WQU Msc Financial Engineering Financial Data GWP 3

Chosen Scenario: Lending Money at a fixed rate for an unsecured purchase

The purpose of this notebook is to create a Python implementation of a credit scoring methodology to decide whether to extend unsecured credit to a potential client using the 5 Cs of credit.

Import Dependencies:

```
In [31]:   import pandas as pd
           import pandas_datareader.data as web
           from datetime import datetime
           import warnings
           warnings.filterwarnings("ignore")
```

Create Functions:

```
In [32]:   #create a function to decide whether to grant credit to a client
           def credit_decision (character, debt_to_income, capital, collateral, cred

               #implement auto reject features – credit score less than 580 or debt:
               if character < 580 or debt_to_income > 50:
                   credit_decision_string = "No Credit"

               #if credit score and capacity are sufficient look at condition factor
               #if environmental credit default rates are greater than 10% or the em

               elif credit_default_rate > 10 or unemployment_rate > 7:
                   credit_decision_string = "No Credit"

               else:
                   credit_decision_string = "Grant Credit"

               return credit_decision_string
```

```
In [33]:   #create a function to gather the latest quarterly credit default rates fr

           def get_default_rate():
               # Define the date range
               start = datetime(2023, 1, 1)
               end = datetime.now()

               # Fetch the delinquency rate on credit cards
               credit_card_defaults_df = web.DataReader('DRCCLACBS', 'fred', start,
```

```
        credit_card_defaults_df.reset_index(inplace=True)

        return credit_card_defaults_df.iloc[-1,1]
```

In [34]:
```
#create a function to gather the latest quarterly unemployment rates from

def get_unemployment_rate():
    # Define the date range
    start = datetime(2023, 1, 1)
    end = datetime.now()

    # Fetch the delinquency rate on credit cards
    credit_card_defaults_df = web.DataReader('UNRATE', 'fred', start, end

    credit_card_defaults_df.reset_index(inplace=True)

    return credit_card_defaults_df.iloc[-1,1]
```

Gather Necessary Information about the pottential client:

In [35]:
```
#manually entered variables
client_credit_score = 590 #to be manually obtained from credit beaureau
debt_to_income = 20 # to be manually obtained from credit beaureau

#automated variables
capital = 0 #always equal to 0 as no capital outlay is required for a cre
collateral = 0 #always equal to 0 as this is unsecured credit
credit_default_rate = get_default_rate() #obtained from federal reserve d
unemployment_rate = get_unemployment_rate() #obtained from federal reserv
```

Get Credit Decision

In [30]:
```
print(f"Credit Decision: {credit_decision(client_credit_score, debt_to_in
```

```
Credit Decision: Grant Credit
```

In [ ]: