1. **What are some common hyperparameters of decision tree models, and how do they affect the model's performance?**

**Decision Trees and Encoding:**

1. **Common Hyperparameters of Decision Tree Models**:
   * **Max Depth**: Controls how deep the tree can grow. A large depth can lead to overfitting, while a shallow tree may underfit.
   * **Min Samples Split**: The minimum number of samples required to split a node. Higher values prevent small sample splits and reduce overfitting.
   * **Min Samples Leaf**: The minimum number of samples that must be present in a leaf node. Higher values prevent the tree from learning specific details.
   * **Max Features**: Limits the number of features used for splitting at each node, helping to control overfitting.

**2. What is the difference between the Label encoding and One-hot encoding?**

1. **Difference between Label Encoding and One-Hot Encoding**:
   * **Label Encoding**: Converts categorical values into numerical labels (e.g., "red", "green", "blue" becomes 0, 1, 2). Suitable for ordinal data but can introduce unintended order for nominal data.
   * **One-Hot Encoding**: Converts categories into binary vectors. Each category is represented by a vector with a 1 in the corresponding position and 0s elsewhere. Ideal for nominal categorical data.