Exercise 11

Task 1

Part 1

Expression	Type	Class	Priority	Message	Deactivation
PLC_PRG.A	DIG=1	DEFAULT	0	A is TRUE	
PLC_PRG.f1	HI	DEFAULT	0	Value too high	
PLC_PRG.f2	LOLO	DEFAULT	0	Value too low	
PLC_PRG.g1	DEV-	DEFAULT	0	Deviation more than 10%	
PLC_PRG.g2	ROC	DEFAULT	0	Rate of change(>0.5)	

Part 2

	Date	Time	Expression	Value	Message	Priority
0	30-04-2024	03:34:23	PLC_PRG.A	1	A is TRUE	0
1	30-04-2024	03:34:24	PLC_PRG.f1	11.00	Value too high	0
2	30-04-2024	03:34:25	PLC_PRG.f2	-16.00	Value too low	0
3	30-04-2024	03:34:26	PLC_PRG.g1	17.00	Deviation more than 10%	0
4	30-04-2024	03:34:27	PLC_PRG.g2	456950.00	Rate of change(>0.5)	0

```
0001 PROGRAM PLC_PRG
0002 VAR
0003     A: BOOL:=FALSE;
0004     f1: INT;
0005     f2:INT;
0006     g1:REAL;
0007     g2:REAL;
0008
0009     B: BOOL;
0010     C: BOOL;
0011     D: BOOL;
0012     E: BOOL;
0013     timer: TON;
0014 END_VAR
```

```
0001 timer(IN:=TRUE, PT:=T#100000S);
0002
0003
0004
0005 IF B THEN
0006     f1:=11;
0007 ELSE
0008     f1:=10;
0009 END_IF
0010
0011 IF C THEN
0012     f2:=-16;
0013 ELSE
0014     f2:=-15;
0015 END_IF
0016
0017 IF D THEN
0018     g1:=17;
0019 ELSE
0020     g1:=20;
0021 END_IF
0022
0023 IF E THEN
0024     g2:=TIME_TO_REAL(TImer.ET);
0025 ELSE
0026     g2:=0;
0027 END_IF
0028
```

Part 3

Here is an example of a typical logfile logfile.

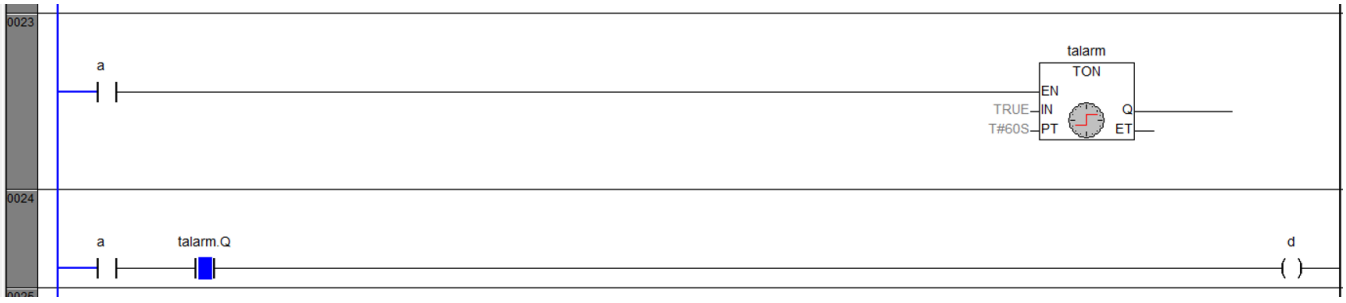
Ex11 alarmlogging HKM1 - Notepad

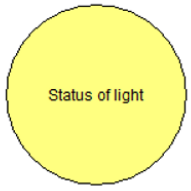
File Edit Format View Help

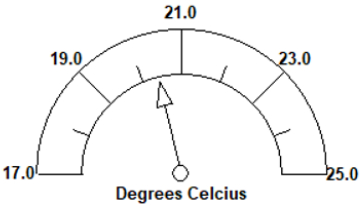
```
1714491537;56337962;30-04-2024;03:38:57;INTO;PLC_PRG.A;DIG=1;;;;    1.00;DEFAULT;0;A is TRUE;
1714491537;56337962;30-04-2024;03:38:57;INTO;PLC_PRG.f2;LOLO;-15;;;  -16.00;DEFAULT;0;Value too low;
1714491537;56337962;30-04-2024;03:38:57;INTO;PLC_PRG.f1;HI;10;;;   11.00;DEFAULT;0;Value too high;
1714491543;56343107;30-04-2024;03:39:03;INTO;PLC_PRG.A;DIG=1;;;;    1.00;DEFAULT;0;A is TRUE;
1714491543;56343713;30-04-2024;03:39:03;INTO;PLC_PRG.f2;LOLO;-15;;;  -16.00;DEFAULT;0;Value too low;
1714491563;56363897;30-04-2024;03:39:23;INTO;PLC_PRG.f1;HI;10;;;   11.00;DEFAULT;0;Value too high;
1714491564;56364748;30-04-2024;03:39:24;INTO;PLC_PRG.g1;DEV-;10;20;;   17.00;DEFAULT;0;Deviation more than 10%;
```

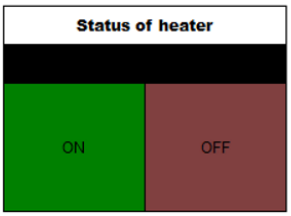
Task 2

The alarm goes high if timer "talarm.Q" is high and "a" is high. talarm.Q is high after the TON timer has passed 60 seconds.



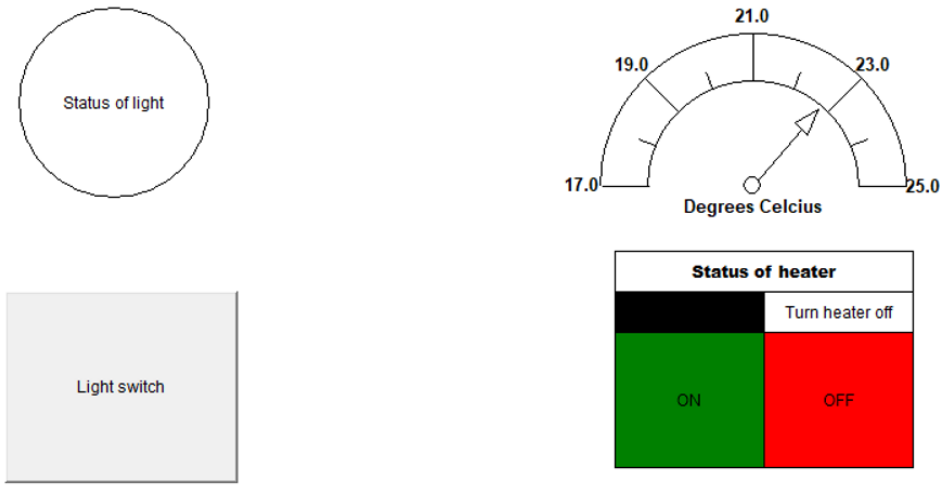






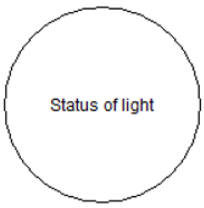
	Time	Expression	Value	Message
0	02:52:02	PLC_PRG.d	1	light on>1min

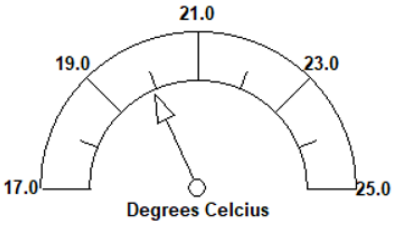
When the temperature is higher than 22 degrees or lower than 20 the alarm goes high.

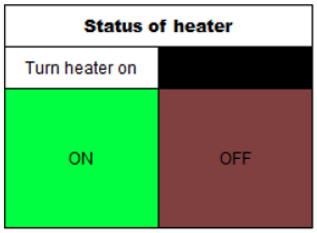


	Time	Expression	Value	Message
0	02:48:56	PLC_PRG.tempreal	23.30	Temp too high

Because the temperature control is set to greater than or equal to 20 degrees and less than or equal to 22 degrees, the temperature fluctuates approximately between 19.9 and 22.1 degrees. And this triggers the alarm.
This can be avoided by setting the deadband to 1% or a bit more.







	Time	Expression	Value	Message
0	02:50:08	PLC_PRG.tempreal	19.90	Temp too low