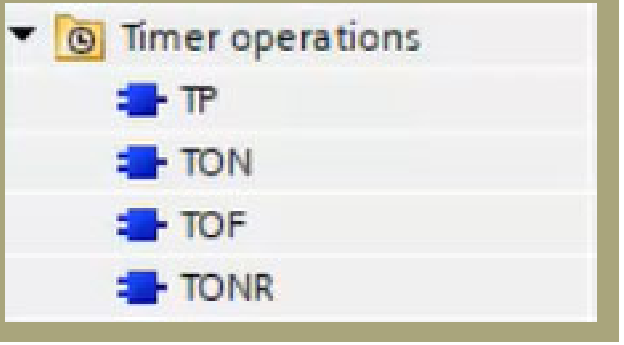
Lecture 2 – Part 2
Programming PLC

Timers for PLC

Timers

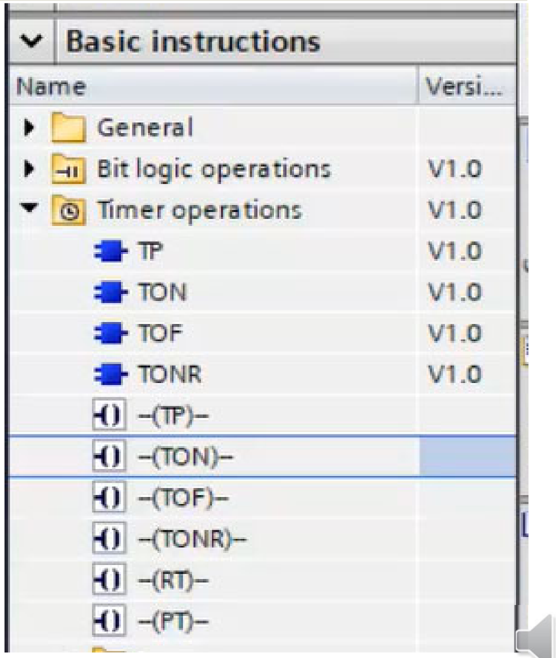


- Timers are common elements in electrical and electronics applications, where we would want a certain action (change state of a Boolean bit) after the desired time
- On-Delay Timer (TON)
  - Delay turning **ON** the output after (Q) the programmed preset time (PT) as a result of IN = 1
- Off-Delay Timer (TOF)
  - Delay turning **OFF** the output after (Q) the programmed preset time (PT) as a result of IN from 1 to 0
- Retentive Timer / Time Accumulator (TONR)
  - Accumulates the time IN=1 and would turns **ON** output (Q) when the accumulated elapsed time (ET) reaches preset time (PT)
  - Reset input resets the ET and turn **OFF** output Q
- Pulse Timer (TP)
  - Generate a pulse after input rising edge is sensed

IEC Timer Parameters

Parameters	Declaration	Data Type	Description
IN	Input	BOOL	Start Input
R	Input	BOOL	Reset Input
PT	Input	Time, LTime	Maximum duration of time recording
Q	Output	BOOL	Output that is set as a function of timer
ET	Output	Time,LTime	Accumulated time

- IEC Timers are function blocks (FB) with pre-defined functions that could allow programmer to reuse the functions
- Each FB require an instance to be declared, and there are several variables associated
- DataBlock (DB) declaration is required for the instance, with an unique name and has it's own data area (global)



Basic instructions

Name	Versi...
General	
Bit logic operations	V1.0
Timer operations	V1.0
TP	V1.0
TON	V1.0
TOF	V1.0
TONR	V1.0
-(TP)-	
-(TON)-	
-(TOF)-	
-(TONR)-	
-(RT)-	
-(PT)-	

Explanation of TON: https://youtu.be/lmYo8SjHLCM

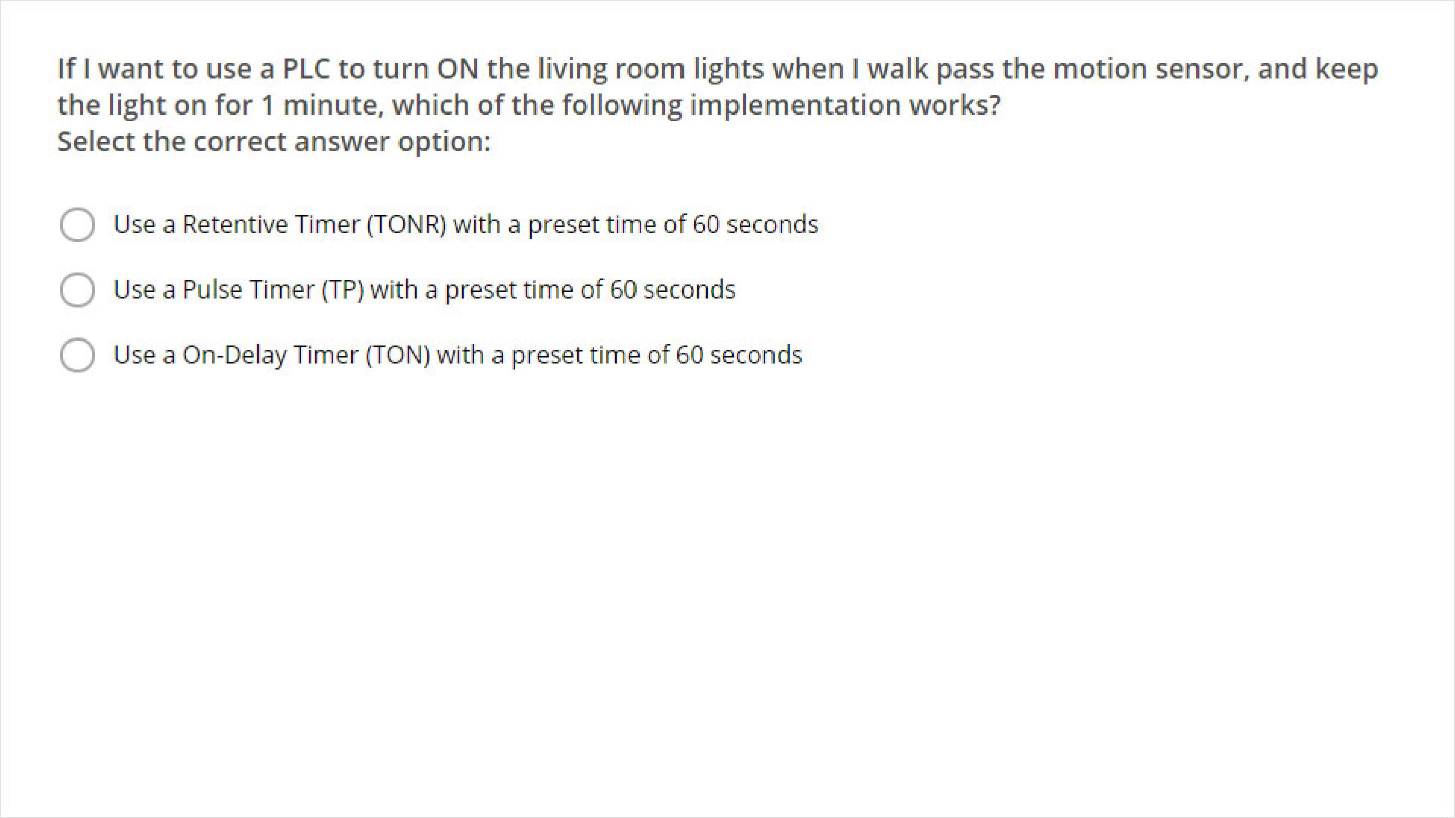
Programming TON: https://youtu.be/3qjvFbIjF6Q

Explanation of TONR: https://youtu.be/9J2v3KDY3ys

Explanation of TP: https://youtu.be/nM3qUB42U1U

Quiz

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



If I want to use a PLC to turn ON the living room lights when I walk pass the motion sensor, and keep the light on for 1 minute, which of the following implementation works?
Select the correct answer option:

○ Use a Retentive Timer (TONR) with a preset time of 60 seconds

○ Use a Pulse Timer (TP) with a preset time of 60 seconds

○ Use a On-Delay Timer (TON) with a preset time of 60 seconds