METRICS OF CONFUSION MATRIX

- **BASIC ELEMENTS:**
  - True Positive (TP) = Observations which are predicted as POSITIVE, and the ground truth is also POSITIVE.
  - True Negative (TN) = Observations which are predicted as NEGATIVE, and the ground truth is also NEGATIVE.
  - False Positive (FP) = Observations which are predicted as POSITIVE, but the ground truth is NEGATIVE
  - False Negative (FN) = Observations which are predicted as NEGATIVE, but the ground truth is POSITIVE

- **METRICS:**

  - **RECALL:** Effectiveness of a Classifier to identify POSITIVE LABELS.
    High Recall indicates the Positive class is correctly recognized (small number of FN)

    Sensitivity/ Recall/ True Positive Rate = TP / [TP + FN]

  - **SPECIFICITY:** Effectiveness of a Classifier to identify NEGATIVE LABELS.
    High specificity indicates the Negative class is correctly recognized (small number of FP)

    Specificity/TNR = TN / [TN + FP]

  - **PRECISION:** It expresses the proportion of data points our model says was positive, were actually positive.
    High Precision indicates an example labeled as positive is indeed positive (small number of FP)

    Precision = TP / [TP + FP]

- **ACCURACY:** On an overall basis, how often is classifier correct?

  Accuracy = [TP + TN] / [TP + FN + FP + TN]

- **F1-SCORE:** F1-Score is used when we want to seek a balance between Precision & Recall.
  F1-Score = [2 x Precision x Recall] / [Precision + Recall]