# 1. How does logistic regression differ from linear regression?

- **Linear regression** predicts continuous outcomes, while **logistic regression** predicts binary outcomes (0 or 1) using the sigmoid function to map predictions to probabilities.

# 2. What is the sigmoid function?

- The sigmoid function maps any real number to a value between 0 and 1, representing the probability of the positive class in logistic regression.

# 3. What is precision vs recall?

- **Precision**: The ratio of true positives to all predicted positives.
- **Recall**: The ratio of true positives to all actual positives.

# 4. What is the ROC-AUC curve?

- **ROC curve** plots the true positive rate vs. false positive rate. **AUC** is the area under the curve, indicating the model's ability to distinguish between classes (higher AUC = better performance).

## 5. What is the confusion matrix?

- It shows the counts of **true positives (TP)**, **true negatives (TN)**, **false positives (FP)**, and **false negatives (FN)** to evaluate a classification model.

## 6. What happens if classes are imbalanced?

- Imbalanced classes can bias the model towards the majority class. Techniques like **resampling** or using **class weights** can help address this.

## 7. How do you choose the threshold?

- The threshold is the cutoff probability for classifying an instance. Adjusting it affects precision and recall; you choose based on which metric (precision or recall) is more important for your use case.

## 8. Can logistic regression be used for multi-class problems?

- Yes, using **One-vs-Rest (OvR)** or **Softmax regression** (multinomial logistic regression) for multi-class classification.