Diabetes Risk Prediction System

Train a Logistic Regression model and deploy it via Flask and Streamlit.

In [2]:
```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score, classification_report
import joblib
```

In [3]:
```
data = {
    'Pregnancies': [6, 1, 8, 1, 0],
    'Glucose': [148, 85, 183, 89, 137],
    'BloodPressure': [72, 66, 64, 66, 40],
    'SkinThickness': [35, 29, 0, 23, 35],
    'Insulin': [0, 0, 0, 94, 168],
    'BMI': [33.6, 26.6, 23.3, 28.1, 43.1],
    'DiabetesPedigreeFunction': [0.627, 0.351, 0.672, 0.167, 2.288],
    'Age': [50, 31, 32, 21, 33],
    'Outcome': [1, 0, 1, 0, 1]
}
df = pd.DataFrame(data)
df.head()
```

Out[3]:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesF
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	

In [5]:
```
X = df.drop("Outcome", axis=1)
y = df["Outcome"]

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, randc

scaler = StandardScaler()
X_train_scaled = scaler.fit_transform(X_train)
X_test_scaled = scaler.transform(X_test)

model = LogisticRegression()
model.fit(X_train_scaled, y_train)

y_pred = model.predict(X_test_scaled)
accuracy = accuracy_score(y_test, y_pred)
```

```
report = classification_report(y_test, y_pred)

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

```
Accuracy: 1.0
              precision    recall  f1-score   support

           0       1.00      1.00      1.00         1

    accuracy                           1.00         1
   macro avg       1.00      1.00      1.00         1
weighted avg       1.00      1.00      1.00         1
```

In [6]:
```
joblib.dump(model, "diabetes_model.pkl")
joblib.dump(scaler, "diabetes_scaler.pkl")
```

Out[6]:
```
['diabetes_scaler.pkl']
```

Flask API Code

In [8]:
```
from flask import Flask, request, jsonify
import joblib
import numpy as np

app = Flask(__name__)

model = joblib.load("diabetes_model.pkl")
scaler = joblib.load("diabetes_scaler.pkl")

@app.route('/predict', methods=['POST'])
def predict():
    data = request.get_json()
    features = [data.get(k, 0) for k in [
        'Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness',
        'Insulin', 'BMI', 'DiabetesPedigreeFunction', 'Age'
    ]]
    input_scaled = scaler.transform([features])
    prediction = model.predict(input_scaled)[0]
    return jsonify({"diabetes_risk": int(prediction)})

if __name__ == '__main__':
    app.run(debug=True)
```

```
 * Serving Flask app '__main__'
 * Debug mode: on
WARNING: This is a development server. Do not use it in a production deploymen
t. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
 * Restarting with watchdog (windowsapi)
```

```
An exception has occurred, use %tb to see the full traceback.

SystemExit: 1
```

Streamlit App Code

In [9]:

```python
import streamlit as st
import numpy as np
import joblib

model = joblib.load("diabetes_model.pkl")
scaler = joblib.load("diabetes_scaler.pkl")

st.title("Diabetes Risk Predictor")

fields = {
    'Pregnancies': st.number_input("Pregnancies", 0),
    'Glucose': st.number_input("Glucose", 0),
    'BloodPressure': st.number_input("BloodPressure", 0),
    'SkinThickness': st.number_input("SkinThickness", 0),
    'Insulin': st.number_input("Insulin", 0),
    'BMI': st.number_input("BMI", 0.0),
    'DiabetesPedigreeFunction': st.number_input("DiabetesPedigreeFunction", 0.
    'Age': st.number_input("Age", 0)
}

if st.button("Predict"):
    features = [fields[f] for f in fields]
    input_scaled = scaler.transform([features])
    prediction = model.predict(input_scaled)[0]
    st.success("Diabetes Risk: {}".format("Yes" if prediction else "No"))
```

```
2025-08-05 11:08:28.559
  Warning: to view this Streamlit app on a browser, run it with the following
  command:

    streamlit run c:\Users\ASUS\anaconda3\Lib\site-packages\ipykernel_launche
r.py [ARGUMENTS]
2025-08-05 11:08:28.563 Session state does not function when running a script w
ithout `streamlit run`
```