Experiment No: 08

Code:

```
from sklearn.model_selection import train_test_split

from sklearn.naive_bayes import GaussianNB

from sklearn.metrics import accuracy_score

import matplotlib.pyplot as plt

import seaborn as sns

import pandas as pd

import numpy as np

import warnings


# Ignore warnings for cleaner output

warnings.filterwarnings('ignore')


# Load the dataset

glass =
pd.read_csv(r"D:\Current_Learning\TY_NOTES\ML\Practical\Exp_No_08\Experiment8.csv
")


# Print dataset information

print("Shape of dataset:", glass.shape)

print("Null values per column:\n", glass.isnull().sum())


# Plot distribution of Glass Types

plt.figure(figsize=(8, 6))

sns.countplot(x='Type', data=glass, color='red')
```

```python
plt.title("Distribution of Glass Types")

plt.xlabel("Type")

plt.ylabel("Count")

plt.show()


# Initialize Gaussian Naive Bayes model

nb = GaussianNB()


# Separate features and target variable

X = glass.drop(columns=['Type'])

y = glass['Type']


# Split data into training and testing sets

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=4)


# Train the model on the training data

nb.fit(X_train, y_train)


# Make predictions on the test set

y_pred = nb.predict(X_test)

print("Predicted values:", y_pred)


# Calculate and print accuracy

accuracy = accuracy_score(y_test, y_pred)

print("Accuracy Score:", accuracy)
```

Output:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

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D:\Current_Learning\TY_NOTES\ML\Practical\Exp_No_08>python -u "d:\Current_Learning\TY_NOTES\ML\Practical\Exp_No_08\ML_08_01.py"
Shape of dataset: (214, 10)
Null values per column:
 RI      0
Na      0
Mg      0
Al      0
Si      0
K       0
Ca      0
Ba      0
Fe      0
Type    0
dtype: int64
Predicted values: [1 7 5 3 3 1 2 1 1 1 5 1 1 7 1 1 1 7 7 1 1 1 7 1 6 7 3 3 7 2 1 7 1 1 1 1 1
 2 1 1 5 7 2]
Accuracy Score: 0.4883720930232558

D:\Current_Learning\TY_NOTES\ML\Practical\Exp_No_08>
```

Distribution of Glass Types