1. **Explain Bagging and Boosting methods. How is it different from each other?**

**Bagging, Boosting, and Handling Imbalance:**

1. **Bagging vs. Boosting**:
   * **Bagging (Bootstrap Aggregating)**: Reduces variance by training multiple models independently on random subsets of the data and averaging the results (e.g., Random Forest).
   * **Boosting**: Builds models sequentially, where each new model focuses on correcting the errors of the previous ones. It reduces both bias and variance (e.g., AdaBoost, Gradient Boosting).
   * **Key Difference**: Bagging trains models in parallel, while boosting trains models sequentially.
2. **Explain how to handle imbalance in the data.**

**Handling Imbalance in Data**:

* + **Resampling**: Techniques like oversampling the minority class (e.g., SMOTE) or Under-sampling the majority class.
  + **Class Weights**: Modifying the cost function to penalize misclassifications of the minority class more heavily.
  + **Anomaly Detection**: Sometimes, treating the problem as anomaly detection can be more effective in highly imbalanced data.