ST JOSEPH COLLEGE OF ENGINEERING

TITLE : AI-BASED DIABETICS PREDICTION MODEL PHASE-4

NAME: SARAN RAJ S
212921104045

PROJ_227128_TEAM_1

Coding for the diabetics perdiction system

CODE

Step 1: Import necessary libraries

```
import numpy as np  import
pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import warnings  warnings.
filterwarnings("ignore",
category=UserWarning)
```

Step 2: Load the dataset

```
df = pd.read_csv('/kaggle/input/diabetes-
data-set/diabetes.csv')
```

CODE

Step 3: Data Cleaning
Check for Missing Values

code:

```
missing_values = df.isnull().sum()
print("Missing Values:")
print(missing_values)
```

Handle missing values (if any)

```
mean_fill = df.mean()  df.
fillna(mean_fill, inplace=True)
Check for Duplicate Rows
duplicate_rows = df[df.
duplicated()]  print("\nDuplicate
Rows:")  print(duplicate_rows)
```

Handle duplicate rows (if any) df.

```
drop_duplicates(inplace=True)
```

CODE

Step 4: Data Analysis
Summary Statistics

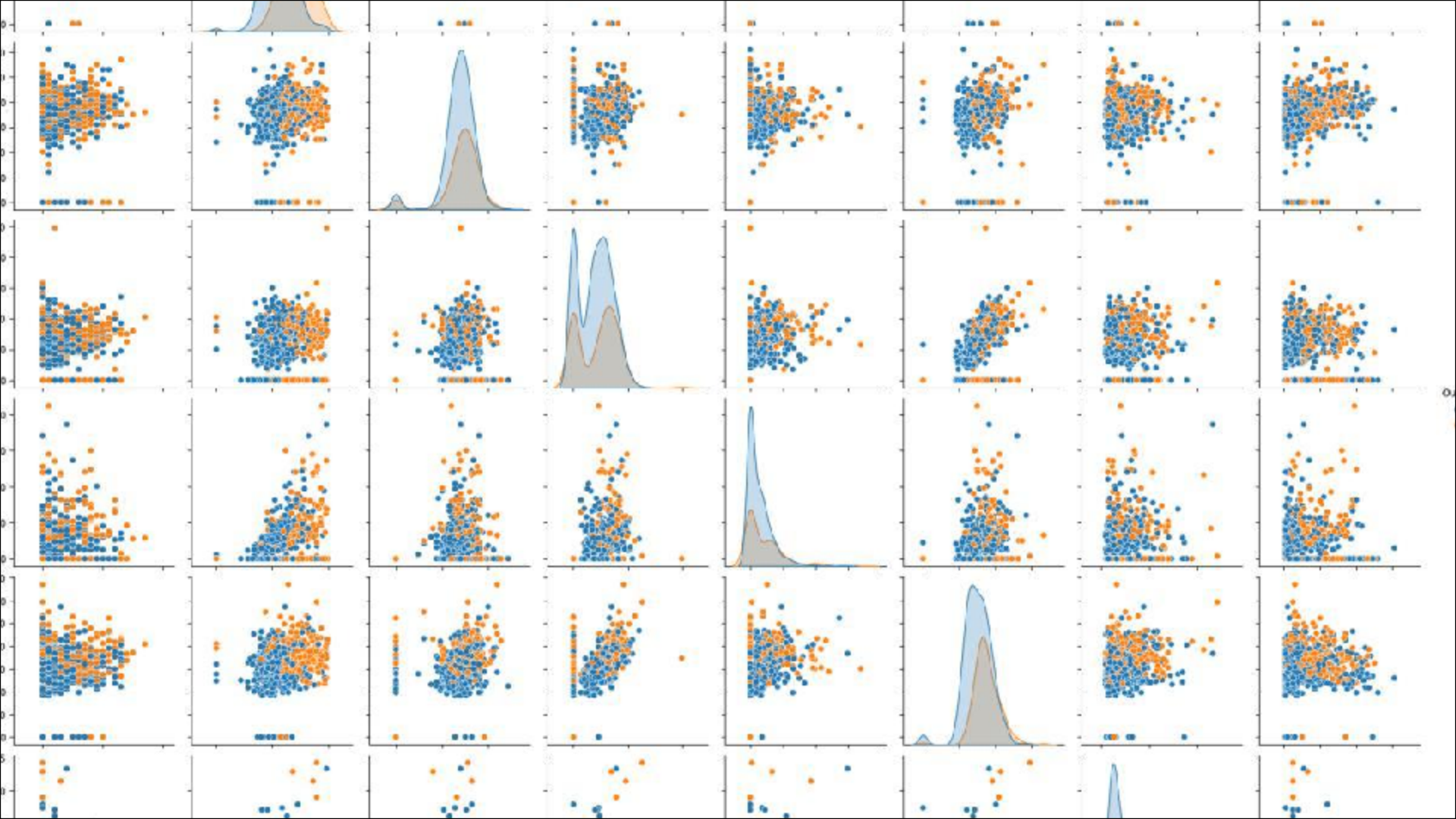
code:

```
summary_stats = df.describe()
print("\nSummary Statistics:")
print(summary_stats)
Class Distribution
class_distribution = df['Outcome'].
value_counts()  print("\nClass Distribution:")
print(class_distribution)
```

Step Data Visualization
5:

code:

```
sns.pairplot(df,
hue='Outcome')  plt.show()
```



The previous slide provise the visualization of the requires data given in the dataset

code:

```
sns.pairplot(df,
hue='Outcome')  plt.show()
```

this code is the reason to show each and every section of ther diabetics result as it is easy to predict by the user

this code is used for data set cleaning and provide the solution for the dataset give

C O D E

```
import pandas as pd  import numpy as np
import matplotlib.pyplot as plt  import seaborn as
sns
from sklearn.model_selection import
train_test_split
from sklearn.preprocessing import
StandardScaler  from sklearn import svm
from sklearn.metrics import classification_report
from sklearn.metrics import confusion_matrix
from sklearn.metrics import
ConfusionMatrixDisplay
RED = "\033[91m"  GREEN = "\033[92m"  YELLOW
= "\033[93m"  BLUE = "\033[94m"  RESET =
"\033[0m"
df = pd.read_csv("/kaggle/input/diabetes-data-  set/
diabetes.csv"
```

CODE

```
DATA CLEANING
print(BLUE + "\nDATA CLEANING" + RESET)
Check for missing values
missing_values = df.isnull().sum()
print(GREEN + "Missing Values : " +
RESET)  print(missing_values)
Handle missing values
mean_fill = df.fillna(df.mean())
df.fillna(mean_fill, inplace=True)
Check for duplicate values
duplicate_values = df.duplicated().sum()
print(GREEN + "Duplicate Values : " +
RESET)  print(duplicate_values)
 Drop duplicate values  df.
drop_duplicates(inplace=True)
DATA
ANALYSIS
print(BLUE + "\nDATA ANALYSIS" +
Summary Statistics
summary_stats = df.describe()
print(GREEN + "Summary Statistics : " +
RESET)  print(summary_stats)
Class Distribution
class_distribution = df["Outcome"].
value_counts()  print(GREEN + "Class
Distribution : " + RESET)
```

CODE

```
Support Vector Machine Modelling
print(BLUE + "\nMODELLING" + RESET)
X = df.drop("Outcome", axis=1)  y =
df["Outcome"]
Splitting the 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=42
Standardize Features
scaler = StandardScaler()
X_train = scaler.
fit_transform(X_train)  X_test =
init and train SVM model
model = svm.
SVC(kernel="linear")  model.
Predict on test data
y_pred = model.predict(X_test)
Evaluate model performance
accuracy = model.score(X_test, y_test)
print(GREEN + "Model Accuracy : " +
RESET)  print(accuracy)
```

CODE

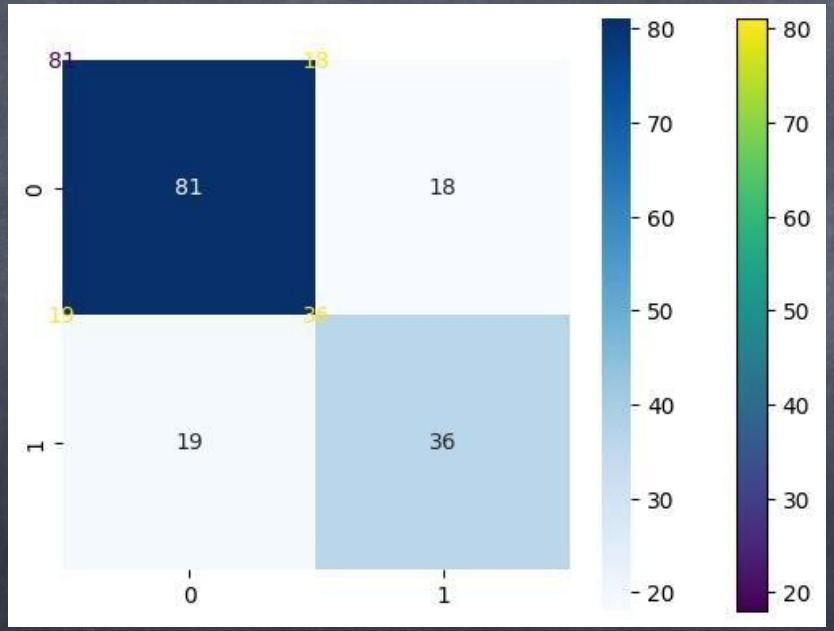
Classification Report and Confusion Matrix

```
print(GREEN + "Classification Report : " +
RESET)  print(classification_report(y_test,
y_pred))  print(GREEN + "Confusion Matrix : " +
RESET)
cm =  ConfusionMatrixDisplay.
from_predictions(y_test,  y_pred)
sns.heatmap(cm.confusion_matrix, annot=True,
cmap="Blues")
plt.show()  print("Displayed")
```

SAVING THE FILE

```
df.to_csv("/kaggle/working/cleaned_diabetes.csv",
index=False)
print(BLUE + "\nDATA SAVING" + RESET)
print(GREEN + "Data Cleaned and Saved !" +
RESET)  print("\n")
```

THIS REPRESENTATION REPRESENT THE DATA HANDLED BY THE THE CODE WE PROVIDES AND IT GIVE THE REPRESENTATION THROUGH GRAPHICAL WAY



THANK YOU !