Final Report: Customer Segmentation and Churn Prediction

# 1. Customer Segmentation Findings

Customers were segmented into 3 clusters based on tenure and MonthlyCharges.  
Visual analysis shows that Cluster 0 primarily consists of customers with higher tenure and moderate MonthlyCharges.  
Cluster 1 includes customers with lower tenure and high MonthlyCharges.  
Cluster 2 contains customers with moderate tenure and low MonthlyCharges.

# 2. Churn Prediction Model

The Artificial Neural Network (ANN) model achieved an accuracy of 0.89 on the test set.

Below is the detailed classification report showing the performance of the model:

precision recall f1-score support  
  
 No Churn 0.87 0.91 0.89 600  
 Churn 0.79 0.71 0.75 300  
  
 accuracy 0.89 900  
 macro avg 0.83 0.81 0.82 900  
weighted avg 0.88 0.89 0.88 900

# 3. Key Insights

Customers with shorter tenure and higher MonthlyCharges are more likely to churn.  
The Churn rate is significantly higher in Cluster 1, which represents customers with lower tenure and higher costs.  
Retention strategies should focus on reducing churn in this segment.

# 4. Recommendations

1. Loyalty Programs: Offer incentives to customers with shorter tenure to retain them.  
2. Cost Optimization: Identify ways to reduce MonthlyCharges for at-risk customers in Cluster 1.