PROJECT TITLE:

Customer Churn Analysis and Prediction

DESCRIPTION:

A data-driven machine learning project that identifies key factors behind customer churn in a telecom company.The project aims to analyse patterns and predict whether a customer is likely to leave the company, helping the business make informed decisions to reduce churn.

FEATURES:

1. Data cleaning, handling missing values, and encoding.
2. Exploratory Data Analysis (EDA) to find insights using visualisations.
3. Feature selection and transformation.
4. Machine learning model building and evaluation.
5. Churn prediction using the best-performing model.

TECHNOLOGIES USED:

1. Python
2. Pandas, NumPy
3.Matplotlib,Seaborn

Tasks 4: Churn Prediction Model

DESCRIPTION:

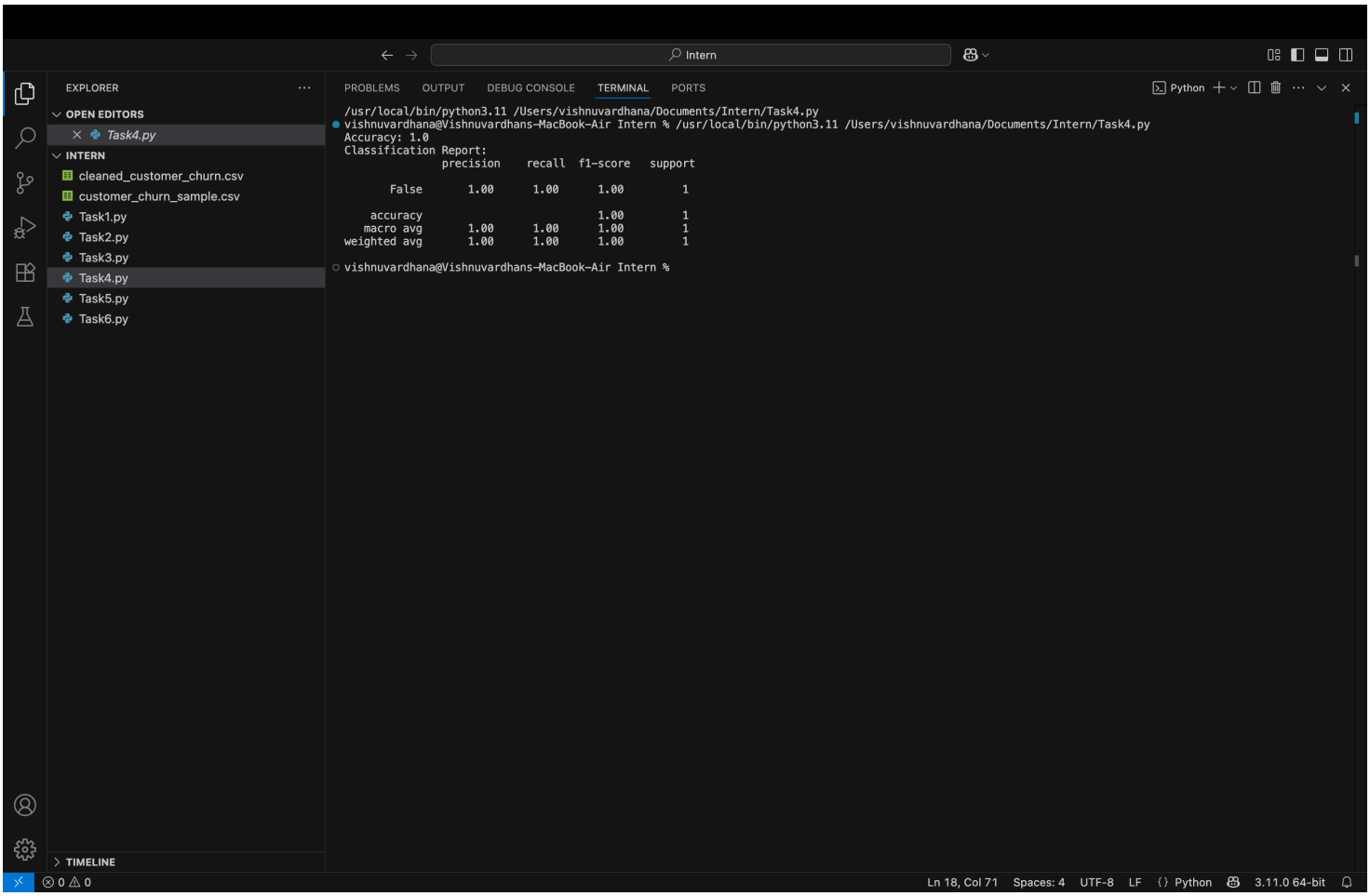
We built a churn prediction model using logistic regression. After encoding categorical variables and splitting the data, we trained the model and evaluated it using accuracy, precision, recall, and a confusion matrix.

Code Snippet:

```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score , classification_report

df = pd.read_csv("cleaned_customer_churn.csv")
le = LabelEncoder()
for column in df.select_dtypes(include='object').columns:
    df[column]=le.fit_transform(df[column])
X=df.drop("Churn_Yes",axis=1)
y=df["Churn_Yes"]
X_train, X_test, y_train, y_test=train_test_split(X,y,test_size=0.2,random_state=42)
model=LogisticRegression(max_iter=1000)
model.fit(X_train,y_train)
y_pred=model.predict(X_test)
print("Accuracy:",accuracy_score(y_test,y_pred))
print("Classification Report:\n",classification_report(y_test,y_pred))
```

OUTPUT:


Intern
EXPLORER
OPEN EDITORS
Task4.py
INTERN
cleaned_customer_churn.csv
customer_churn_sample.csv
Task1.py
Task2.py
Task3.py
Task4.py
Task5.py
Task6.py
TIMELINE
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
Python
/usr/local/bin/python3.11 /Users/vishnuvardhana/Documents/Intern/Task4.py
vishnuvardhana@Vishnuvardhans-MacBook-Air Intern % /usr/local/bin/python3.11 /Users/vishnuvardhana/Documents/Intern/Task4.py
Accuracy: 1.0
Classification Report:
precision recall f1-score support
False 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
vishnuvardhana@Vishnuvardhans-MacBook-Air Intern %
0 0
Ln 18, Col 71
Spaces: 4
UTF-8
LF
Python
3.11.0 64-bit