Assignment - 2

1. Calculate Accuracy, Precision, Recall and F1-score using below confusion matrix.

		Actual Values	
		Positive	Negative
Predicted values	P	150	20
	N	30	80

2. Implement the following tasks on the Ionosphere Dataset using the scikit-learn (sklearn) library or the statsmodels library: Consider “V6” **to** “V12” as predictor variables and predict “class” (the last column is class).
    (a) Implement Logistic Regression on this dataset and print Coefficients, Intercept of the model. (Split ratio for train and test data is 70:30)
    (b) Predict probabilities of the test set.
    (c) Calculate ROC curve using ROC_curve and the AUC-ROC score (sklearn.metrics).
    (d) Plot ROC curve with matplotlib.

3. Implement Linear Discriminant Analysis on the same dataset. Print a classification report, which typically includes metrics such as precision, recall, F1-score, and support for each class. (Split ratio for train and test data is 75:25)

4. Implement K-Nearest Neighbors for the “Smarket” dataset by setting the K value as 5 and independent variables as “lag3”, “lag5” and predict “direction”. Find the accuracy of the model. (Split ratio for train and test data is 80:20)