

Lecture 2 – Part 4

Programming PLC

Set - Reset for PLC

Edge Detection for PLC



Set Output or Reset Output Instruction

- "Set Output" instruction set the signal state of a specified operand to "1"
- "Reset Output" instruction reset the signal state of a specified operand to "0"

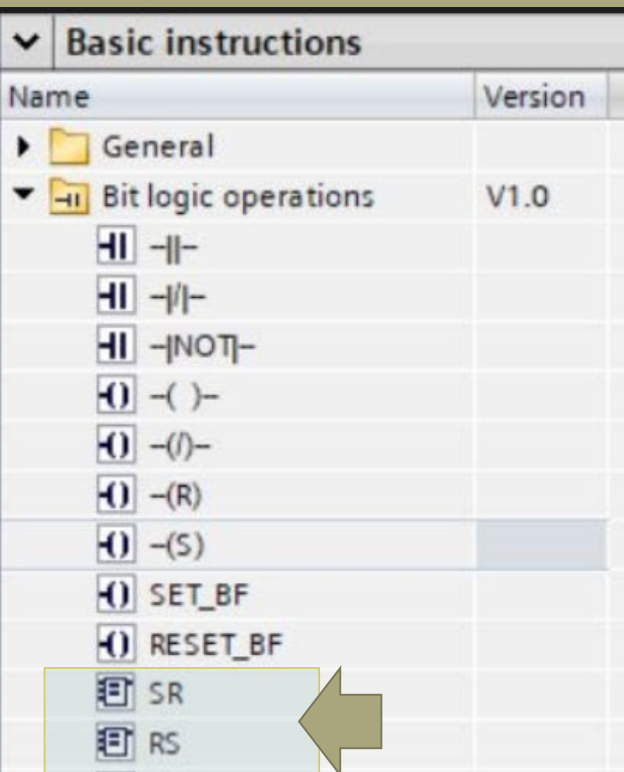


When "SensorA" AND "SensorB" = 1, Set Output of "Tag_1" would be activated, "Tag_1" bit would be set (=1) and remains ON

When "Startb" = 1, Reset Output of "Tag_1" would be activated, "Tag_1" bit would reset (= 0)

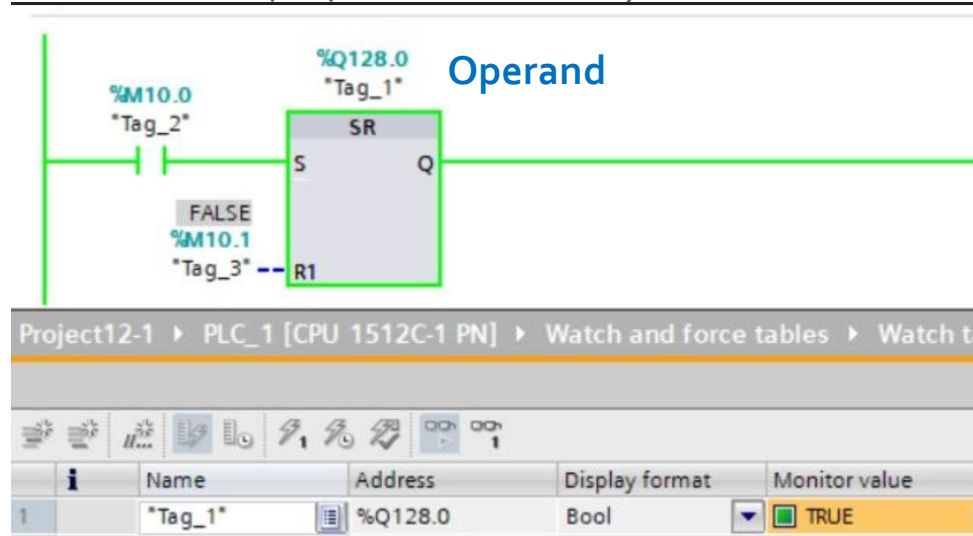


Set-Reset Reset-Set Flip Flops

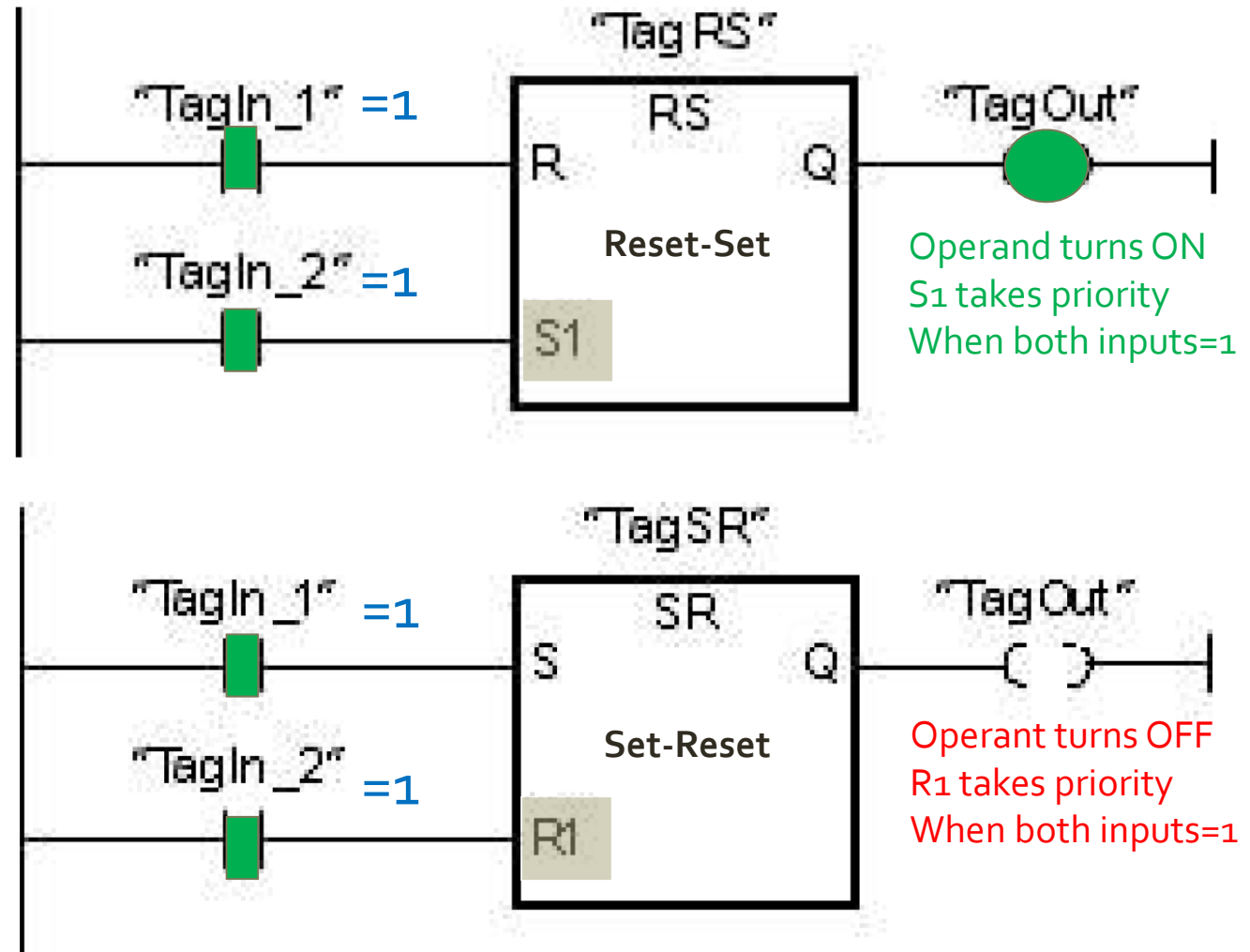


Parameters	Declaration	Data Type	Description
S or S1	Input	BOOL	Enable Setting
R or R1	Input	BOOL	Enable Resetting
<Operand>	InOut	BOOL	Operand that is set or reset.
Q	Output	BOOL	Signal state of the operand

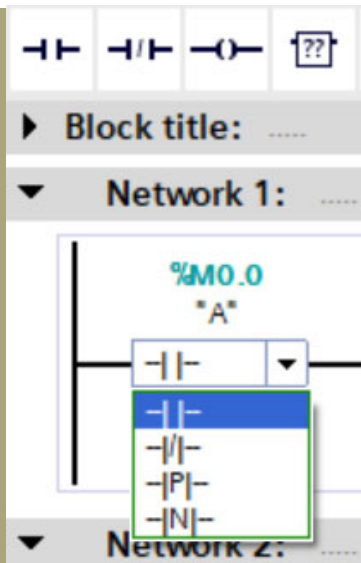
- Set-Reset Flip Flop or Reset-Set Flip Flops are **Functions** that set or reset the specified operand
- Functions (FC) - codes that do not store memory (Do Not Declare instance)
- Note: Function Blocks (FB) stores memory in DB as an instance



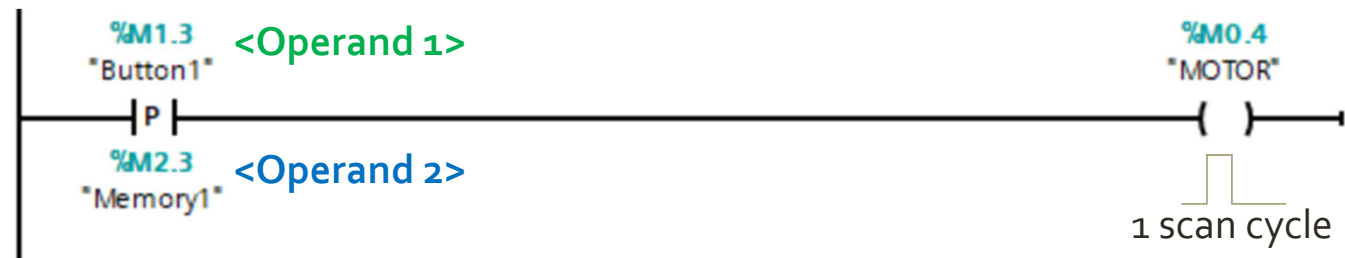
Set-Reset Reset-Set Flip Flops



Rising Edge and Falling Edge Detection



- "Scan operand for positive signal edge" instruction determine if there is a "0" to "1" state of **specified operand (<Operand1>)**
- Compares the current signal state of **<Operand1>** with the signal state of the previous scan, which is saved in an **edge memory bit (<Operand2>)**
- Instruction detects change "0" to "1", positive rising edge detected



Note:

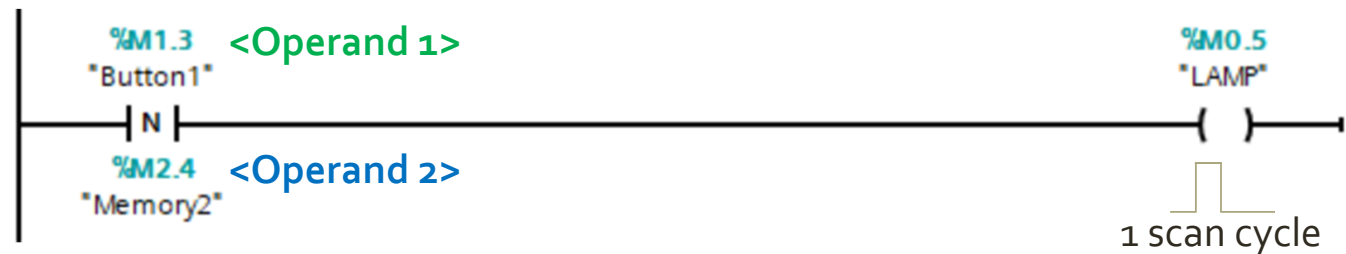
Operand 2 (edge memory bit) shall be defined bit memory as Global Memory %M. Edge memory bit address cannot be used more than once in the program. Edge memory bit influence the edge evaluation.



Rising Edge and Falling Edge Detection



- "Scan operand for negative signal edge" instruction determine if there is a "1" to "0" state of **specified operand (<Operand1>)**
- Compares the current signal state of **<Operand1>** with the signal state of the previous scan, which is saved in an **edge memory bit (<Operand2>)**
- Instruction detects change "1" to "0", negative signal edge detected

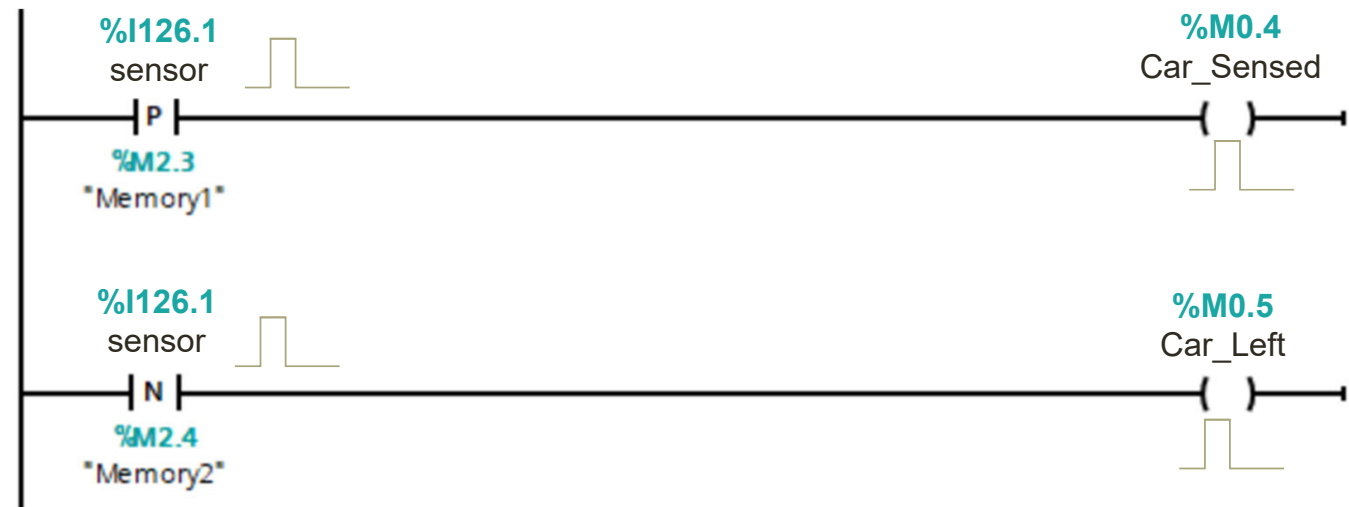


Note:

Operand 2 (edge memory bit) shall be defined bit memory as Global Memory %M
Edge memory bit address cannot be used more than once in the program
Edge memory bit influence the edge evaluation



Rising Edge and Falling Edge Detection



Quiz

Click the **Quiz** button to edit this object

Select the correct statement about the image:

- ☐ When "SensorA" AND "SensorB" = 1, "Tag_1" will set (=1) and remain ON regardless of the state of "SensorA" AND "SensorB" till "Startb" reset (=0) "Tag_1"
- ☐ When "SensorA" AND "SensorB" = 1, "Tag_1" will set (=1) and remain ON. Whenever "SensorA" AND "SensorB" = 0, "Tag_1" will reset (=0) as there is no latching
- ☐ When "SensorA" AND "SensorB" AND "Startb" = 1, "Tag_1" will set (=1) and remain ON. When "Startb" = 0, it will reset (=0) "Tag_1"

