```
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import pandas as pd
import numpy as np
import matplotlib as plt

df=pd.read_csv("diabetes.csv")

df
```

```
     Pregnancies  Glucose  BloodPressure  SkinThickness  Insulin   BMI  \
0              6      148             72             35        0  33.6   
1              1       85             66             29        0  26.6   
2              8      183             64              0        0  23.3   
3              1       89             66             23       94  28.1   
4              0      137             40             35      168  43.1   
..           ...      ...            ...            ...      ...   ...   
763           10      101             76             48      180  32.9   
764            2      122             70             27        0  36.8   
765            5      121             72             23      112  26.2   
766            1      126             60              0        0  30.1   
767            1       93             70             31        0  30.4   

     DiabetesPedigreeFunction  Age  Outcome  
0                       0.627   50        1  
1                       0.351   31        0  
2                       0.672   32        1  
3                       0.167   21        0  
4                       2.288   33        1  
..                        ...  ...      ...  
763                     0.171   63        0  
764                     0.340   27        0  
765                     0.245   30        0  
766                     0.349   47        1  
767                     0.315   23        0  

[768 rows x 9 columns]
```

```
df.columns
```

```
Index(['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness',
'Insulin',
       'BMI', 'DiabetesPedigreeFunction', 'Age', 'Outcome'],
      dtype='object')
```

```
df.isnull()
```

```
     Pregnancies  Glucose  BloodPressure  SkinThickness  Insulin
BMI  \
0          False    False          False          False    False
False
1          False    False          False          False    False
False
2          False    False          False          False    False
False
3          False    False          False          False    False
False
4          False    False          False          False    False
False
..           ...      ...            ...            ...      ...    ..
.
763        False    False          False          False    False
False
764        False    False          False          False    False
False
765        False    False          False          False    False
False
766        False    False          False          False    False
False
767        False    False          False          False    False
False

     DiabetesPedigreeFunction    Age  Outcome
0                       False  False    False
1                       False  False    False
2                       False  False    False
3                       False  False    False
4                       False  False    False
..                        ...    ...      ...
763                     False  False    False
764                     False  False    False
765                     False  False    False
766                     False  False    False
767                     False  False    False

[768 rows x 9 columns]
```

```
 x = df.drop(['Outcome'], axis=1)
 y = df['Outcome']
```

```
from sklearn.model_selection import train_test_split
X_train, X_test, Y_train, Y_test = train_test_split(x, y,
test_size=0.4,random_state=10)
```

```
 from sklearn.naive_bayes import GaussianNB
 gaussian = GaussianNB()
 gaussian.fit(X_train, Y_train)
```

```
GaussianNB()
```

```
 Y_pred = gaussian.predict(X_test)
```

```
 from sklearn.metrics import accuracy_score, precision_score,
recall_score
```

```
accuracy = accuracy_score(Y_test,Y_pred)
precision =precision_score(Y_test, Y_pred,average='micro')
recall = recall_score(Y_test, Y_pred,average='micro')
```

```
 from sklearn.metrics import
precision_score,confusion_matrix,accuracy_score,recall_score
 cm = confusion_matrix(Y_test, Y_pred)
```

```
 cm =confusion_matrix(Y_test,Y_pred)
 print("ConfusionMatrix:\n",cm)
```

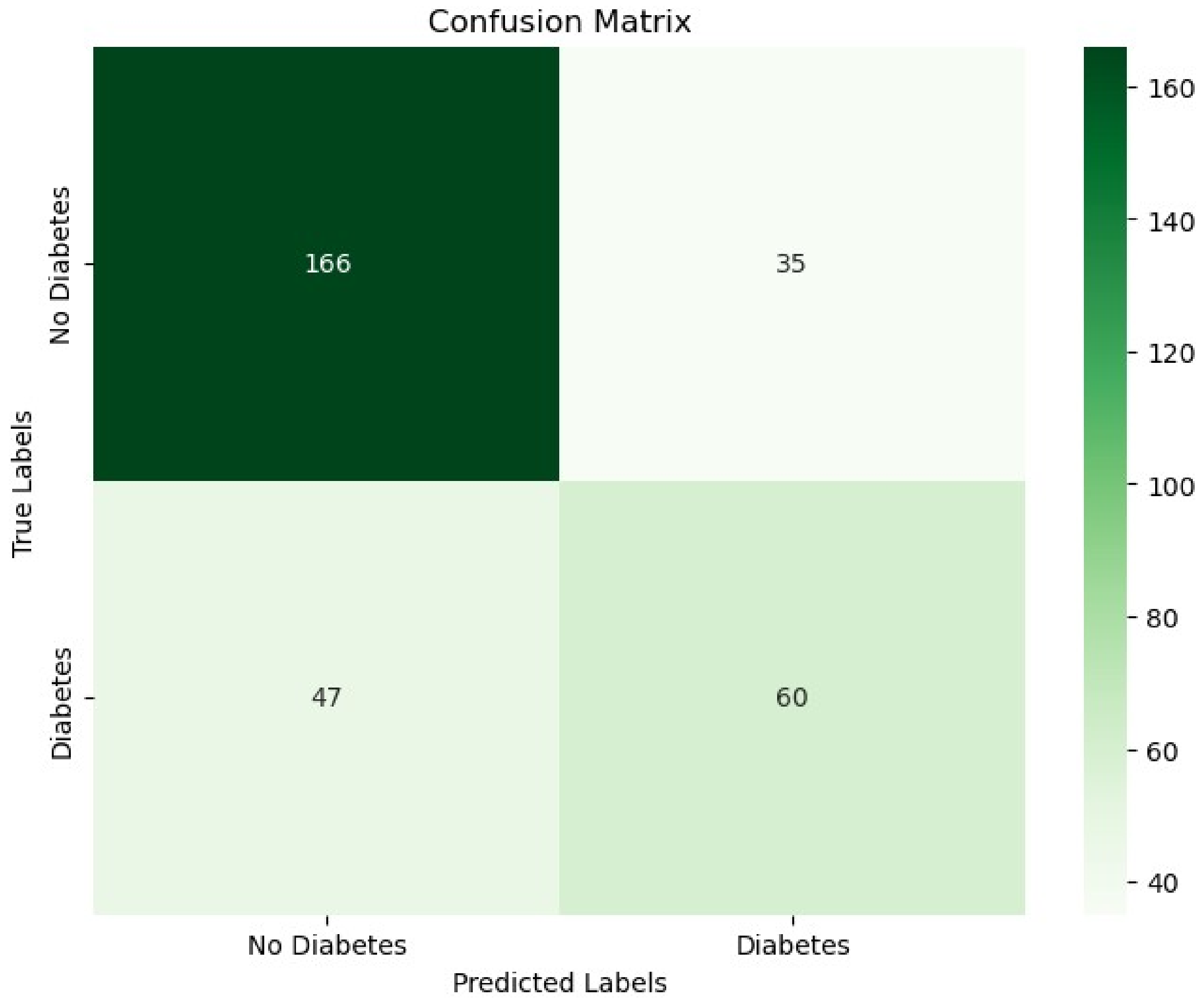
```
ConfusionMatrix:
 [[166  35]
 [ 47  60]]
```

```
print("Accuracy:", accuracy_score(Y_test, Y_pred))
print("Precision:", precision_score(Y_test, Y_pred,
average='weighted'))
print("Recall:", recall_score(Y_test, Y_pred, average='weighted'))
```

```
Accuracy: 0.7337662337662337
Precision: 0.7280092035466387
Recall: 0.7337662337662337
```

```
 import matplotlib.pyplot as plt
 import seaborn as sns
 from sklearn.metrics import confusion_matrix
```

```
 # Generate confusion matrix
 cm = confusion_matrix(Y_test, Y_pred)
 # Correct class labels
 labels = ['No Diabetes', 'Diabetes'] # Use appropriate labels
 # Plot confusion matrix
 plt.figure(figsize=(8, 6))
 sns.heatmap(cm, annot=True, fmt='d', cmap='Greens',
xticklabels=labels,yticklabels=labels)
 plt.xlabel('Predicted Labels')
 plt.ylabel('True Labels')
 plt.title('Confusion Matrix')
 plt.show()
```


Confusion Matrix
True Labels
No Diabetes
Diabetes
No Diabetes
Diabetes
Predicted Labels