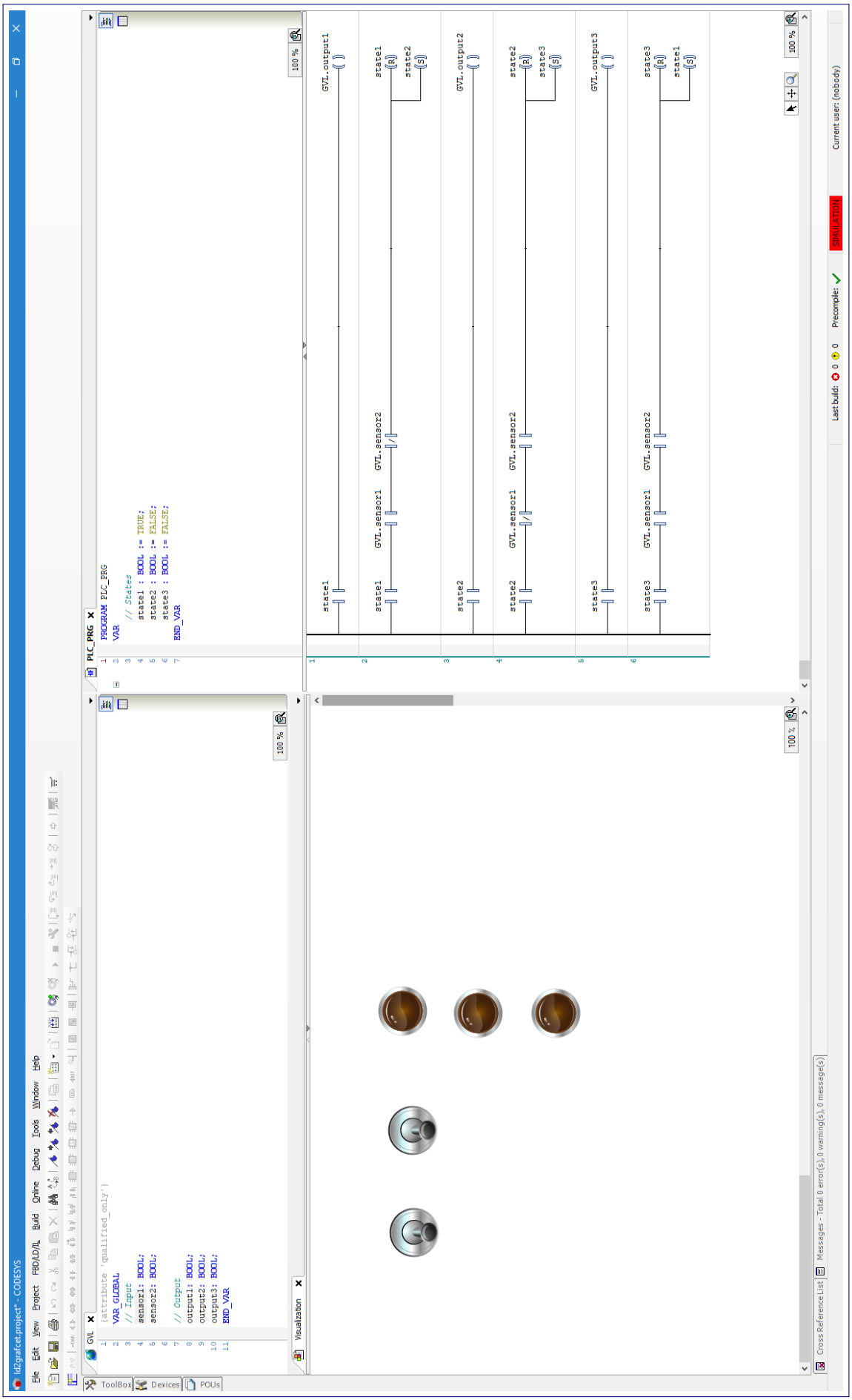
Labo 2: Ladder Diagrams & GRAFCET
Corrigé

The activation of the GRAFCET step can be represented in the Ladder diagram using one sequential memory block (SR) : 0 indicating that the state is not active and 1 when it is active. The synthesis of such specification consists in determining the control functions of the SR FF.

Exercice 1. Construct a linear GRAFCET with 5 different steps using Ladder Diagram. Choose inputs and actions freely.

Réponse :


ld2grafcet.project* - CODESYS
PLC_PRG
PROGRAM PLC_PRG
VAR
// States
state1 : BOOL := TRUE;
state2 : BOOL := FALSE;
state3 : BOOL := FALSE;
END_VAR
GVL
VAR_GLOBAL
// Input
sensor1: BOOL;
sensor2: BOOL;
// Output
output1: BOOL;
output2: BOOL;
output3: BOOL;
END_VAR
Visualization
GVL.output1
GVL.output2
GVL.output3
GVL.sensor1
GVL.sensor2
SIMULATION

Exercice 2. Using ladder diagrams construct the problem for a GRAFCET shown on Figure 1: Choose inputs and actions freely.

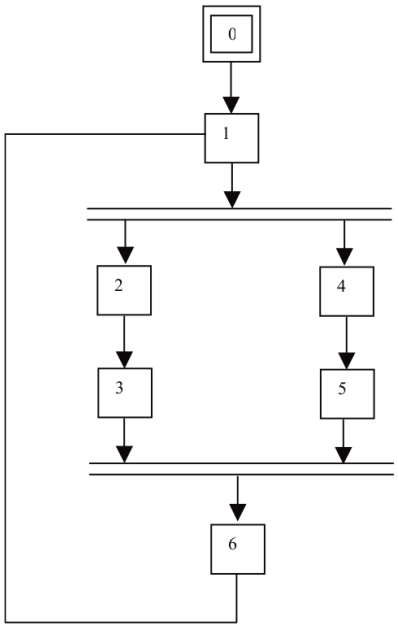
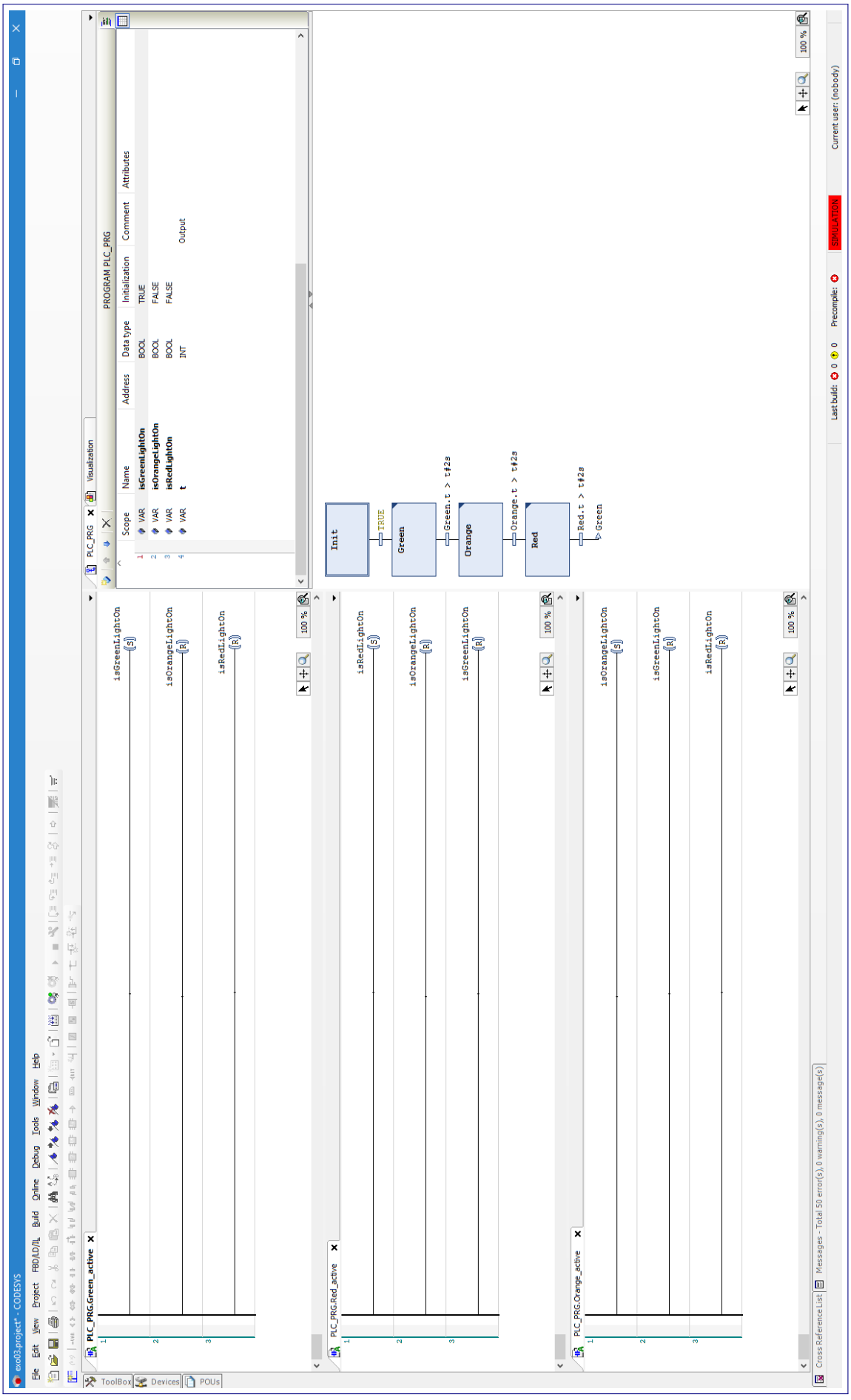


Figure 1: GRAFCET to be made using Ladder diagram.

Réponse :

Exercice 3. Implement a traffic light using GRAFCET (SFC). First build a single traffic light that will switch between green, orange and red automatically using timers. Then add a second one that controls a perpendicular road. They thus can't be green at the same time.

Réponse :


exo03.project* - CODESYS
PLC_PRG
Visualization
PROGRAM PLC_PRG
Scope
Name
Address
Data type
Initialization
Comment
Attributes
VAR isGreenLightOn BOOL TRUE
VAR isOrangeLightOn BOOL FALSE
VAR isRedLightOn BOOL FALSE
VAR t INT Output
Init
TRUE
Green
Green.t > t#2s
Orange
Orange.t > t#2s
Red
Red.t > t#2s
Green
PLC_PRG.Green_active
PLC_PRG.Red_active
PLC_PRG.Orange_active
isGreenLightOn
isOrangeLightOn
isRedLightOn
ToolBox
Devices
POUs
Cross Reference List
Messages - Total 50 error(s), 0 warning(s), 0 message(s)
Current user: (nobody)
SIMULATION