**1.What is Normalization & Standardization and how is it helpful?**

1. **Normalization & Standardization**:
   * **Normalization**: Rescaling the data to a range of [0,1]. This is useful for algorithms like KNN or neural networks that are sensitive to feature magnitudes. x′=x−xminxmax−xminx' = \frac{x - x\_{min}}{x\_{max} - x\_{min}}x′=xmax​−xmin​x−xmin​​
   * **Standardization**: Transforming the data so that it has a mean of 0 and a standard deviation of 1. This is useful for algorithms that assume normally distributed data. x′=x−μσx' = \frac{x - \mu}{\sigma}x′=σx−μ​
   * **Importance**: Helps in preventing features with larger ranges from dominating the model and improves the convergence of optimization algorithms.

**2.What techniques can be used to address multicollinearity in multiple linear regression?**

**1. Techniques to Address Multicollinearity**:

* + **Variance Inflation Factor (VIF)**: Identifies highly collinear features, which can be removed.
  + **Principal Component Analysis (PCA)**: Reduces dimensionality and transforms correlated variables into a set of linearly uncorrelated variables.
  + **Ridge Regression**: Adds a penalty to the magnitude of coefficients to reduce multicollinearity.