# Exploratory Data Analysis & Feature Engineering

## Exploratory Data Analysis (EDA)

Definition:  
- EDA is an approach to analyzing data sets that summarizes their main characteristics, often using visual methods.  
- Helps determine if data is usable as-is or needs further cleaning.  
  
Importance:  
- Identifies patterns.  
- Observes trends.  
- Helps formulate hypotheses.  
  
Common techniques:  
- Summary statistics.  
- Visualizations.

## Feature Engineering & Variable Transformation

Purpose:  
- Transforming variables helps meet assumptions of statistical models.  
- Example: In linear regression, transform predictors to create a linear relation with target.  
  
Common transformations:  
- Log transformations.  
- Polynomial features.  
- Encoding categorical variables.  
- Scaling variables.