

## Task 2

Date: \_\_\_\_\_

	predicted +ve	predicted -ve
Actual +ve	45	5
Actual -ve	55	395

$$\text{Accuracy} = \frac{TP + TN}{TP + FP + TN + FN}$$

$$= \frac{45 + 395}{45 + 5 + 55 + 395}$$

$$\text{Accuracy} = \frac{440}{500} = 0.88$$

$$\text{Precision} = \frac{TP}{TP + FP}$$

$$= \frac{45}{45 + 55}$$

$$\text{Precision} = \frac{45}{100} = 0.45$$

$$\text{Recall} = \frac{TP}{TP + FN}$$

$$\frac{45}{45 + 5} = \frac{45}{50}$$

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$$\text{Recall} = 0.90$$

$$F1\text{-score} = 2 \left( \frac{\text{Precision} \times \text{Recall}}{\text{Precision} + \text{Recall}} \right)$$

$$= 2 \left( \frac{0.45 \times 0.90}{0.45 + 0.90} \right)$$

$$= 2 \times \left( \frac{0.45}{1.35} \right)$$

$$F1\text{-score} = 0.6$$

### Task 3.

**Overfitting:** When the <sup>model</sup> train well on training data and ~~generalize~~ generalize to it, but fail to perform on new or unseen data.

**Underfitting:** It occurs when the model doesn't fit properly to training data. It does not find pattern in the data, hence when it is given new data to predict, it can't find pattern in it too.

**Bias:** Difference between actual and predicted ~~data~~ values.