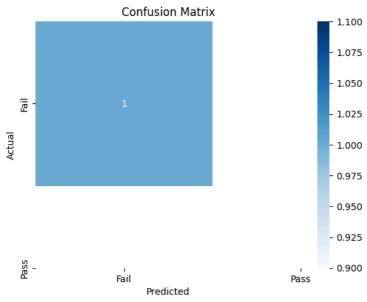
```
import pandas as pd
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score, classification_report
df = pd.read csv('student data.csv')
X = df.drop(columns=['Final_Result'])
y = df['Final_Result']
model = RandomForestClassifier(n_estimators=100, random_state=42)
model.fit(X, y)
y_pred = model.predict(X)
print("Accuracy:", accuracy_score(y, y_pred))
print("\nClassification Report:\n", classification\_report(y, y\_pred))
→ Accuracy: 1.0
     Classification Report:
                                recall f1-score
                    precision
                                                   support
             Fail
                        1.00
                                 1.00
                                            1.00
                                                         2
             Pass
                        1.00
                                 1.00
                                            1.00
                                                         3
                                            1.00
         accuracy
                        1.00
                                 1.00
                                            1.00
        macro avg
     weighted avg
                        1.00
                                  1.00
                                            1.00
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import learning_curve
# Confusion matrix
cm = confusion_matrix(y_test, y_pred)
sns.heatmap(cm, annot=True, fmt='d', cmap='Blues', xticklabels=['Fail', 'Pass'], yticklabels=['Fail', 'Pass'])
plt.xlabel("Predicted")
plt.ylabel("Actual")
plt.title("Confusion Matrix")
plt.show()
# Learning curve
train_sizes, train_scores, test_scores = learning_curve(model, X, y, cv=3)
train_scores_mean = train_scores.mean(axis=1)
test_scores_mean = test_scores.mean(axis=1)
plt.plot(train_sizes, train_scores_mean, label="Training score")
plt.plot(train_sizes, test_scores_mean, label="Validation score")
plt.xlabel("Training Set Size")
plt.ylabel("Accuracy")
plt.title("Learning Curve")
plt.legend()
plt.show()
```

/usr/local/lib/python3.11/dist-packages/sklearn/metrics/\_classification.py:407: UserWarning: A single label was found in 'y\_true' ar warnings.warn(



/usr/local/lib/python3.11/dist-packages/sklearn/model\_selection/\_split.py:805: UserWarning: The least populated class in y has only warnings.warn(
/usr/local/lib/python3.11/dist-packages/sklearn/model\_selection/\_validation.py:2180: RuntimeWarning: Removed duplicate entries from warnings.warn(

