

PLC Programming

Group 11:

- Leonard Tan Chin Leong
- Muzammil Muhammad
- Edison Koo

Contents

1 Exercise 01	2
1.1 Source	2
1.2 Result	2
2 Exercise 02	3
2.1 Source	3
2.2 Result	3
3 Exercise 03	4
3.1 Source	4
3.2 Result	4
4 Exercise 04	5
4.1 Source	5
4.2 Result	5
5 Exercise 05	6
5.1 Source	6
5.2 Result	6

1 Exercise 01

1.1 Source

```
/* Exercise 01

If DI_01 is pressed, the button DO_05 will light up if it is not originally lit
up and turn off if it is lit up.

*/

IF S:FS THEN
    DO_05 := 0;
    Counter := 0;
END_IF;

CASE Counter OF
    0:
        IF DI_01 THEN
            DO_05 := NOT DO_05;           // Button pressed
            Counter := 1;                // Toggle light
        END_IF;
    1:
        IF NOT DI_01 THEN
            Counter := 0;              // Button released
        END_IF;
END_CASE;
```

1.2 Result



2 Exercise 02

2.1 Source

```
/* Exercise 02

If DI_02 is pressed, followed by DI_03 is pressed, the button DO_02 and DO_05
will light up if it is not originally lit up and turn off if it is lit up.

*/
IF S:FS THEN
    DO_02 := 0;
    DO_05 := 0;
    Counter := 0;
END_IF;

CASE Counter OF
    0:                                // No buttons pressed
        IF DI_02 AND NOT DI_03 THEN   // Only first button pressed
            Counter := 1;
        END_IF;
    1:
        IF DI_02 AND DI_03 THEN      // Both buttons pressed
            DO_02 := NOT DO_02;       // Toggle lights
            DO_05 := NOT DO_05;
            Counter := 0;             // Reset counter
        ELSIF DI_02 THEN           // First button held
            Counter := 1;
        ELSE                         // No buttons pressed
            Counter := 0;
        END_IF;
END_CASE;
```

2.2 Result



3 Exercise 03

3.1 Source

```
/* Exercise 03

Push DI_04 four times and DO_02 will light up and DO_02 will stay on till DI_04
is pushed for the fifth time.

*/

IF S:FS THEN
    DO_02 := 0;
    Counter := 0;
END_IF;

CASE Counter OF
    0, 2, 4, 6, 8:
        IF DI_04 THEN                                // Button pressed
            Counter := Counter + 1;
        END_IF;
    1, 3, 5:
        IF NOT DI_04 THEN                            // Button released
            Counter := Counter + 1;
        END_IF;
    7:
        DO_02 := 1;                                 // 4th press turns on light
        IF NOT DI_04 THEN                          // Button released
            Counter := Counter + 1;
        END_IF;
    9:
        DO_02 := 0;                                 // 5th press turns off light
        IF NOT DI_04 THEN                          // Button released
            Counter := 0;                           // Reset state
        END_IF;
END_CASE;
```

3.2 Result



4 Exercise 04

4.1 Source

```
/* Exercise 04

Push DI_06, and DO_05 will remain lighted up for three seconds and will go off.

*/
IF S:FS THEN
    DO_05 := 0;
    Counter := 0;                                // state tracking
END_IF;

CASE Counter OF
    0:                                         // wait for button press
        DO_05 := 0;                            // light off
        IF DI_06 THEN                         // button pressed
            Counter := 1;
        END_IF;
    1:                                         // light on
        DO_05 := 1;                            // milliseconds
        TON.PRE := 3000;                      // start timer
        TON.TimerEnable := 1;
        TONR(TON);
        IF TON.DN THEN                        // timer done
            TON.TimerEnable := 0;              // stop timer
            TONR(TON);
            Counter := 0;                     // reset state
        END_IF;
END_CASE;
```

4.2 Result



5 Exercise 05

5.1 Source

```
/* Exercise 05

If the temperature sensor reads above 30 degrees, DO_02 and DO_10 buttons will
light up.

*/
IF S:FS THEN
    ThresTemp := 30.0;
END_IF;

DO_02 := Temp1 > ThresTemp;
DO_10 := Temp1 > ThresTemp;
```

5.2 Result

