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Assignment: 26

	Actual Predictions	Model A Predictions	Model B Predictions
1)	Q	Q	Q
2)	Q	Q	Q
3)	Q	R	Q
4)	R	R	Q
5)	R	R	R
6)	R	R	R

Question 1: Calculate Accuracy for both models:

Solution: Model A accuracy:

$$\text{Accuracy} = \frac{\text{Number of correct Predictions}}{\text{Total Number of predictions}}$$

$$\Rightarrow \text{Accuracy} = \frac{5}{6} = 0.8333 \text{ or } 83.33$$

Model B accuracy:

$$\text{Accuracy} = \frac{5}{6} = 0.8333 \text{ or } 83.33$$

Question 2: Calculate Precision, Recall and F_1 Score for class Q:

Precision (Model A, Class Q) $= \frac{2}{2+0} = \boxed{1}$.)

Precision (Model B, Class Q) $= \frac{3}{3+1} = \frac{3}{4}$.)

$= \boxed{0.75 \text{ or } 75\%.}$

Recall (Model A, Q) $= \frac{2}{2+1} = \frac{2}{3} = \boxed{0.6667 \text{ or } 66.67\%.}$.)

Recall (Model B, Q) $= \frac{3}{3+0} = \frac{3}{3} = \boxed{1 \text{ or } 100\%.}$

F_1-Score (Model A, Q) $= 2 \times \frac{1 \times 0.6667}{1+0.6667} = \boxed{0.80 \text{ or } 80\%.}$.) .)

F_1-Score (Model B, Q) $= 2 \times \frac{0.75 \times 1.0}{0.75+1.0} = \boxed{0.857 \text{ or } 85.71\%.}$

Question 3: Which model is better in your opinion and why?

- Model A has a higher precision for Class 0 (100%) but a lower recall (66.67%)

- Model B has a lower precision for Class 0 (75%) but a higher recall (100%)

- F_1 Score which balances precision and recall is generally considered a good metric for evaluating model performance in cases where there is an imbalance between precision and recall.

- F_1 - Score for Model A: 80%
- F_1 - Score for Model B: 85.71%

Model B has a better F_1 Score compared to Model A which suggests that Model B is better overall in balancing precision and recall for class 0.

Question 4: Create a Confusion matrix for Model B:

	Predicted (Q)	Predicted (R)
Actual (Q)	3 (TP)	0 (FN)
Actual (R)	1 (FP)	2 (TN)

Question 5: What do you learn from this Confusion Matrix?

- Model B correctly identified all instances of class Q (no false negatives), leading to perfect recall.
- It misclassified 1 example from class R as Q (false positive), reducing its precision