**Challenge Overview**

In 1998, the Adventure Works Cycles company collected a large volume of data about their existing customers, including demographic features and information about purchases they have made. The company is particularly interested in analyzing customer data to determine any apparent relationships between demographic features known about the customers and the likelihood of a customer purchasing a bike. Additionally, the analysis should endeavor to determine whether a customer's average monthly spend with the company can be predicted from known customer characteristics.

**In this project, you must tackle three challenges:**

**Challenge 1**: Explore the data and gain some insights into Adventure Works customer characteristics and purchasing behavior.

**Challenge 2**: Build a classification model to predict customer purchasing behavior.

**Challenge 3**: Build a regression model to predict customer purchasing behavior.

This data consists of **three** files, containing data that was collected on **January 1st 1998**.

**AdvWorksCusts.csv**

**Customer demographic data consisting of the following fields:**

CustomerID (integer): A unique customer identifier.

Title (string): The customer's formal title (Mr, Mrs, Ms, Miss Dr, etc.)

FirstName (string): The customer's first name.

MiddleName (string): The customer's middle name.

LastName (string): The customer's last name.

Suffix (string): A suffix for the customer name (Jr, Sr, etc.)

AddressLine1 (string): The first line of the customer's home address.

AddressLine2 (string): The second line of the customer's home address.

City (string): The city where the customer lives.

StateProvince (string): The state or province where the customer lives.

CountryRegion (string): The country or region where the customer lives.

PostalCode (string): The postal code for the customer's address.

PhoneNumber (string): The customer's telephone number.

BirthDate (date): The customer's date of birth in the format YYYY-MM-DD.

Education (string): The maximum level of education achieved by the customer:

Partial High School

High School

Partial College

Bachelors

Graduate Degree

Occupation (string): The type of job in which the customer is employed:

Manual

Skilled Manual

Clerical

Management

Professional

Gender (string): The customer's gender (for example, M for male, F for female, etc.)

MaritalStatus (string): Whether the customer is married (M) or single (S).

HomeOwnerFlag (integer): A Boolean flag indicating whether the customer owns their own home (1) or not (0).

NumberCarsOwned (integer): The number of cars owned by the customer.

NumberChildrenAtHome (integer): The number of children the customer has who live at home.

TotalChildren (integer): The total number of children the customer has.

YearlyIncome (decimal): The annual income of the customer.

AW\_AveMonthSpend.csv

Sales data for existing customers, consisting of the following fields:

CustomerID (integer): The unique identifier for the customer.

AveMonthSpend (decimal): The amount of money the customer spends with Adventure Works Cycles on average each month.

AW\_BikeBuyer.csv

Sales data for existing customers, consisting of the following fields:

CustomerID (integer): The unique identifier for the customer.

BikeBuyer (integer): A Boolean flag indicating whether a customer has previously purchased a bike (1) or not (0).

**Research question we want to address:**

Minimum AveMonthSpend?

Question 2

Maximum AveMonthSpend?

Question 3

Mean AveMonthSpend?

Question 4

Median AveMonthSpend?

Question 5

Standard Deviation AveMonthSpend?

Question 6

The distribution of the values in the BikeBuyer column indicates?

Question 7

What is the correct order (from lowest to highest) that ranks the median YearlyIncome by Occupation?

Question 8

Based on their age at the time when the data was collected (1st January 1998),

which group of customers accounts for the highest AveMonthSpend values?

Question 9

What is the relation between Age and AveMonthSpend?

Question 10

Which of the following statements about BikeBuyer are true?

The median YearlyIncome is higher for customers who bought a bike than for customers who didn't.

The median number of cars owned by customers who bought a bike is lower than for customers who didn't.

The most common occupation type for customers who bought a bike is skilled manual.

Male customers are more likely to buy bikes than female customers.

A maried customer is more likely to buy a bike.