**Research idea:**

Identifying Marketing strategies using customer segmentation.

**variables:**

age, education, marital status, yearly household income/ income per person, number of children, number of kids, number of teenagers, recency, complain, MntWine, MntFruit, MntMeatProduct, Dt\_Customer based on days, MntFishProduct, MntSweetProduct, MntGoldProds, NumDealsPurchases, AcceptedCmp1, AcceptedCmp2, AcceptedCmp3, AcceptedCmp4, AcceptedCmp5, Response, NumWebPurchases, NumCatalogPurchases, NumStorePurchases, NumWebVisitsMonth

the red attributes should be generated.

**details of research:**

1. Apply association rule mining techniques such as Apriori algorithm to discover patterns in the purchasing behavior of common customers. "common customers" means those customers who have purchased multiple products.
2. For each basket of products we can make customer segmentation based on the purchase on discount, amount paid and response to campaigns which helps in purposeful marketing
3. For the predictive analysis:

* Customer Lifetime Value (CLV) prediction refers to the process of estimating the total value that a customer is expected to generate for a business over the entire duration of their relationship with the company. CLV prediction involves analyzing past customer behavior and transaction data to forecast future spending patterns and lifetime value.
* Prediction if a customer accepts a campaign or not based on the demographics and behaviour
* Prediction of the best platform to do marketing and the basket of products to be used in the marketing plan for a new customer based on the demographic data and also the do marketing based on discount or prestigious products.
* LightGBM can also be used for this data analysis which can control both numerical and categorical values. It is robust for the outliers. This algorithm also provide feature important scores. Good performance and scalability.