### Project Code for Thyroid Disease Prediction Project

**Project Code:** TDP-2024-OMY

**Description:** This project involves developing a machine learning model to predict thyroid disease using patient data. The project includes data preprocessing, model building, evaluation, and deployment.

**Steps to Follow:**

1. **Data Collection:** Load the hypothyroid dataset.
2. **Data Preprocessing:** Handle missing values, encode categorical variables, and normalize numerical features.
3. **Data Balancing:** Use techniques like RandomOverSampler to balance the dataset.
4. **Model Building:** Implement various algorithms such as Logistic Regression, SVM, KNN, Decision Tree, and Random Forest.
5. **Model Evaluation:** Evaluate models using metrics like accuracy, precision, recall, and F1-score.
6. **Model Deployment:** Save the best model using pickle and integrate it with a web application.

**Example Code Snippet:**

import pandas as pd

from sklearn.model\_selection import train\_test\_split

from sklearn.ensemble import RandomForestClassifier

import pickle

# Load data

data = pd.read\_csv('hypothyroid.csv')

# Data preprocessing steps

# ...

# Model building

X = data.drop('Class', axis=1)

y = data['Class']

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

model = RandomForestClassifier()

model.fit(X\_train, y\_train)

# Save the model

with open('thyroid\_model.pkl', 'wb') as file:

pickle.dump(model, file)