

### Soal 1

	Prediksi Positif	Prediksi Negatif
Positif Sebenarnya	40	10
Negatif Sebenarnya	15	35

a) True Positive (TP) = 40 //

c) True Negative (TN) = 35 //

b) False Positive (FP) = 15 //

d) False Negative (FN) = 10 //

e) Akurasi =  $\frac{(TP + TN)}{(TP + TN + FP + FN)} = \frac{(40 + 35)}{(40 + 35 + 15 + 30)} = \frac{75}{100} = 0,75$  atau 75% //

f) Presisi =  $\frac{TP}{(TP + FP)} = \frac{40}{(40 + 15)} = \frac{40}{55} = 0,727$  atau 72,7% //

g) Recall =  $\frac{TP}{(TP + FN)} = \frac{40}{(40 + 10)} = \frac{40}{50} = 0,8$  atau 80% //

h) Spesifisitas =  $\frac{TN}{(TN + FP)} = \frac{35}{(35 + 15)} = \frac{35}{50} = 0,7$  atau 70% //

i) F1 Score =  $\frac{2 \times (\text{presisi} \times \text{Recall})}{(\text{presisi} + \text{Recall})} = \frac{2 \times (0,727 \times 0,8)}{(0,727 + 0,8)}$   
 $= \frac{2(0,582)}{1,527} = \frac{1,164}{1,527} = 0,762$  atau 76,2% //

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### Soal 2

	Prediksi spam	Prediksi Tdk spam
Spam Sebenarnya	80	10
Tdk spam Sebenarnya	30	80

a) True Positive (TP) = 80 //

c) True Negative (TN) = 80 //

b) False Positive (FP) = 30 //

d) False Negative (FN) = 10 //

e) Akurasi =  $\frac{(TP+TN)}{(TP+TN+FP+FN)} = \frac{(80+80)}{(80+80+30+10)} = \frac{160}{200} = 0,8$  atau 80% //

f) Presisi =  $\frac{TP}{(TP+FP)} = \frac{80}{(80+30)} = \frac{80}{110} = 0,727$  atau 72,7% //

g) Recall =  $\frac{TP}{(TP+FN)} = \frac{80}{(80+10)} = \frac{80}{90} = 0,889$  atau 88,9% //

h. Spesifisitas =  $\frac{TN}{(TN+FP)} = \frac{80}{(80+30)} = \frac{80}{110} = 0,727$  atau 72,7% //

i) F1 Score =  $\frac{2 \times (\text{Presisi} \times \text{Recall})}{(\text{Presisi} + \text{Recall})} = \frac{2 \times (0,727 \times 0,889)}{(0,727 + 0,889)}$   
 $= \frac{2(0,646)}{1,616} = \frac{1,292}{1,616} = 0,799$  atau 79,9% //

### Soal 5

Data Aktual ( $y_i$ )	Prediksi ( $y_p$ )
3	2,5
4	4,2
2	2,8
5	4,6

7) Mean Absolute Error (MAE)

$$= \frac{\sum |y_i - y_p|}{n}$$

$$= \frac{|(3-2,5)| + |(4-4,2)| + |(2-2,8)| + |(5-4,6)|}{4}$$

$$= \frac{0,5 + 0,2 + 0,8 + 0,4}{4} = \frac{1,9}{4} = 0,475 //$$

7) Root Mean Squared Error

$$= \sqrt{\frac{\sum (y_i - y_p)^2}{n}}$$

$$= \sqrt{\frac{(3-2,5)^2 + (4-4,2)^2 + (2-2,8)^2 + (5-4,6)^2}{4}}$$

$$= \sqrt{\frac{(0,5)^2 + (-0,2)^2 + (-0,8)^2 + (0,4)^2}{4}}$$

$$= \sqrt{\frac{0,25 + 0,04 + 0,64 + 0,16}{4}} = \sqrt{\frac{1,09}{4}} = \sqrt{0,272} = 0,521 //$$

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## Soal 4

Data Aktual ( $y_i$ )	Prediksi ( $y_p$ )
7	6
9	10
5	5.5
11	9
13	14
8	7.5

7, Mean Absolute Error (MAE)

$$= \frac{\sum |y_i - y_p|}{n}$$

$$= \frac{|(7-6)| + |(9-10)| + |(5-5.5)| + |(11-9)| + |(13-14)| + |(8-7.5)|}{6}$$

$$= \frac{1 + 1 + 0.5 + 2 + 1 + 0.5}{6} = \frac{6}{6} = 1 //$$

7, Root Mean Squared Error (RMSE)

$$= \sqrt{\frac{\sum (y_i - y_p)^2}{n}}$$

$$= \sqrt{\frac{(7-6)^2 + (9-10)^2 + (5-5.5)^2 + (11-9)^2 + (13-14)^2 + (8-7.5)^2}{6}}$$

$$= \sqrt{\frac{1^2 + (-1)^2 + (-0.5)^2 + 2^2 + (-1)^2 + (0.5)^2}{6}}$$

$$= \sqrt{\frac{1 + 1 + 0.25 + 4 + 1 + 0.25}{6}} = \sqrt{\frac{7.5}{6}} = \sqrt{1.25} = 1.118 //$$

-Pengawas dapat mencatat *kecurangan* tanpa peringatan lebih dahulu  
-siswa melepas lembar jawaban dari *jilidan*