Exercise Description:

A telecom operator, which has successfully launched a fourth generation (4G) mobile telecommunications network, would like to make use of existing customer usage and demographic data to identify which customers are likely to switch to using their 4G network. The target categorical variable is "Customer_Type" (3G/4G). A 4G customer is defined as a customer who has a 4G Subscriber Identity Module (SIM) card and is currently using a 4G network compatible mobile phone. You are asked to assist them in examining the data.

In your first meeting with the company, the clients kept talking about following issues.

- They would like to know how much an issue missing data is in their data set and what approach you took to deal with it. **(1 point)**

- The company would like to ensure the information is from a valid sample of their customers. The company would like to see a training data set that is 70% of their customer set. **(1 point)**

- They believe that classifying people correctly is the most important metric to examine. **(1 point)**

- The telecom company would like to know just how well they could determine those who are really going to change to 4G and those will not.   **(2 points)**

- They would also like to know exactly what the rules are for classifying people, how to use them and how well they will work for them. **(3 points)**

You are provided with the telecommunications data (filename: **Telecom_Fall2019.jmp**) and asked to create a manager-friendly report that covers results of your analysis. You will use **12345 for any random seed** you need. The data set contains 18 variables and over 6,000 observations. You report should be restricted to 7-pages maximum. Please back up your assertions with appropriate statistics and graphs as needed. The variables in the data set are shown in the table below with the appropriate roles and levels.

Variable Description:

Attribute Name	ROLE	LEVEL	Description
Age	INPUT	INTERVAL	In Years
Contract_flag	INPUT	NOMINAL	Contract ownership flag (Y/N)
customer_class	INPUT	NOMINAL	Codes indicating VIP, Individual, Corporate, Government, Under 21, Foreigner, etc.
customer_type	TARGET	BINARY	TARGET FIELD: 4G Customer Flag (3G/4G)
Gender	INPUT	NOMINAL	Male or Female
HS_AGE	INPUT	INTERVAL	Handset Age in Months
ID_change_flag	INPUT	NOMINAL	1 if the customer change the ID in the last 6 month
Line_tenure	INPUT	INTERVAL	Line tenure in days
Marital_status	INPUT	NOMINAL	Marital status
Nationality	INPUT	NOMINAL	Nationality
occup_CD	INPUT	NOMINAL	Occupation code
pay_metd	INPUT	NOMINAL	Payment method code such as Credit card, Cash, etc. as of last billing cycle in the 6 months
subplan	INPUT	INTERVAL	Current Subscription Plan Type
serial_num	ID	NOMINAL	Record Index (ID)
top1_int_cd	INPUT	NOMINAL	Top 1 international country
top2_int_cd	INPUT	NOMINAL	Top 2 international country
top3_int_cd	INPUT	NOMINAL	Top 3 international country

Deliverables (please follow these instructions):

- *As you complete the exercise, create a report in Microsoft Word. In this report, answer the questions in the exercise description.*
- *Make sure you comment or explain and not just provide snapshots of data.*
- *Limit your report to no more than **7 pages** including tables and diagrams.*
- *Copy and paste or screen shot supporting tables/diagrams as needed to justify any of your answer. You may need to shrink your table/ diagrams but please ensure they are readable.*
- *Include any required data sets or codes/projects as requested as separate files.*
- *Make sure you print your name, student ID#, student email on the cover page of the report and turn-in the report as communicated by your instructor.*
- *Please also put a running header/footer with your name, on each page of your exercise solution report.*

    Failure to follow these instructions will result in deduction of points