**Assignment:** AllLife Bank Unsupervised Learning

**Description:**

**Context:**

AllLife Bank wants to focus on its credit card customer base in the next financial year. They have been advised by their marketing research team, that the penetration in the market can be improved. Based on this input, the Marketing team proposes to run personalized campaigns to target new customers as well as up sell to existing customers. Another insight from the market research was that the customers perceive the support services of the back poorly. Based on this, the Operations team wants to upgrade the service delivery model, to ensure that customer’s queries are resolved faster. Head of Marketing and Head of Delivery both decide to reach out to the Data Science team for help

**Objective:** To identify different segments in the existing customer based on their spending patterns as well as past interaction with the bank.

**Dataset:** ALLLife bank

**Data Description**: Data is of various customers of a bank with their credit limit, the total number of credit cards the customer has, and different channels through which customer has contacted the bank for any queries, different channels include visiting the bank, online and through a call centre.

**Key Questions:**

1. Perform EDA.
2. Apply Clustering Algorithms and mentions how many clusters are formed?
3. How are these segments different from each other?
4. What are your recommendations to the bank on how to better market to and service these customers?

**Submission Guidelines:**

1. There are two parts to the submission:
   1. A well commented Jupyter notebook [format - .ipynb]
   2. A presentation as you would present to the top management/business leaders [format - .ppt /.pptx]
2. Files: .ipynb and MS Power Point presentations needs to be submitted

1. Jupyter notebook needs to be labeled and sectioned as follows:

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| **Define the problem and perform an Exploratory Data Analysis**  "- Problem definition, questions to be answered - Data background and contents - Univariate analysis - Bivariate analysis " |  |
| **Illustrate the insights based on EDA**  Key meaningful observations on individual variables and the relationship between variables |  |
| **Data pre-processing**  "Prepare the data for analysis - Feature Engineering - Missing value Treatment - Outlier Treatment - Duplicate observations check and removal if found" |  |
| **Applying K-means clustering algorithms**  "Apply K-means - Elbow curve - Silhouette Score - figure out appropriate number of cluster" |  |
| **Applying Hierarchical clustering**  "- Apply Hierarchical clustering with different linkage methods - Plot dendrograms for each linkage methods - Choose appropriate number of cluster" |  |
| **"Compare cluster K-means clusters and Hierarchical clusters - Perform cluster profiling - Derive Insights"**  "- Compare clusters obtained from k-means and hierarchical clustering techniques - Perform cluster profiling - Insights about different clusters" |  |
| **Actionable Insights & Recommendations**  "- Conclude with the key takeaways for the business - What would your business recommendation." |  |
| **Notebook - Overall**  "- Structure and flow - Well commented code" |  |