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What is the best practice to handle a logic with two Function Blocks in a Jump loop?

Published date: 24 March 2020

Issue

As defined in IEC61131-3, the outputs from deactivated functions (caused by EN=0 or an error during execution) are undefined and programmers have to avoid the kind of code below when have it inside of a Jump loop.



Product Line

Ecostruxure Control Expert

Environment

Control Expert v14.1, Windows 10 version 1902 (OS Build 18362.30)

Resolution

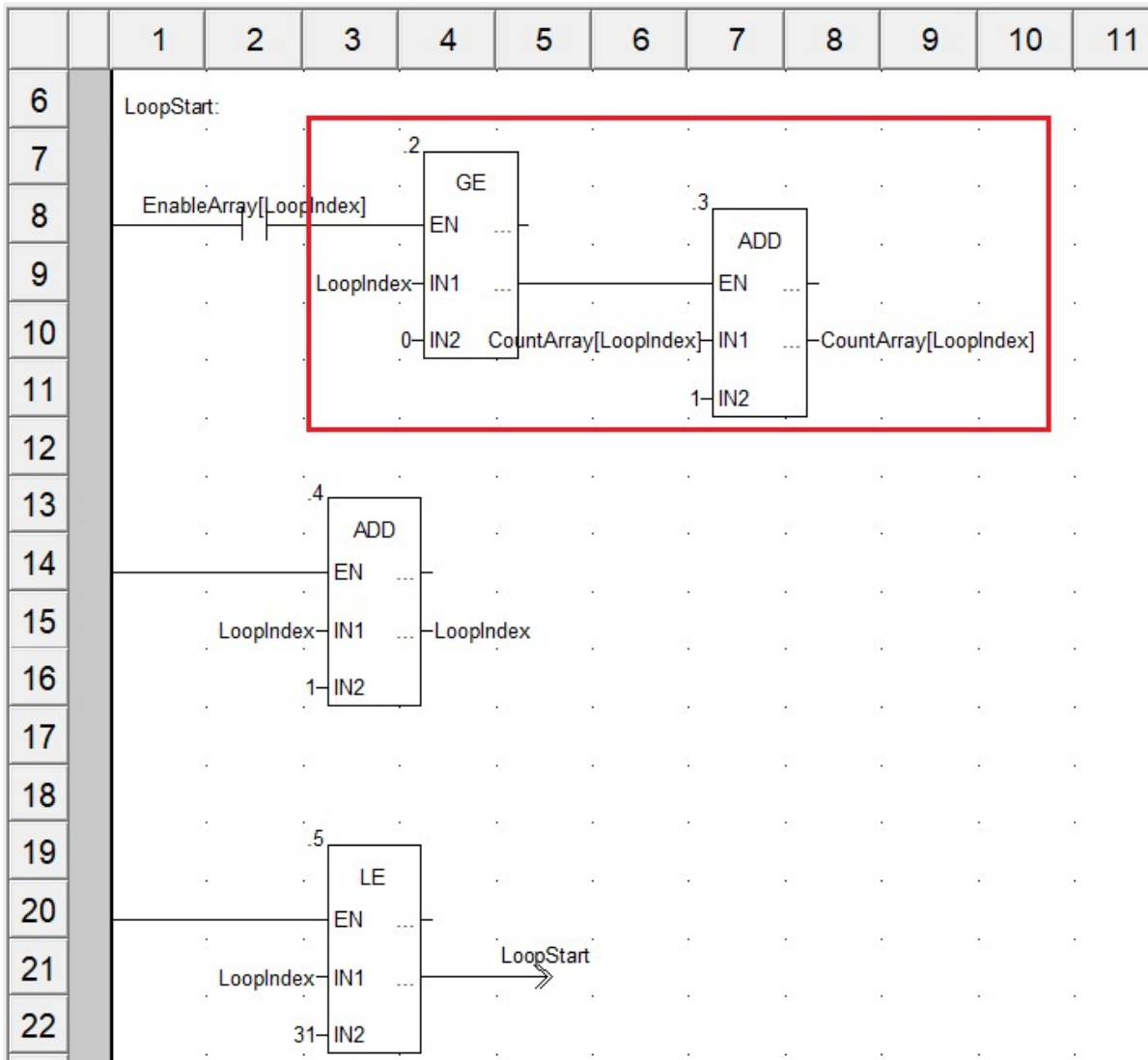
The EcoStruxure Control Expert Help states that as defined in IEC61131-3, the outputs from deactivated functions (caused by EN=0 or an error during execution) are undefined. So based on the picture above, if the EN of FUNCBLOCK_1 is set to "0", the link on output OUT of FUNCBLOCK_1 maintains the old status it had during the last correctly executed cycle.

This should be taking in consideration while you are developing your program, specially if you have it inside of jump loops as in this scenario the same Function Block is executed multiple time the logic on the same cycle and the output is maintained.

You can find below an illustration of this behavior:

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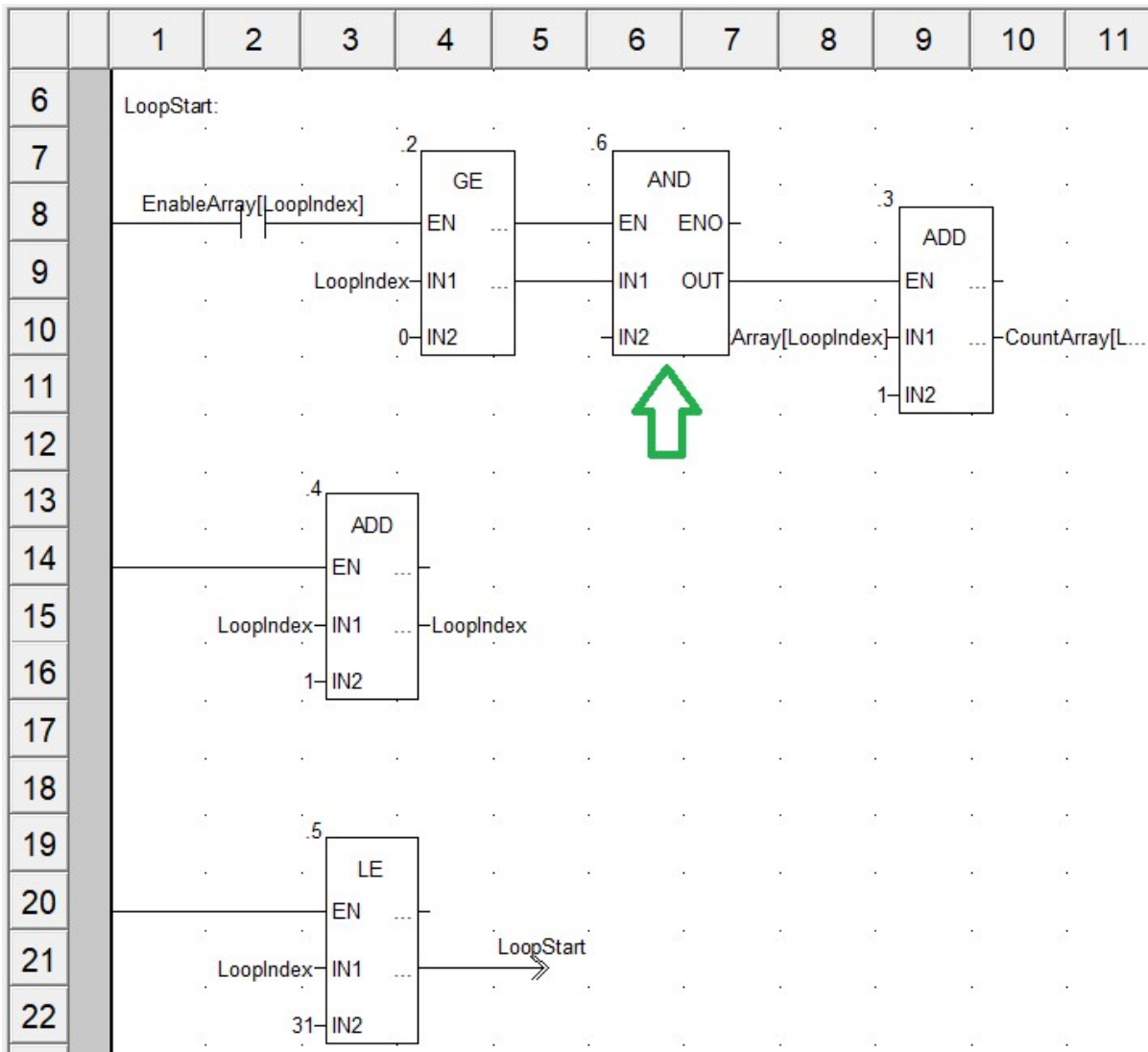
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In this case, the value 1 of the ADD will be added to all the variables of the `CountArray[LoopIndex]` array if the first bit of the `EnableArray[LoopIndex]` has the value 1 as the GE maintains the status of the first time that the logic is executed in the loop for the same scan of the PLC. To avoid this scenario, you should change your logic to one of the two best practices of programming showed below using a contact between the two Function Blocks or an AND.

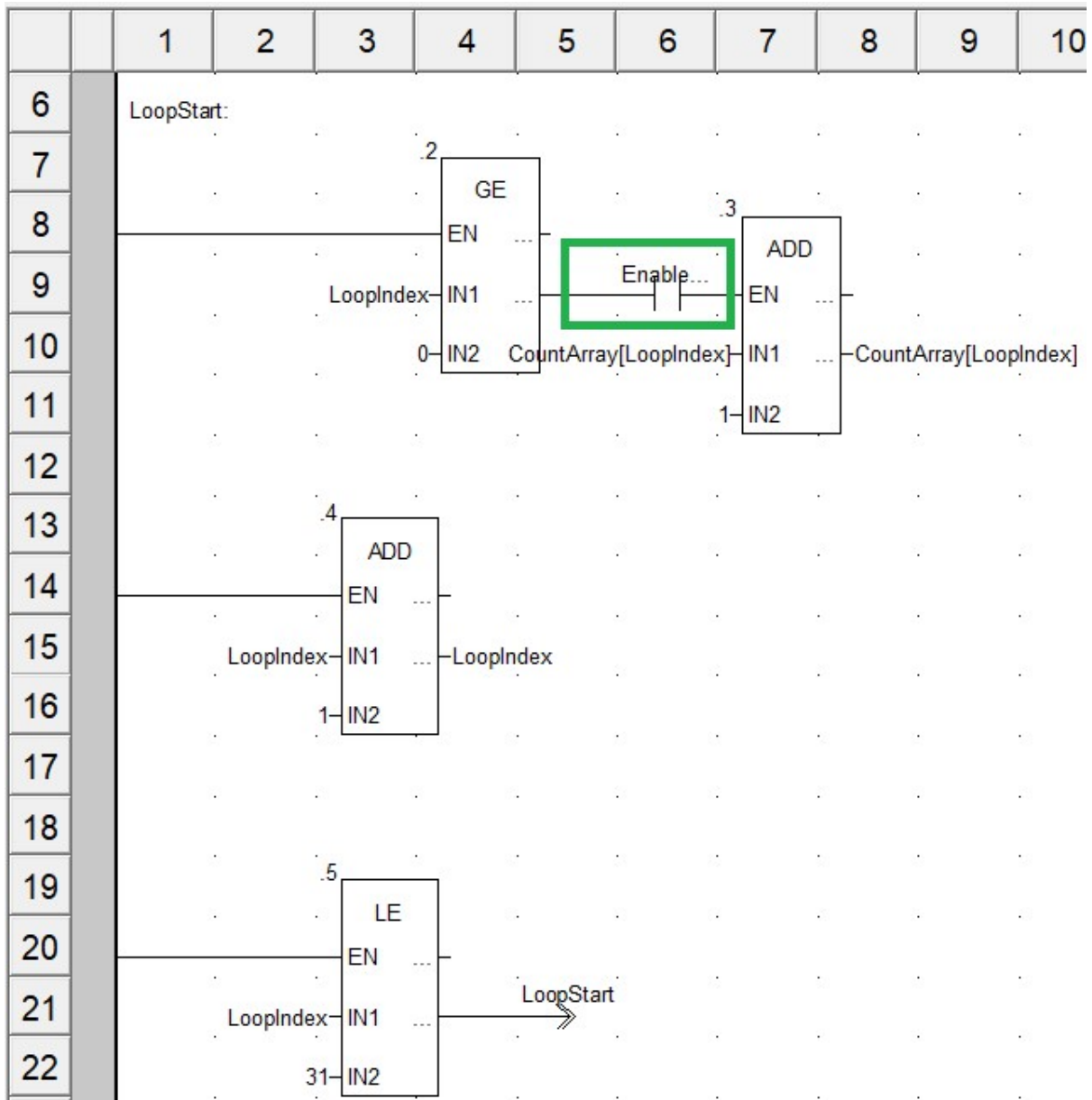
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P.S.: You can find more information about this topic on page 296 of the [EcoStruxure Control Expert - Program Languages and Structure Reference Manual](#).

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