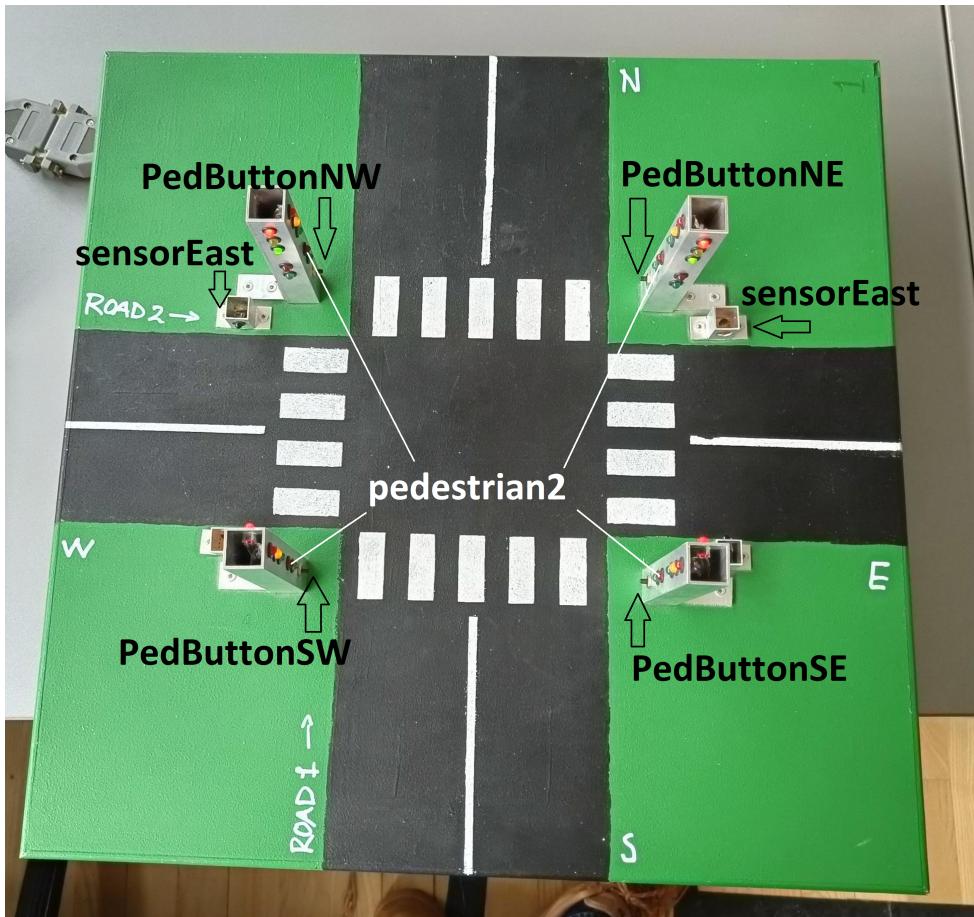


# Exercise 6

## Part 1



DX522 nr. 2

input0 SensorWest  
input1 sensorEast  
input2 PedButtonNW  
input3 PedButtonSE  
input4 PedButtonSW  
input5 PedButtonNE  
input6  
input7

output0 greenPed2  
output1 redPed2  
output2 greenRoad2  
output3 yellowRoad2  
output4 redRoad2  
output5 GreenPed1  
output6 redPed1

*output7*      *greenRoad1*

*DX522 nr. 1*

*input0*

*input1*      *resetcounter*

*input2*

*input3*

*input4*

*input5*

*input6*

*input7*

*output0*

*output1*

*output2*

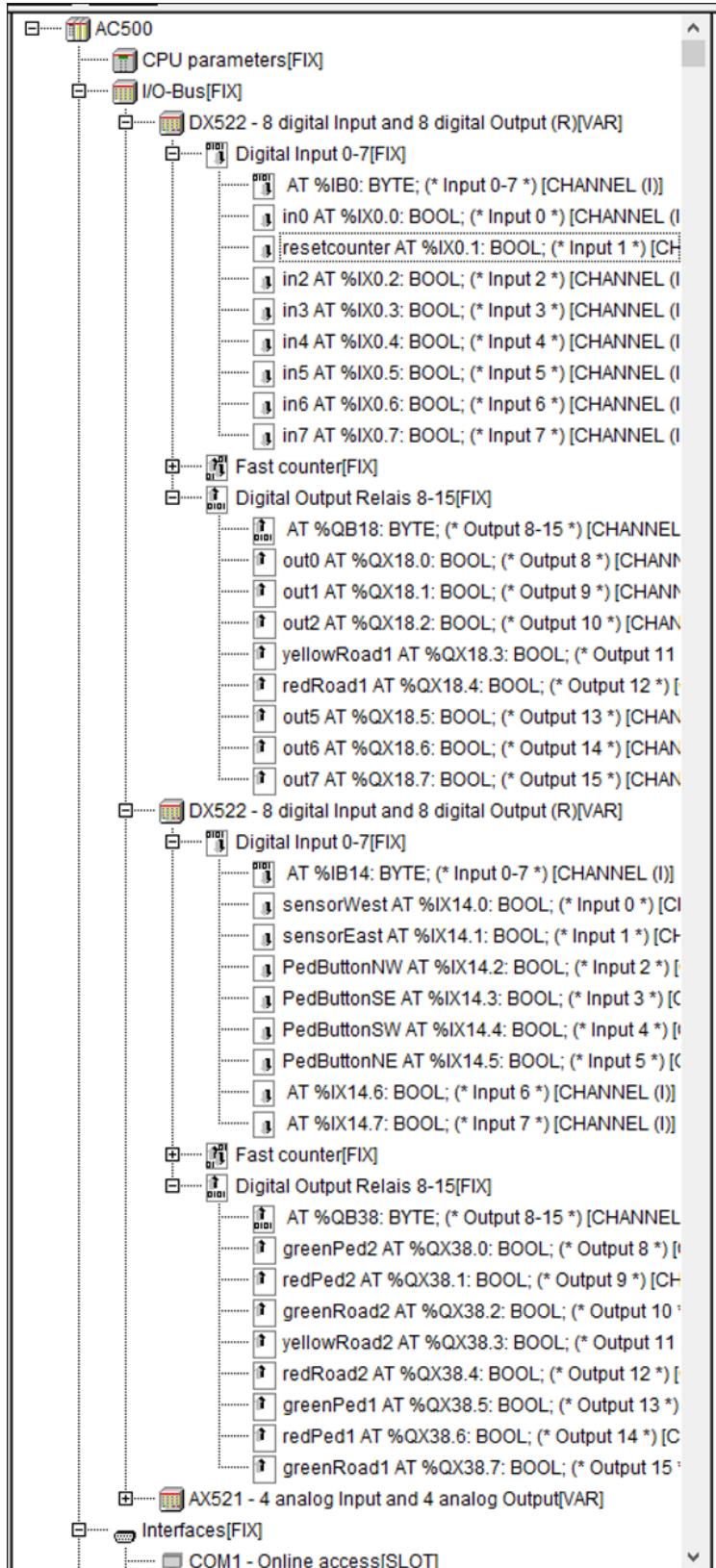
*output3*      *yellowRoad1*

*output4*      *redRoad1*

*output5*

*output6*

*output7*



## Part 2-6

I used a 20 second TON timer "resetTimer" to reset all the timers every 20 seconds repeatedly.

For part 2 and 3 i used TOF timers to generate the traffic sequence.

For part 4 i used a shift register(SHL) to be able to delay the start of the sequence until one cycle after the pedestrian button has been pushed(next cycle).

For part 5 i added a 3 second timer to differentiate between cars stopping at red light on road 2 and cars that are turning from the main road. And to delay the activation until the next cycle, i again added a SHL.

For part 6 i used a counter, and because the "push" is already latched when one of the 4 pedestrian buttons is pushed, multiple presses of the button in one cycle only count as one. resetcounter resets the counter.

## Part 7

If there are less than five activations of "sensor" on the road 2 and less than 5 activations of the pedestrian sequence within 30minutes , it should switch from sequence based to mode to sensor based mode.

If sensor(West and East) are activated more than 5 times or more than 5 activations of the pedestrian sequence within 30mins, it should switch from sensor based mode to sequence based mode.

The amount of incomming cars could be measured further away to be more pro active about switching between sensor based and sequence based mode.

This could be done using a TON timer(30min) and two counters, one that counts up if "sensor" is high and one that counts up if "push" is high. And if one of the counters has counted to more than 5 then the sequence is switched from sensor based mode to sequence based mode. After the 30minutes have passed, the timer and both counters are reset. And again, if one of the counters is less than 5 within the 30min period, it should switch from sequence based mode to sensor made mode.