1) Table 1

Day	Ground Truth	Prediction
1	Shower	Shower
2	Clear	Shower
3	Shower	Clear
4	S	S
5	C	S
6	S	S
7	C	S
8	C	C
9	C	C
10	S	S

Confusion Matrix

	C_1	$\neg C_1$
C_1	4 (TP)	1 (FN)
$\neg C_1$	3 (FP)	2 (TN)

Accuracy $= \frac{6}{10} = 0.60$

Precision $= \frac{4}{7} \simeq 0.571$

Recall $= \frac{4}{5} = 0.80$

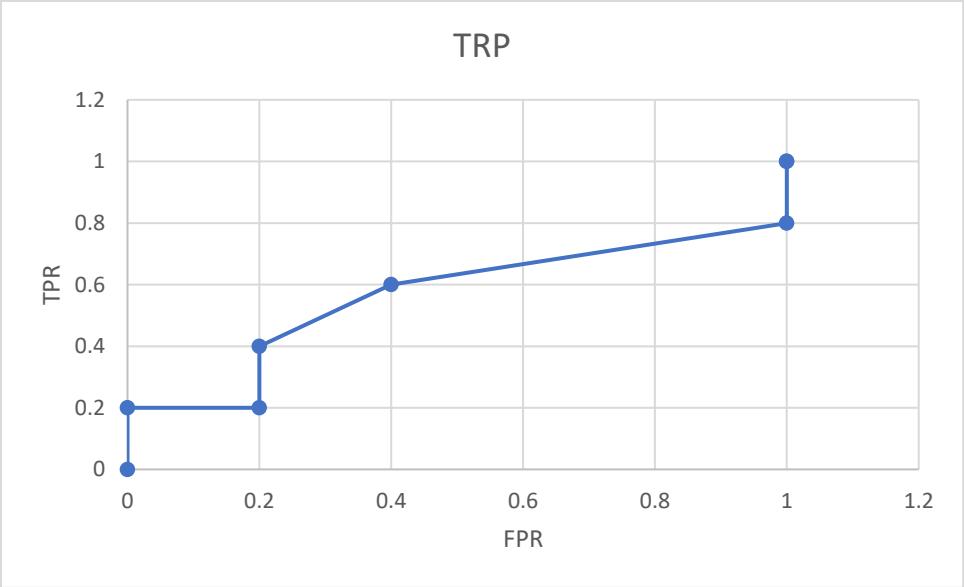
$F_1 = \frac{2 \times \frac{4}{7} \times \frac{4}{5}}{\frac{4}{7} + \frac{4}{5}} = \frac{2}{3} \simeq 0.6667$

2) Table 2

Day	Ground Truth	Prediction
1	S	0.95
2	C	0.85
3	S	0.78
4	S	0.66
5	C	0.6
6	S	0.55
7	C	0.53
8	C	0.52
9	C	0.51
10	S	0.4

	TP	FP	TN	FN	TPR	FPR
≥ 0.03	5	5			1	1
≥ 0.4	5	5			1	1
≥ 0.5	4	5		1	0.8	1
≥ 0.6	3	2	3	2	0.6	0.4
≥ 0.7	2	1	4	3	0.4	0.2
≥ 0.8	1	1	4	4	0.2	0.2
≥ 0.9	1		5	4	0.2	0
≥ 1			5	5	0	0

FPR	TRP
1	1
1	1
1	0.8
0.4	0.6
0.2	0.4
0.2	0.2
0	0.2
0	0



Difference of RMSe = $\sqrt{0.00890} - \sqrt{0.01326}$

pood pooled_sd = $\sqrt{\frac{(10-1)\times(0.1055)+(10-1)\times(0.1287)}{10+10-2}}$ = -0.0208

(3)

	Residuals for R1	Residuals for R2	d
1	0.09	-0.11	0.2
2	0.12	0.10	0.02
3	-0.07	-0.12	0.05
4	-0.12	0.09	-0.21
5	-0.08	0.14	-0.22
6	-0.1	0.13	-0.23
7	-0.08	-0.12	0.04
8	-0.08	0.11	-0.19
9	-0.1	0.13	-0.23
10	-0.09	-.09	0

$\bar{d} = -0.077$

$S_d^2 = \frac{1}{K-1}\sum(d_i - \bar{d})^2$ K=10

$\sum = (0.2-(-0.077))^2 + (0.02-(-0.077))^2 + (0.05-(-0.077))^2$
$+ (-0.21-(-0.077))^2 + (-0.22-(-0.077))^2 + (-0.23-(-0.077))^2$
$+ (0.04-(-0.077))^2 + (-0.19-(-0.077))^2 + (-0.23-(-0.077))^2$
$+ (0-(-0.077))^2 = 0.21961$

$S_d^2 = \frac{0.21961}{9} = 0.02440$

$$t = \frac{\bar{d}}{\sqrt{\frac{S_d^2}{K}}} \qquad t = \frac{-0.077}{\sqrt{\left(\frac{0.02440}{9\,10}\right)}} = -1.5588$$

~~P val = 0.1554~~ $df = 9$ Confidence = 95%

alpha = $\frac{1 - 0.95}{2} = 0.025$ critical t val = 2.26

Since our t value is not greater than our critical t val, we can't reject the null hypothesis. So regressor 1 is not significantly better or worse than regressor 2.