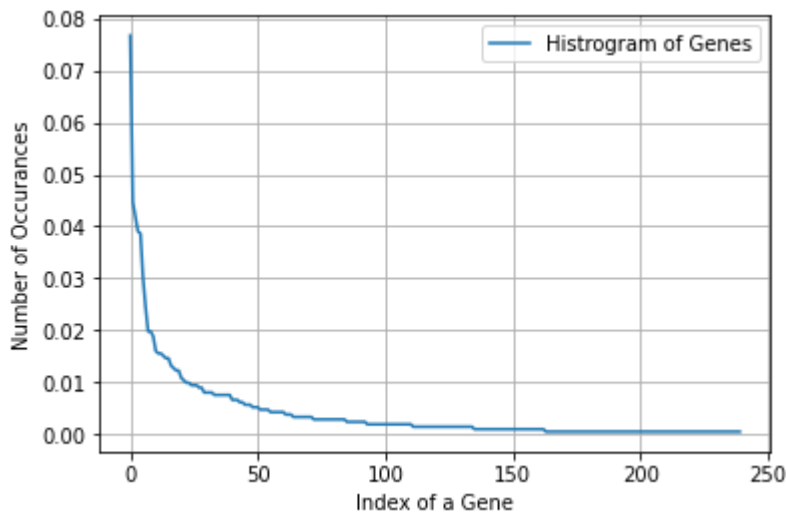
Ans: There are 240 different categories of genes in the train data, and they are distribu

```

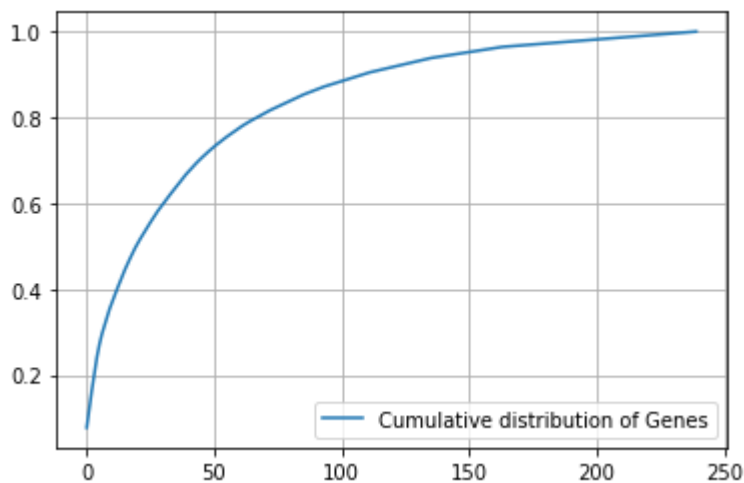
s = sum(unique_genes.values);
h = unique_genes.values/s;
plt.plot(h, label="Histogram of Genes")
plt.xlabel('Index of a Gene')

```

```
plt.xlabel('Index of a Gene')
plt.ylabel('Number of Occurances')
plt.legend()
plt.grid()
plt.show()
```



```
c = np.cumsum(h)
plt.plot(c, label='Cumulative distribution of Genes')
plt.grid()
plt.legend()
plt.show()
```



Saved successfully!



Ans.there are two ways we can featurize this variable check out this video:

<https://www.appliedaicourse.com/course/applied-ai-course-online/lessons/handling-categorical-and-numerical-features/>

1. One hot Encoding
2. Response coding