Hero FinCorp Case Study – Python Analysis Script

This document explains each step of the Python script used to analyze Hero FinCorp datasets.

# Python Script with Comments

# Hero FinCorp Case Study Analysis Script  
  
# Step 1: Import necessary libraries  
import pandas as pd  
import matplotlib.pyplot as plt  
  
# Step 2: Load datasets  
applications = pd.read\_csv("applications.csv")  
loans = pd.read\_csv("loans.csv")  
customers = pd.read\_csv("customers.csv")  
branches = pd.read\_csv("branches.csv")  
transactions = pd.read\_csv("transactions.csv")  
defaults = pd.read\_csv("defaults.csv")  
  
# Step 3: Merge applications and loans  
merged = pd.merge(applications, loans, on="Loan\_ID", how="left")  
merged = merged.rename(columns={"Customer\_ID\_x": "Customer\_ID"}).drop(columns=["Customer\_ID\_y"])  
  
# Step 4: Merge with customer details  
merged = pd.merge(merged, customers, on="Customer\_ID", how="left")  
  
# Step 5: Feature engineering  
merged["Is\_Approved"] = merged["Approval\_Status"] == "Approved"  
merged["Is\_Default"] = merged["Loan\_Status"] == "Overdue"  
merged["Processing\_Fee"] = pd.to\_numeric(merged["Processing\_Fee"], errors="coerce")  
merged["Credit\_Bucket"] = pd.cut(  
 merged["Credit\_Score"],  
 bins=[0, 500, 650, 750, 900],  
 labels=["High Risk", "Moderate", "Good", "Excellent"]  
)  
  
# Step 6: Add transaction summaries  
txn\_summary = transactions.groupby("Customer\_ID")["Amount"].sum().reset\_index()  
txn\_summary.columns = ["Customer\_ID", "Total\_Repaid"]  
merged = pd.merge(merged, txn\_summary, on="Customer\_ID", how="left")  
  
# Step 7: Add default status  
merged = pd.merge(merged, defaults, on="Loan\_ID", how="left")  
merged["Legal\_Action"] = merged["Legal\_Action"].fillna("No")  
merged["Has\_Default"] = ~merged["Default\_Amount"].isna()  
  
# Step 8: Generate summaries  
approval\_by\_region = merged.groupby("Region")["Is\_Approved"].mean().reset\_index(name="Approval\_Rate")  
default\_by\_region = merged.groupby("Region")["Has\_Default"].mean().reset\_index(name="Default\_Rate")  
credit\_bucket\_counts = merged["Credit\_Bucket"].value\_counts().reset\_index()  
credit\_bucket\_counts.columns = ["Credit\_Segment", "Count"]  
  
# Step 9: Export merged dataset  
merged.to\_csv("HeroFinCorp\_Merged\_Output.csv", index=False)