Introduction to Data Analysis (DATA 1200)
Assignment #5 – Response Model (15% of Final Grade)
Professor: Ritwick Dutta

Mr. John Hughes is looking for some help in developing a response model for a campaign based on **Mktg_Campaign.csv**

The dataset has 2,216 observations and 27 variables:

Independent Variables:

AcceptedCmp1 - 1 if customer accepted the offer in the 1st campaign, 0 otherwise
AcceptedCmp2 - 1 if customer accepted the offer in the 2nd campaign, 0 otherwise
AcceptedCmp3 - 1 if customer accepted the offer in the 3rd campaign, 0 otherwise
AcceptedCmp4 - 1 if customer accepted the offer in the 4th campaign, 0 otherwise
AcceptedCmp5 - 1 if customer accepted the offer in the 5th campaign, 0 otherwise
Complain - 1 if customer complained in the last 2 years
Education - customer's level of education
Marital - customer's marital status
Kidhome - number of small children in customer's household
Teenhome - number of teenagers in customer's household
Income - customer's yearly household income
MntFishProducts - amount spent on fish products in the last 2 years
MntMeatProducts - amount spent on meat products in the last 2 years
MntFruits - amount spent on fruits products in the last 2 years
MntSweetProducts - amount spent on sweet products in the last 2 years
MntWines - amount spent on wine products in the last 2 years
MntGoldProds - amount spent on gold products in the last 2 years
NumDealsPurchases - number of purchases made with discount
NumCatalogPurchases - number of purchases made using catalogue
NumStorePurchases - number of purchases made directly in stores
NumWebPurchases - number of purchases made through company's web site
NumWebVisitsMonth - number of visits to company's web site in the last month
Recency - number of days since the last purchase

Dependent Variable:

Response (target) - 1 if customer accepted the offer in the last campaign, 0 otherwise

The Ask:

1. **Create a Python Script using Jupyter Notebook (then convert to .html)** – *2%*
   a) Using Python develop a **Response algorithm** script to predict Converted. Attach the HTML copy of your Python Code with your submission.

   Note: All steps need to be annotated (i.e. Wk10a-ResponseModelExample)

2. **Create a PowerPoint (PPT or PPTX) presentation that includes the following:**
   a) Cover Page (Title, First and Last Name, Student Number)
   b) Rational Statement (summary of the problem or problems to be addressed by the PPT) – *2%*
   c) Present the Confusion/Classification Report and Explain **four (4) key insights** from the Model Metrics (i.e., Precision, Recall, F1, Support for both summary and detailed metrics). – *8%*
   d) Explain **three (3) ways** to help improve the performance of the Response model. Please justify each of your answers. – *3%*

3. HTML copy of your Python Code

Hint: Leverage the Wk10a-ResponseModelExample

Please post your PowerPoint Document (.ppt or .pptx) and Jupyter Notebook in HTML (.html) format via assignments under Assignment #5 by

Monday, December 4th, 2023 @ 11:59 p.m.