



AUTO DIDACTIC CO., LTD.
บริษัท ออโต้ ไดดัคติก จำกัด

GX Works3





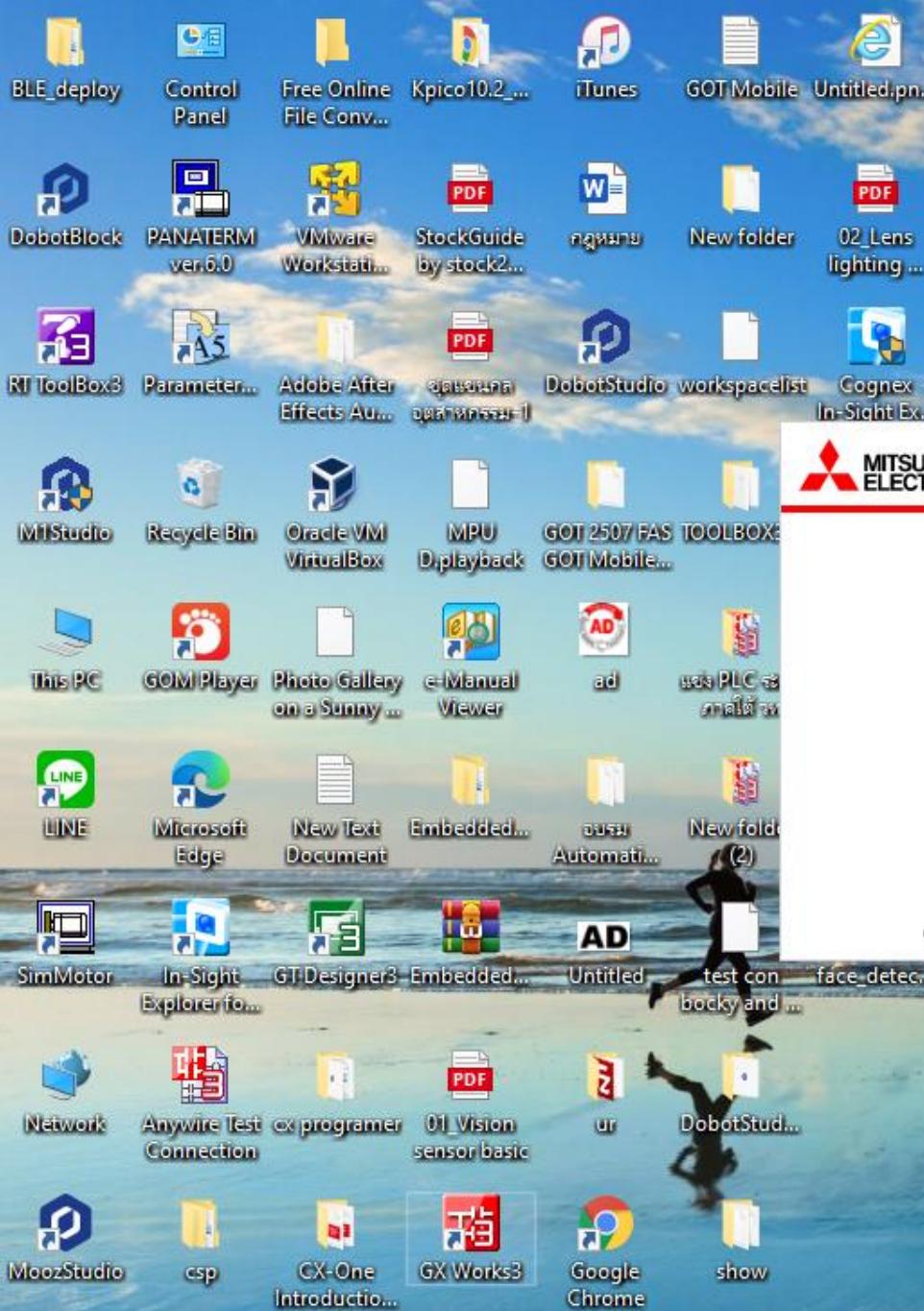
AUTO DIDACTIC CO., LTD.
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GX Works3

GX Works 3 ซอฟต์แวร์วิศวกรรมจาก Mitsubishi Electric เป็นซอฟต์แวร์การเขียนโปรแกรมและ การบำรุงรักษาอุปกรณ์ที่ทำงานแบบนาฬิกาเพื่อใช้เขียนโปรแกรมสำหรับ MELSEC iQ-R และ MELSEC iQ-F series

โดยการติดตั้ง GX Works 3 แบบเต็มจะได้ GX Developer และ GX Works 2 มาให้กับ PLC รุ่นอื่นๆ การใช้งาน GX Works 3 จะช่วยเพิ่มความสามารถในการออกแบบทางวิศวกรรมให้มากขึ้น รองรับ MELSEC iQ-R และ iQ-F โดยการเขียนโปรแกรมมีความมีความหลากหลายกว้างกว่า GX Developer และ GX Works2 และ GX Works3 จะใช้ Ladder ปกติพร้อมกับ Function Block Diagram/Structure Ladder (FBD/LD) ตามมาตรฐาน IEC 61131-3 ได้





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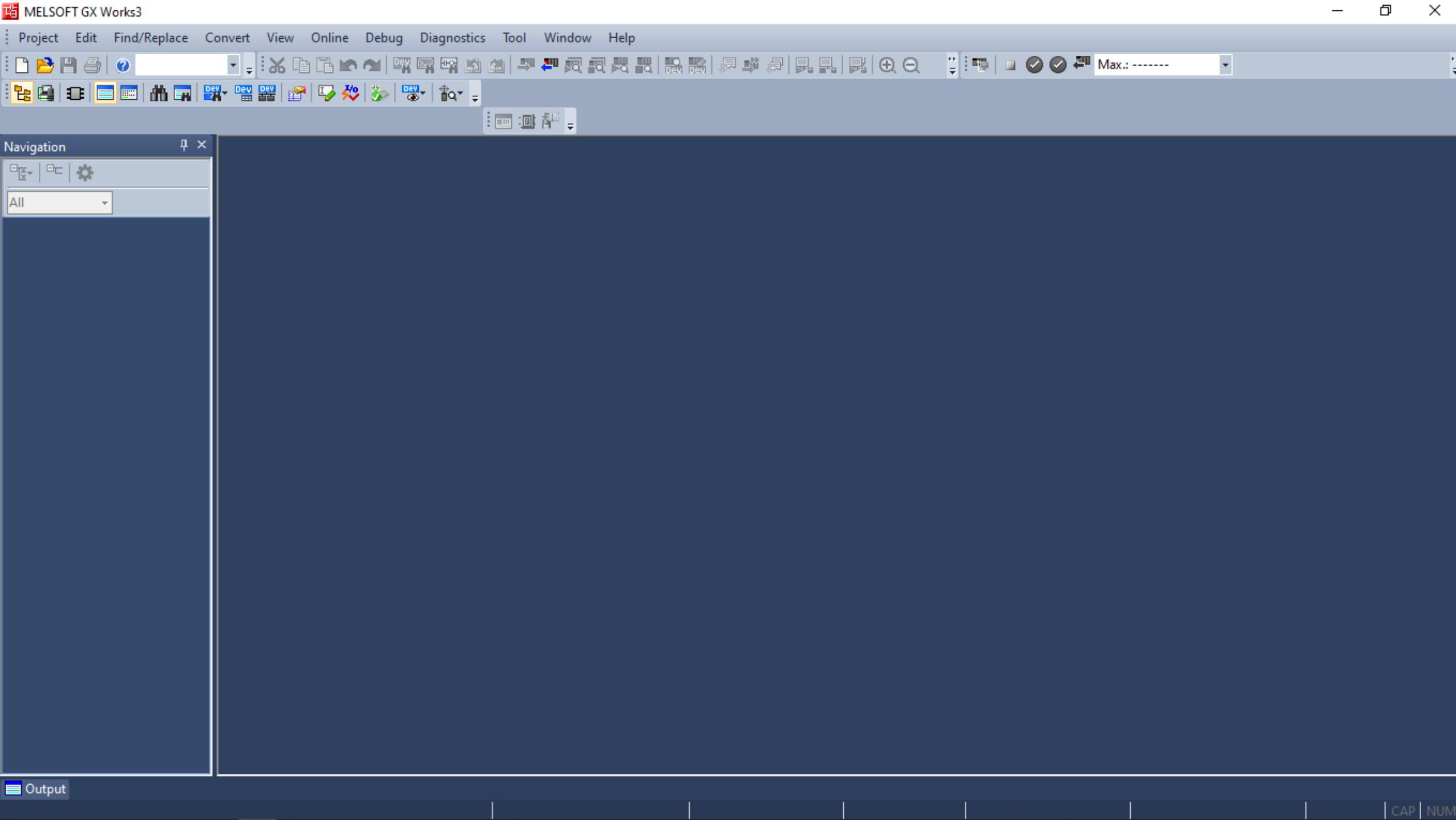
MELSOFT

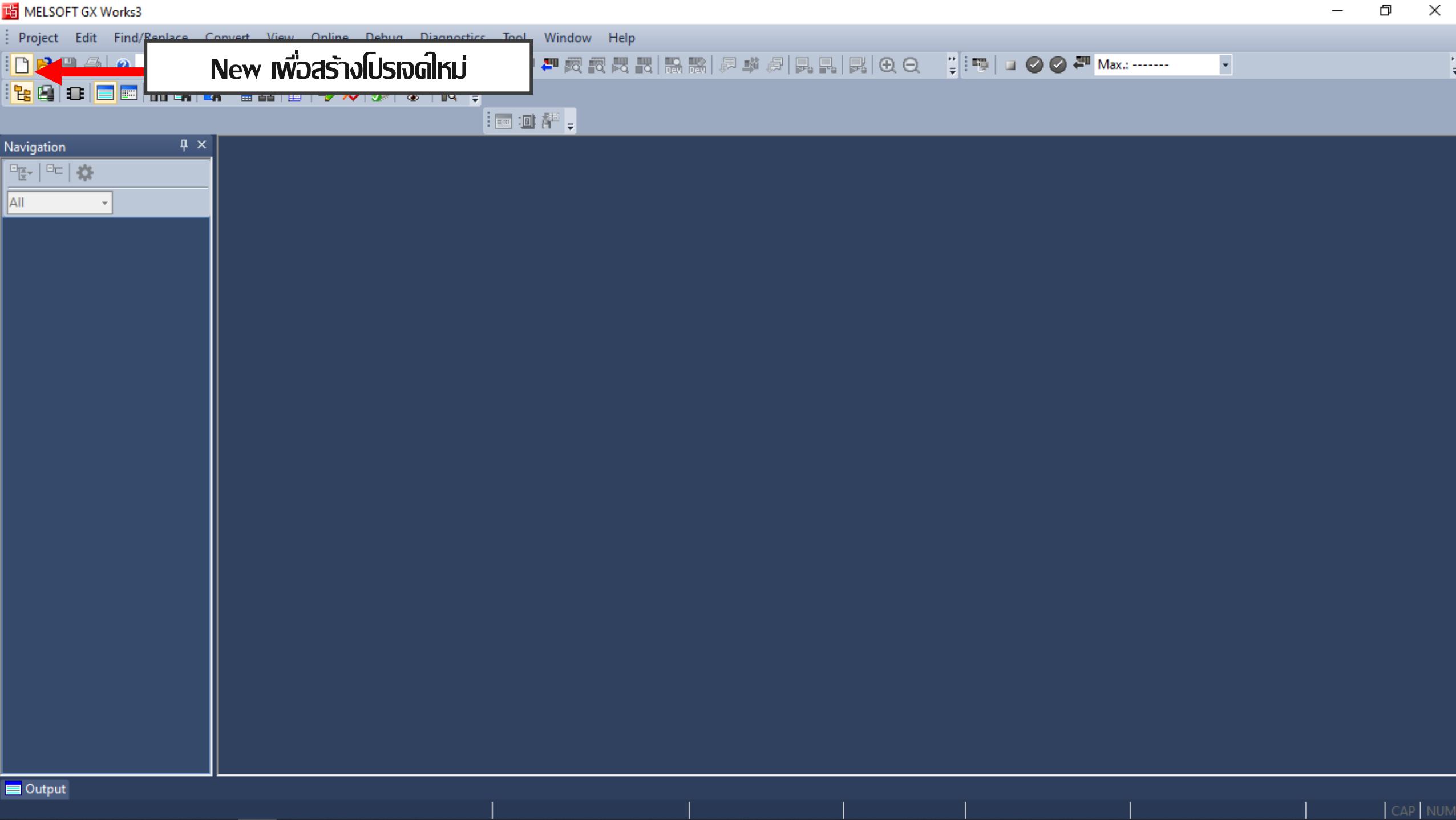
Programmable Controllers Engineering Software

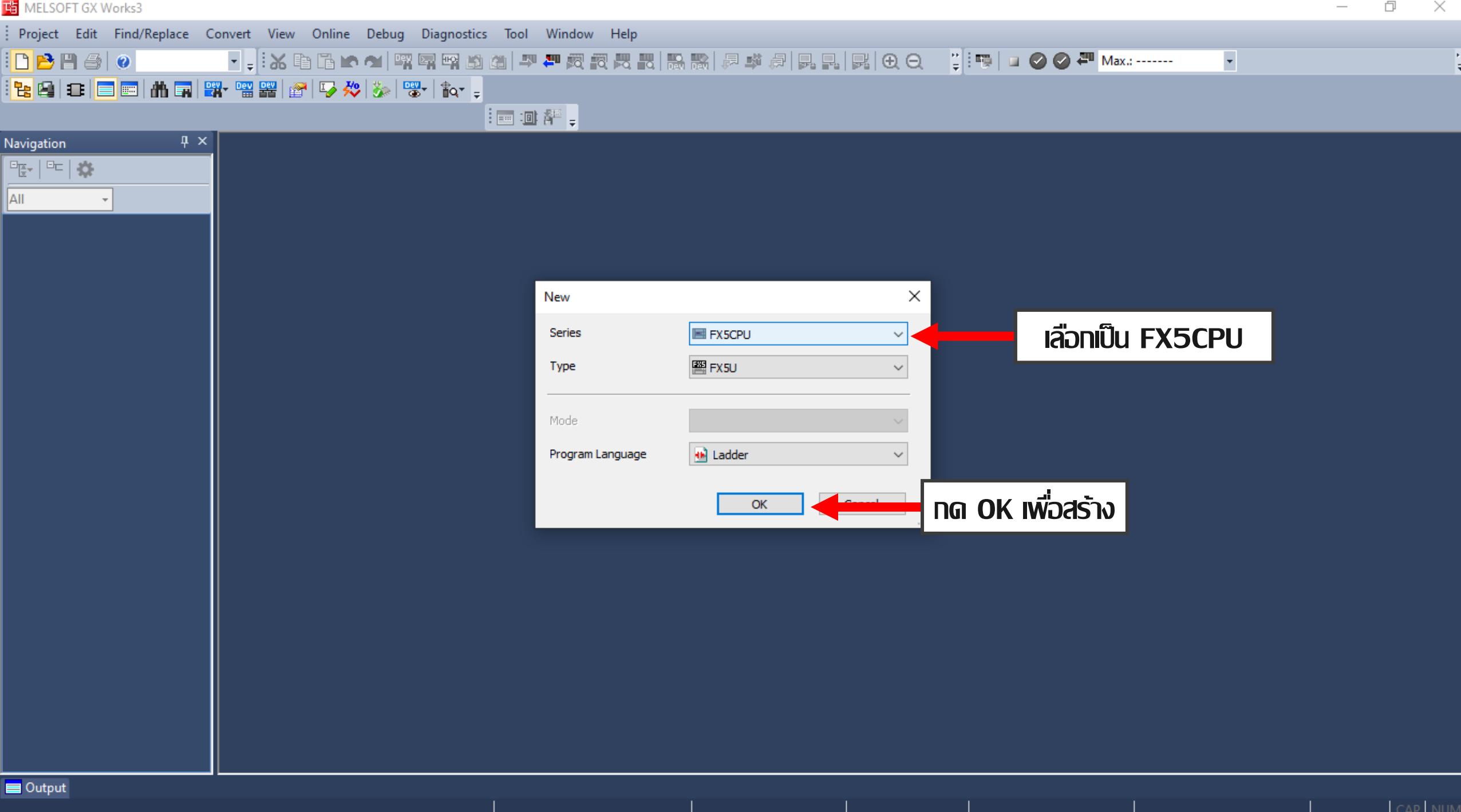
GX Works3

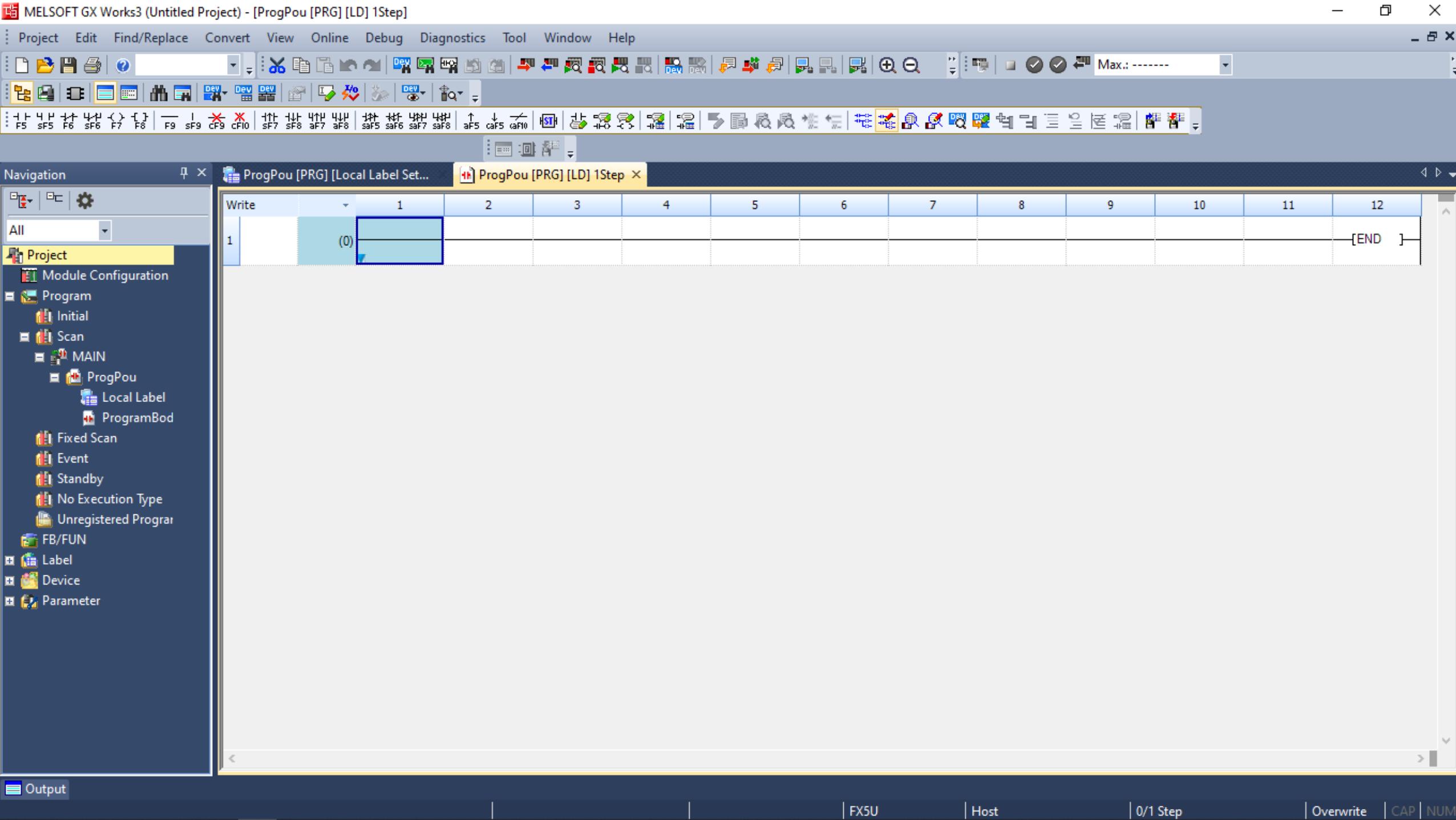
Version 1

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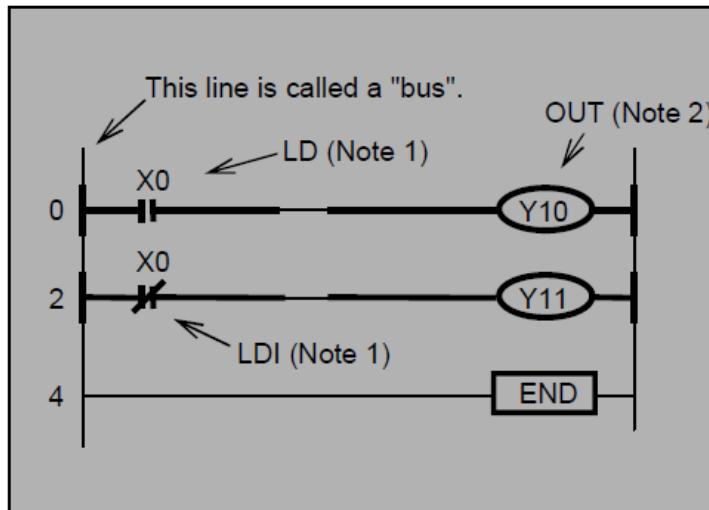
ការសំគាល់បច្ចុប្បន្ន



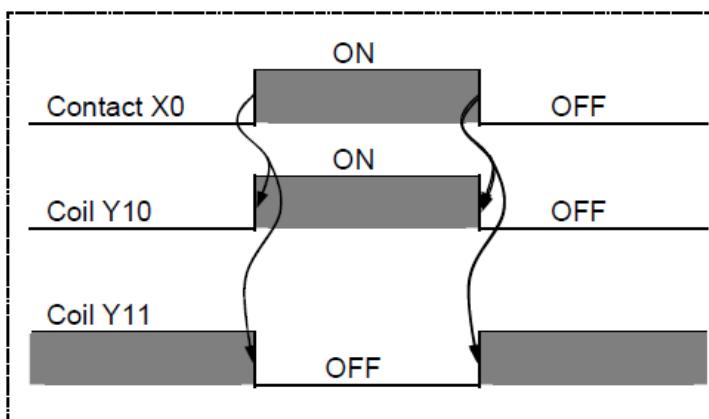


ดำเนิน LD, LDI, OUT, IIa: END

[Example of ladder diagram]



[Timing chart]



[List program]

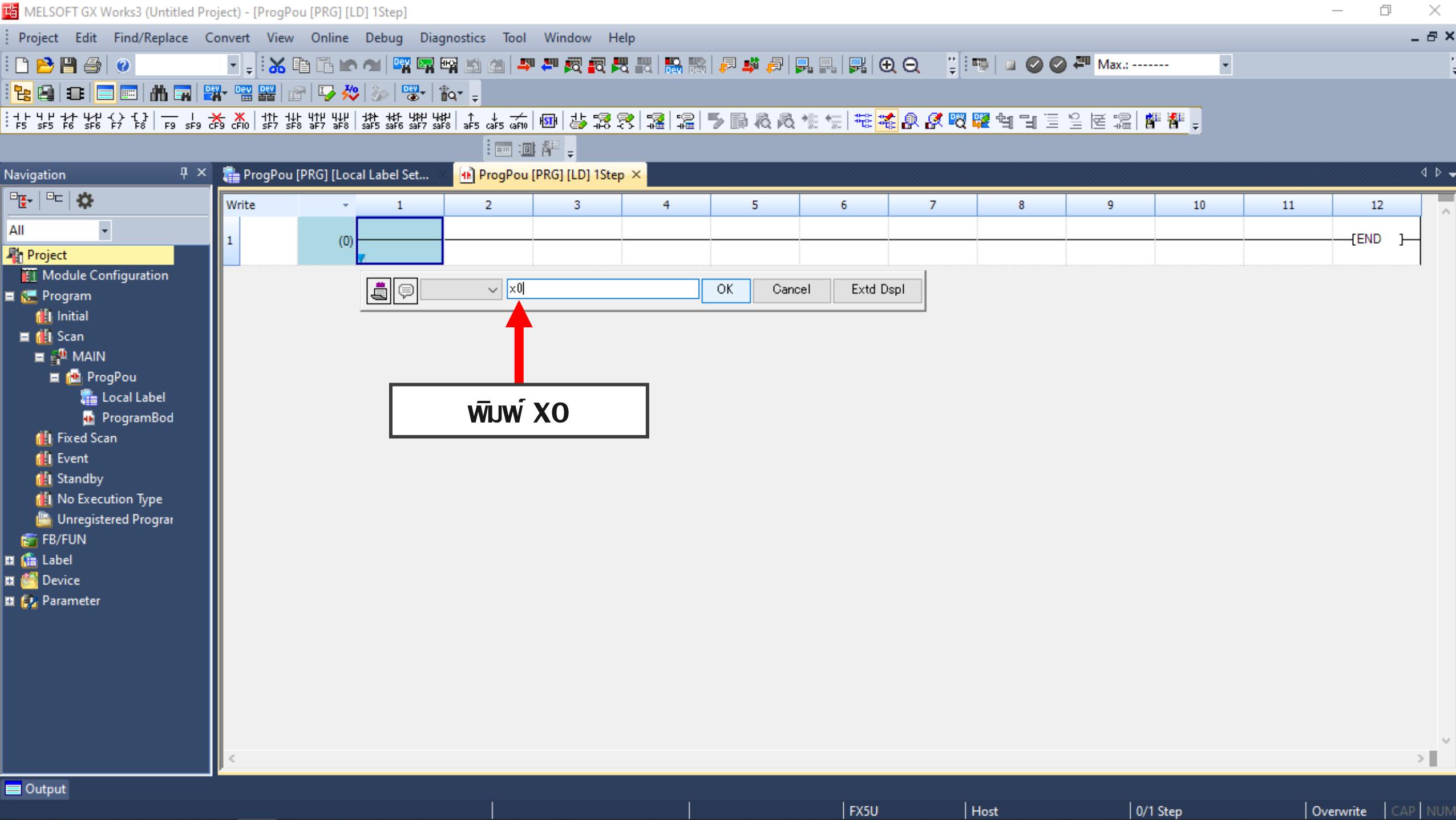
Step	Instruction
0	LD X0
1	OUT Y10
2	LDI X0
3	OUT Y11
4	END

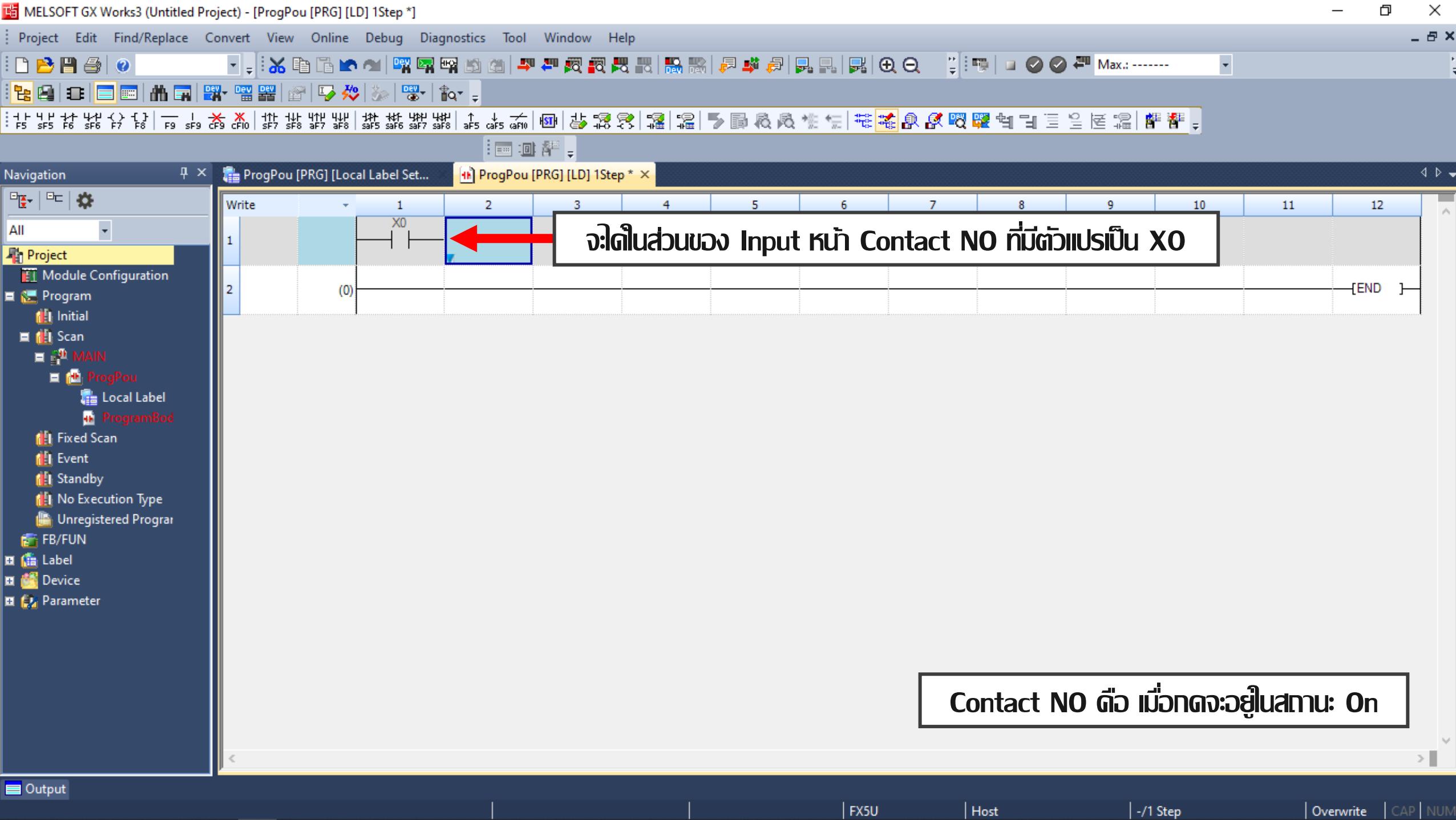
[Step number]

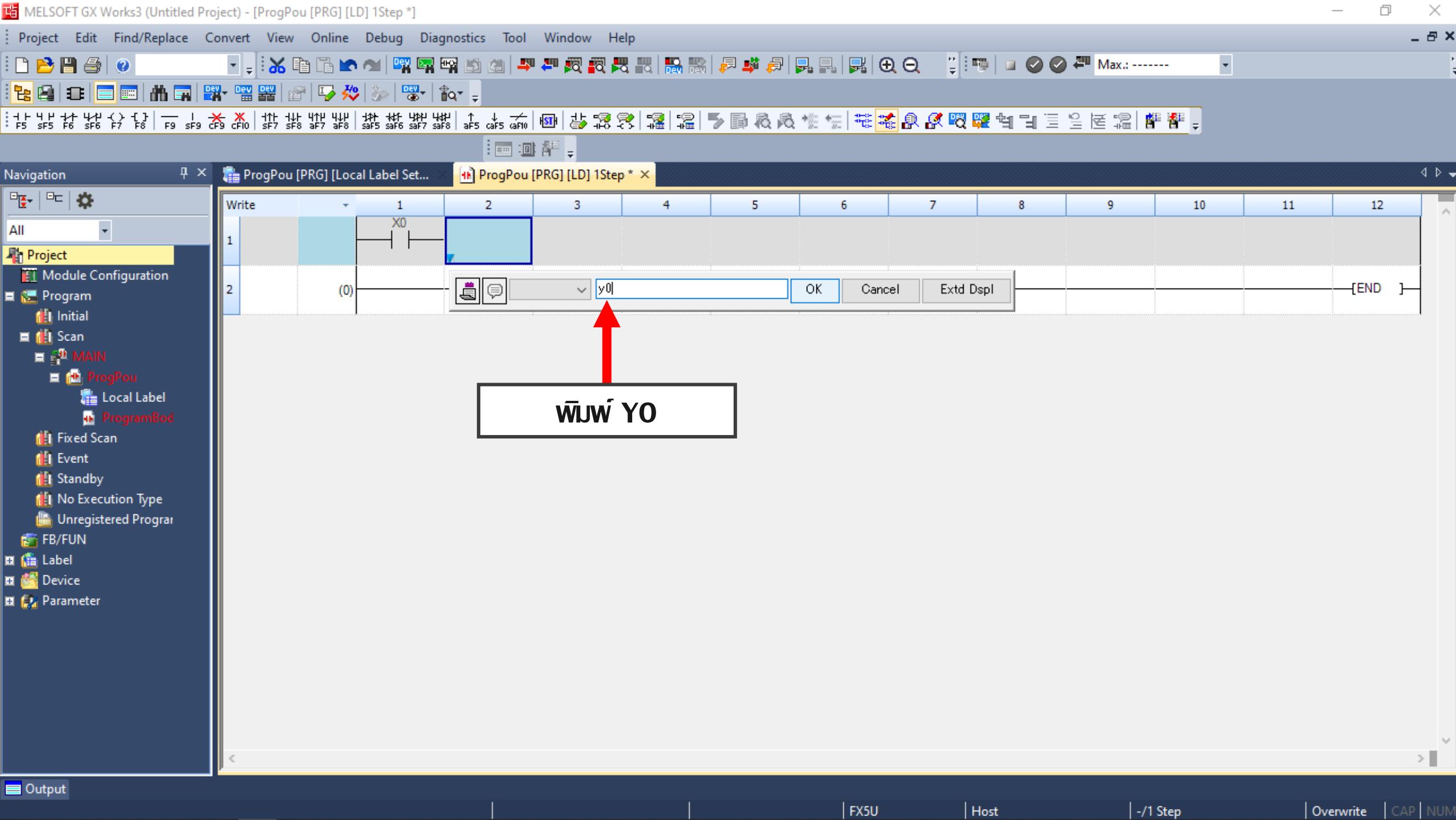
- The step number indicates the order of the program and the program size.
- When the instructions are programmed according to the order of the list program, the programmable controller assigns the step number automatically.

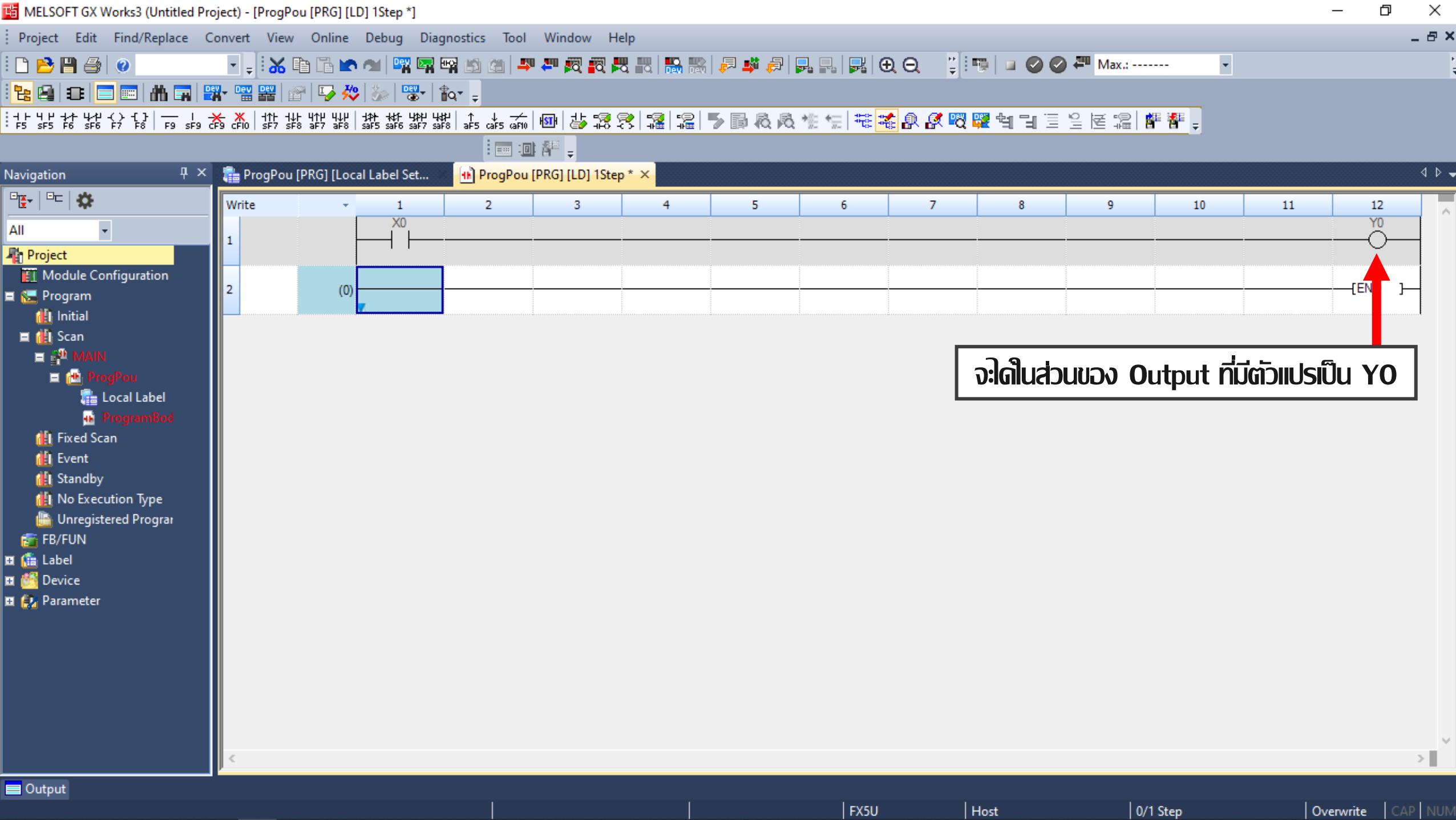
(Note 1) Use LD (Load) as the first normally open contact and LDI (Load inverse) as the first normally closed contact.

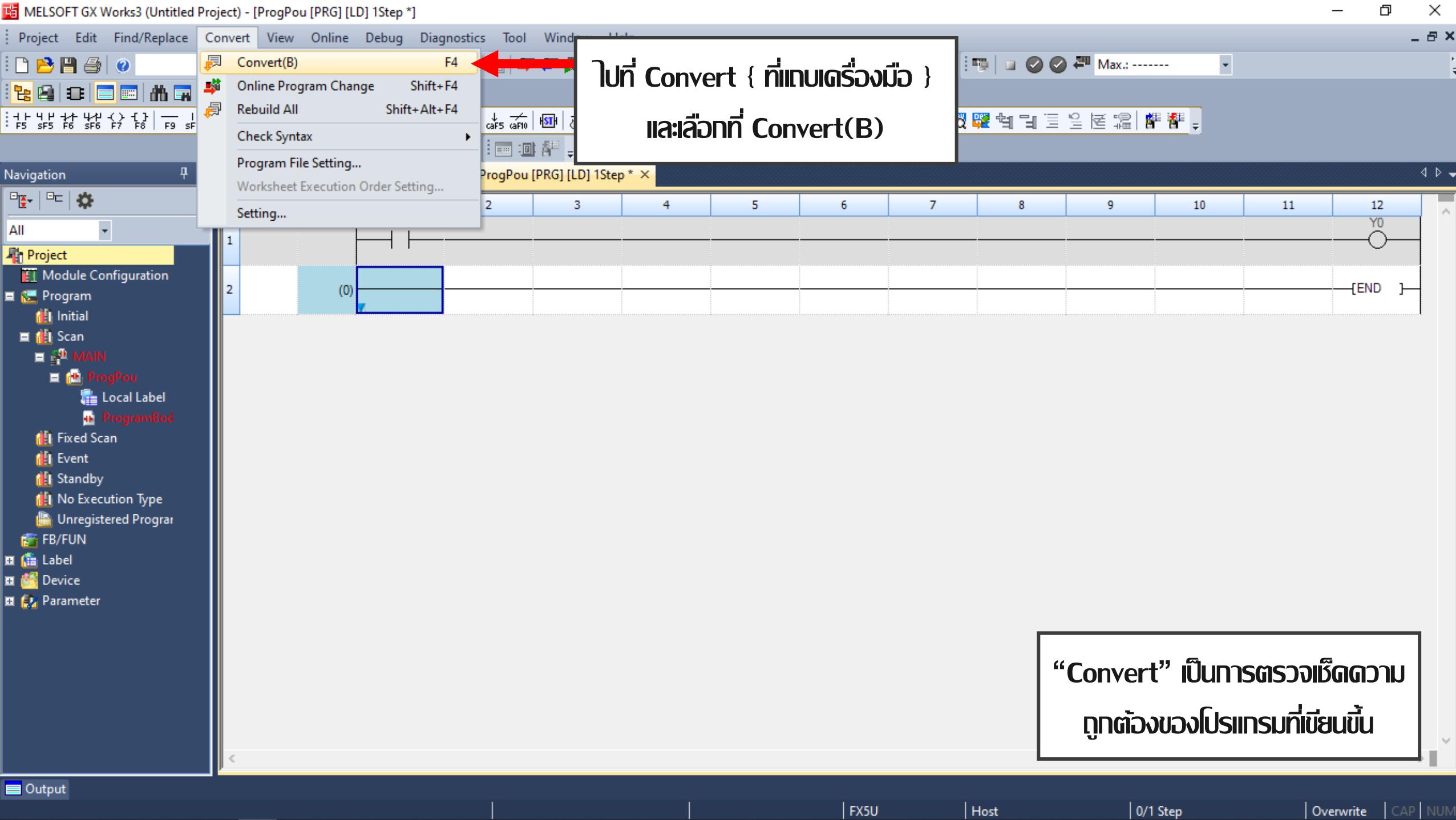
The contact instructions such as LD and LDI are used for devices such as the input relay X, the output relay Y, the timer T, the counter C, and the auxiliary relay M.

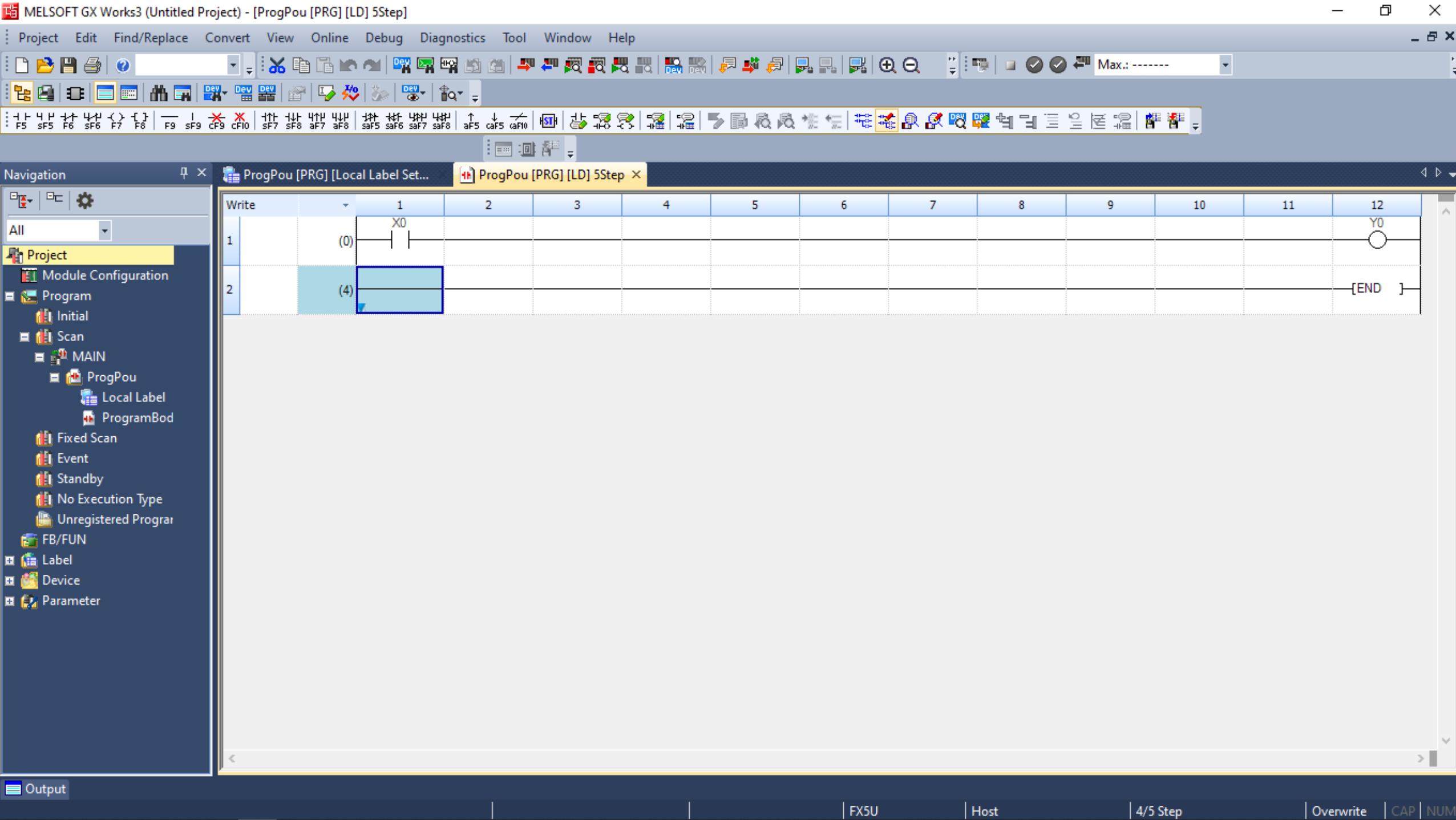


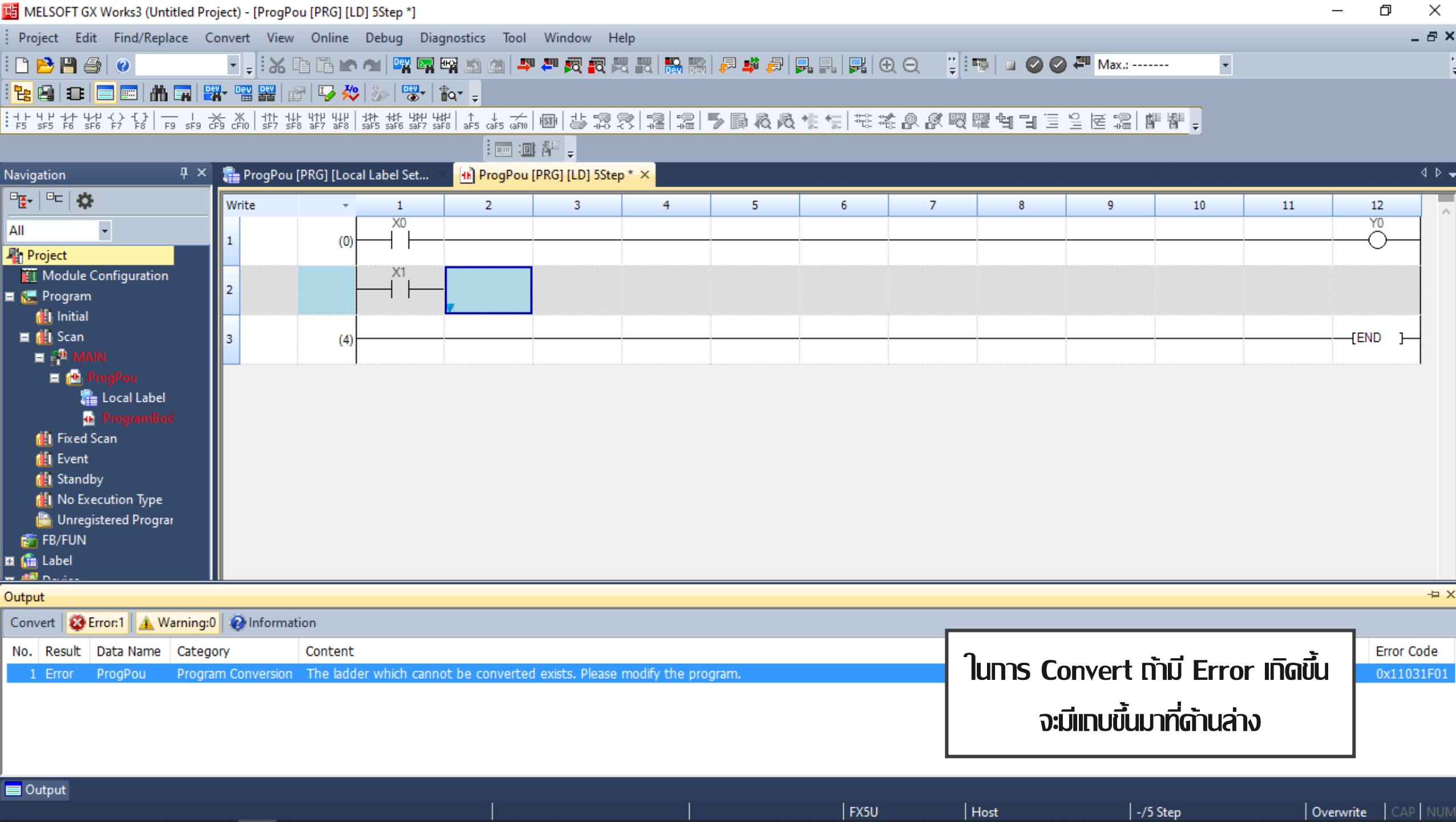


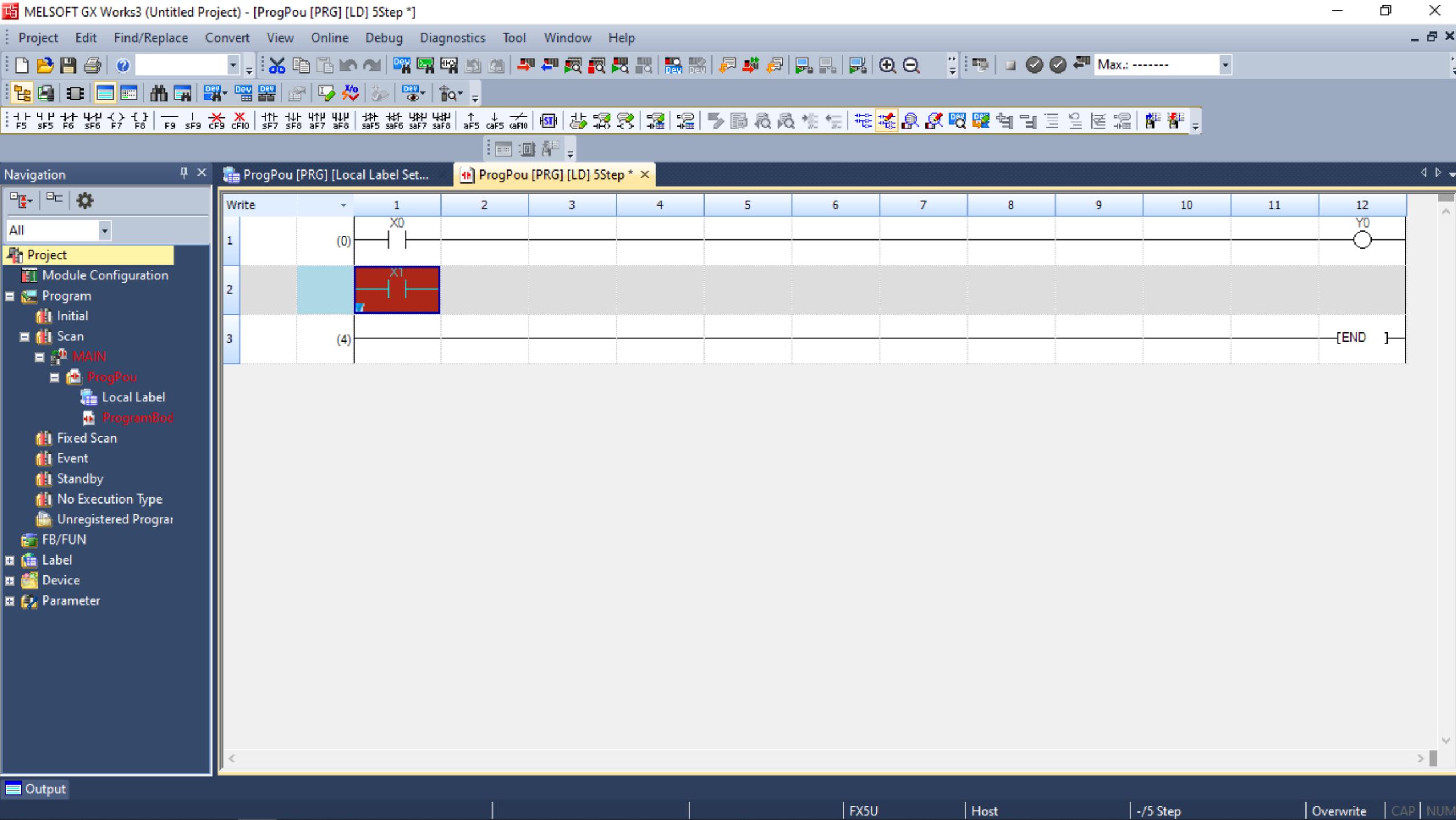


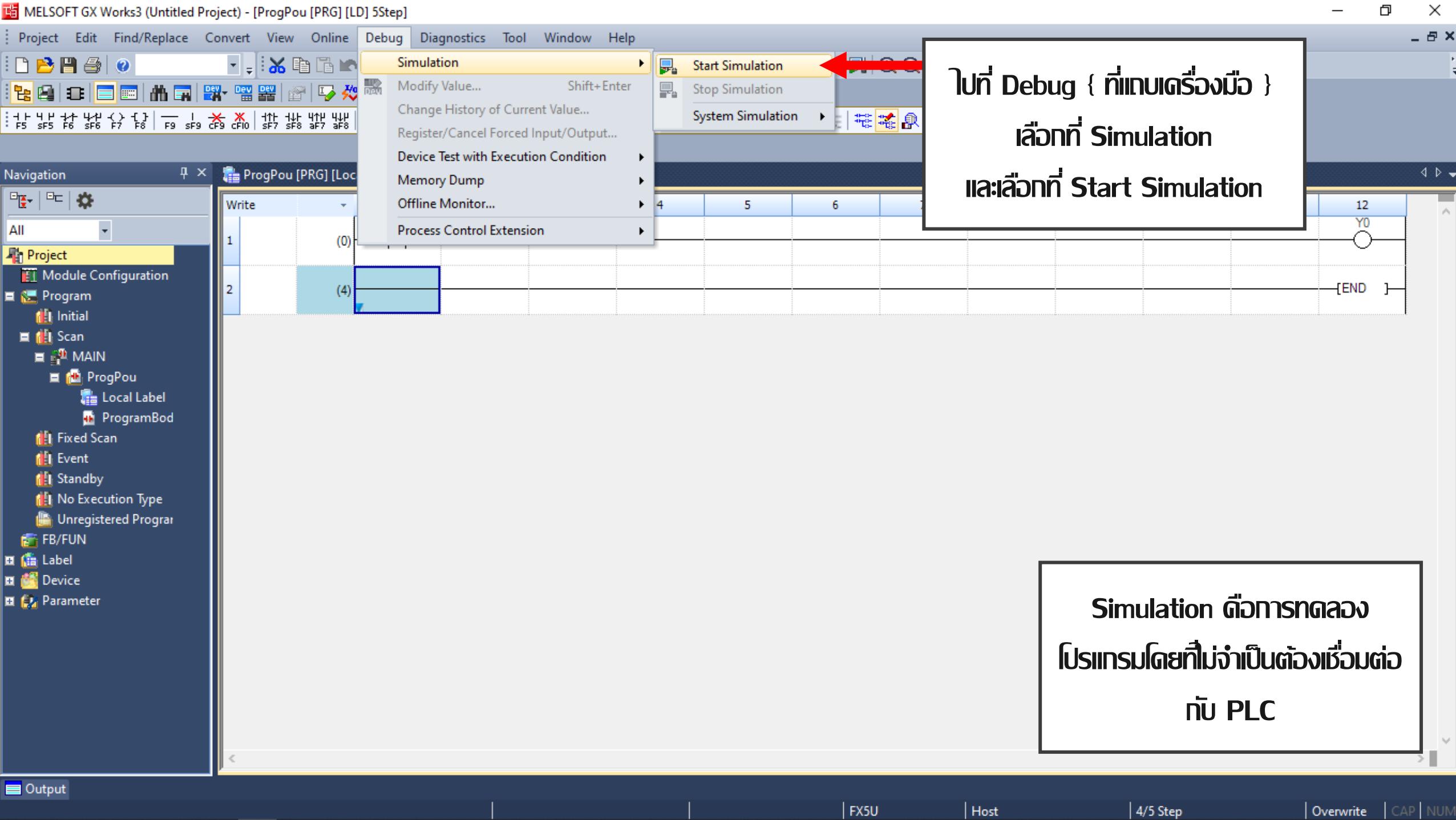












ไปที่ Debug { ที่被执行人ร่วมมือ }

เลือกที่ Simulation

และเลือกที่ Start Simulation

Simulation ด้วยการทดลอง
โปรแกรมโดยที่ไม่จำเป็นต้องเชื่อมต่อ
กับ PLC

Online Data Operation

Display Setting Related Functions

Write Read Verify Delete

Parameter + Program(F) Select All

Open/Close All(T) Deselect All(N)

Module Name/Data Name

Module Name/Data Name	Detail	Title	Last Change	Size (Byte)
Untitled Project				
Parameter				
System Parameter/CPU Parameter			11/4/2564 20:42:40	Not Calculated
Module Parameter			11/4/2564 20:42:37	Not Calculated
Memory Card Parameter			11/4/2564 20:42:37	Not Calculated
Remote Password			11/4/2564 20:42:37	Not Calculated
Global Label				
Global Label Setting			11/4/2564 20:42:41	Not Calculated
Program				
MAIN			11/4/2564 20:45:46	0
Device Memory				
MAIN			11/4/2564 20:42:41	

Display Memory Capacity Check Memory Capacity before Writing

Memory Capacity

Size Calculation

Legend

- Used
- Increased
- Decreased
- Free: 5% or Less

Program Memory: Free 64000/64000Step

Data Memory: Free

SD Memory Card: Free 0/0KB

Execute Close

Max.: -----

GX Simulator3

Tool

1 FX5UCPU

LED

PWR: RUN (Green)

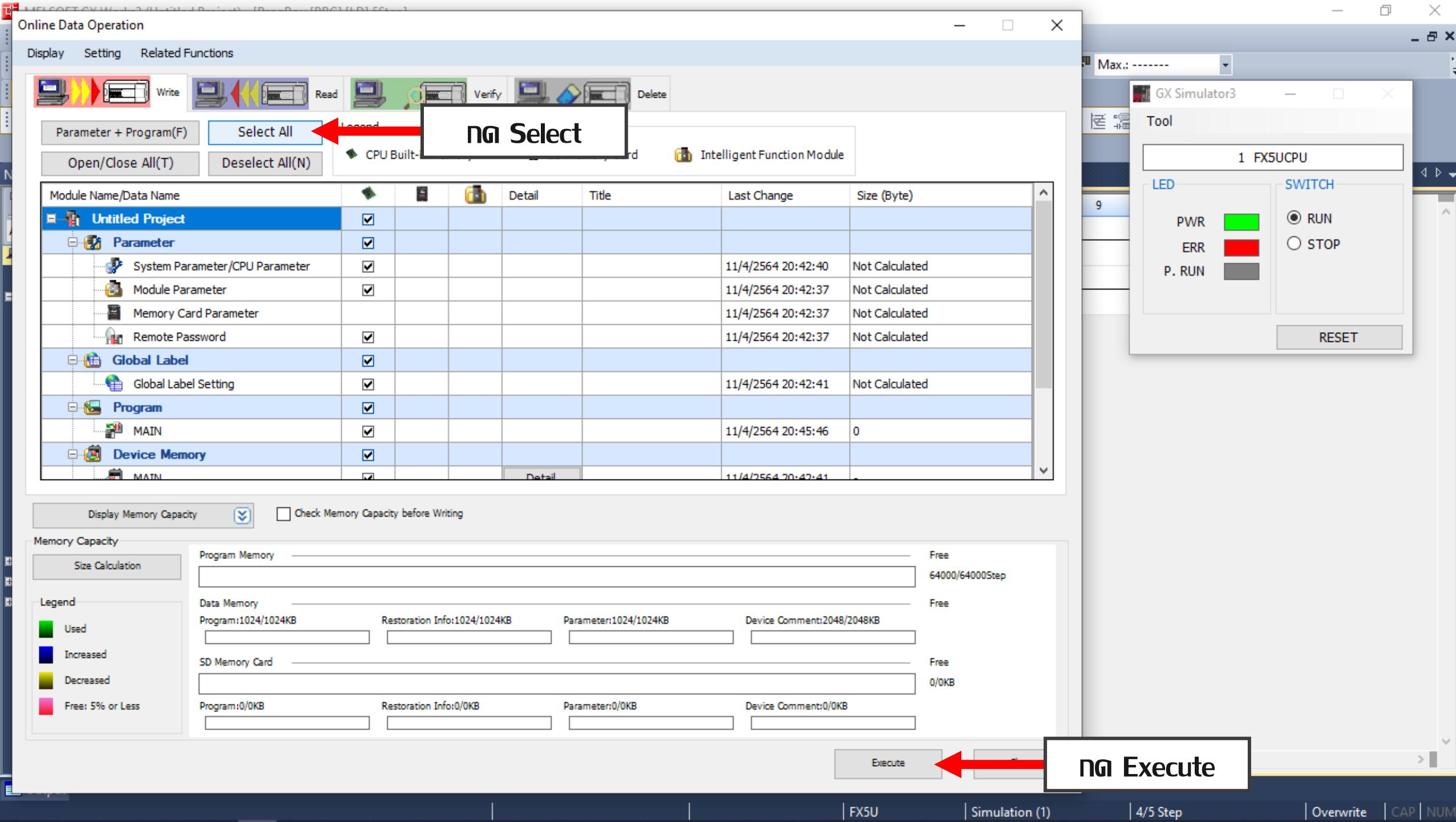
ERR: STOP (Red)

P. RUN: (Grey)

SWITCH

RESET

FX5U Simulation (1) 4/5 Step Overwrite CAP NUM



Online Data Operation

Display Setting Related Functions

Write Read Verify Delete

Parameter + Program(F) Select All

Open/Close All(T) Deselect All(N)

Module Name/Data Name

Untitled Project

- Parameter
 - System Parameter/CPU Parameter
 - Module Parameter
 - Memory Card Parameter
 - Remote Password
- Global Label
 - Global Label Setting
- Program
 - MAIN
- Device Memory
 - MAIN

Legend

Write to PLC

Intelligent Function Module

Last Change Size (Byte)

11/4/2564 20:42:40	Not Calculated
11/4/2564 20:42:37	Not Calculated
11/4/2564 20:42:37	Not Calculated
11/4/2564 20:42:37	Not Calculated
11/4/2564 20:42:41	Not Calculated
11/4/2564 20:45:46	0
11/4/2564 20:42:41	

Program File(MAIN); Writing

System Parameter: Writing Completed CPU Parameter: Writing Completed Remote Password: Writing Completed Module Parameter: Writing Completed Global Label Setting File: Writing Completed

The window is automatically closed when the operation is completed successfully.

Display Memory Capacity Check Memory Capacity

Memory Capacity

Size Calculation

Program Memory _____

Data Memory _____

Program:1024/1024KB

SD Memory Card _____

Program:0/0KB Restoration Info:0/0KB Parameter:0/0KB Device Comment:0/0KB

Free 64000/64000Step

Free

Device Comment:2048/2048KB

Free 0/0KB

Cancel

Execute Close

Max.: -----

GX Simulator3

Tool

1 FX5UCPU

LED

PWR

ERR

P. RUN

SWITCH

RESET

FX5U Simulation (1) 4/5 Step Overwrite CAP NUM

Online Data Operation

Display Setting Related Functions

Write Read Verify Delete

Parameter + Program(F) Select All

Open/Close All(T) Deselect All(N)

Legend: CPU Built-inMemory SD Memory Card Intelligent Function Module

Module Name/Data Name	Detail	Title	Last Change	Size (Byte)
Untitled Project				
Parameter				
System Parameter/CPU Parameter			11/4/2564 20:42:40	Not Calculated
Module Parameter			11/4/2564 20:42:37	Not Calculated
Memory Card Parameter			11/4/2564 20:42:37	Not Calculated
Remote Password			11/4/2564 20:42:37	Not Calculated
Global Label				
Global Label Setting			11/4/2564 20:42:41	Not Calculated
Program				
MAIN			11/4/2564 20:45:46	0
Device Memory				
MAIN			11/4/2564 20:42:41	

Display Memory Capacity Check Memory Capacity before Writing

Memory Capacity

Size Calculation

Program Memory: Free 64000/64000Step

Data Memory: Free
Program:1024/1024KB Restoration Info:1024/1024KB Parameter:1024/1024KB Device Comment:2048/2048KB

SD Memory Card: Free 0/0KB
Program:0/0KB Restoration Info:0/0KB Parameter:0/0KB Device Comment:0/0KB

Legend: Used (Green), Increased (Dark Blue), Decreased (Yellow), Free: 5% or Less (Red)

Execute Close

Max.: -----

GX Simulator3

Tool

1 FX5UCPU

LED

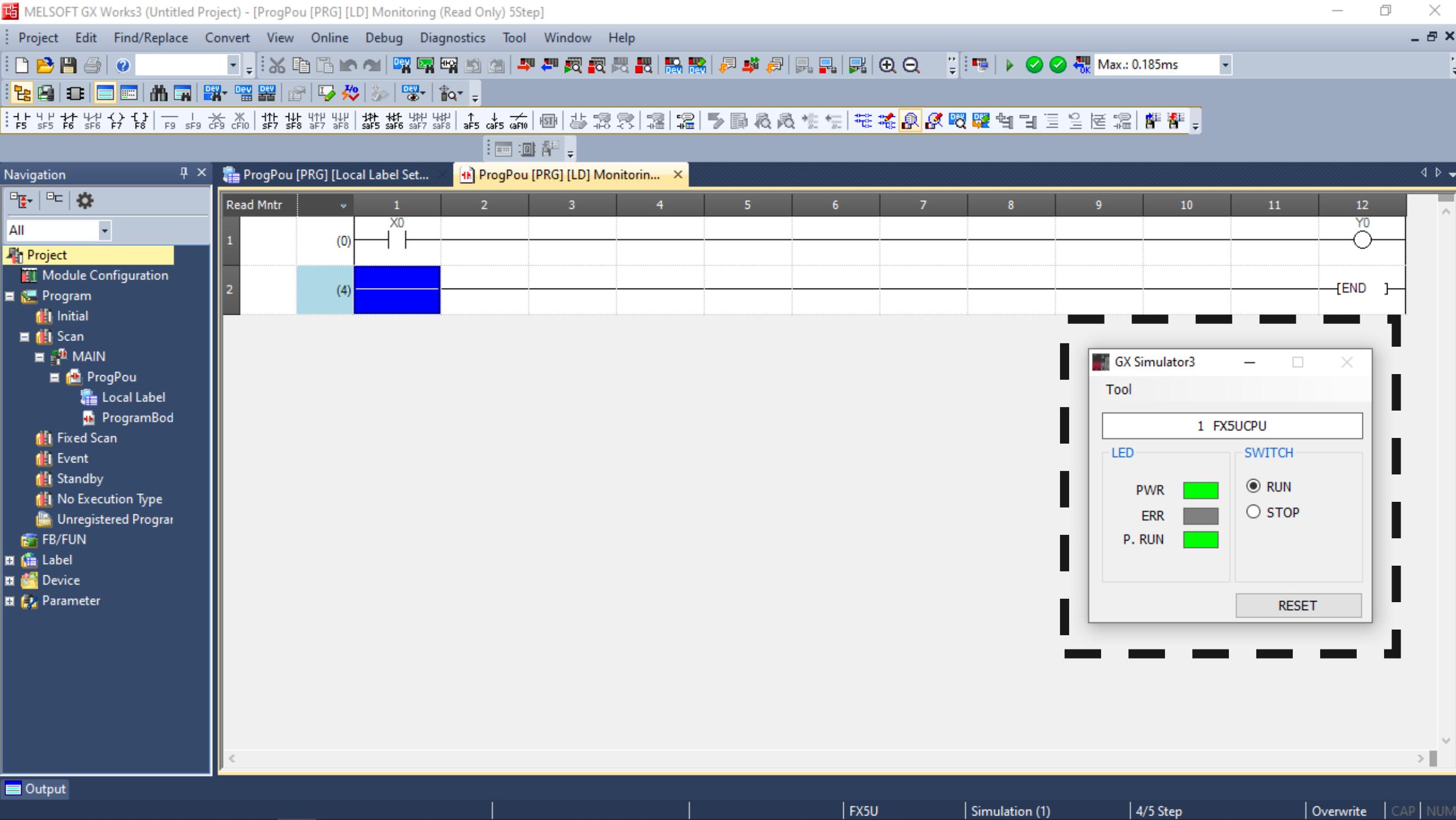
PWR: RUN STOP

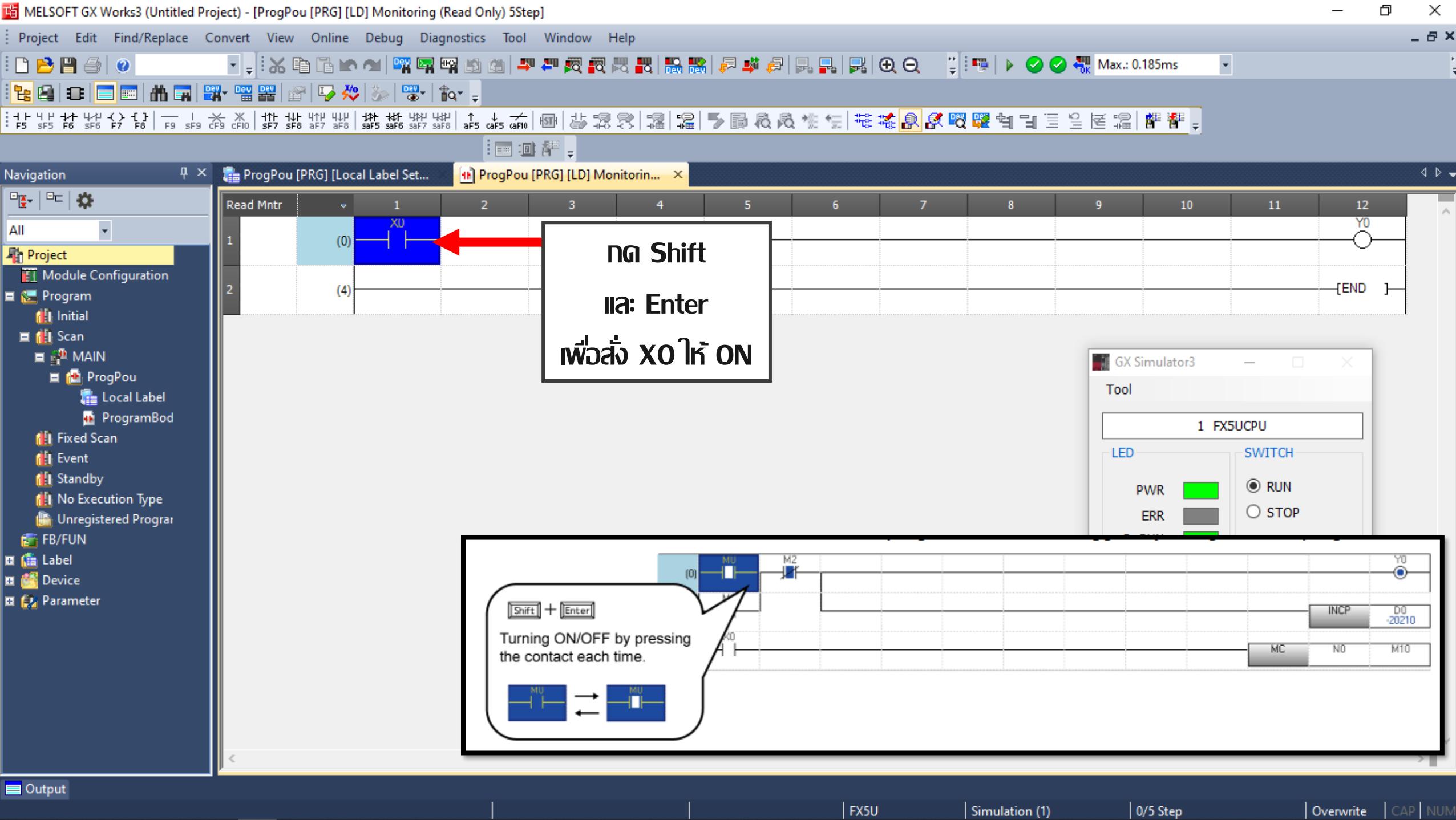
ERR:

P. RUN:

SWITCH

RESET







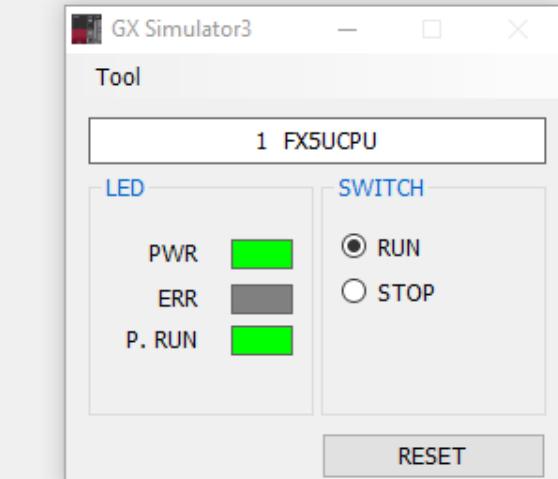
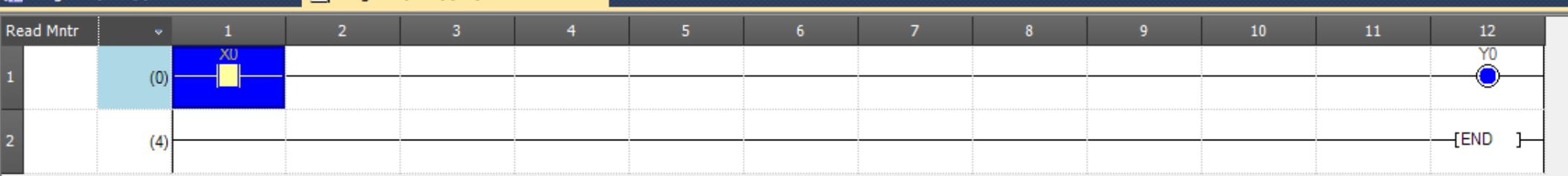
Navigation

Project

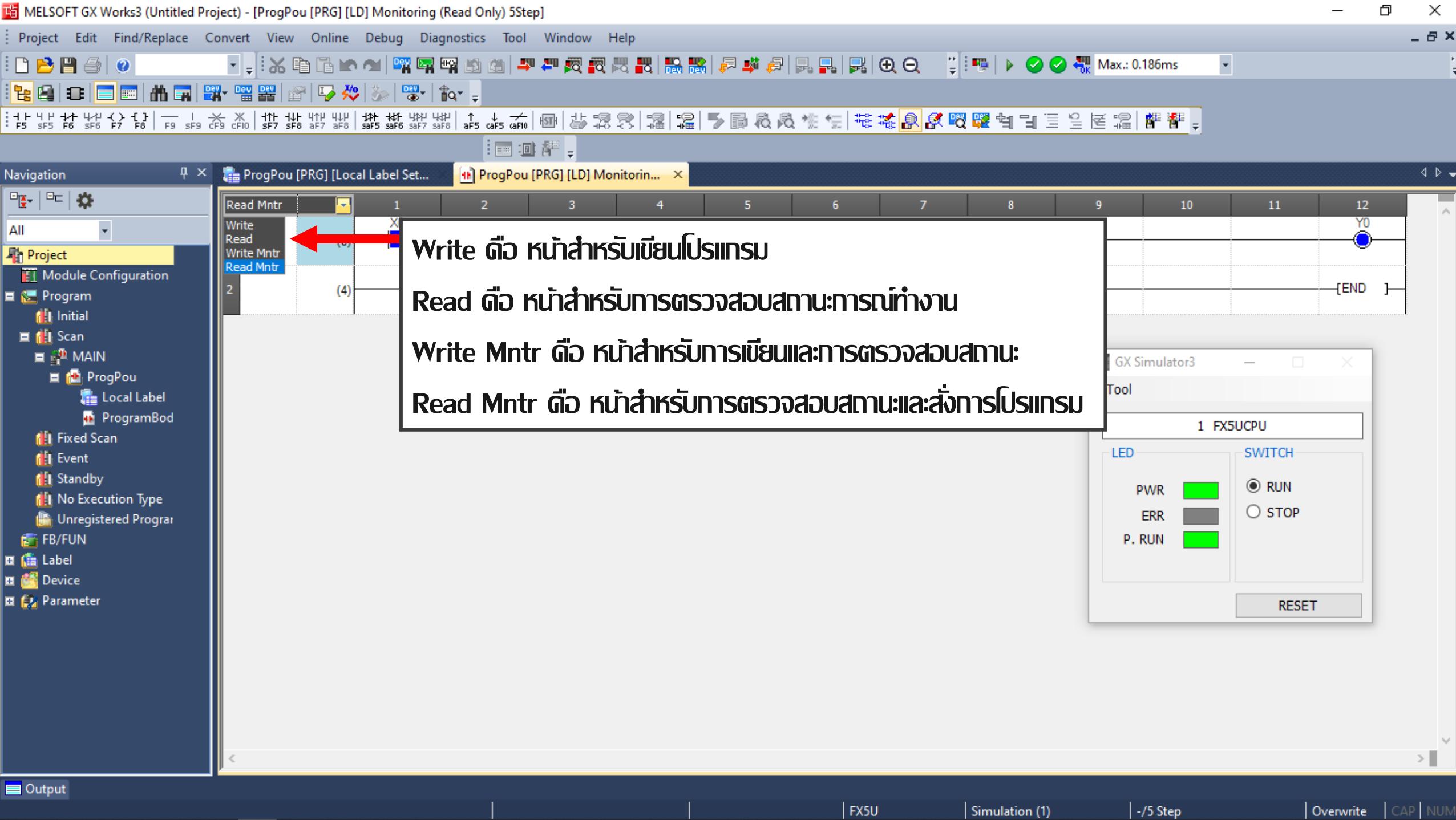
- All
- Project
- Module Configuration
- Program
- Initial
- Scan
 - MAIN
 - ProgPou
 - Local Label
 - ProgramBod
 - Fixed Scan
 - Event
 - Standby
 - No Execution Type
 - Unregistered Program
- FB/FUN
- Label
- Device
- Parameter

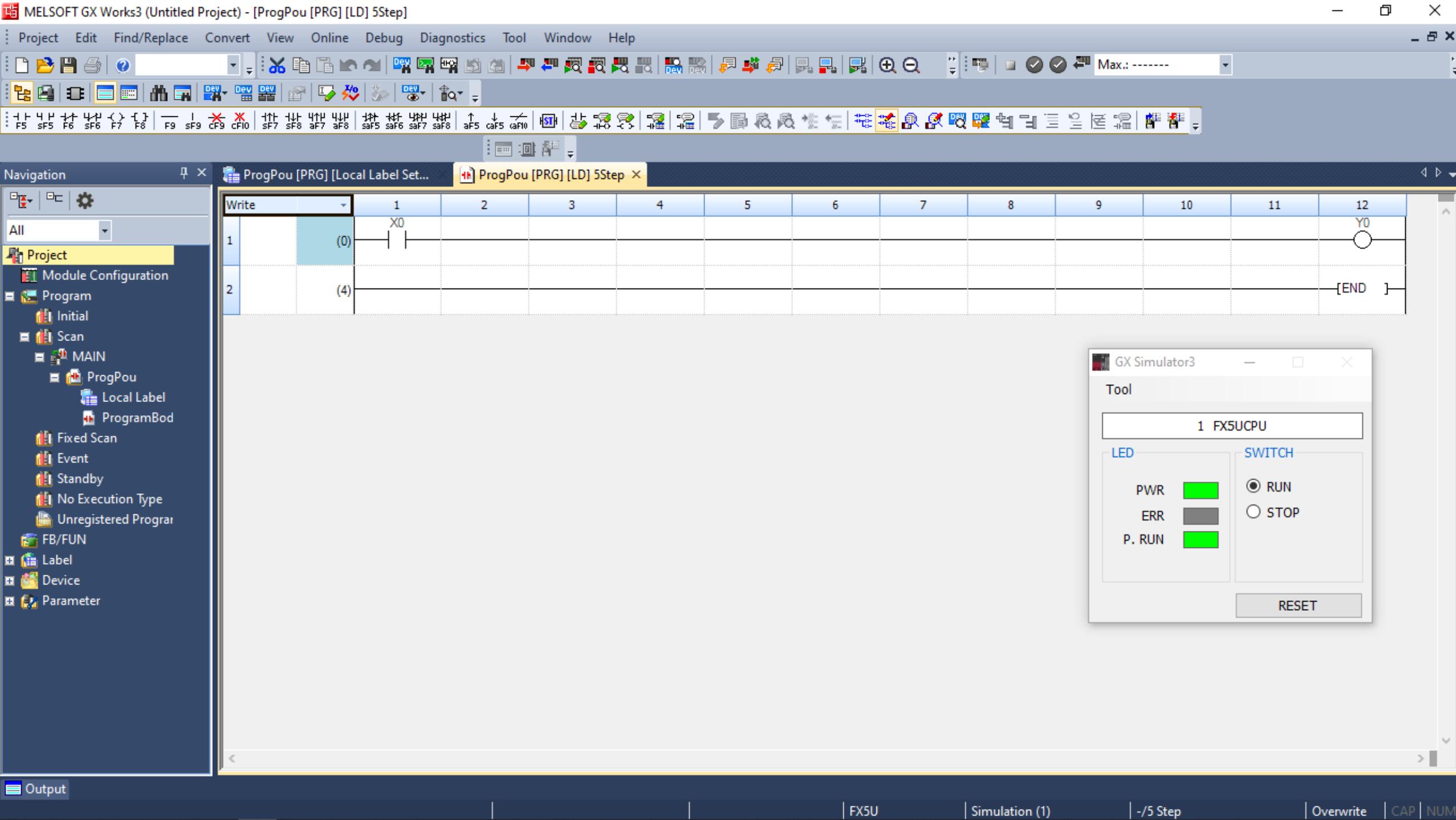
ProgPou [PRG] [Local Label Set...]

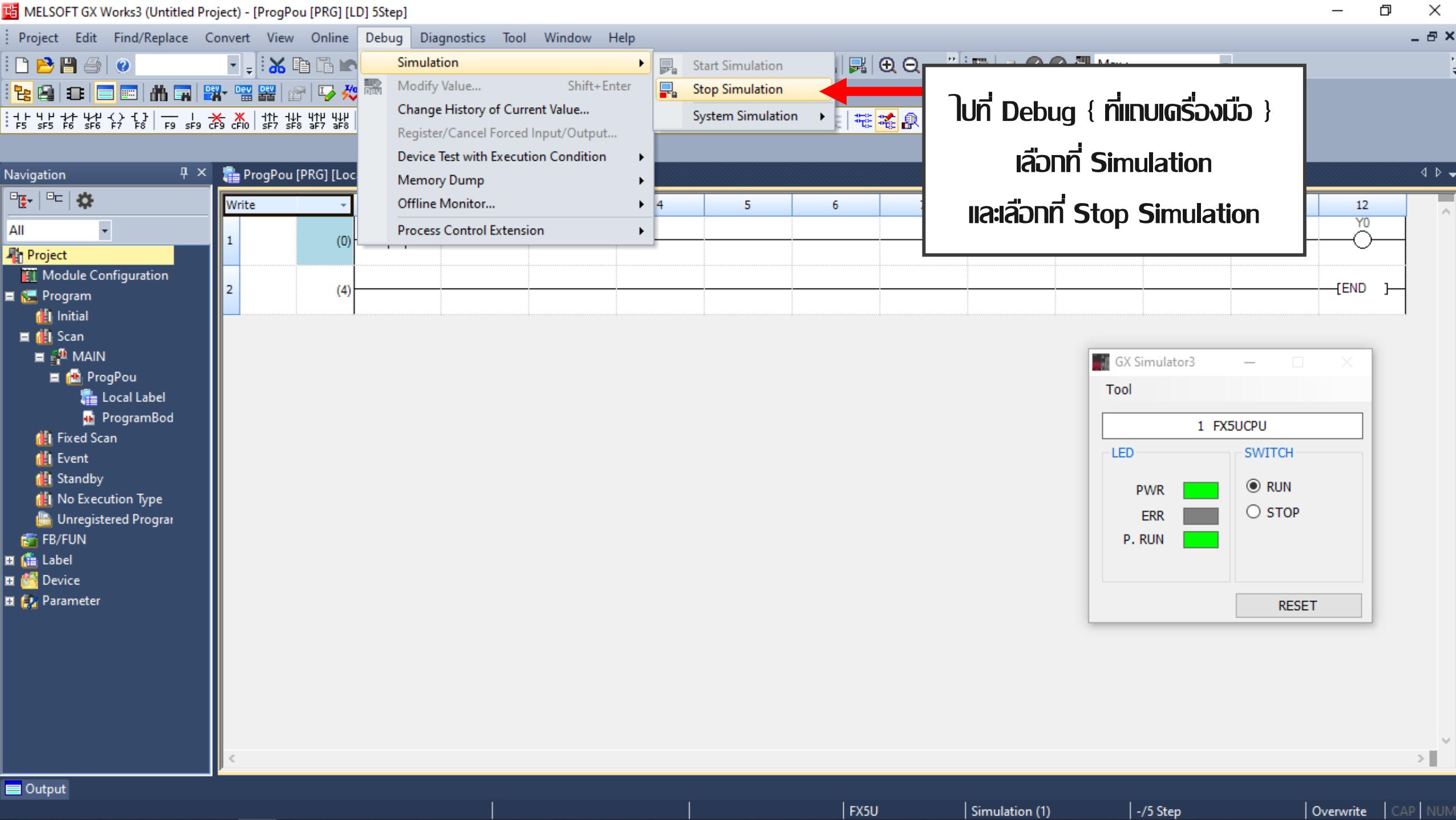
ProgPou [PRG] [LD] Monitoring (Read Only) 5Step



Output



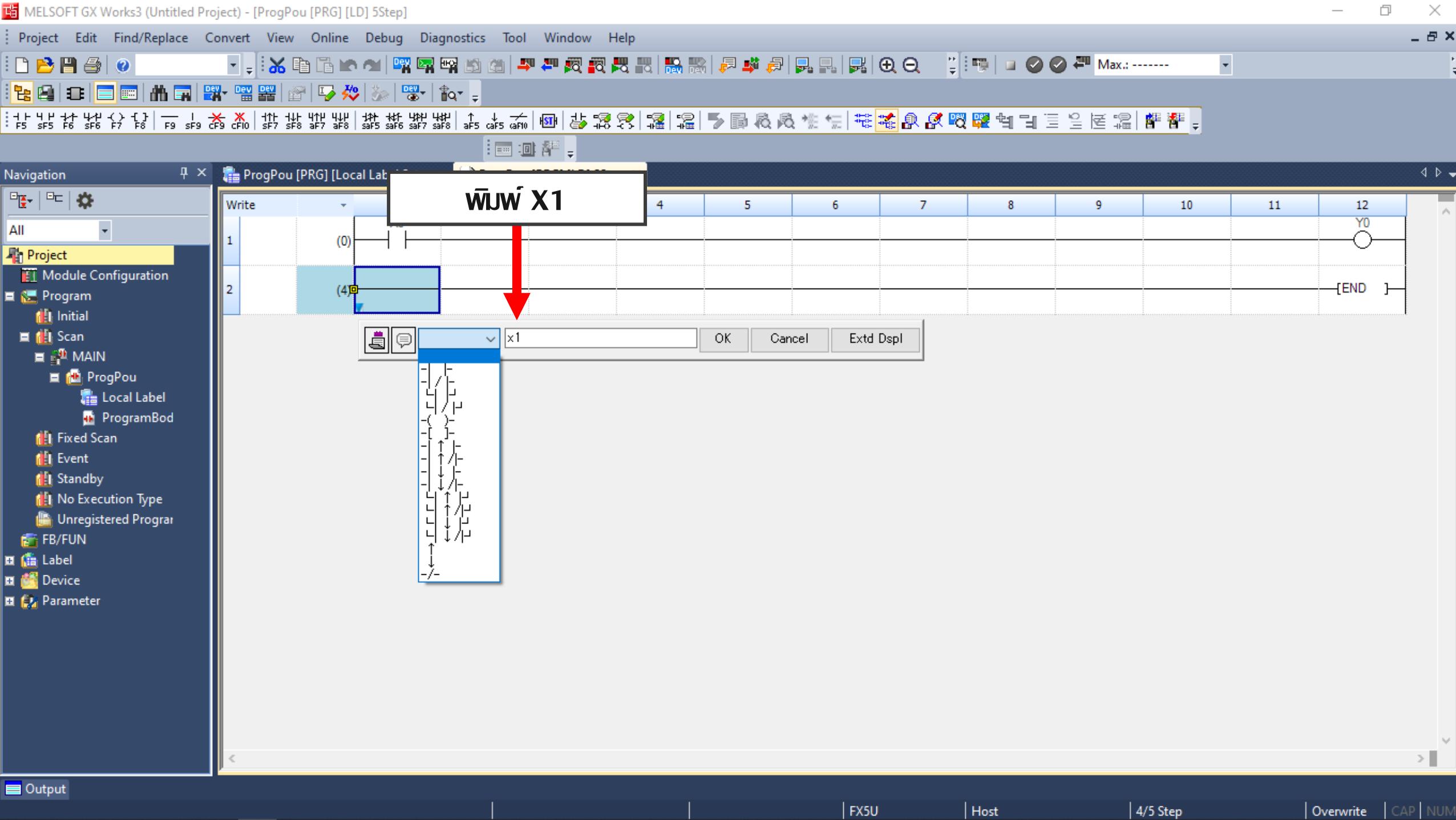


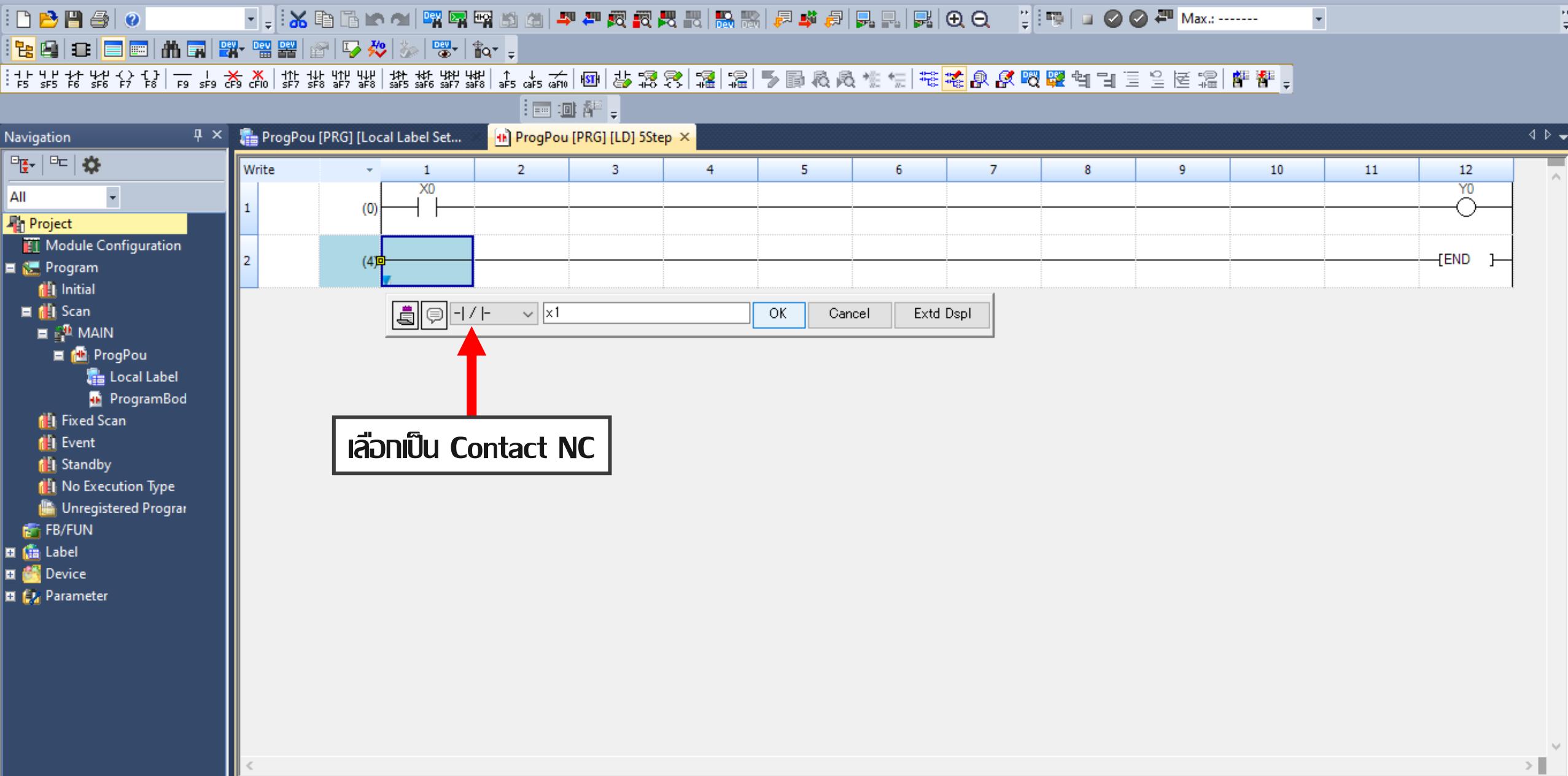


ไปที่ Debug { ที่เบบเดร็งเมือง }

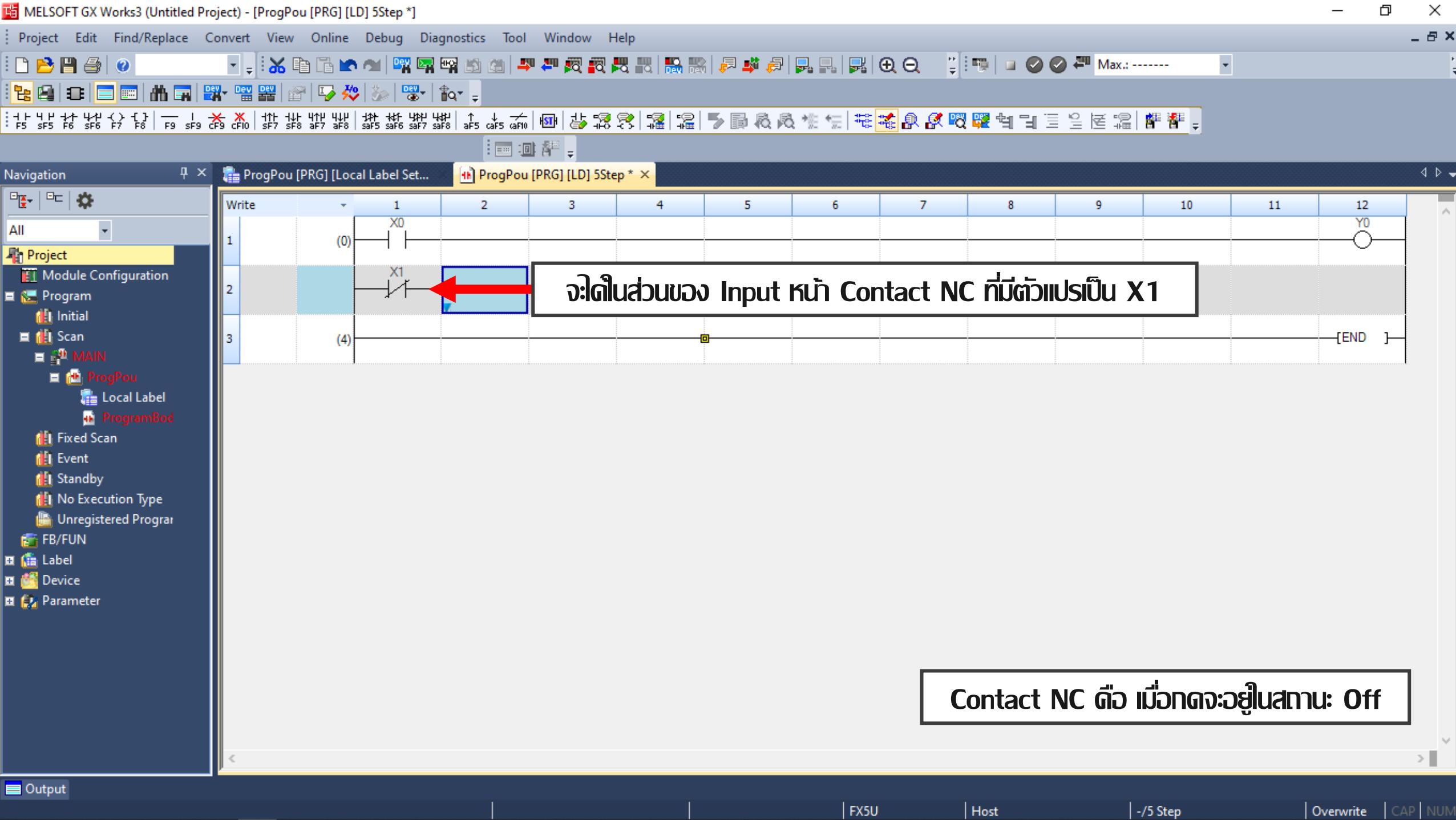
เลือกที่ Simulation

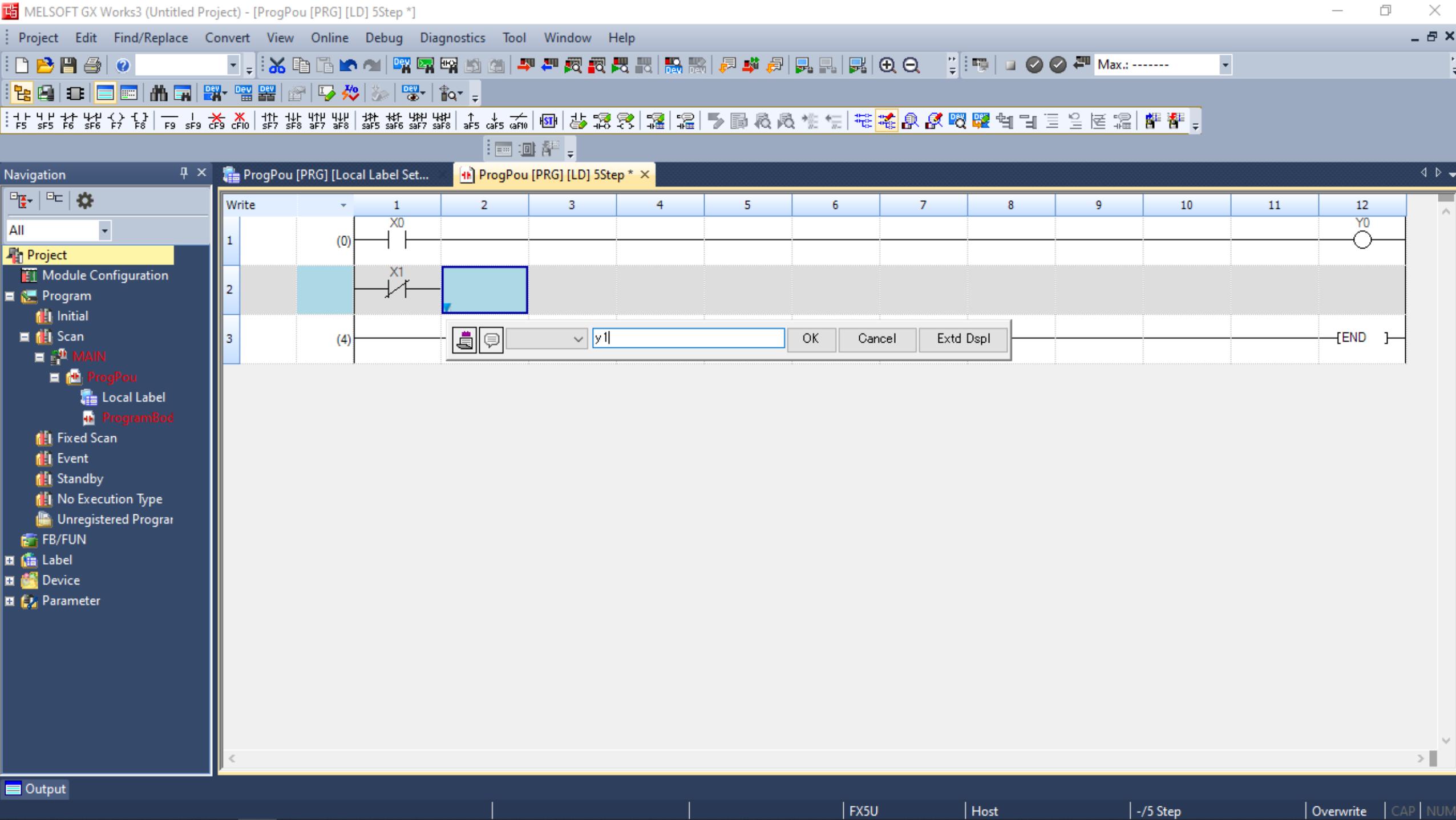
และเลือกที่ Stop Simulation

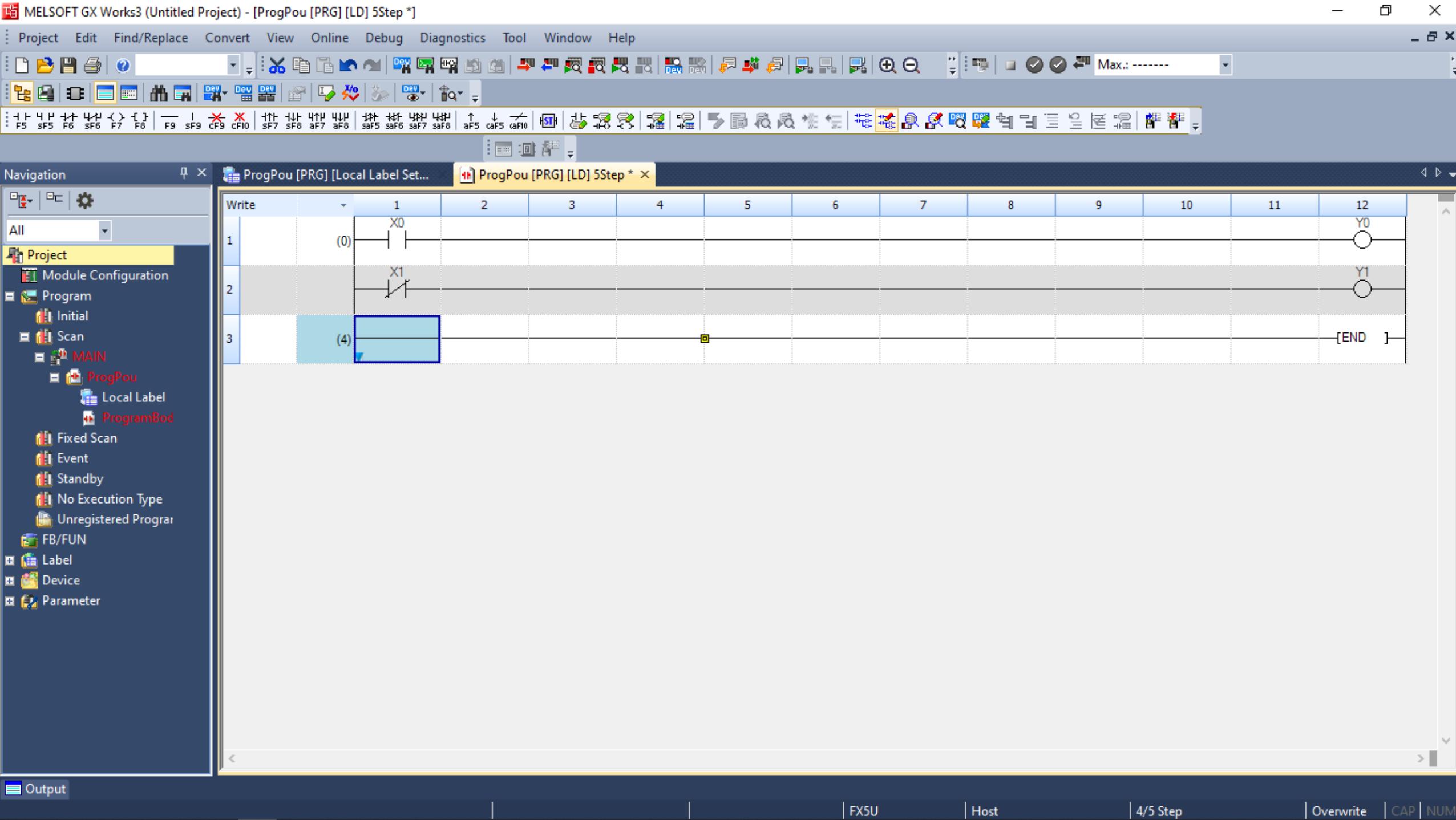


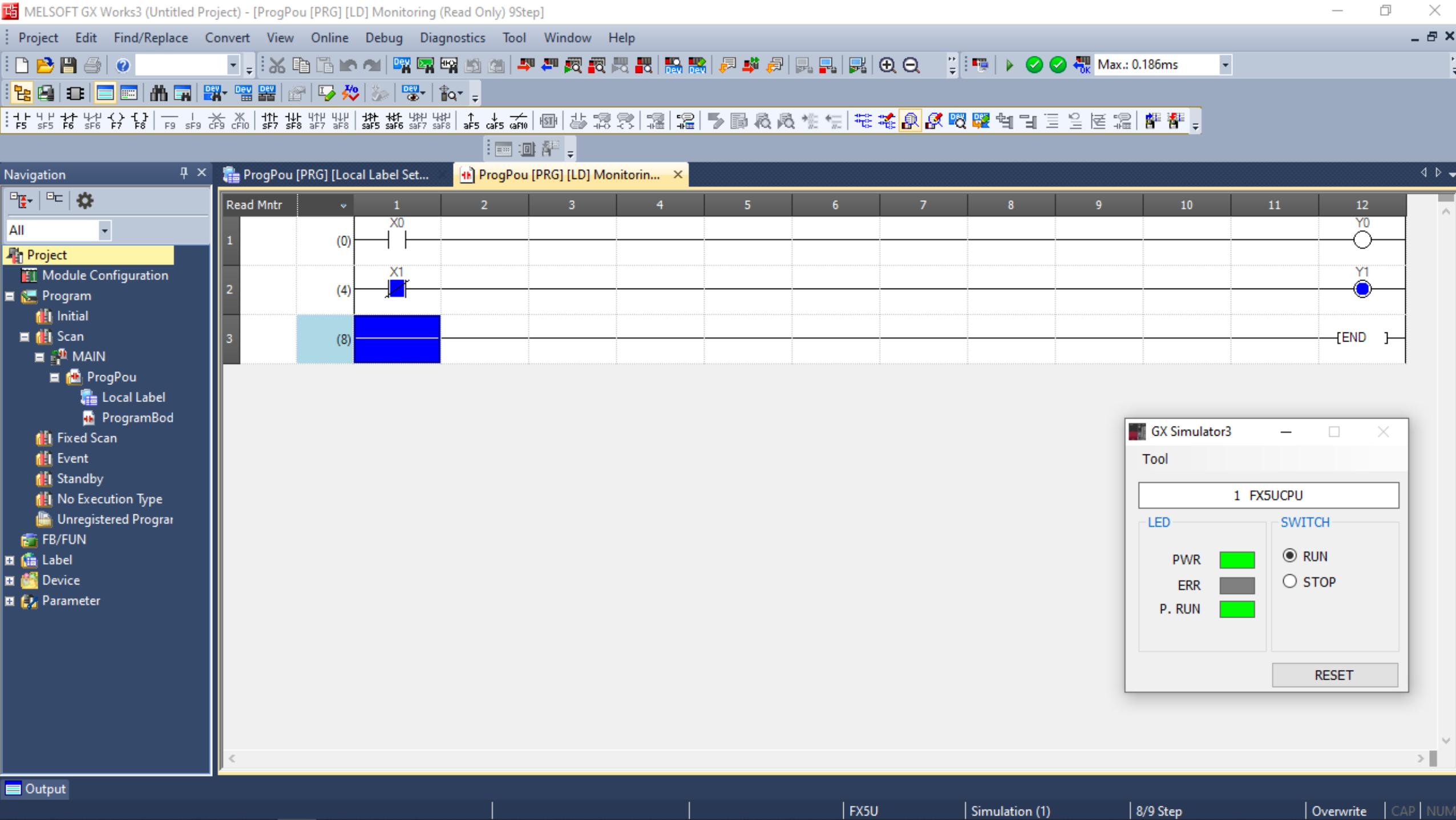


ເລື່ອກເປີນ Contact NC











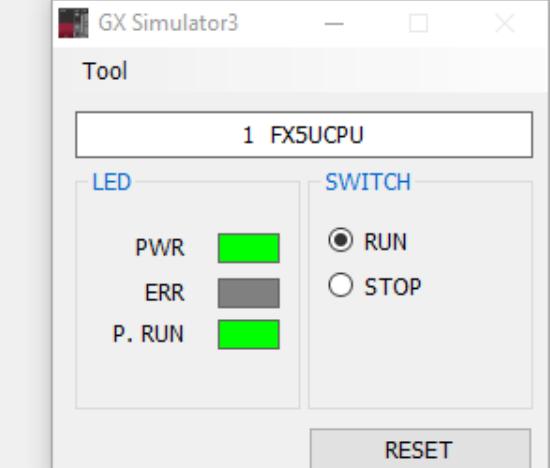
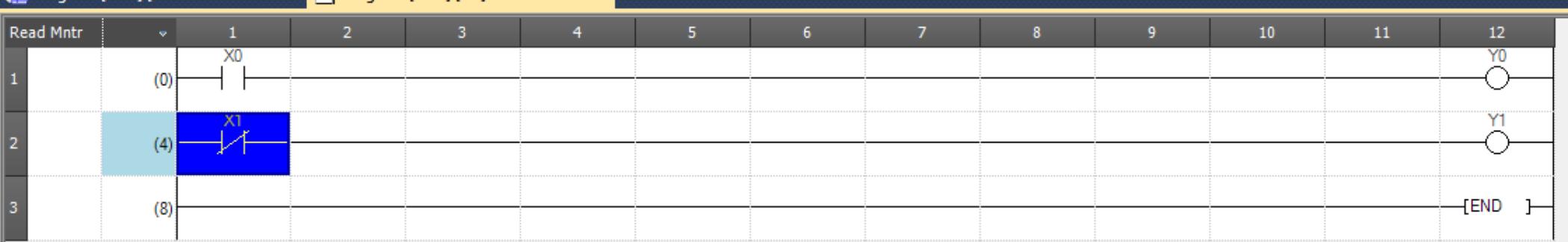
Navigation

Project

- Module Configuration
- Program
- Initial
- Scan
- MAIN
 - ProgPou
 - Local Label
 - ProgramBod
- Fixed Scan
- Event
- Standby
- No Execution Type
- Unregistered Program
- FB/FUN
- Label
- Device
- Parameter

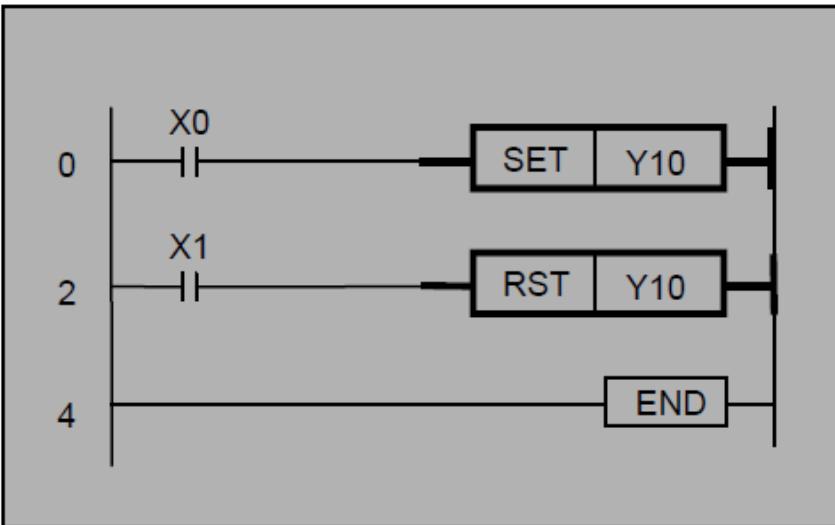
ProgPou [PRG] [Local Label Set...]

ProgPou [PRG] [LD] Monitor...



ចាត់សំ SET IIa: RST

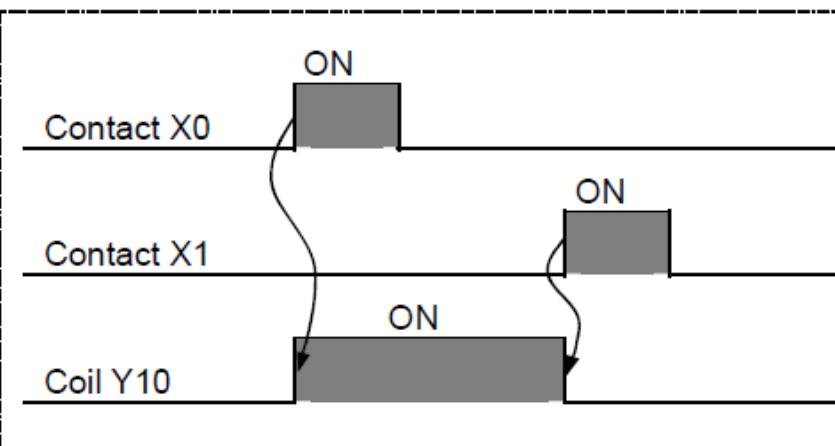
[Example of ladder diagram]



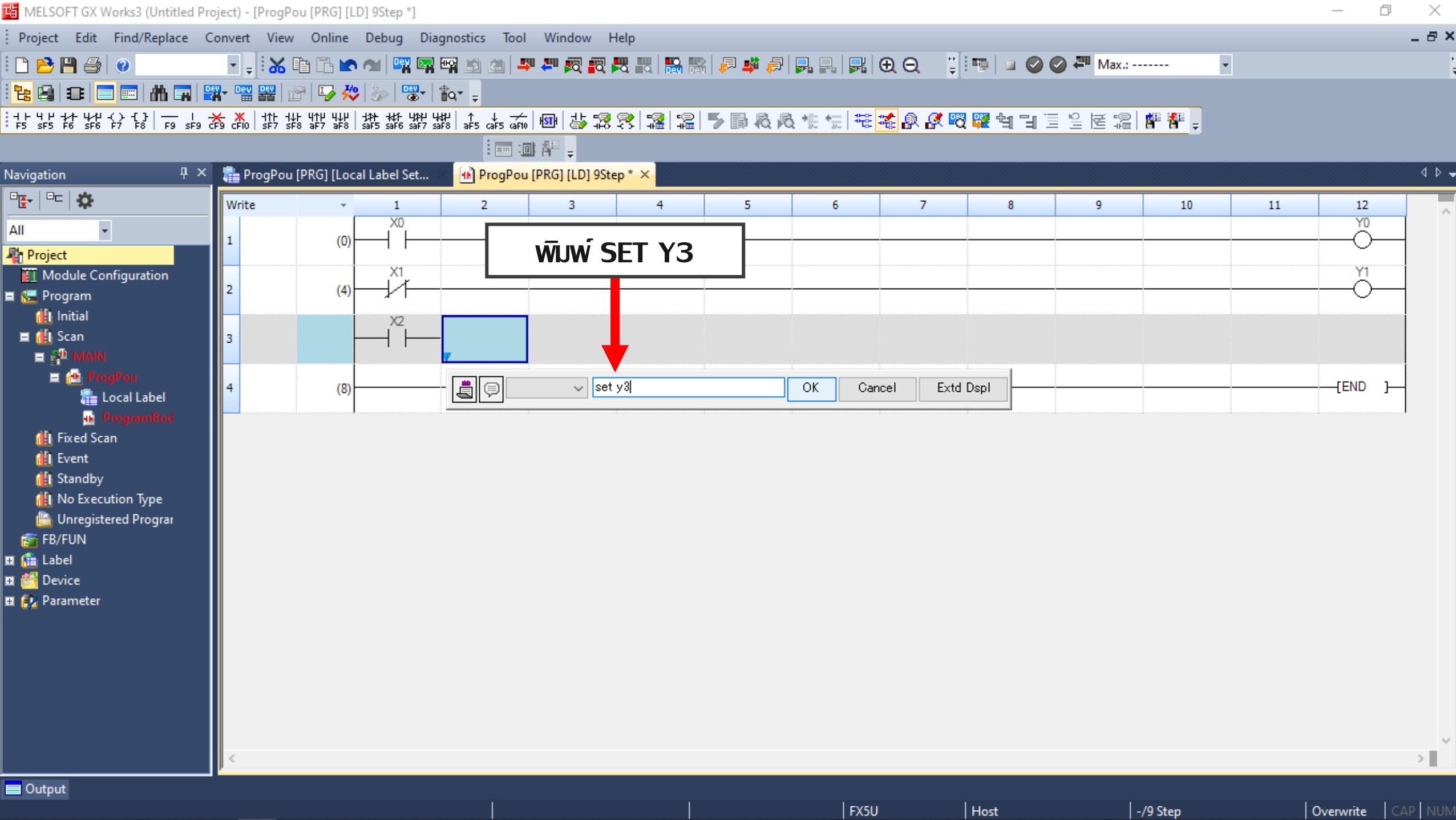
[List program]

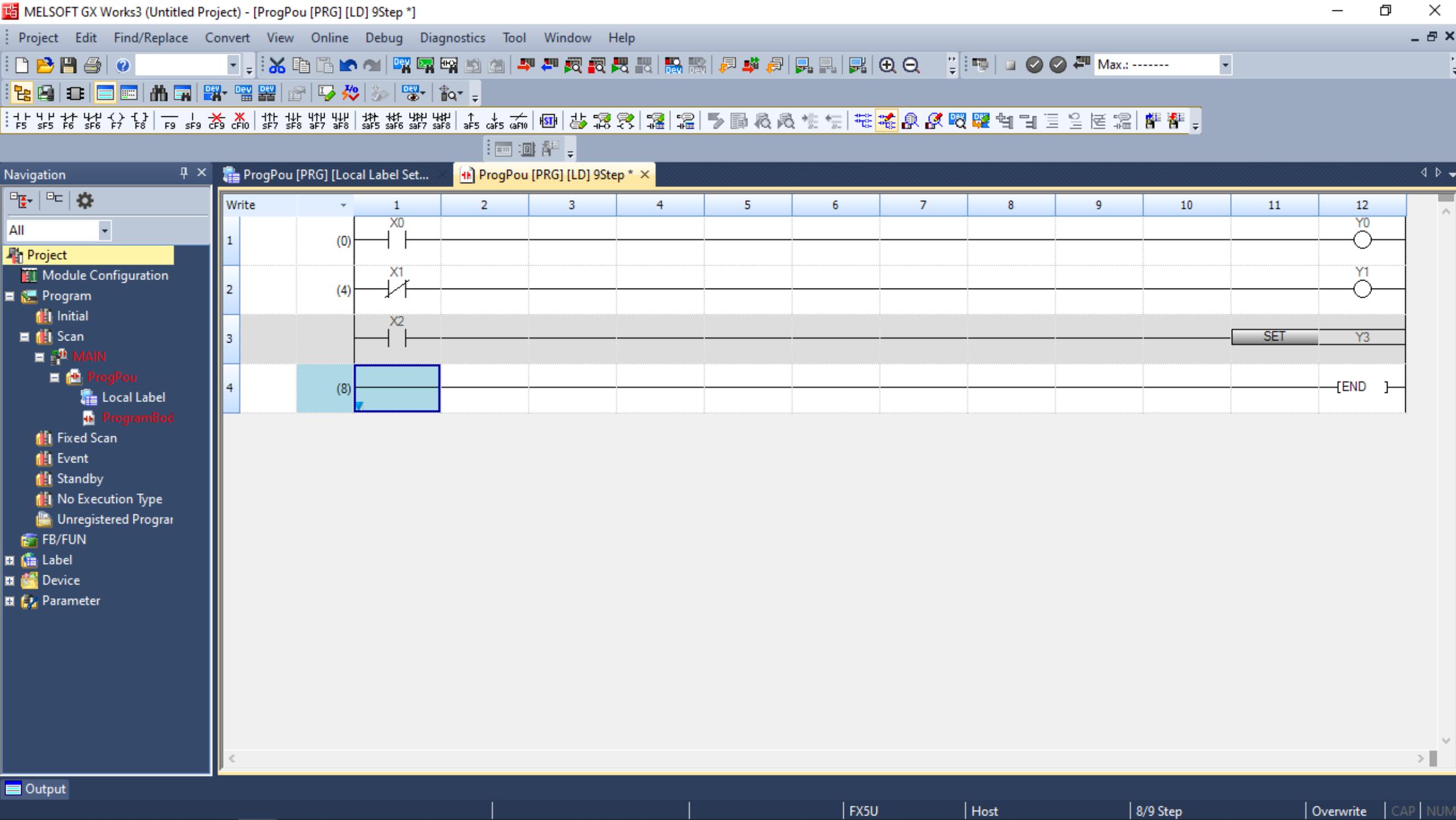
Step	Instruction
0	LD X0
1	SET Y10
2	LD X1
3	RST Y10
4	END

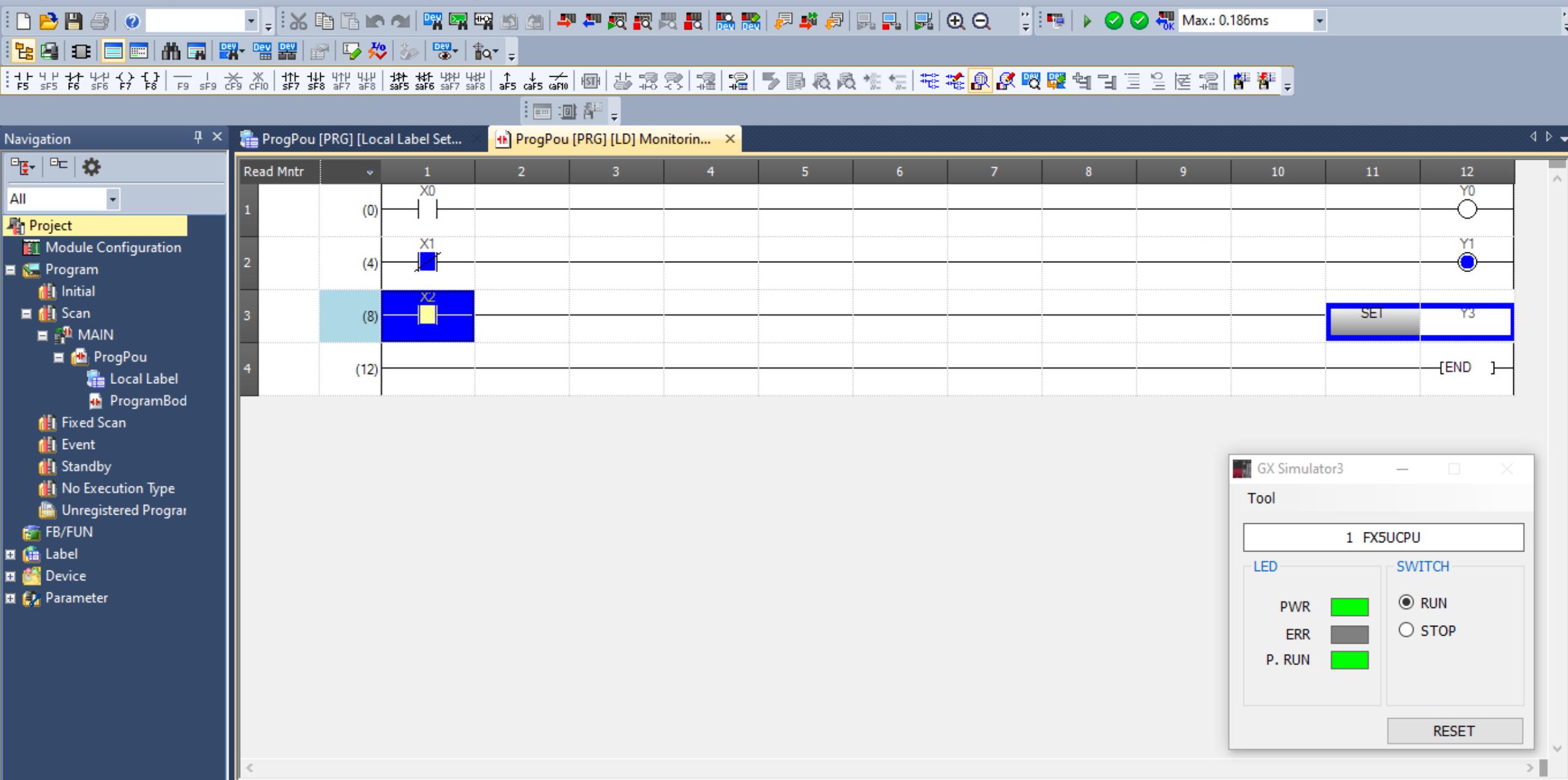
[Timing chart]

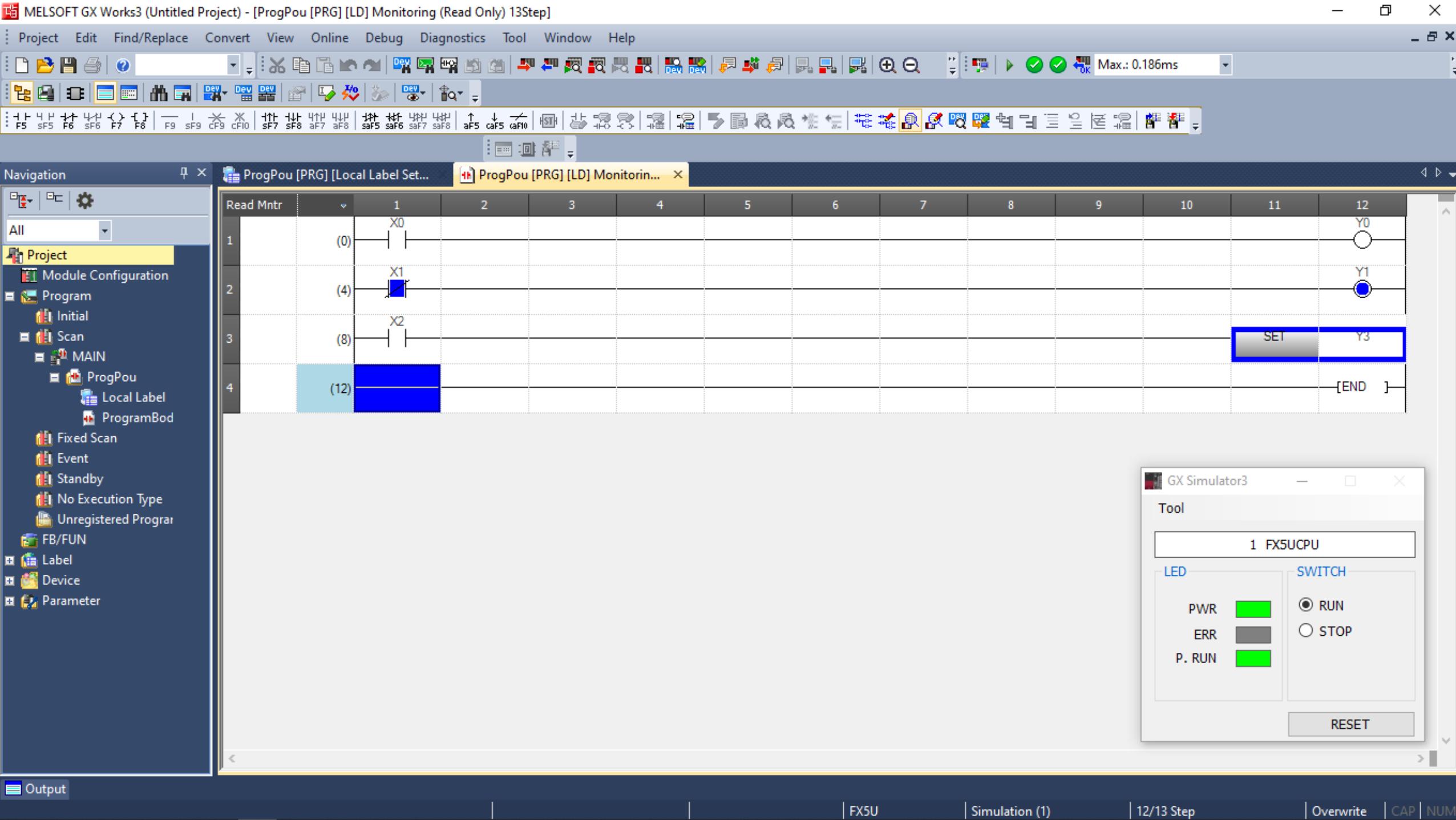


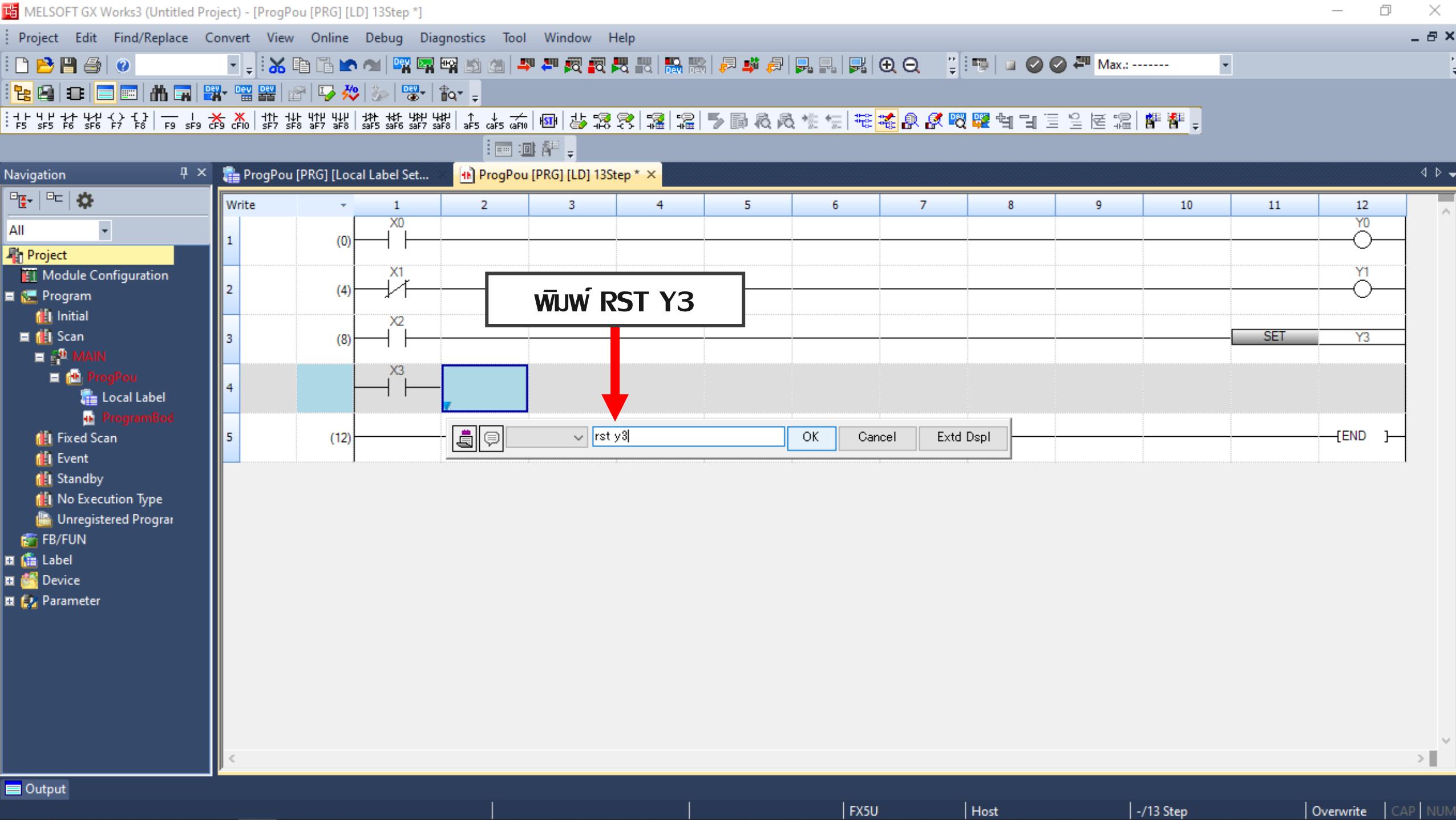
- These instructions drive the coil as well as the OUT instruction.
- With the OUT instruction, when the contact to drive the coil turns off from on, the coil programmed with the OUT instruction turns off as well. With the SET (Set) instruction, even when the contact turns off from on, the coil remains on and the operation is held. Use the RST (Reset) instruction to turn off the coil driven by the SET (Set)

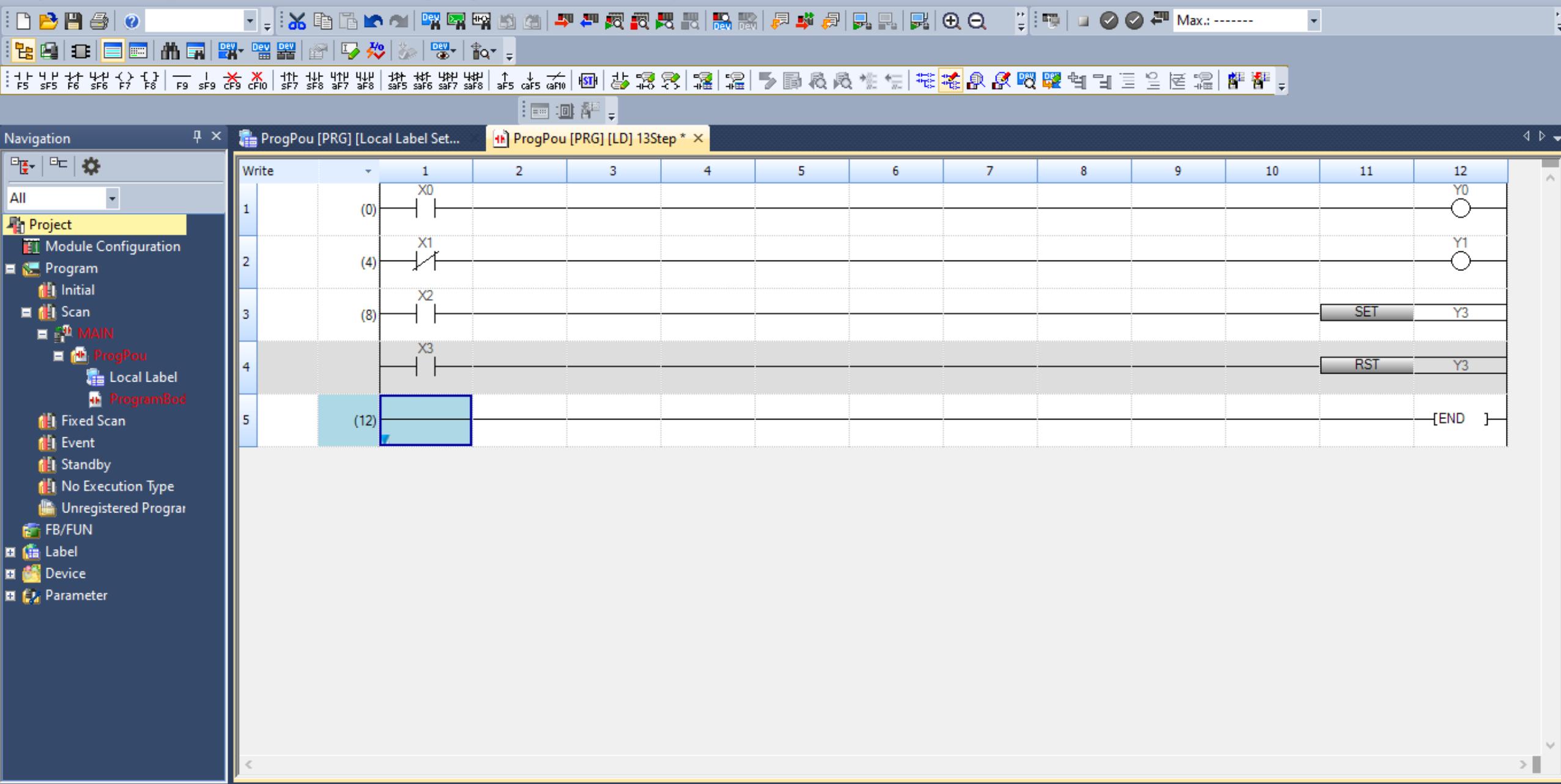














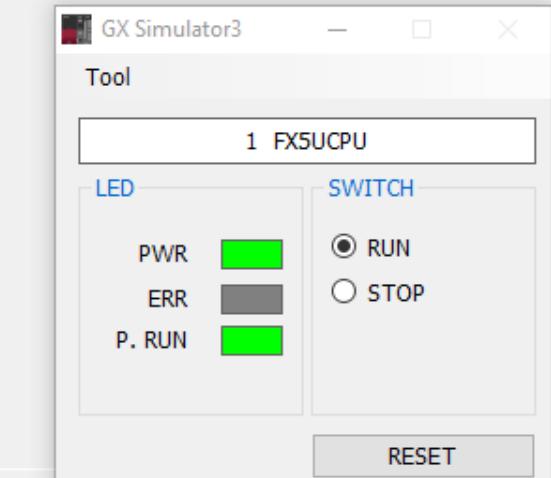
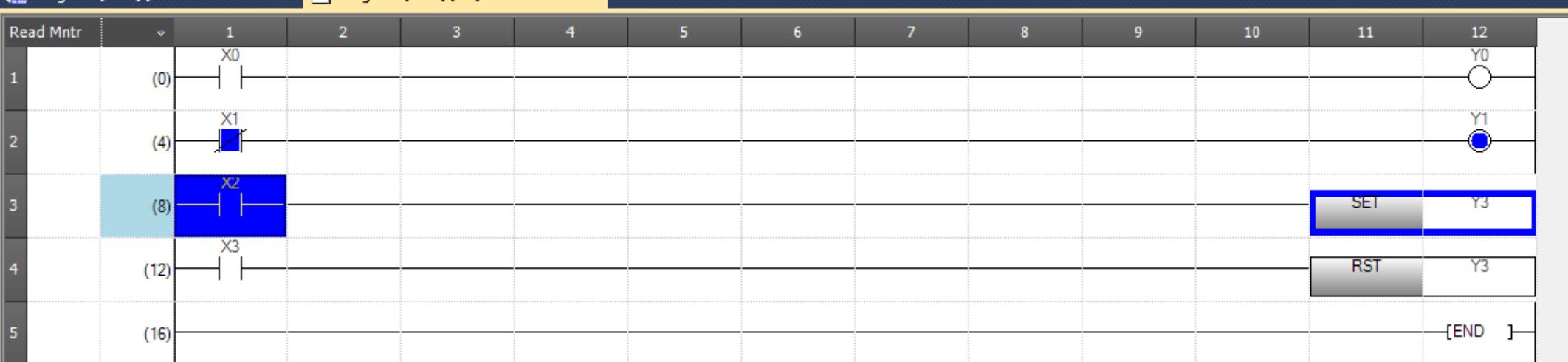
Navigation

Project

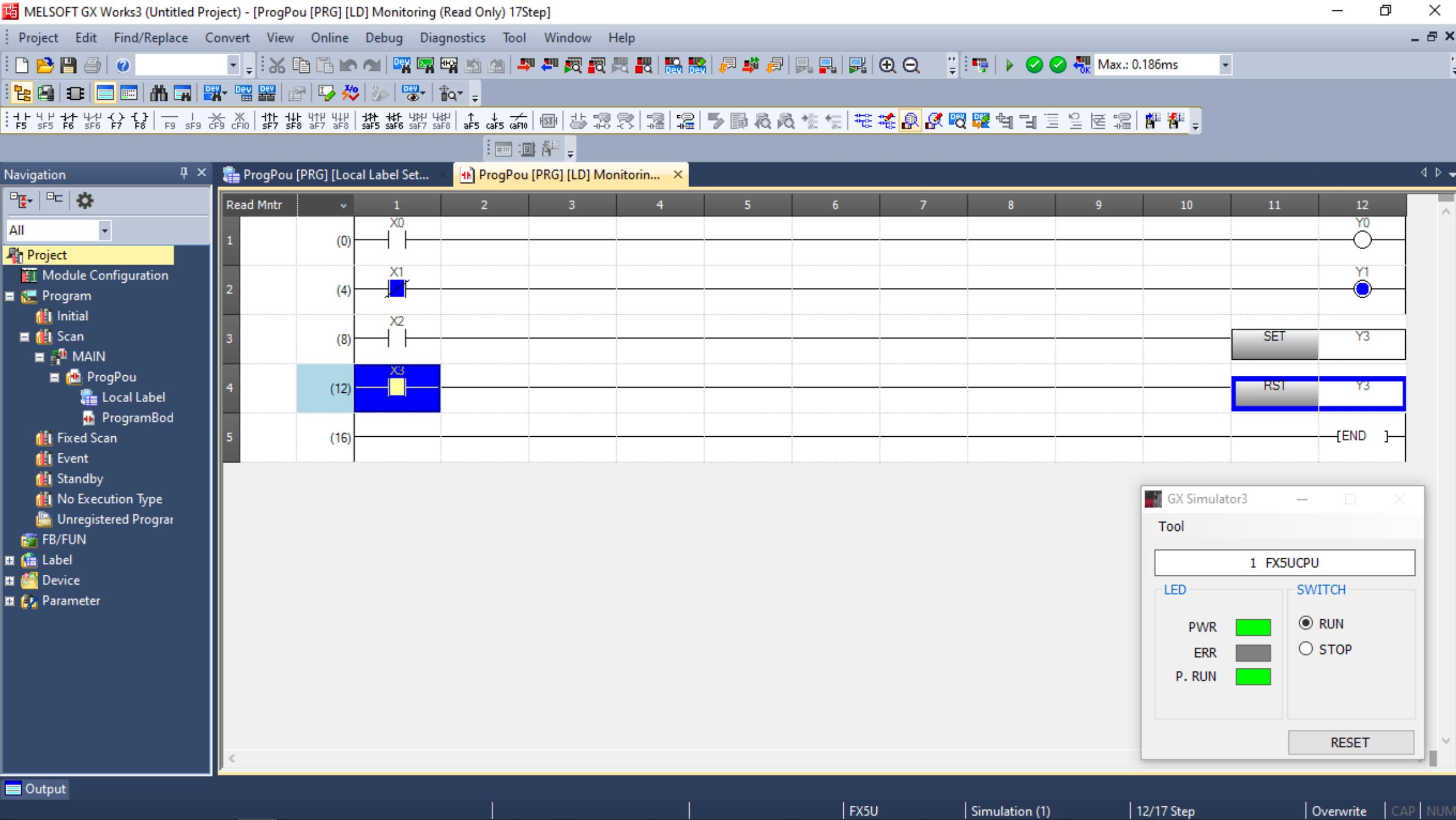
- Module Configuration
- Program
- Initial
- Scan
- MAIN
 - ProgPou
 - Local Label
 - ProgramBod
- Fixed Scan
- Event
- Standby
- No Execution Type
- Unregistered Program
- FB/FUN
- Label
- Device
- Parameter

ProgPou [PRG] [Local Label Set...]

ProgPou [PRG] [LD] Monitoring (Read Only) 17Step

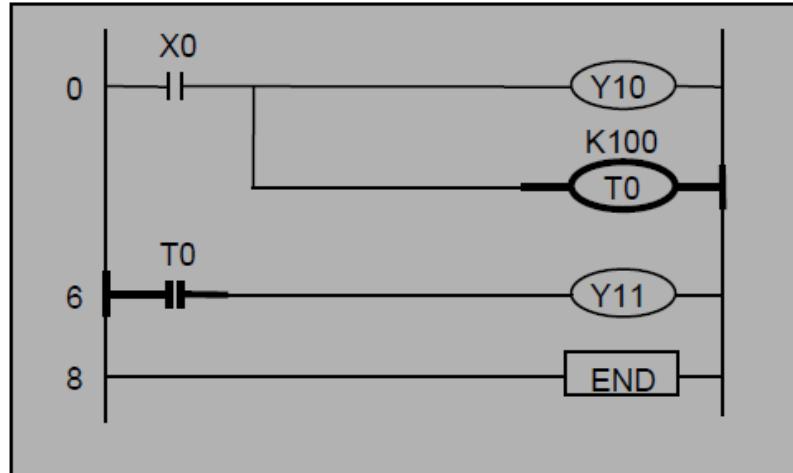


Output



➤ ចាំសំពី T (Timer)

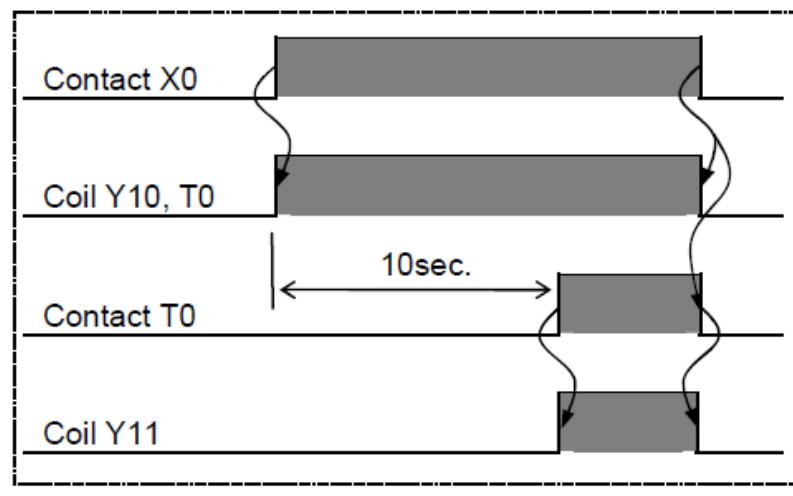
[Example of ladder diagram]



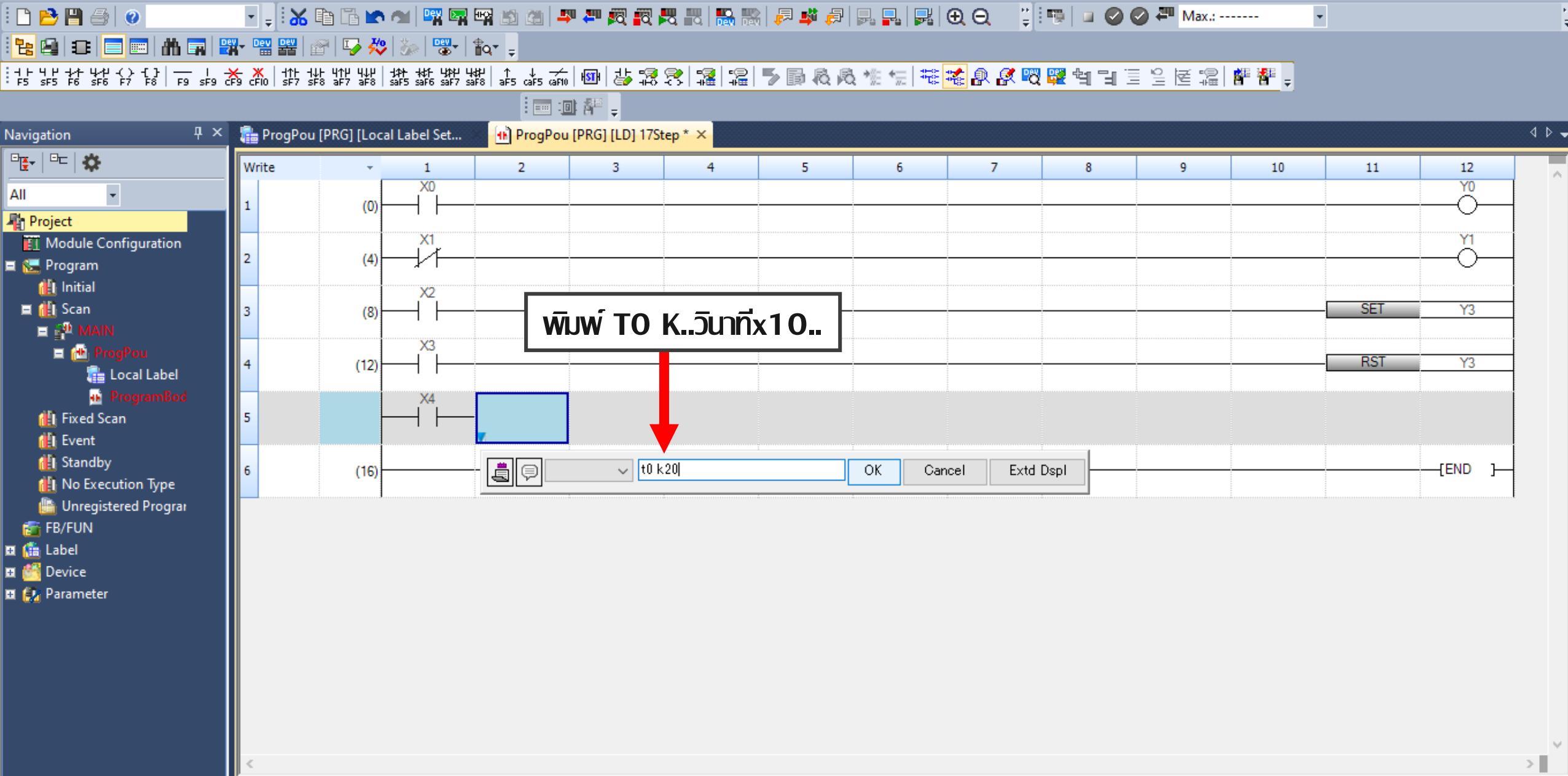
[List program]

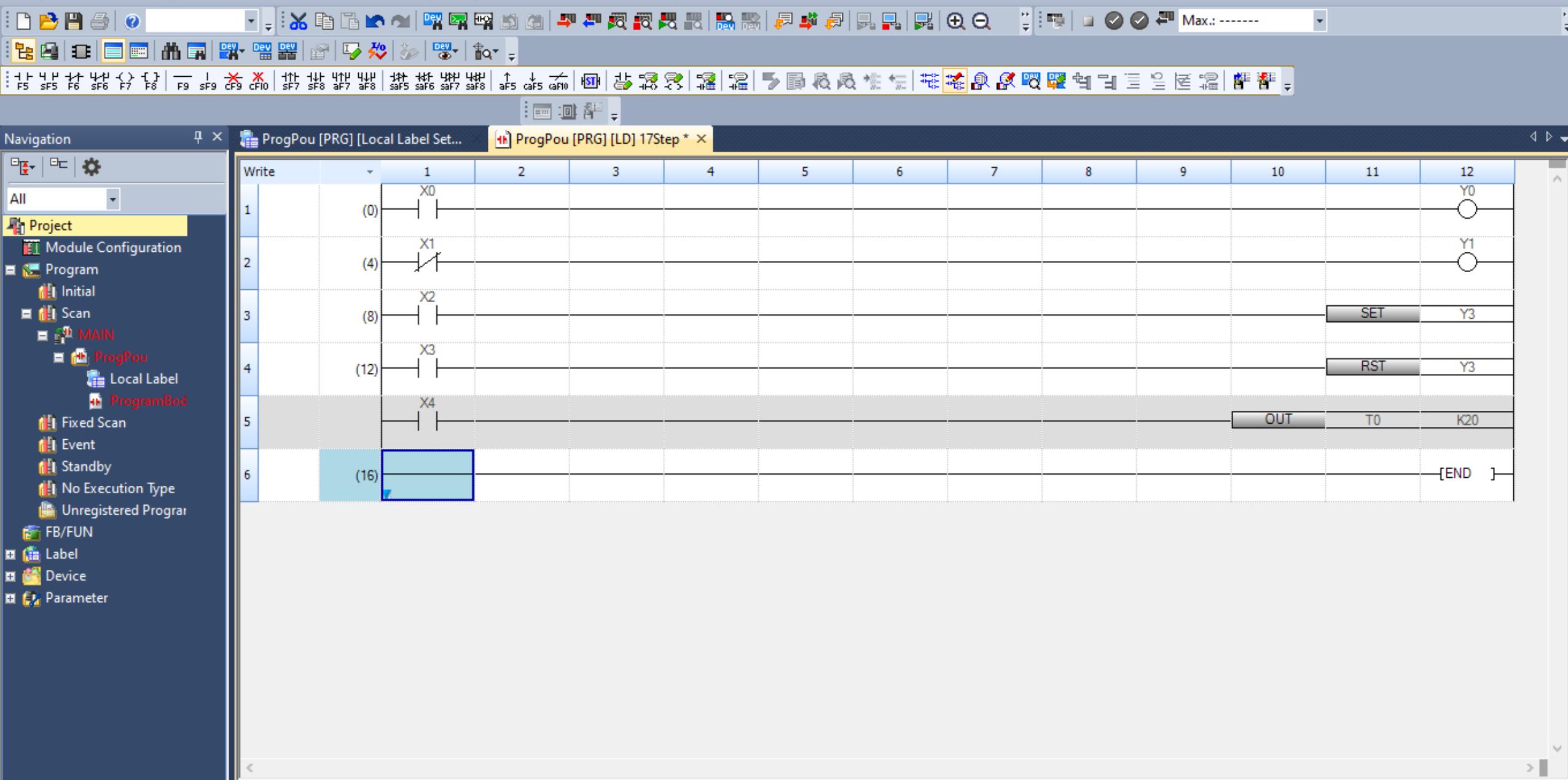
Step	Instruction
0	LD X0
1	OUT Y10
2	OUT T0 K100
6	LD T0
7	OUT Y11
8	END

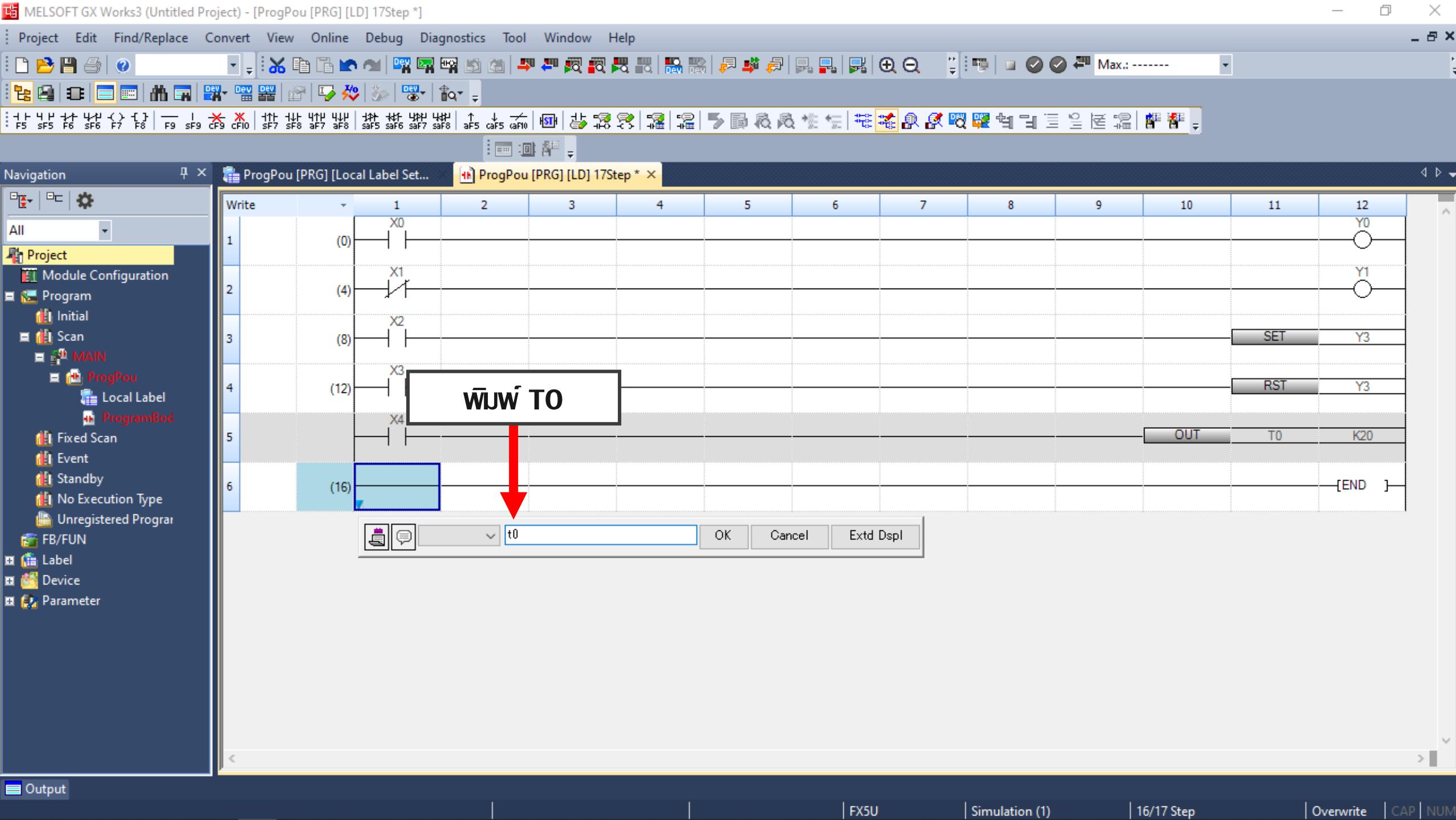
[Timing chart]

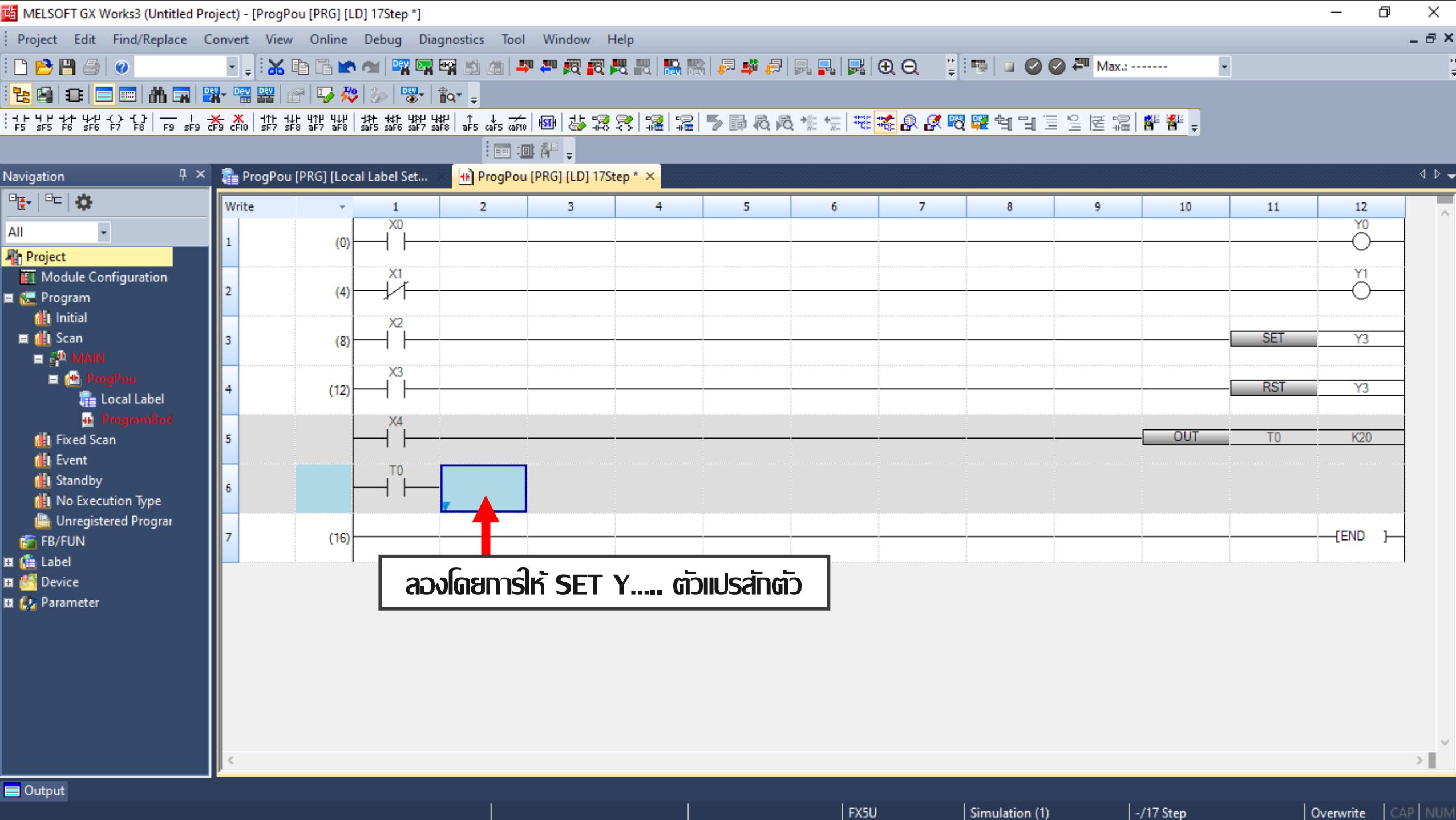


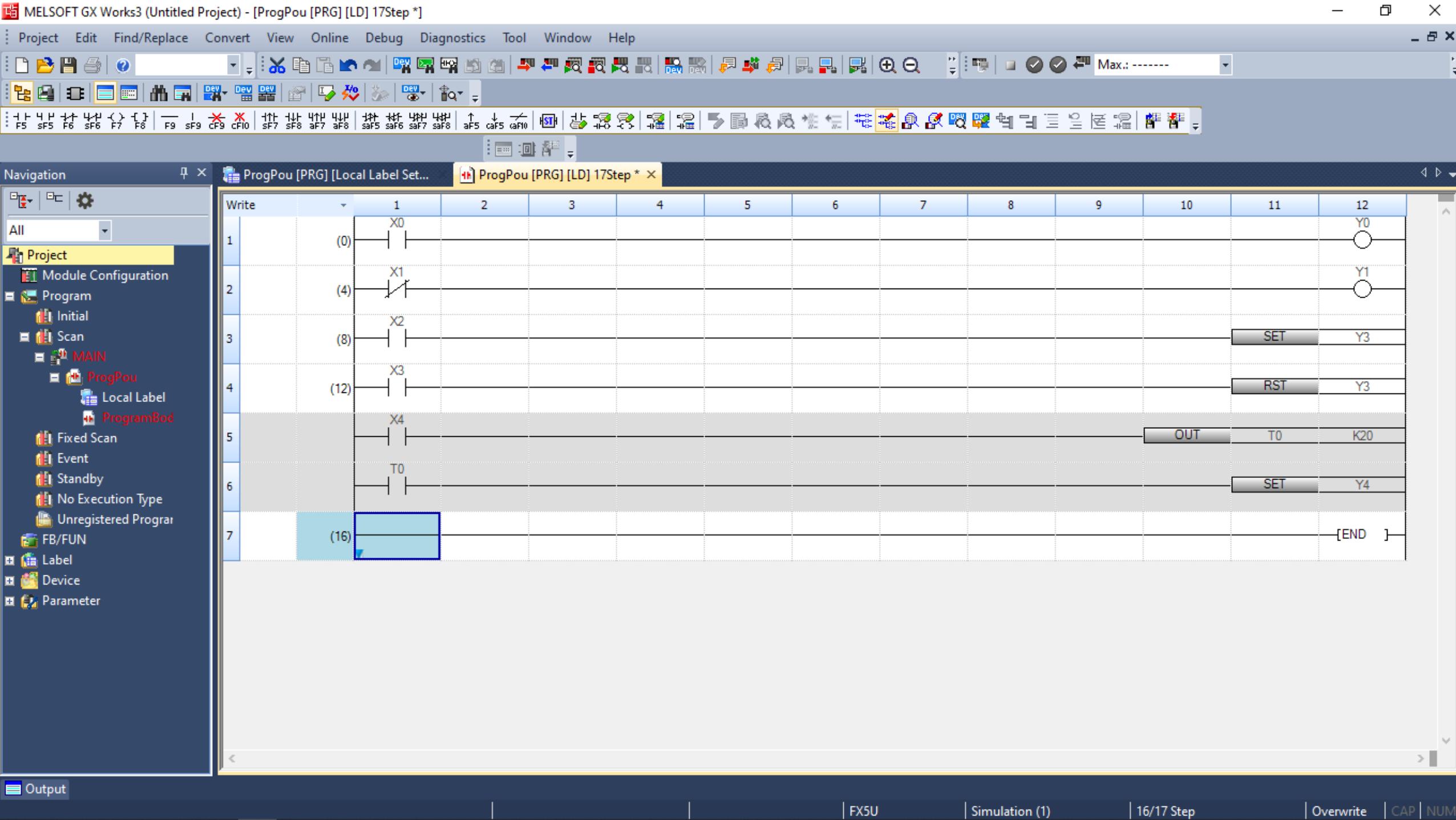
- The timer contact operates delaying by a set time after the coil is energized. (On-delay timer)
This set time is called set value, and indicated by K.
- When X0 is turned off while the timer is driving, the current value of the timer returns to 0 and the timer contact turns off

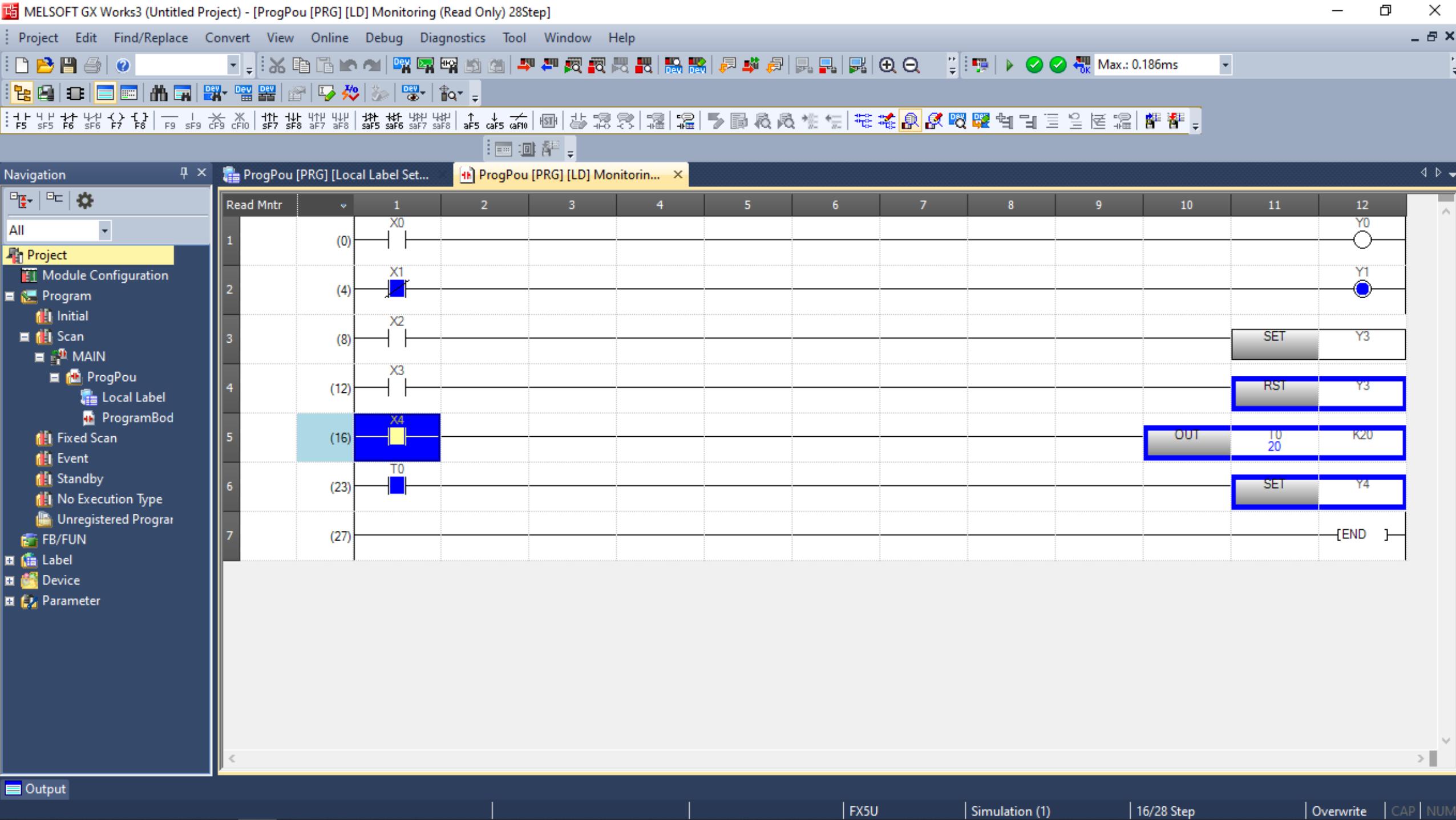


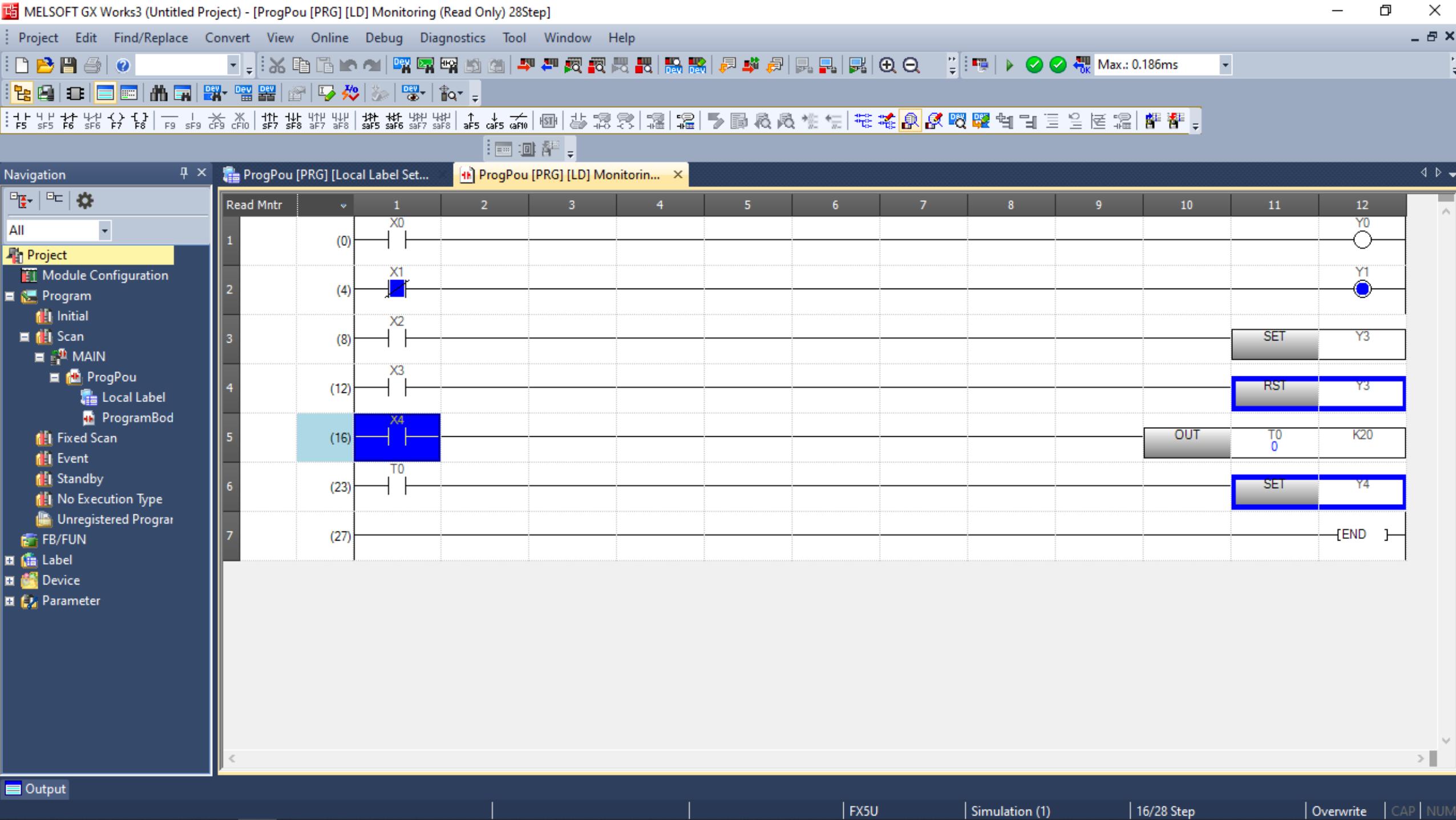


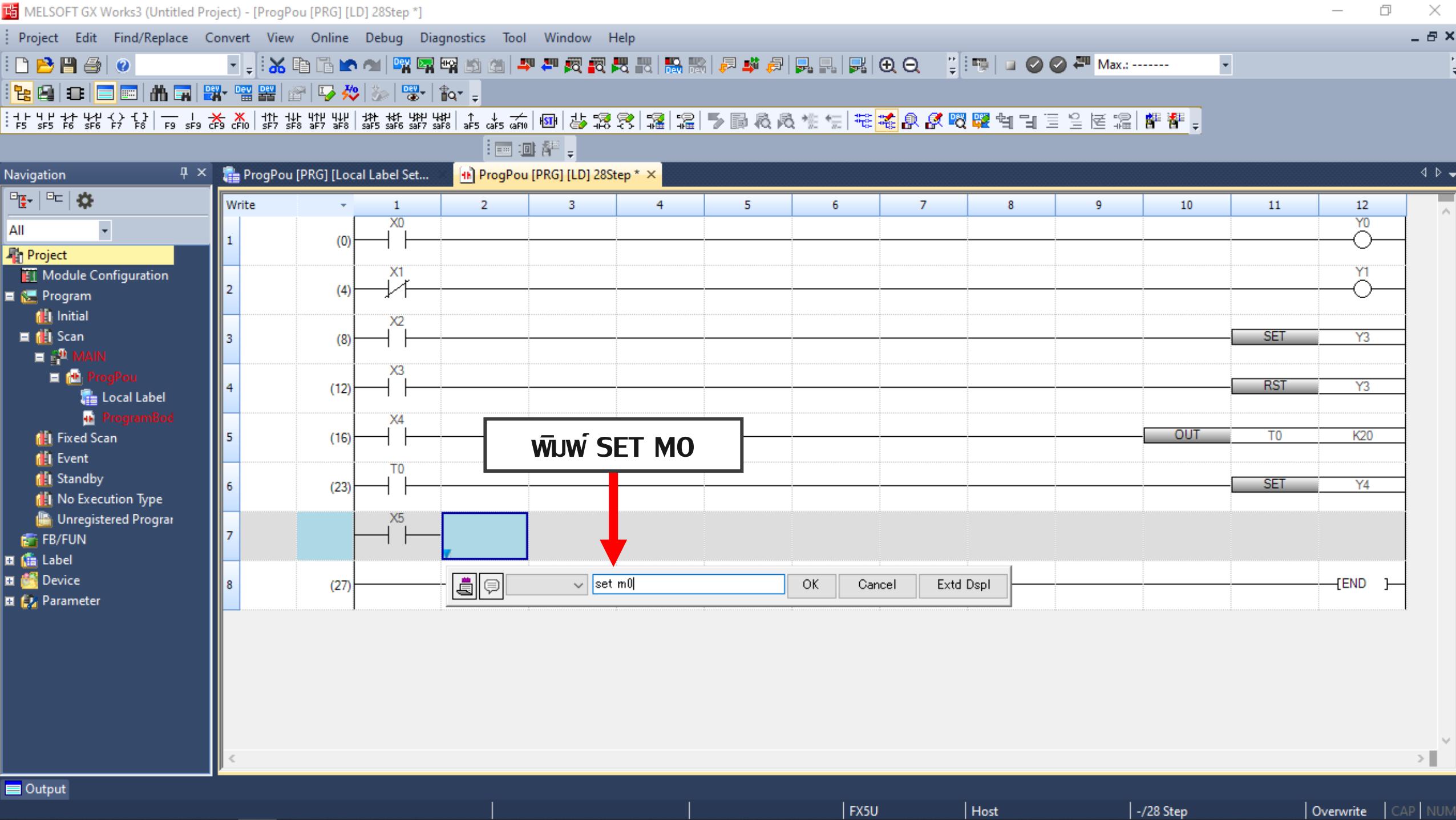


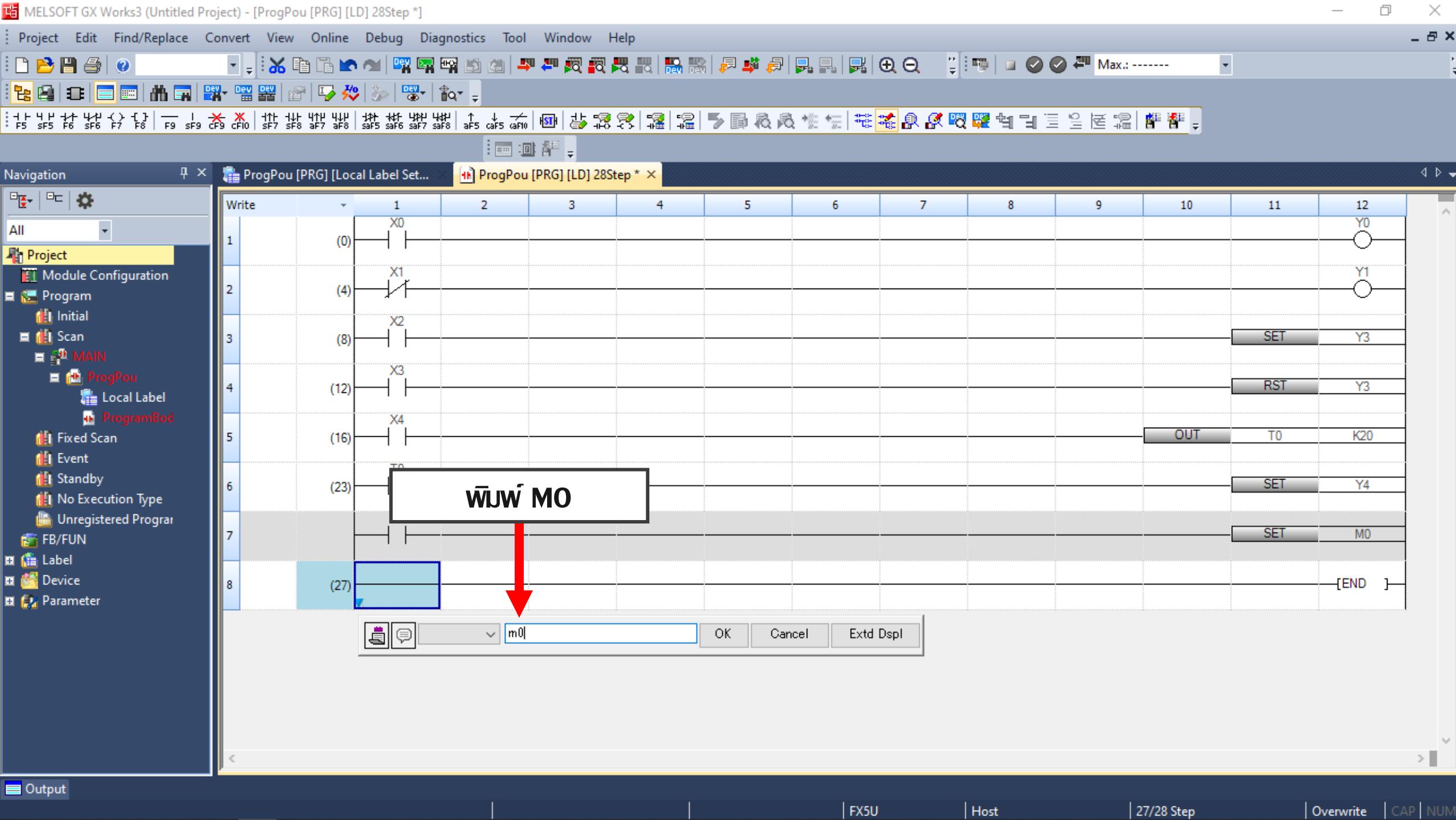


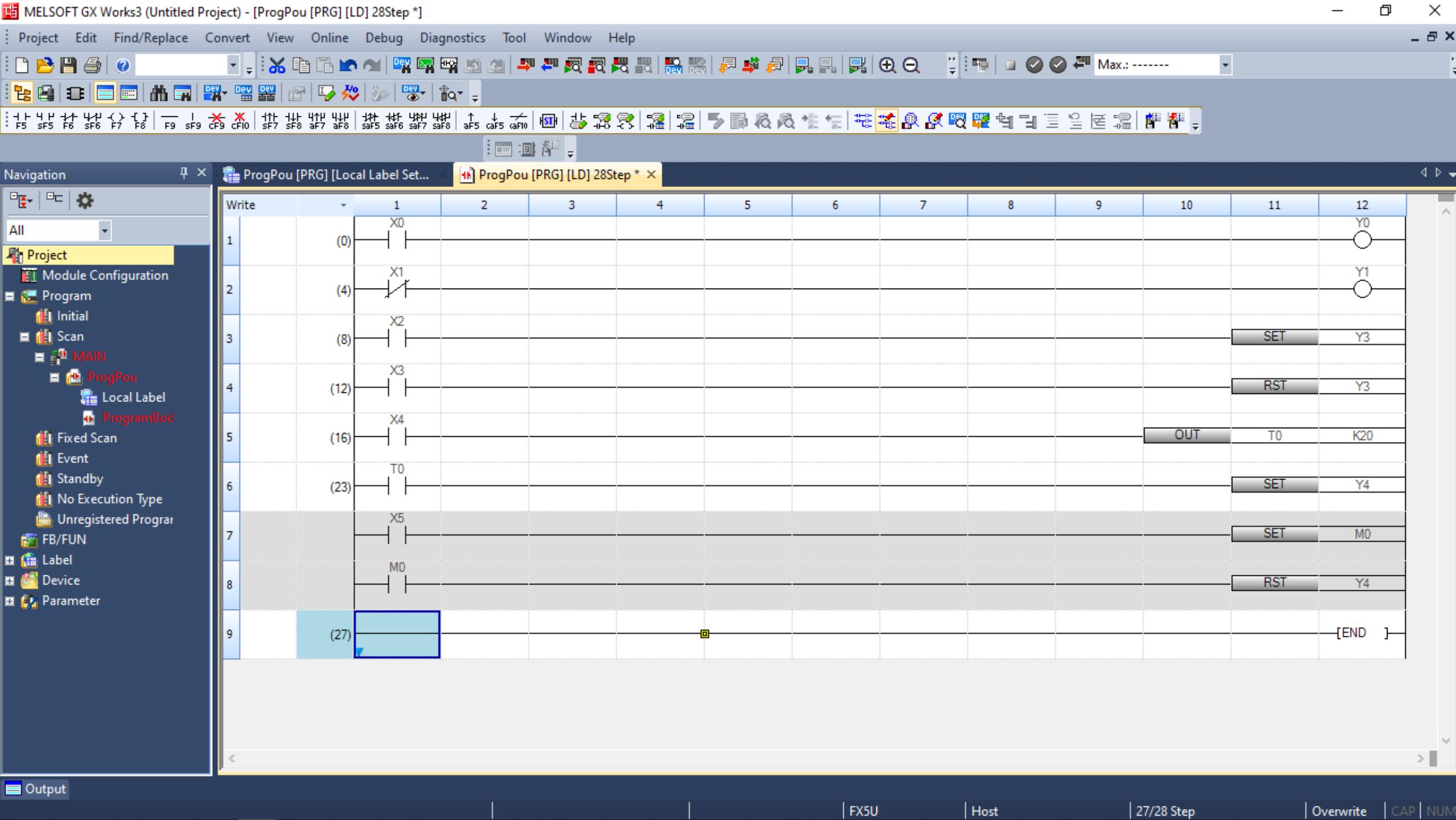


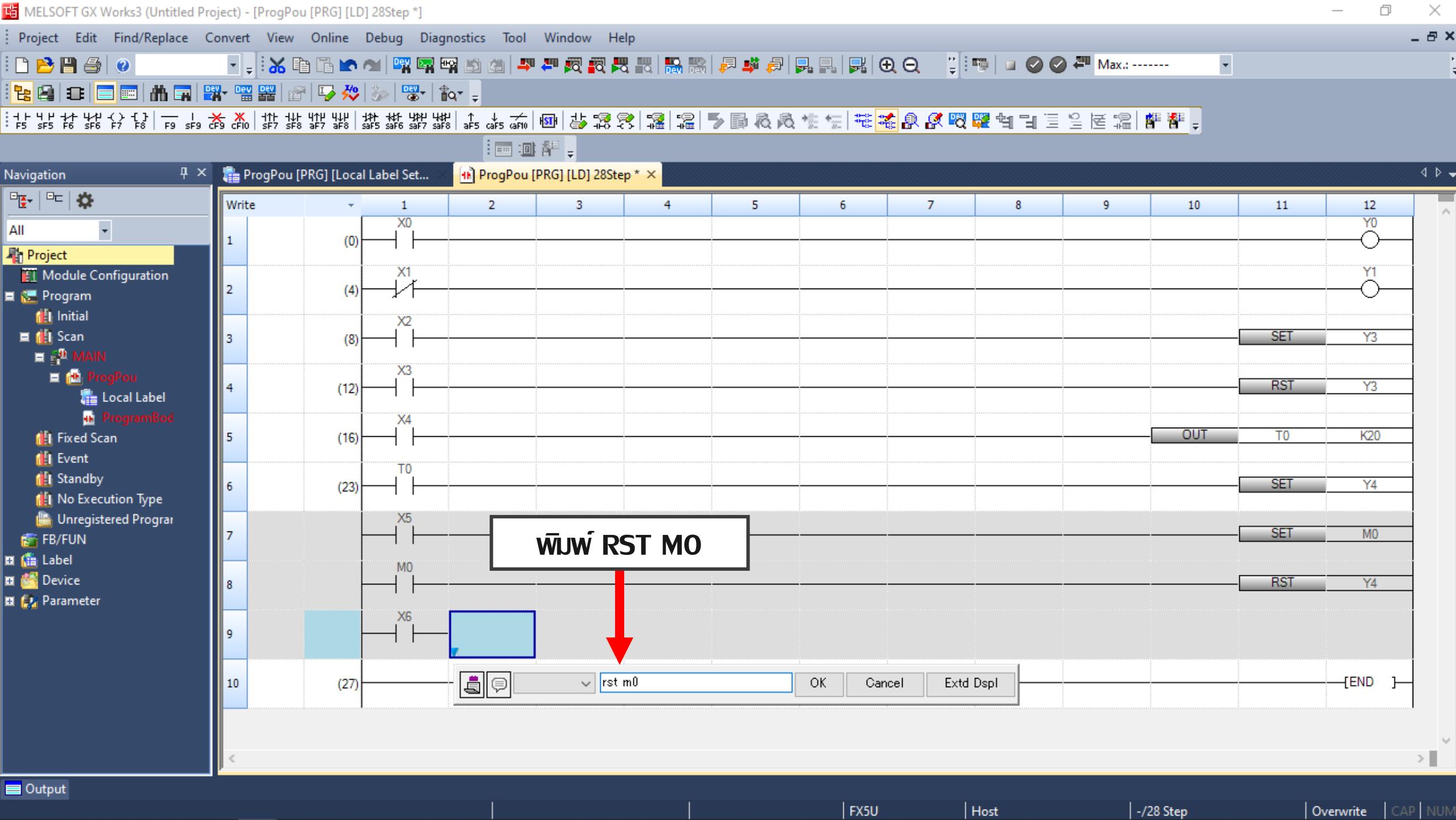


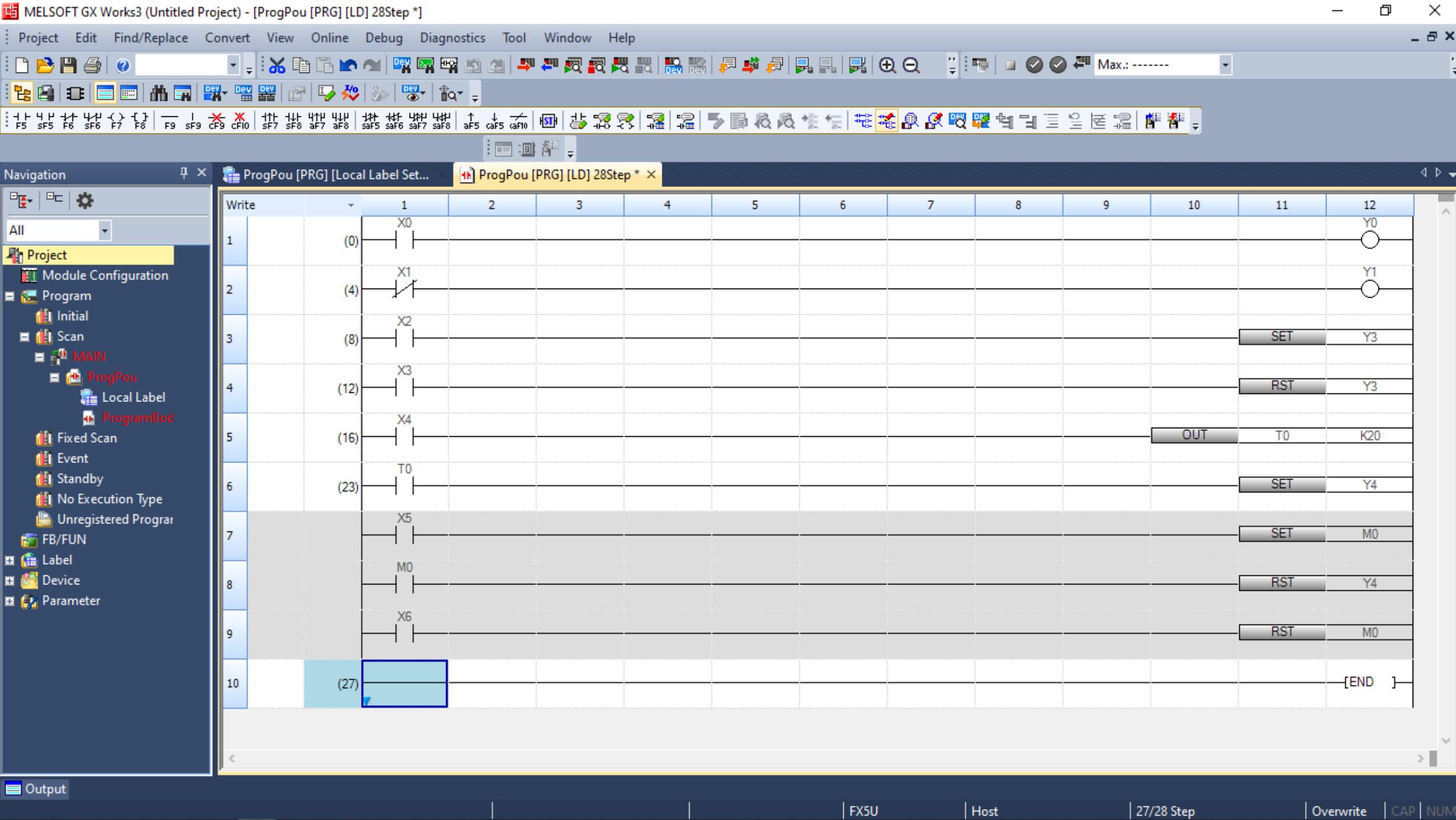


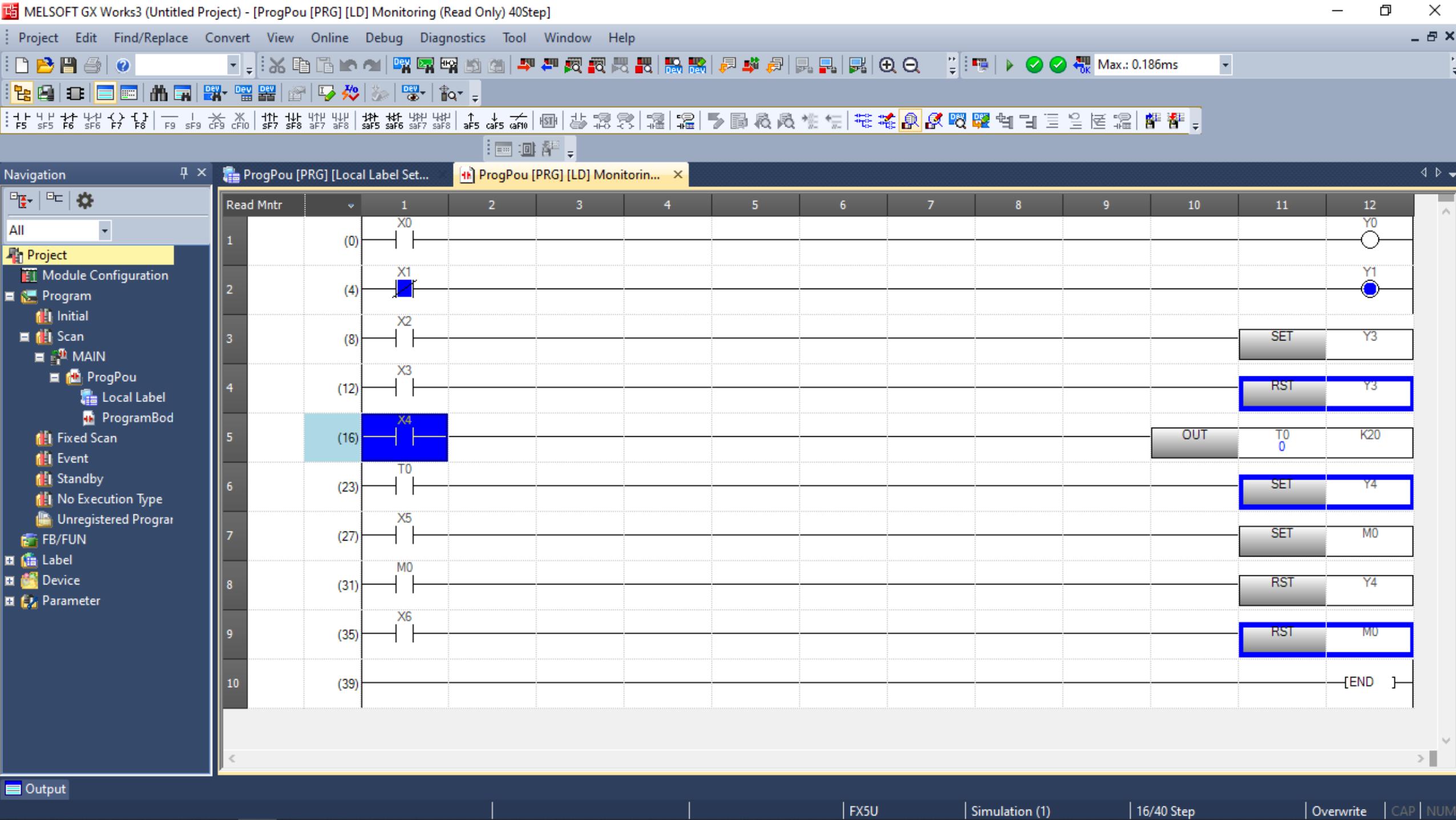


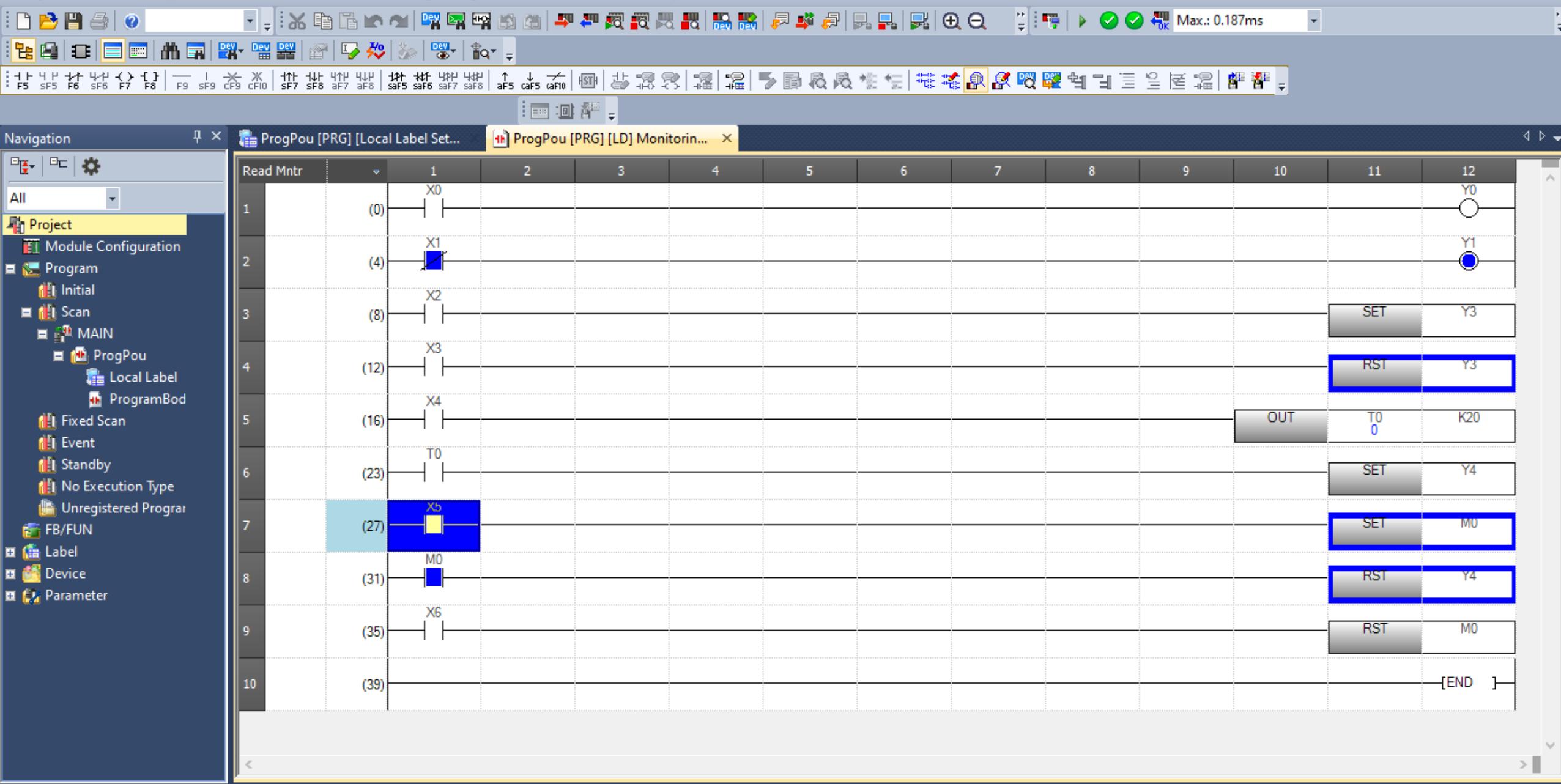


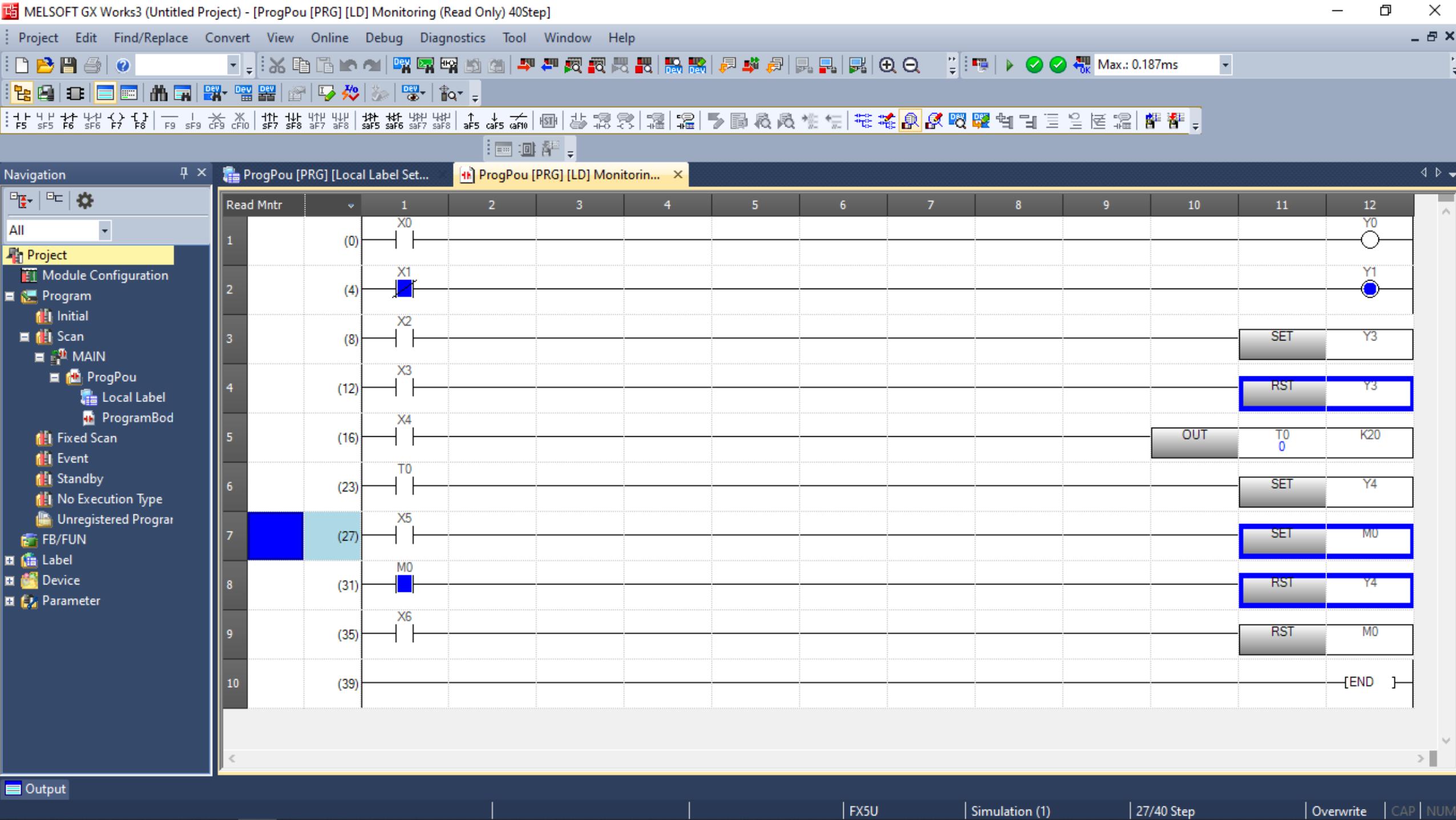


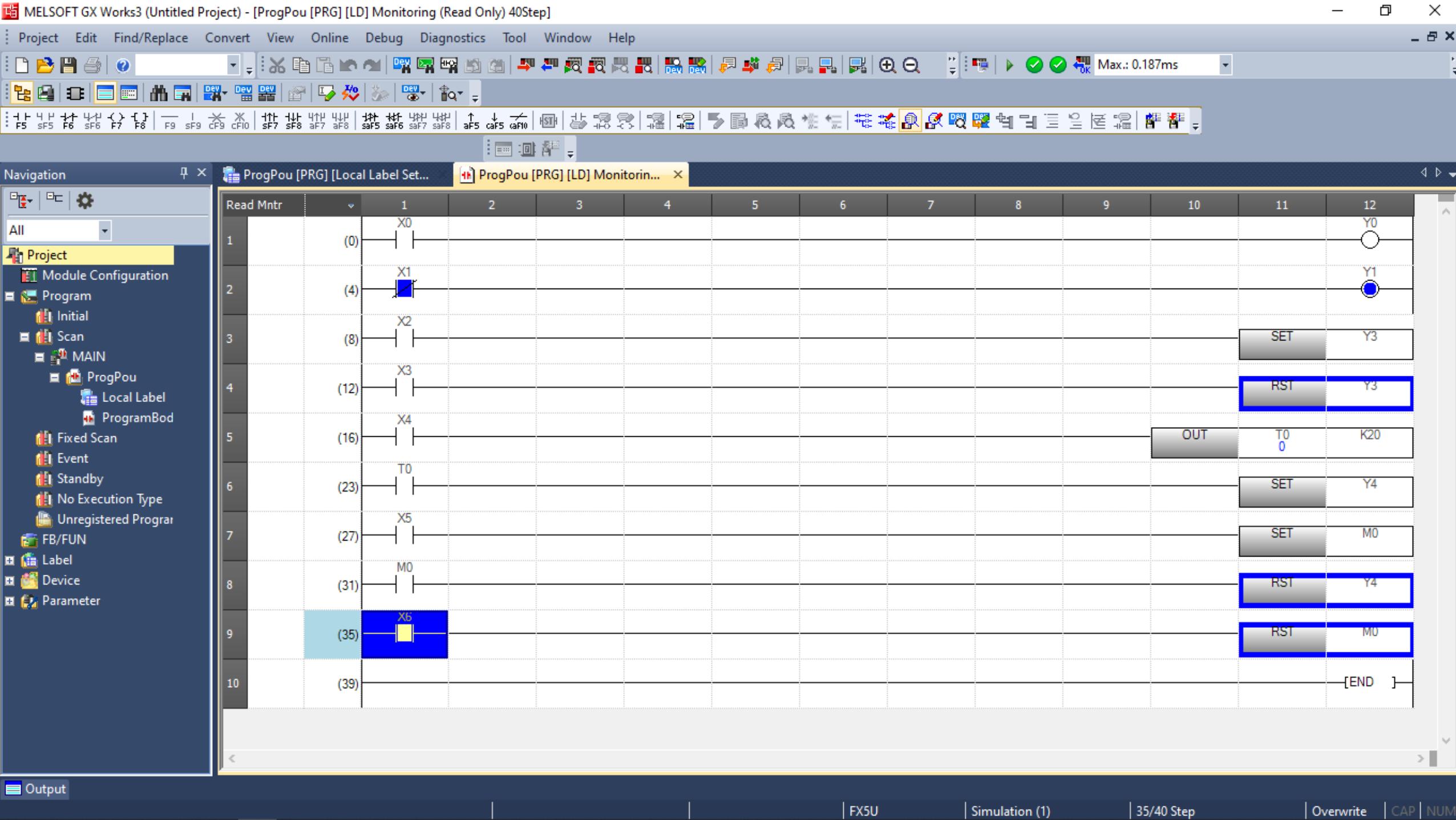


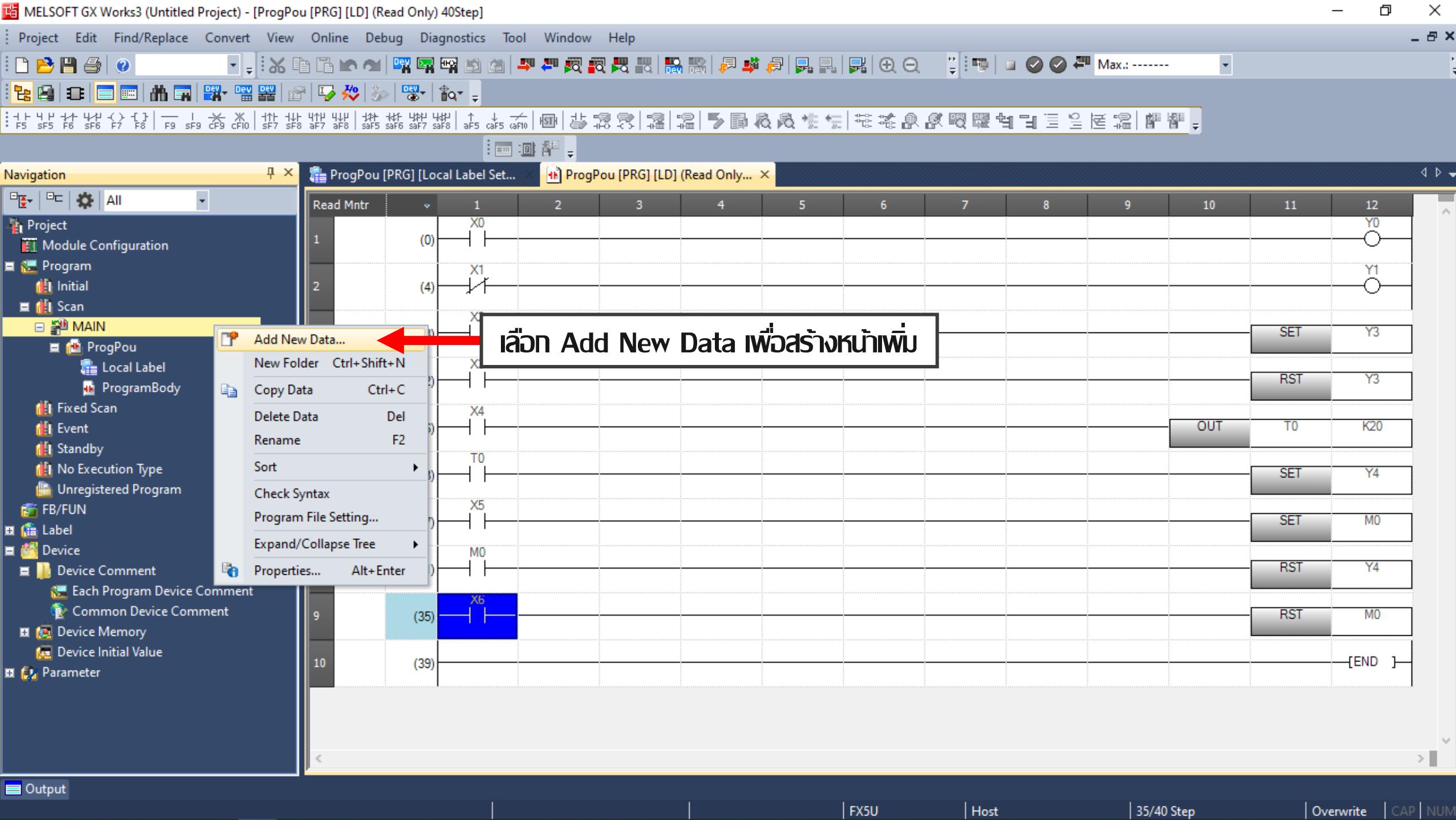


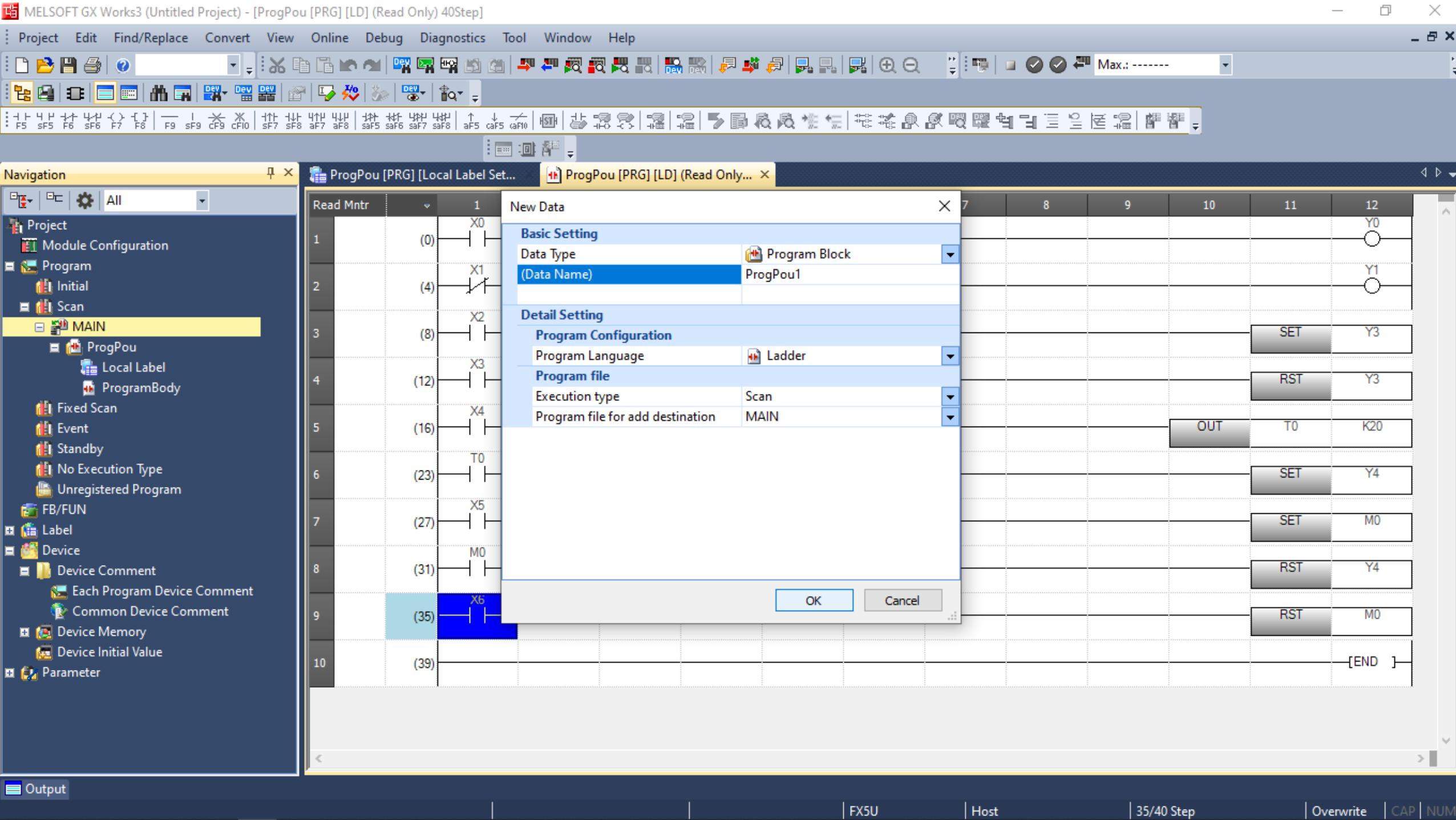












MELSOFT GX Works3 (Untitled Project) - [ProgPou1 [PRG] [LD] 1Step *]

Project Edit Find/Replace Convert View Online Debug Diagnostics Tool Window Help

Max.: -----

F5 SF5 F6 SF6 F7 F8 F9 SF9 CF9 CF10 SF7 SF8 aF7 aF8 saF5 saF6 saF7 saF8 aF5 caF5 caF10

Navigation

All

Project

- Module Configuration
- Program
 - Initial
 - Scan
 - MAIN
 - ProgPou
 - Local Label
 - ProgramBody
 - ProgPou1
 - Local Label
 - ProgramBody
 - Fixed Scan
 - Event
 - Standby
 - No Execution Type
 - Unregistered Program
- FB/FUN
- Label
- Device
 - Device Comment
 - Each Program Device Comment
 - Common Device Comment
 - Device Memory
 - Device Initial Value
- Parameter

Output

ProgPou [PRG] [Local Label Set...]

ProgPou [PRG] [LD] (Read Only...)

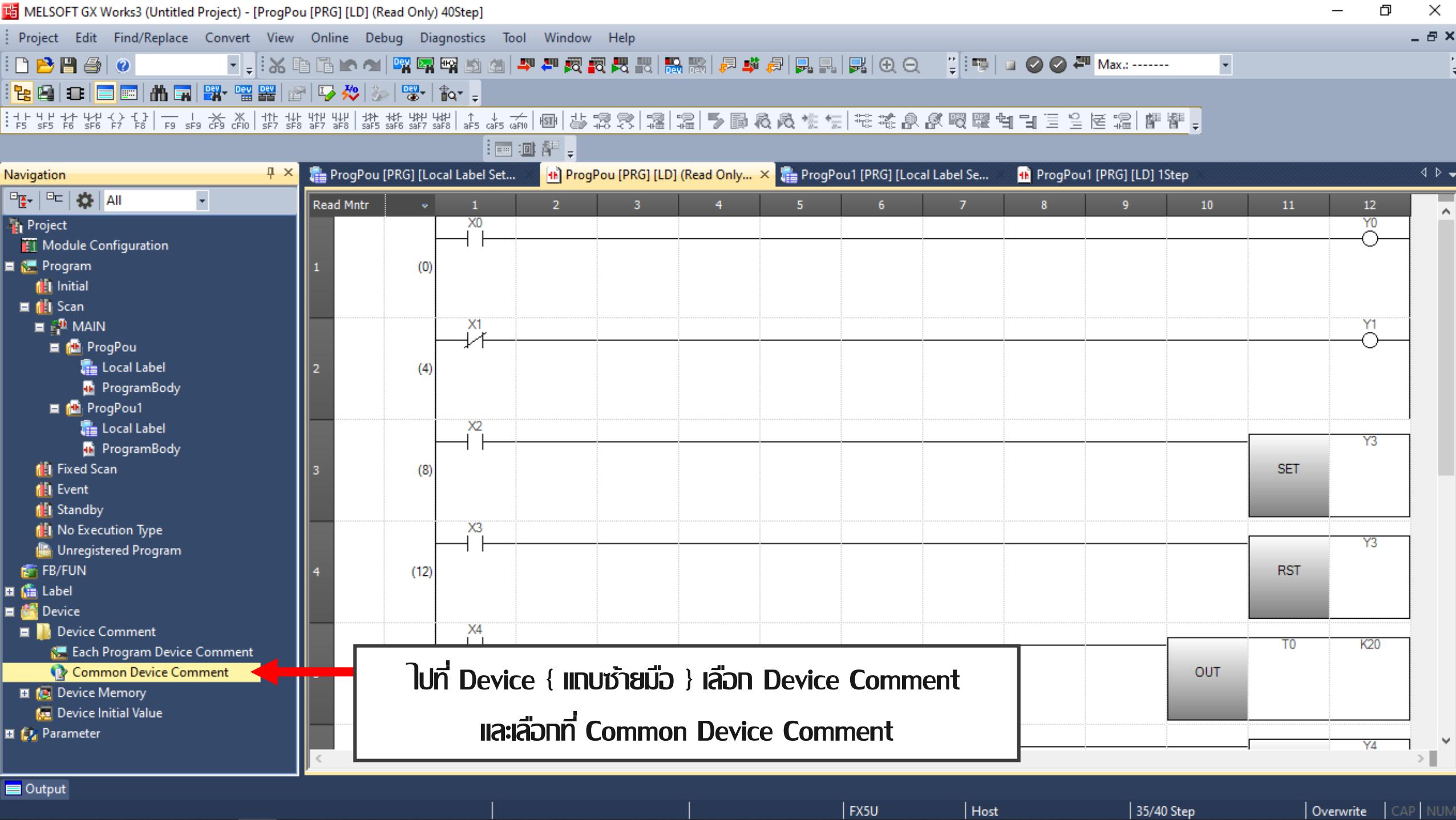
ProgPou1 [PRG] [Local Label Se...]

ProgPou1 [PRG] [LD] 1Step *

Write 1 2 3 4 5 6 7 8 9 10 11 12 [END]

1 (0)

FX5U Host 0/1 Step Overwrite CAP NUM



MELSOFT GX Works3 (Untitled Project) - [COMMENT [Device Comment]]

Project Edit Find/Replace Convert View Online Debug Diagnostics Tool Window Help

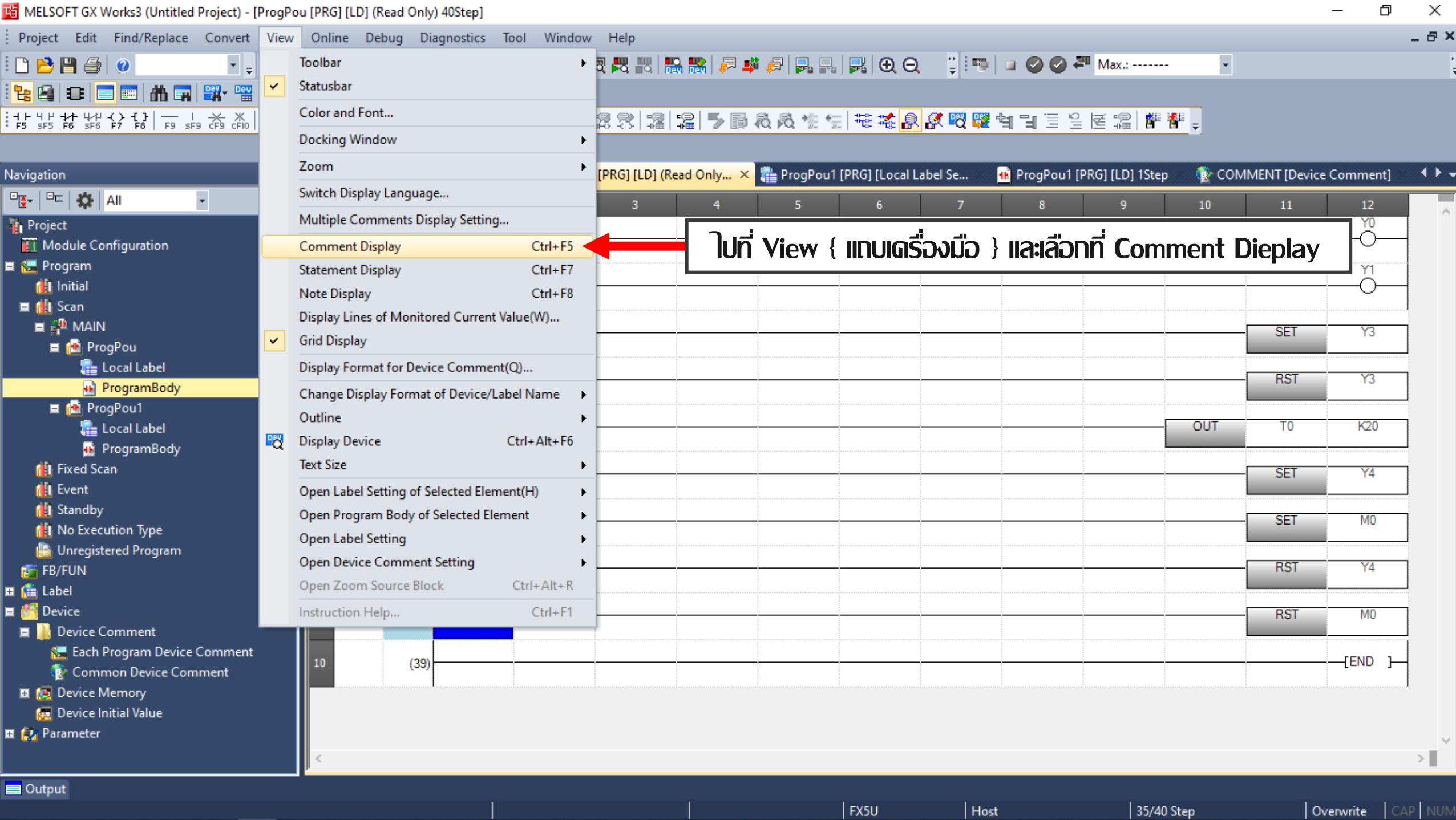
Navigation

Device Name X0 Detailed Conditions

Device Na	Comment
X0	start
X1	
X2	
X3	
X4	
X5	
X6	
X7	
X10	
X11	
X12	
X13	
X14	
X15	
X16	
X17	
X20	
X21	
X22	
X23	
X24	
X25	
X26	
X27	
X30	
v21	

Output

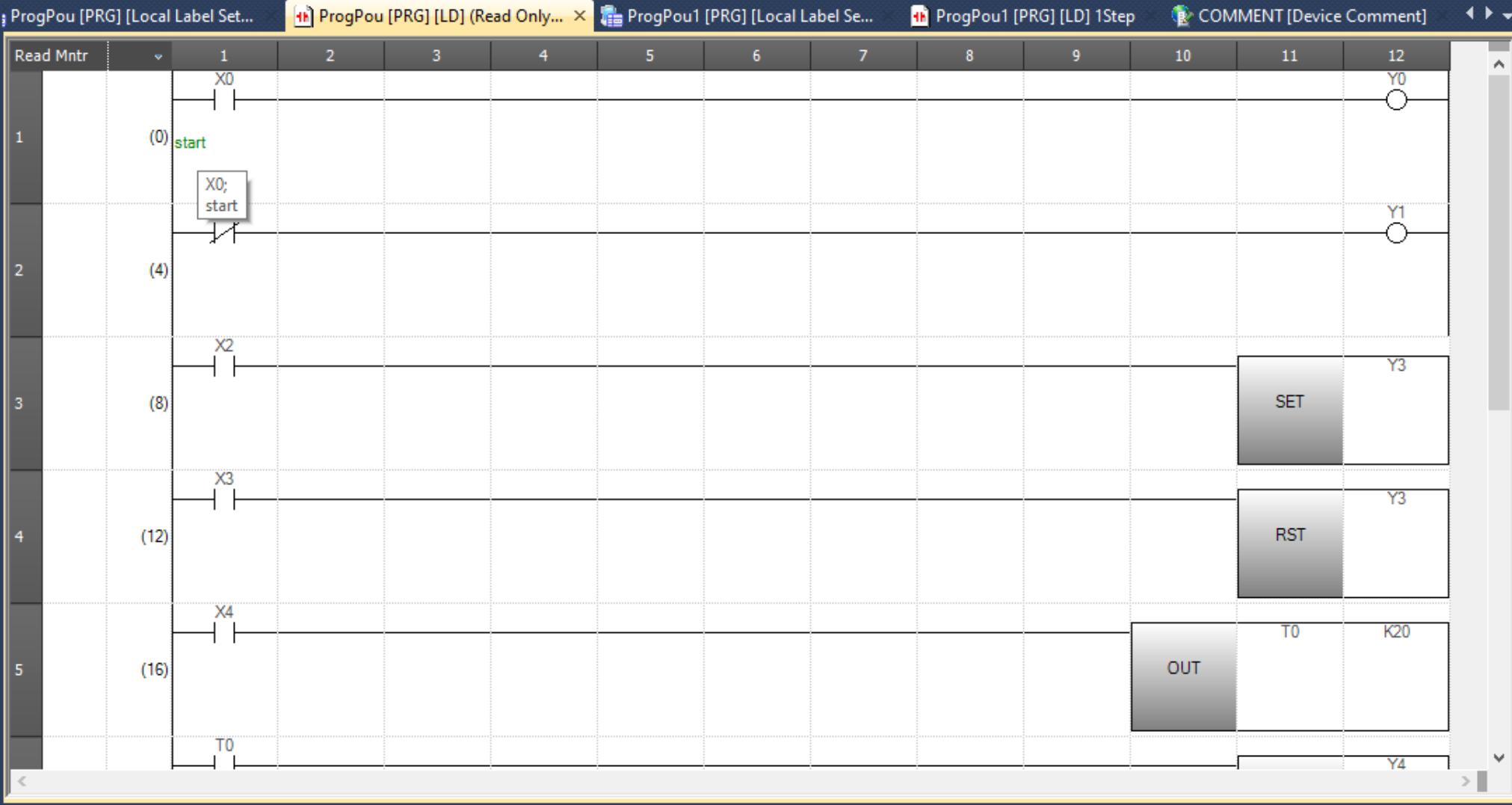
FX5U Host CAP NUM



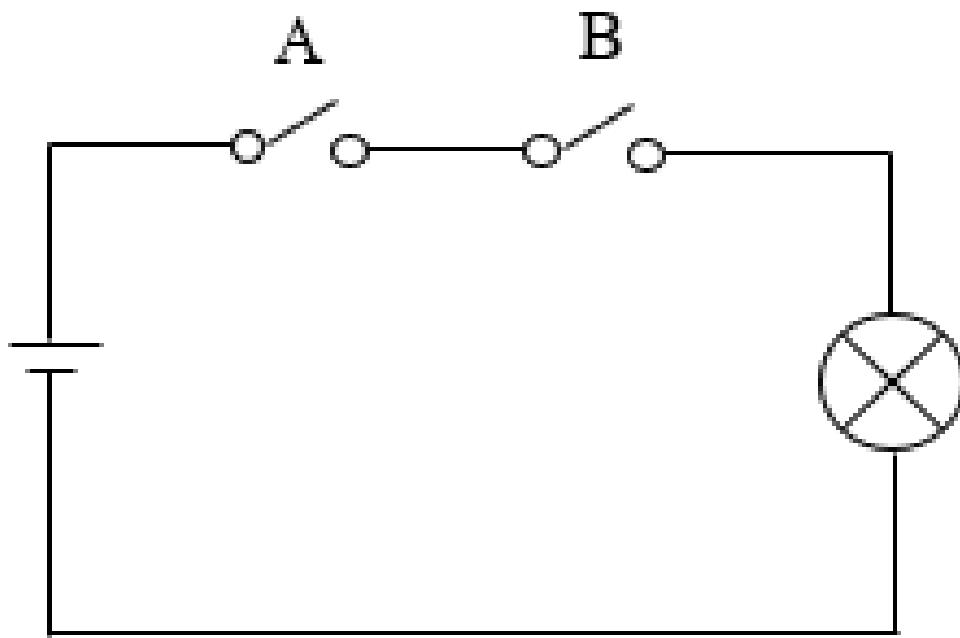


Navigation

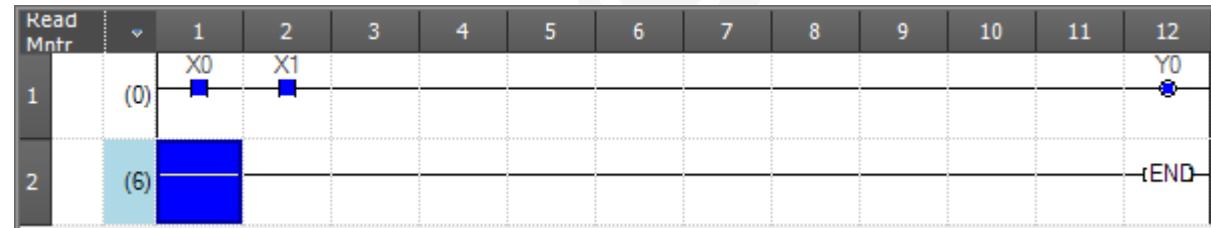
Project
Module Configuration
Program
Initial
Scan
MAIN
ProgPou
Local Label
ProgramBody
ProgPou1
Local Label
ProgramBody
Fixed Scan
Event
Standby
No Execution Type
Unregistered Program
FB/FUN
Label
Device
Device Comment
Each Program Device Comment
Common Device Comment
Device Memory
Device Initial Value
Parameter
Output



การสร้างเงื่อนไข^ๆ “ And ”

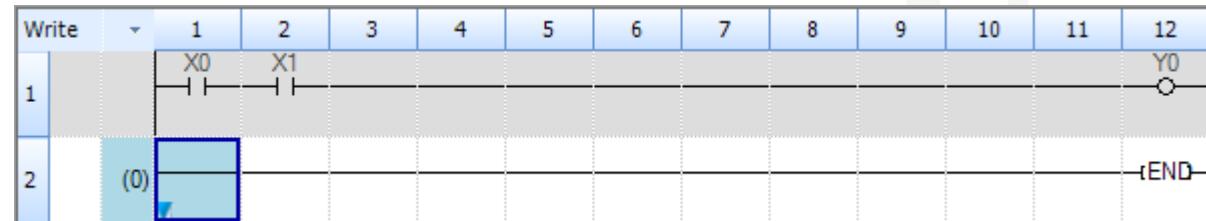


YO ຈ: On ກີຕ່ວເນື່ອ X0 ແລະ: X1 ວຸຍືນສາງ: On ພຣວມກັນທັງສອງຈັນ

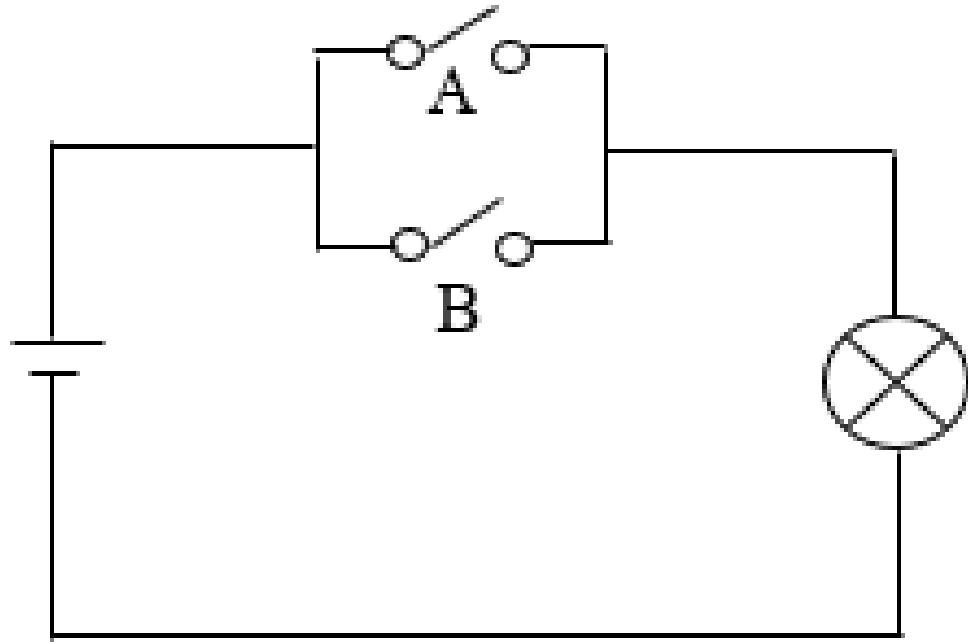


การสร้างเงื่อนไข “ And ”

เป็นการสร้างเงื่อนไขโดยที่มี 2 สิ่งเป็นปัจจัย แล้วต้องทำงานพร้อมกันทั้ง 2 สิ่งนั้น จึงจะทำให้เกิดผลลัพธ์



การสร้างเงื่อนไข “ OR ”



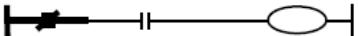
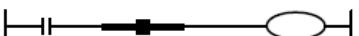
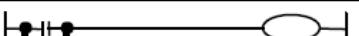
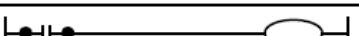
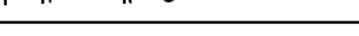
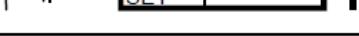
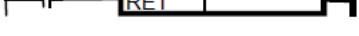
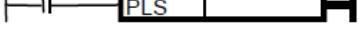
การสร้างเงื่อนไข “ Or ”

เป็นการสร้างเงื่อนไขโดยที่มี 2 สิ่งเป็นปัจจัย แล้วจะทำงานอย่างใดอย่างหนึ่ง จึงจะทำให้เกิดผลลัพธ์หรือทำงานพร้อมกันก็ได้

The timing diagram illustrates the logic levels of inputs X0 and X1 and output Y0 over 12 time steps. Input X0 is high from step 1 to 3, and input X1 is high from step 2 to 4. The output Y0 is high from step 1 to 3 and again from step 7 to 12. A callout box labeled '(6)' points to the output line at step 6.

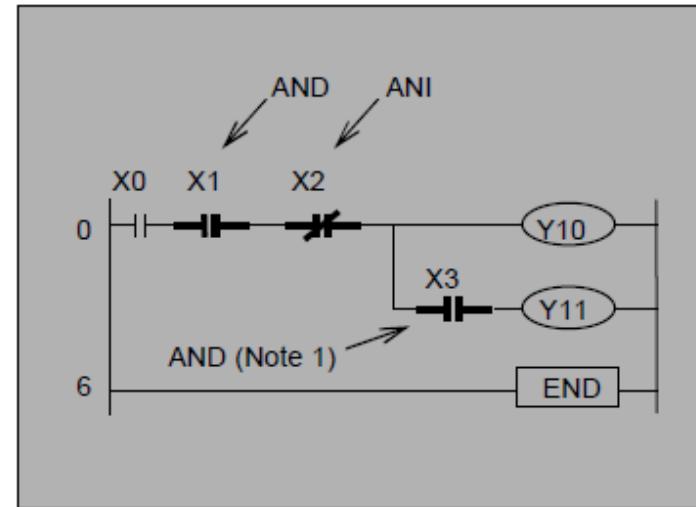
YO ຈ: On ກີຕ່ວເນື້ວ X0 ທີ່ຈະ X1 ວິທີໃນສາກວະ: On ທີ່ຈະ On ພຣອມກັນ

ຕຳຫັ້ງພື້ນຖານບັນ FX-5U

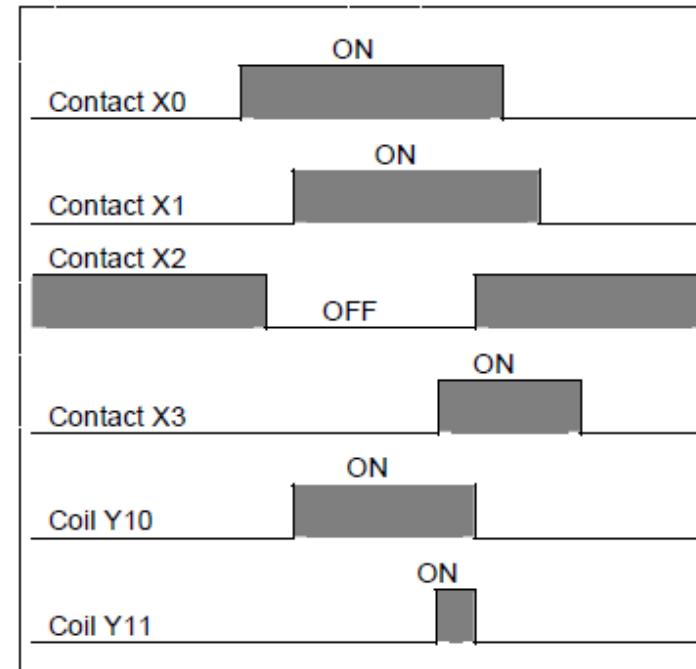
Symbol/Name	Function	Drawing	JIS symbol
[LD] Load	Starting to operate a normally open contact		---
[LDI] Load inverse	Starting to operate a normally closed contact		---
[AND] And	Series connection of normally open contacts		\\ \\
[ANI] And inverse	Series connection of normally closed contacts		\\ \\
[OR] Or	Parallel connection of normally open contacts		\\ \\
[ORI] Or inverse	Parallel connection of normally closed contacts		\\ \\
[ANB] And block	Series connection of blocks		\\ \\
[ORB] Or block	Parallel connection of blocks		\\ \\
[OUT] Out	Coil drive instruction		---
[SET] Set	Operation hold output instruction		---
[RST] Reset	Operation hold cancel instruction		---
[PLS] Pulse	Turns on the specified device for one scan at rising edge of an input condition		---
[PLF] Pulf	Turns on the specified device for one scan at falling edge of an input condition		---
[END] End	Program end	End of the program and return to step 0	\\ \\

ดำเนิน AND ॥a: ANI

[Example of ladder diagram]



[Timing chart]



[List program]

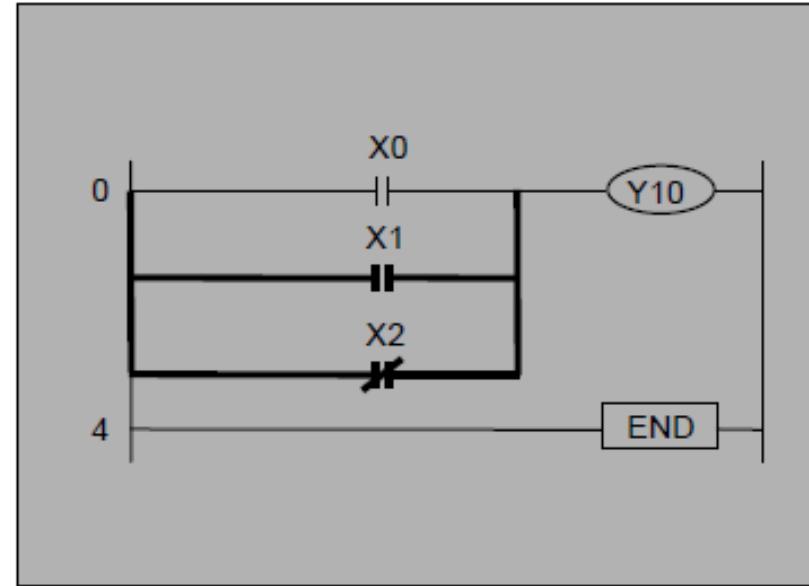
Step	Instruction
0	LD X0
1	AND X1
2	ANI X2
3	OUT Y10
4	AND X3
5	OUT Y11
6	END

- Use the AND (And) instruction for the normally open contact or the ANI (And inverse) instruction for the normally closed contact connected to LD or LDI in series.
- Y10 and Y11 are on when all contacts which drive these contacts connected in series are on.

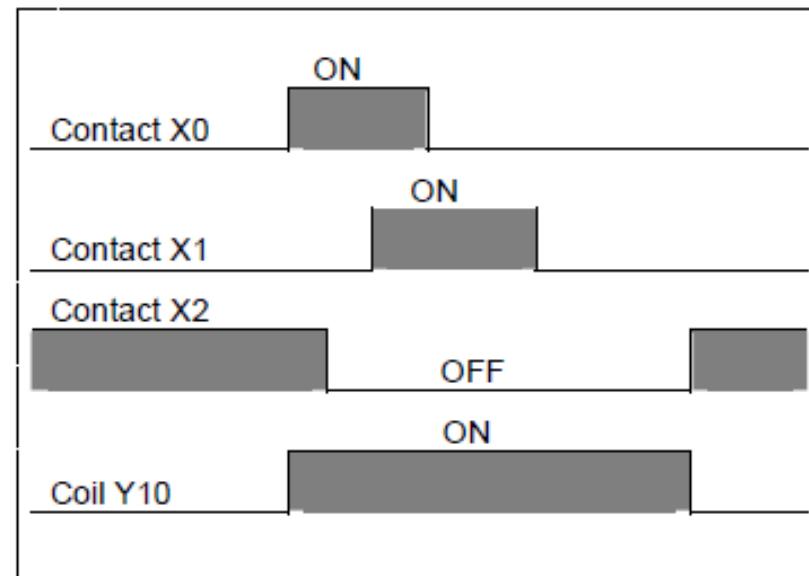
(Note 1) Note that the contact instruction here is always AND or ANI.

ดำเนิน OR ॥a: ORI

[Example of ladder diagram]



[Timing chart]



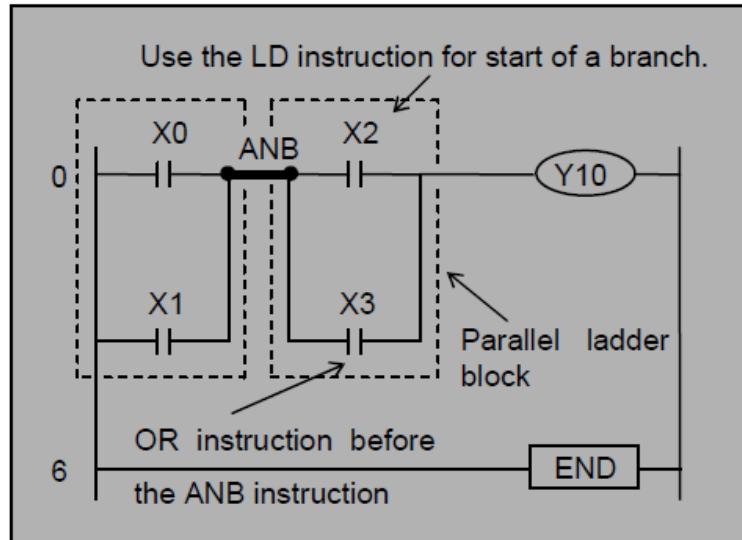
[List program]

Step	Instruction
0	LD X0
1	OR X1
2	ORI X2
3	OUT Y10
4	END

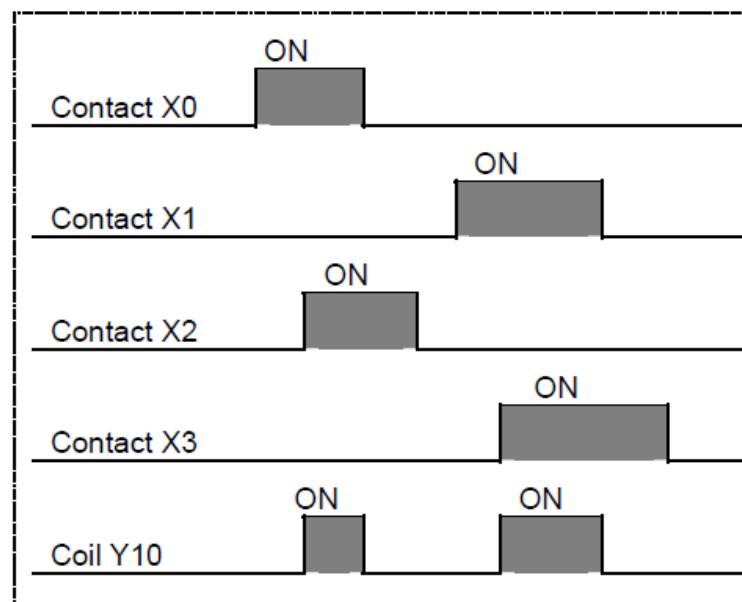
- Use the OR (Or) instruction for the normally open contact or the ORI (Or inverse) instruction for the normally closed contact connected to LD or LDI in parallel.
- In the left figure, the output Y10 turns on when one of the contacts connected to Y10 in parallel is on.

ดำเนิน ANB (And Block)

[Example of ladder diagram]



[Timing chart]

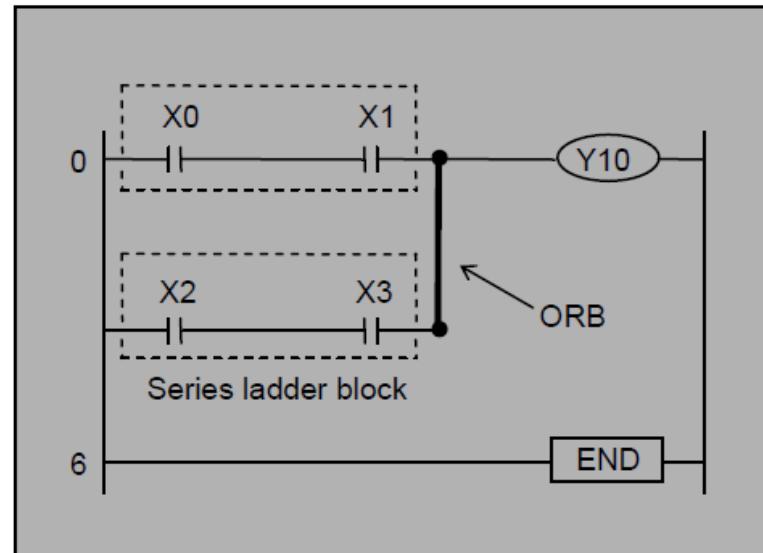


[List program]

Step	Instruction	
0	LD	X0
1	OR	X1
2	LD	X2
3	OR	X3
4	ANB	
5	OUT	Y10
6	END	

- To connect ladder blocks where contacts are connected in parallel in series as shown left, use the ANB (And block) instruction.
- A device number is not assigned to the ANB instruction.
In this type of program, the LD instruction is used for the contact X2. The OR instruction is used since X1 and X3 are connected to X0 and X2, for which the LD instruction is used, in parallel.

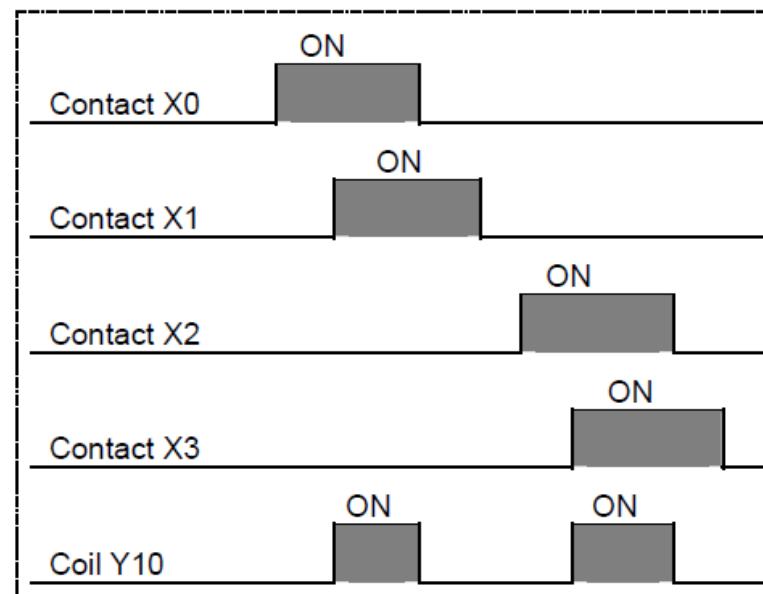
[Example of ladder diagram]



[List program]

Step	Instruction
0	LD X0
1	AND X1
2	LD X2
3	AND X3
4	ORB
5	OUT Y10
6	END

[Timing chart]



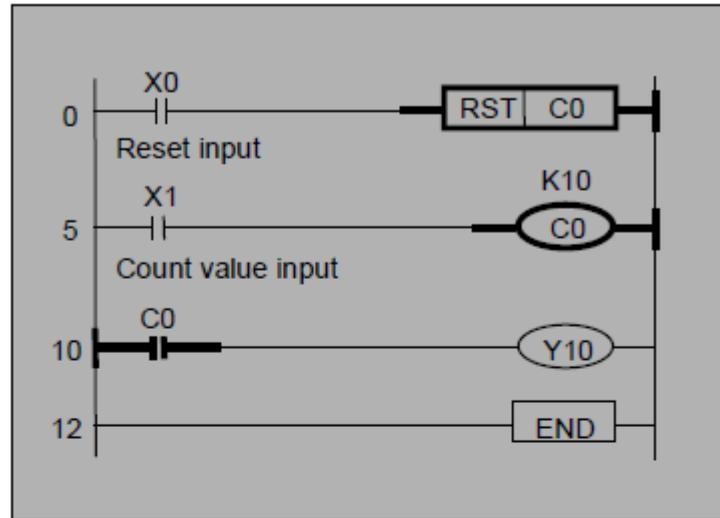
- The OR and ORI instructions connect one contact to the previous LD contact in parallel.

To connect a ladder block where contacts are connected in series in parallel as shown left, use the ORB (Or block) instruction.

- A device number is not assigned to the ORB instruction.
In this type of program, the LD instruction is used for the contact X2.

ចាំសំង C (Counter)

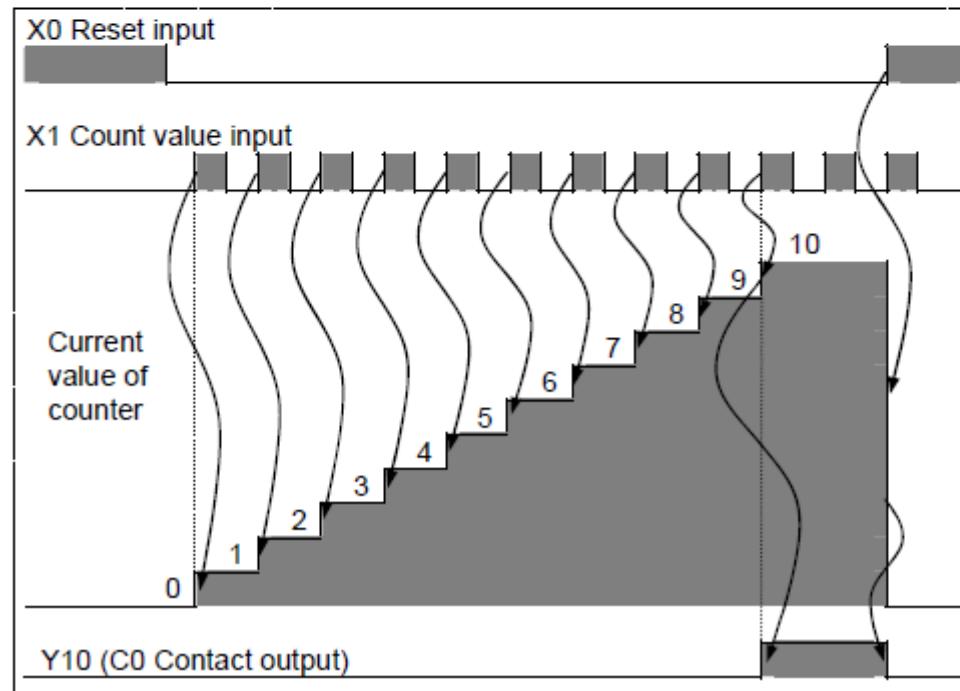
[Example of ladder diagram]



[List program]

Step	Instruction
0	LD X0
1	RST C0
5	LD X1
6	OUT C0 K10
10	LD C0
11	OUT Y10
12	END

[Timing chart]



- The counter counts how many times the contact (X1) is turned on from off. The contact (X1) is called the count value input, and the value counted by the counter is called current value.
- The counter contact is turned on when the current value reaches the specified number (set value).
- After the count, the current counter value does not change and the output contact remains on.

Exercise 1 Signal Light control

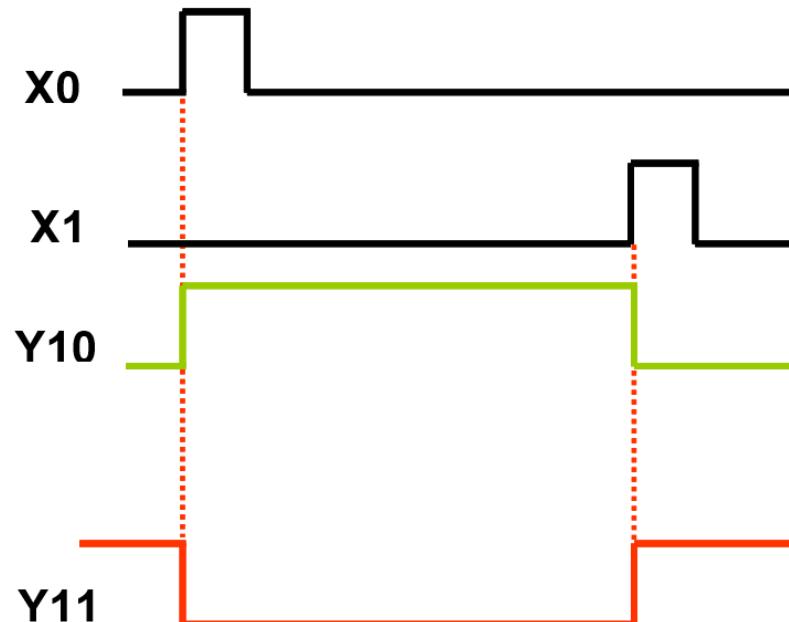
Hardware



Switches



Tower light



Input	Output
X0 -Start	Y10- Green Lamp
X1 - Stop	Y11- Yellow Lamp

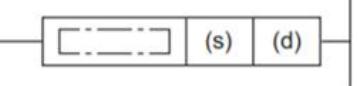
ການເວັບຄົດ

Adding 16-bit binary data

+**(P)(_U)** instruction and ADD(**P**)**(_U)** instruction can be used for addition of 16-bit binary data.

+**(P)(_U)** [using two operands]

These instructions add the 16-bit binary data in the device specified by (d) and the 16-bit binary data in the device specified by (s), and store the result in the device specified by (d).

Ladder diagram	Structured text
	Not supported

Setting data

■Descriptions, ranges, and data types

Operand		Description	Range	Data type	Data type (label)
(s)	+ (P)	Addend data or the device where the data that is added to another is stored	-32768 to +32767	16-bit signed binary	ANY16_S
	+ (P)_U		0 to 65535	16-bit unsigned binary	ANY16_U
(d)	+ (P)	Device where the data to which another is added is stored	-32768 to +32767	16-bit signed binary	ANY16_S
	+ (P)_U		0 to 65535	16-bit unsigned binary	ANY16_U

Subtracting 16-bit binary data

$-(P)(_U)$ instruction and SUB(P)(_U) instruction can be used for subtraction of 16-bit binary data.

$-(P)(_U)$ [using two operands]

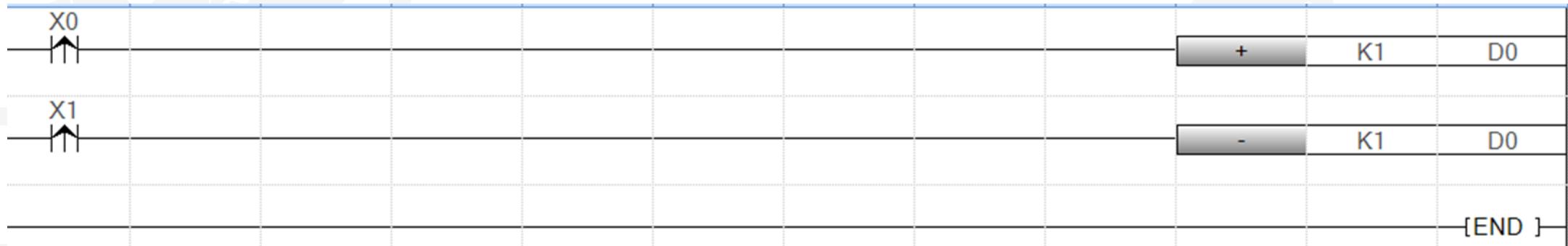
These instructions subtract the 16-bit binary data in the device specified by (d) and the 16-bit binary data in the device specified by (s), and store the result in the device specified by (d).

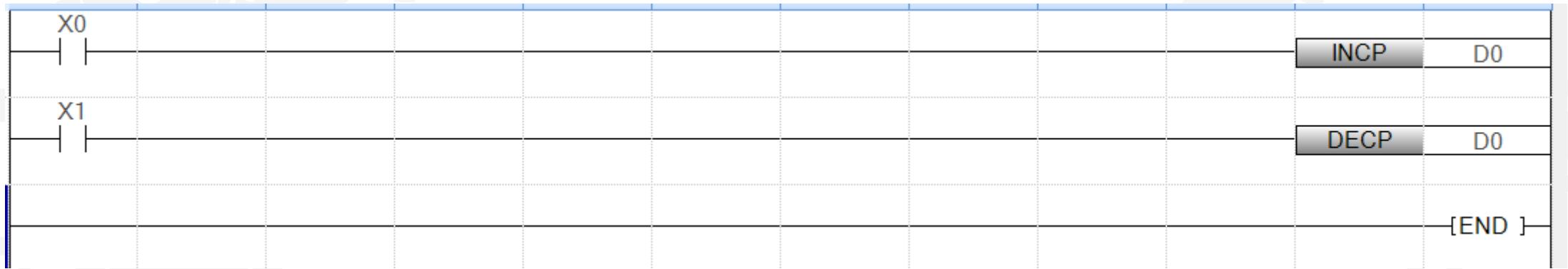
Ladder diagram	Structured text
	Not supported

Setting data

■ Descriptions, ranges, and data types

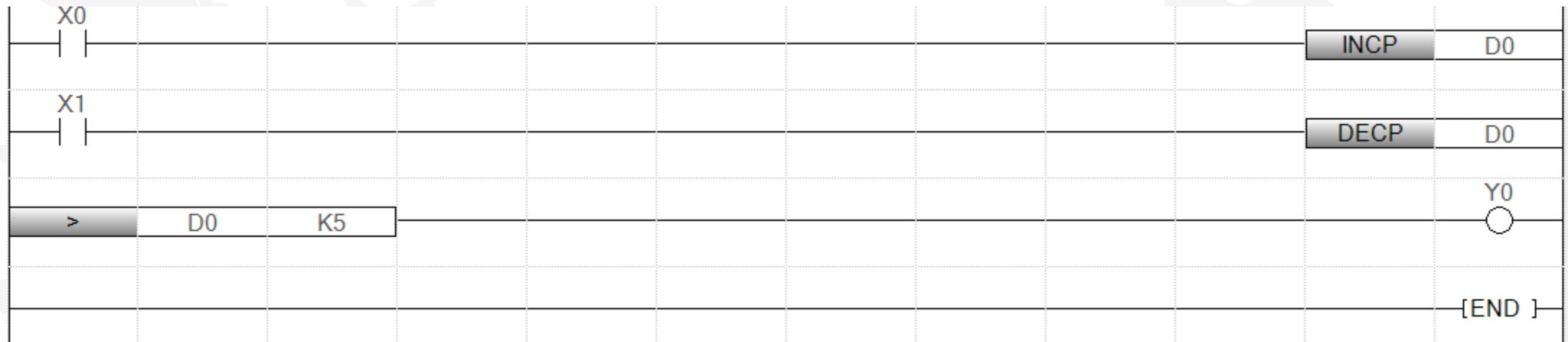
Operand	Description	Range	Data type	Data type (label)
(s)	$-(P)$	-32768 to +32767 0 to 65535	16-bit signed binary	ANY16_S
	$-(P)_U$		16-bit unsigned binary	ANY16_U
(d)	$-(P)$	-32768 to +32767 0 to 65535	16-bit signed binary	ANY16_S
	$-(P)_U$		16-bit unsigned binary	ANY16_U

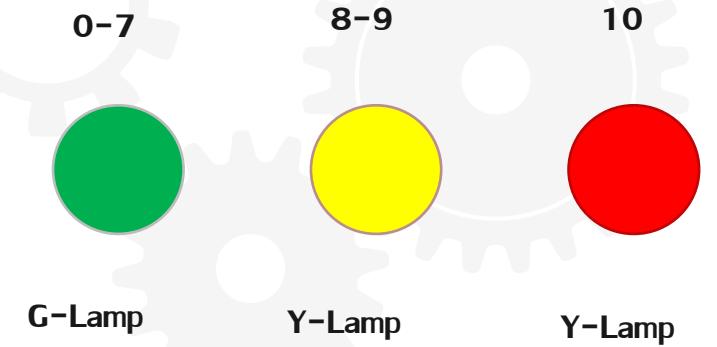
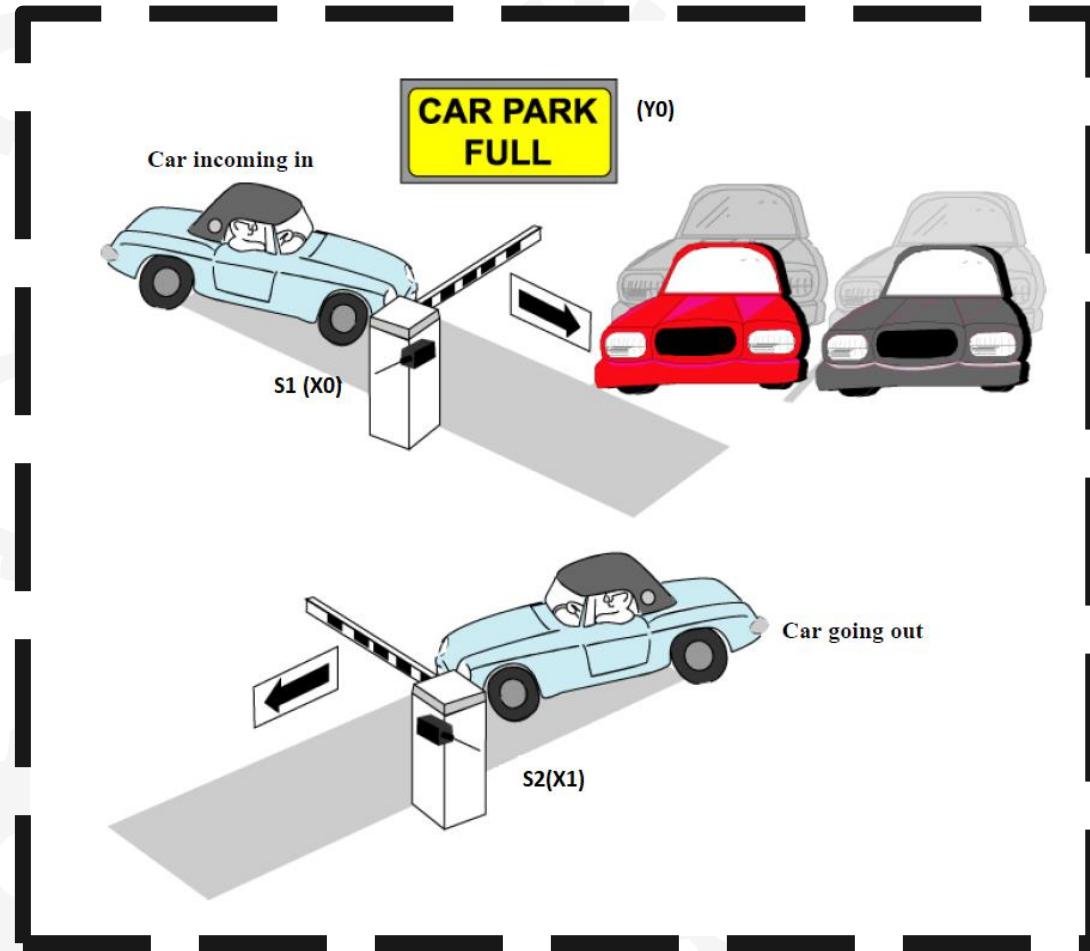




➤ คำสั่งเปรียบเทียบค่า

Instruction symbol	Condition
$=(_U)$	$(s1) = (s2)$
$<(_U)$	$(s1) \neq (s2)$
$>(_U)$	$(s1) > (s2)$
$\leq(_U)$	$(s1) \leq (s2)$
$<(_U)$	$(s1) < (s2)$
$\geq(_U)$	$(s1) \geq (s2)$
$=(_U)$	$(s1) \neq (s2)$
$<(_U)$	$(s1) = (s2)$
$>(_U)$	$(s1) \leq (s2)$
$\leq(_U)$	$(s1) > (s2)$
$<(_U)$	$(s1) \geq (s2)$
$\geq(_U)$	$(s1) < (s2)$

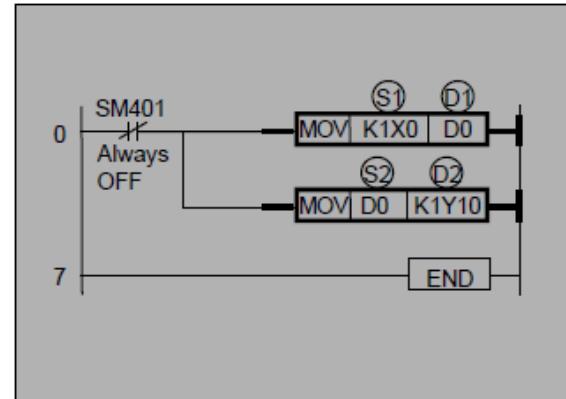




Input	Output
X0 -Sensor IN	Y0- Green Lamp
X1 - Sensor OUT	Y1- Yellow Lamp
	Y2- Red Lamp

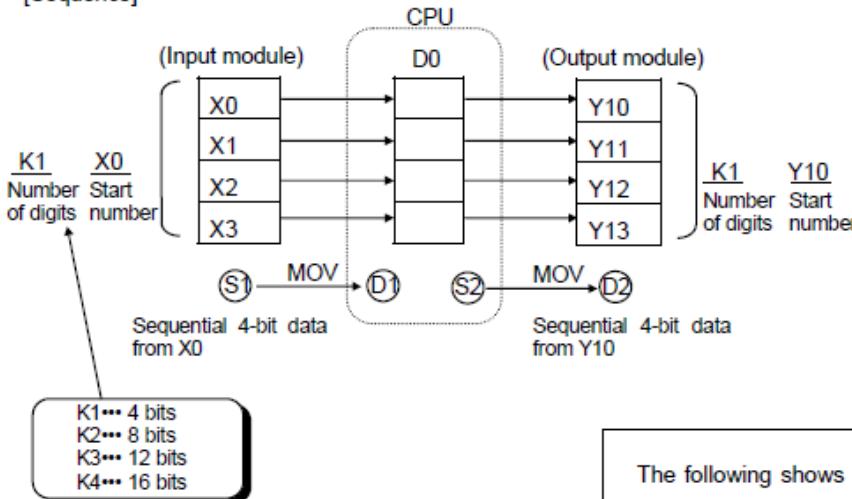
ดำเนินพิธี MOV

[Example of ladder diagram]



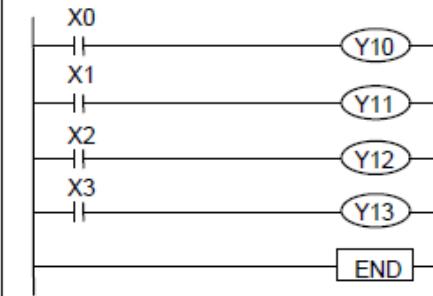
- When the input condition is turned on, the data in the device specified by **(S)** are transferred to the device specified by **(D)**.
- Use the MOV instruction when reading the changing data for all the time.
- Use the MOVP instruction (P is a capital of Pulse) to transfer data instantaneously such as setting data or reading data at an error.

[Sequence]

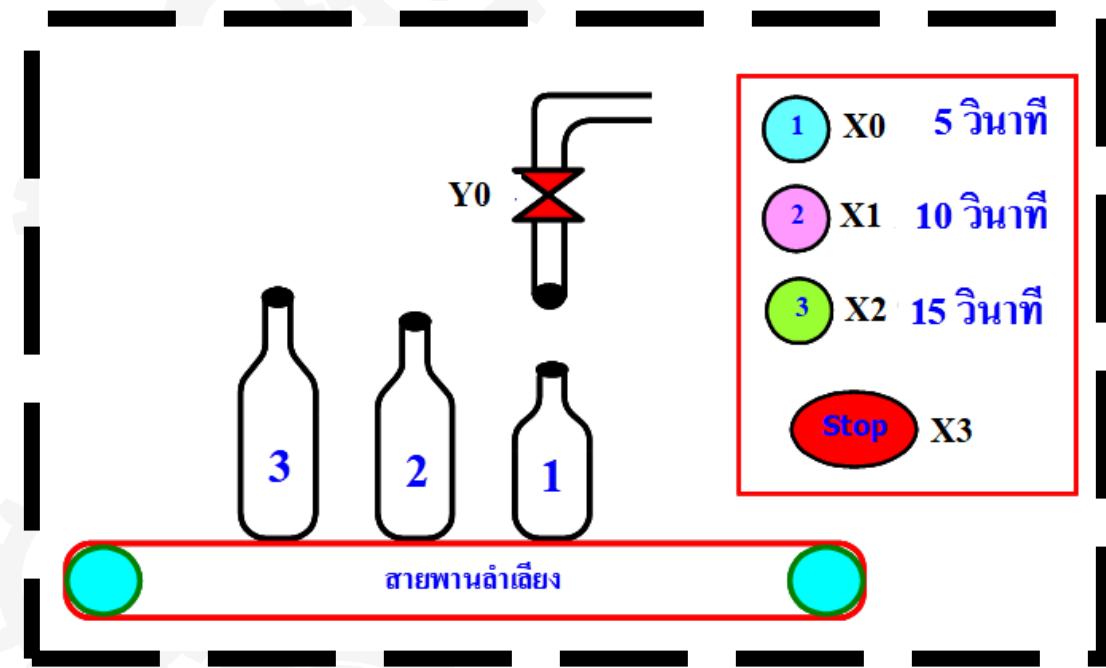


Turning on the input X0 turns on Y10.
Turning on the input X1 turns on Y11.
Turning on the input X2 turns on Y12.
Turning on the input X3 turns on Y13.

The following shows a program which is created without the MOV instruction.



Exercise 3 Water machine



Input	Output
X0 – 5s	Y10- Solenoid valve
X1 - 10s	
X2 – 15s	

- เมื่อกดสวิตช์หมายเลขตามขนาดของขวด Y0 จะทำงานทันที เดร็งจะเติมน้ำลงขวดตามเวลาที่กำหนด
- บน: กีซีลินวิล์วอล์ Y0 กำลังทำงาน สวิตช์หมายเลข 1 – 3 ก็ไม่มีผลต่อการทำงาน
- เมื่อซีลินวิล์วอล์ Y0 หยุดทำงานจึงสามารถกดสวิตช์หมายเลข 1 – 3 เพื่อทำงานต่อ แต่ถ้าต้องการหยุดในขณะที่ Y0 ทำงาน ให้กดปุ่มสวิตช์ Stop (X3 ON) และ Y0 จะหยุดทำงาน แล้วจึงสามารถกดสวิตช์หมายเลข 1 – 3 เพื่อทำงานต่อไปได้

▶ หน่วยความจำพิเศษ (Special Relay)

เปรียบเทียบ Special Relay PLC Q, L, iQ-R, iQ-F (FX5) และ FX

Q, L, iQ-R	iQ-F (หรือ FX5)	FX	ความหมาย
SM400	SM400, SM8000	M8000	Always ON
SM401	SM401, SM8001	M8001	Always OFF
SM402	SM402, SM8002	M8002	After RUN, ON for 1 scan only
SM403	SM403, SM8003	M8003	After RUN, OFF for 1 scan only
SM409	SM409, SM8011	M8011	0.01 second clock
SM410	SM410, SM8012	M8012	0.1 second clock
SM411	SM411		0.2 second clock
SM412	SM412, SM8013	M8013	1 second clock
SM413	SM413		2 second clock
	SM8014	M8014	1 minute clock

ລັກທະນະຂອງສັບຍາມ Special Relay)

System clock

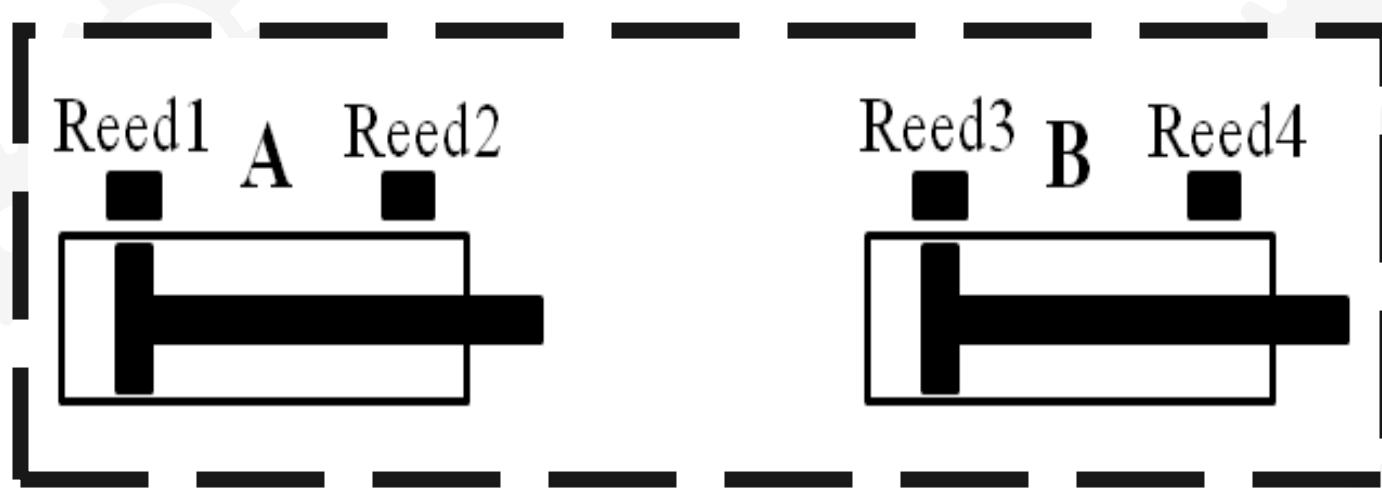
The special relay about system clock is shown below.

R: Read only, R/W: Read/Write

No.	Name	Description	R/W
SM400	Always ON	ON _____ OFF	R
SM401	Always OFF	ON OFF_____	R
SM402	After RUN, ON for one scan only	ON [] 1 scan OFF []	R
SM403	After RUN, OFF for one scan only	ON [] OFF [] 1 scan	R
SM409	0.01 second clock	0.005 s [] 0.005 s	R
SM410	0.1 second clock	0.05 s [] 0.05 s	R
SM411	0.2 second clock	0.1 s [] 0.1 s	R
SM412	1 second clock	0.5 s [] 0.5 s	R
SM413	2 second clock	1 s [] 1 s	R
SM414	2n second clock	n s [] n s	R

Basic Programming

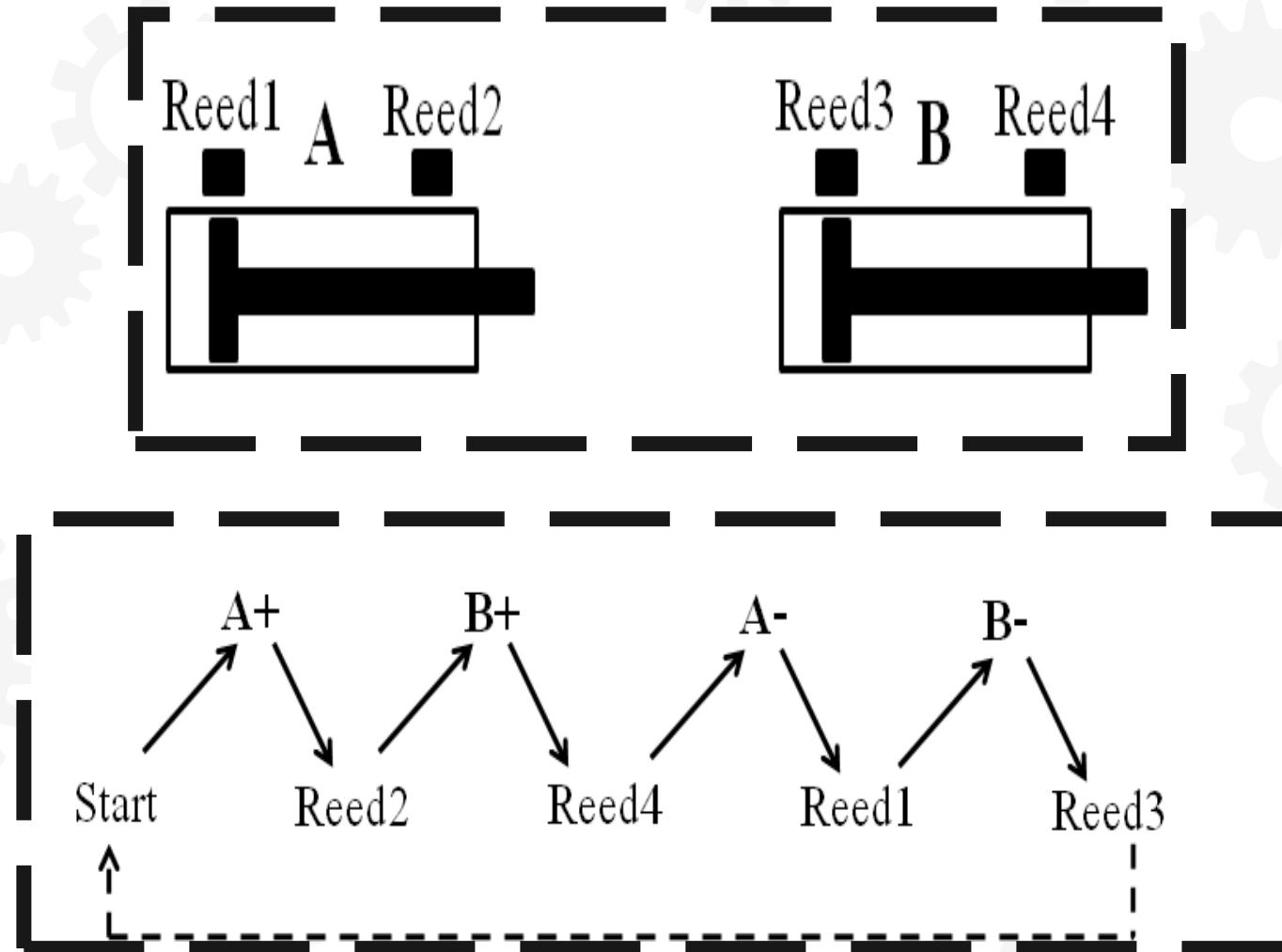
❖ การควบคุมแบบเลื่อนลำดับขั้น (Sequence Control)



- A+ ແກນ ກຮ:ບວກສູບ A ເດລື່ວນທີ່ຈົກ
- A- ແກນ ກຮ:ບວກສູບ A ເດລື່ວນທີ່ເຂົ້າ
- B+ ແກນ ກຮ:ບວກສູບ B ເດລື່ວນທີ່ຈົກ
- B- ແກນ ກຮ:ບວກສູບ B ເດລື່ວນທີ່ເຂົ້າ

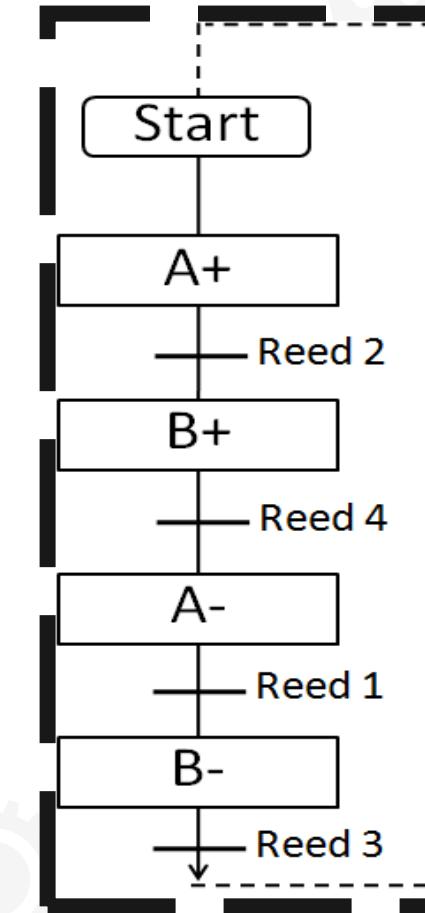
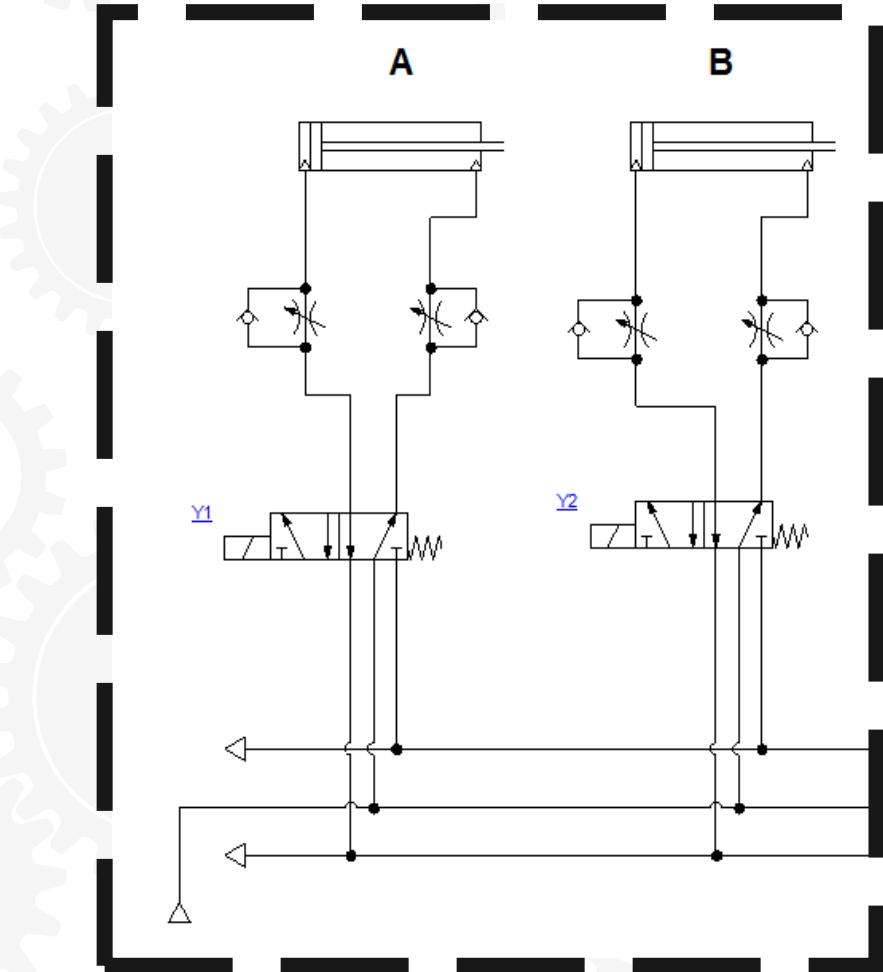
Sequence Control Programming

- ❖ การเขียนโปรแกรมการทำงานแบบ Signal Flow Diagram



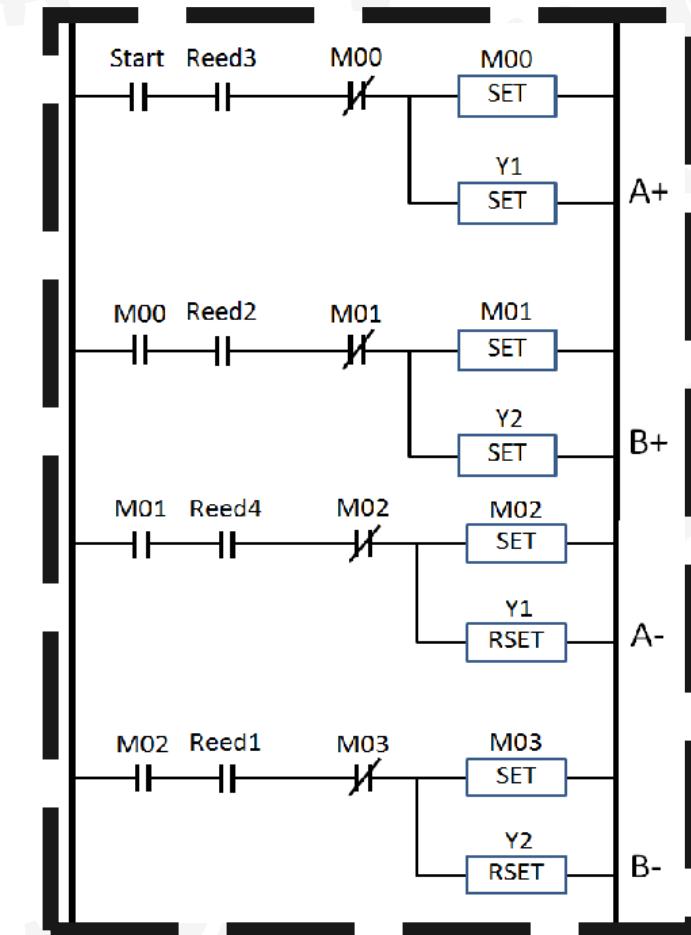
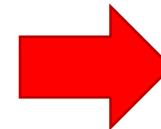
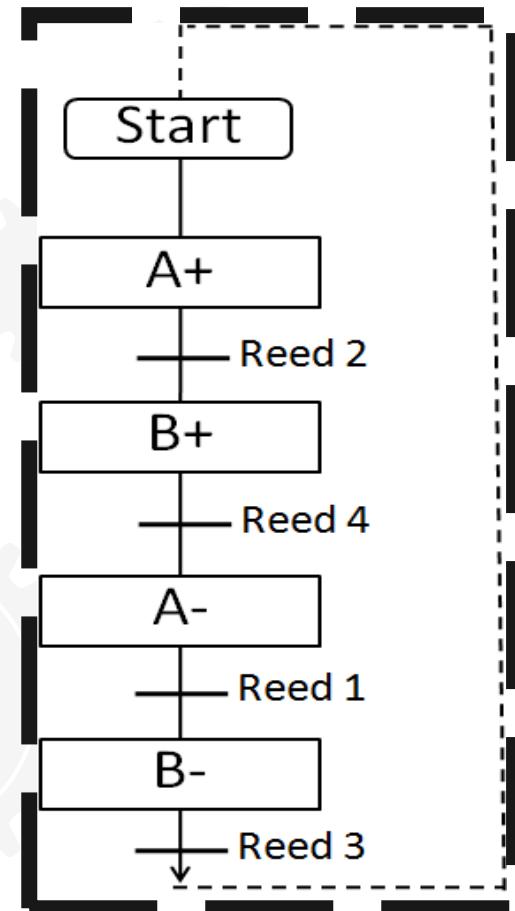
Sequence Control Programming

❖ การเขียนโปรแกรมแบบ Function Chart



Sequence Control Programming

❖ การเขียนโปรแกรม Ladder สำหรับ Sequence Control



Sequence Control Programming

- ❖ การเขียนโปรแกรม Ladder แบบ Sequence Control (ต่อ)

