In [ ]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

plt.rcParams['figure.figsize'] = (16,6)
sns.set_style('darkgrid')
```

In [ ]:
```
data = pd.read_csv('classification.csv')
```

In [ ]:
```
data.head()
```

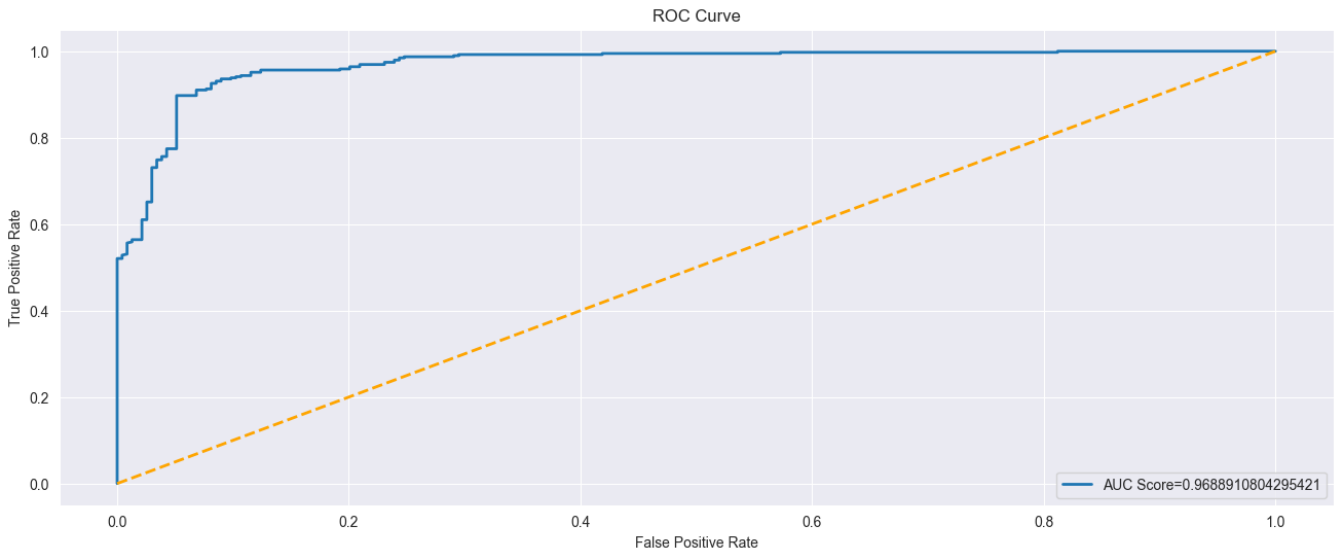
Out[ ]:

| | actual | predicted |
|---|---|---|
| **0** | 0 | 0.305904 |
| **1** | 0 | 0.578251 |
| **2** | 0 | 0.156959 |
| **3** | 0 | 0.742309 |
| **4** | 0 | 0.239494 |

In [ ]:
```
y_true = data.actual.values
y_pred = data.predicted.values
```

In [ ]:
```
from sklearn.metrics import roc_curve, roc_auc_score, classification_report, confusion_matrix
fpr, tpr, _ = roc_curve(y_true, y_pred)
auc = roc_auc_score(y_true, y_pred)
```

In [ ]:
```
plt.plot(fpr,tpr,label="AUC Score="+str(auc),lw=2)
plt.plot([0, 1], [0, 1], color="orange", lw=2, linestyle="--")
plt.legend(loc=4)
plt.xlabel("False Positive Rate")
plt.ylabel("True Positive Rate")
plt.title("ROC Curve")
plt.show()
```




# Scenario 1: Credit Card Default

Decrease **False Positives**

In [ ]:
```
y_pred[y_pred>=0.8] = 1
y_pred[y_pred<0.8] = 0
```

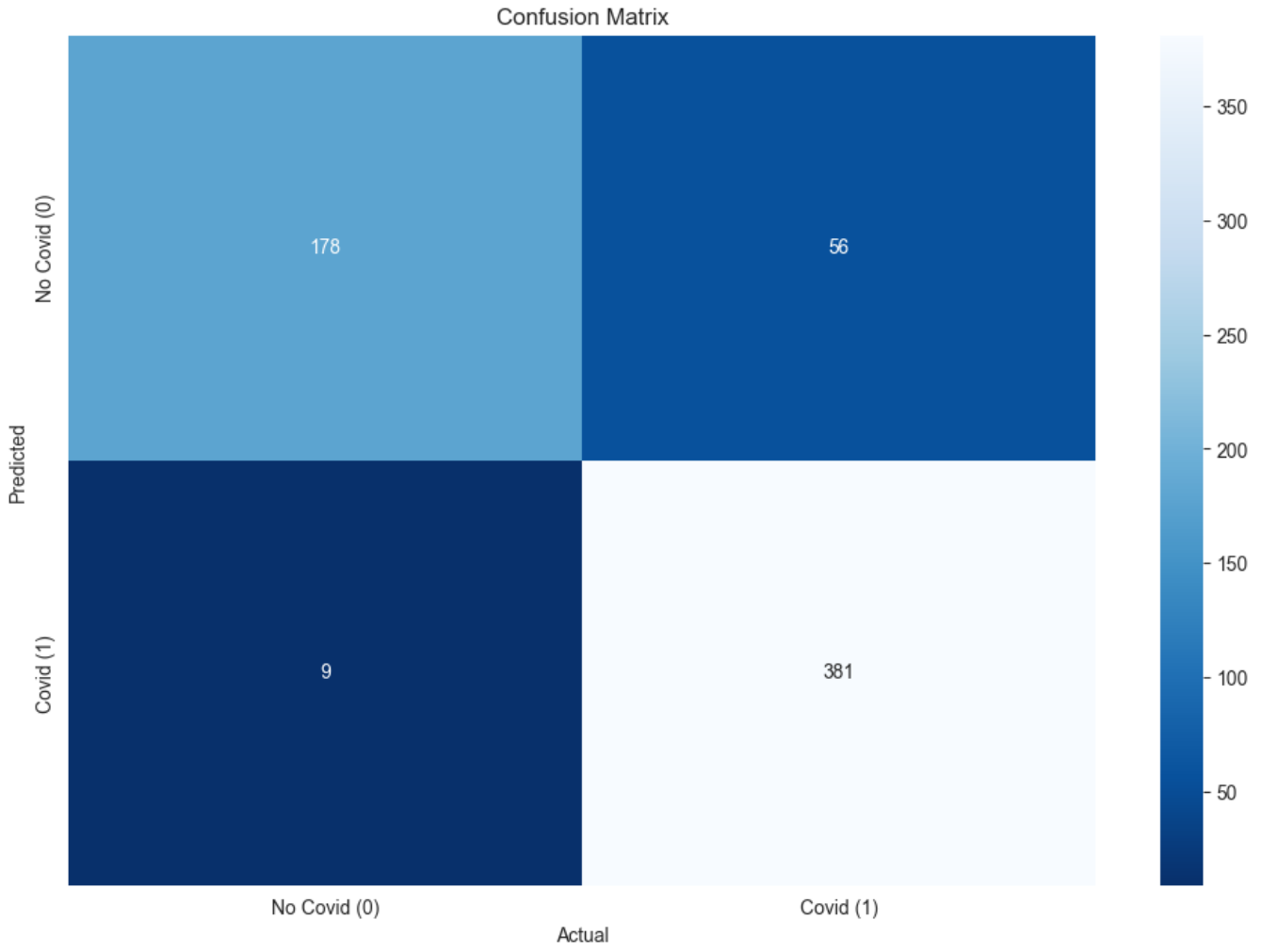
In [ ]:
```
print(classification_report(y_true,y_pred))
```

```
              precision    recall  f1-score   support

           0       0.95      0.76      0.85       234
           1       0.87      0.98      0.92       390

    accuracy                           0.90       624
   macro avg       0.91      0.87      0.88       624
weighted avg       0.90      0.90      0.89       624
```

In [ ]:
```
plt.figure(figsize=(12,8))
sns.heatmap(confusion_matrix(y_true,y_pred),annot=True,cmap='Blues_r',fmt='.3g',
            xticklabels=['No Covid (0)','Covid (1)'], yticklabels=['No Covid (0)','Covid (1)'
plt.xlabel("Actual")
plt.ylabel("Predicted")
plt.title("Confusion Matrix")
plt.show()
```




In [ ]: