CODESYS Beginner Tutorial IV

Resets and Interrupts

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Introduction

These tutorials are designed for aspiring programmers who wish to learn more about industrial and physical computing using the open source platform; CODESYS®.
Each tutorial follows on from the last, with the list of planned and produced tutorials so far being:

- Beginner Tutorial: Getting started with CODESYS
- Beginner Tutorial II: Visualising with CODESYS
- Beginner Tutorial III: Sequential actions and Timers
- Beginner Tutorial IV: Resets and Interrupts

More information about CODESYS can be gained from the Smart Software Solutions (3S) website www.codesys.com.

Objectives

In the course of this tutorial you will learn how to:

- The difference between resets and interrupts
- How to programme a reset button
- How to programme an interrupt capability

The aim of this tutorial is to modify the existing program completed in Tutorial III, from a single routine to a loop that resets itself upon completion, as well as adding in additional features that further exhibit how interrupts work.

Prerequisites

There is no need for previously proven software development skills in order to successfully complete this tutorial. All that is required is a licenced (including a Demo licence) copy of CODESYS version 3.5 or higher, and basic computer literacy.
In addition, as this tutorial follows on from the previous *Getting Started with CODESYS* tutorial.

Using Resets and Interrupts with XSoft – CODESYS 3

Step 1: Open the program from the third tutorial

As before, this tutorial will be continuing on from the last program. Your project should look the same as or similar to the one below:
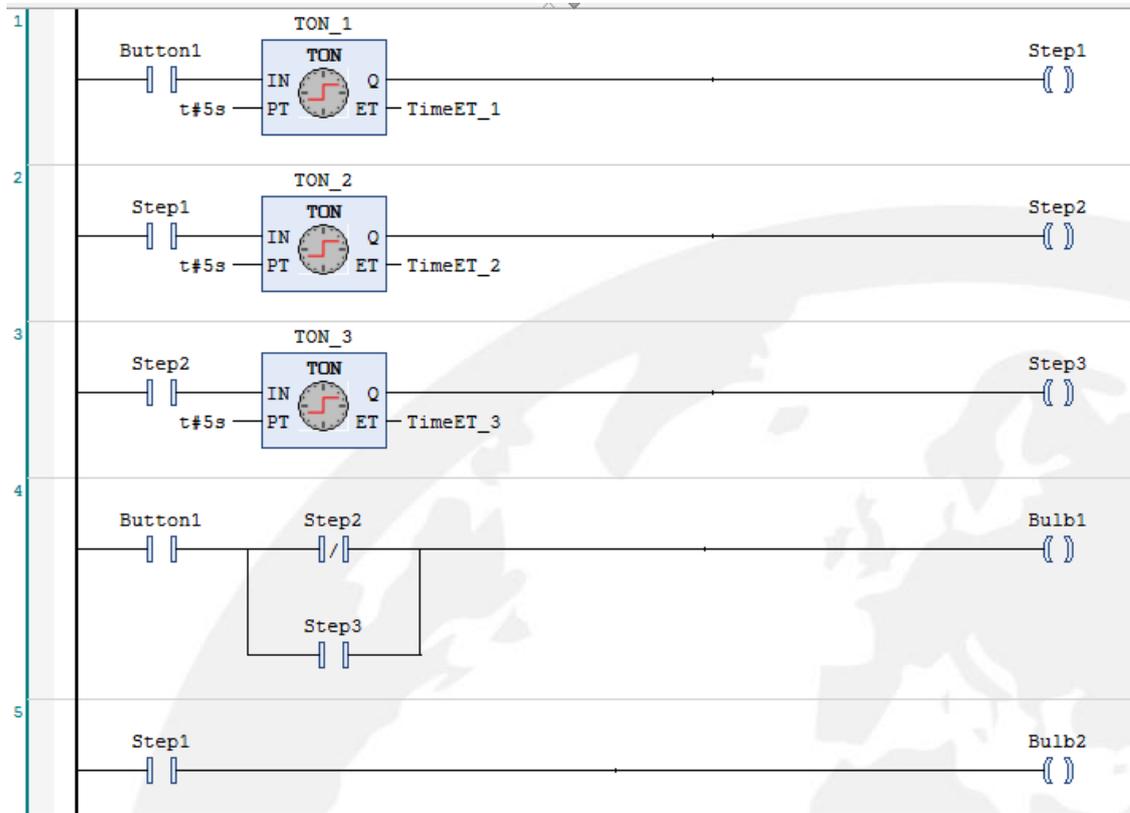
Step 2: Create two new networks

Since this action has already been explained previously, this step will be straightforward.

Once you've made two new networks, setup network 6 and 7 like so:
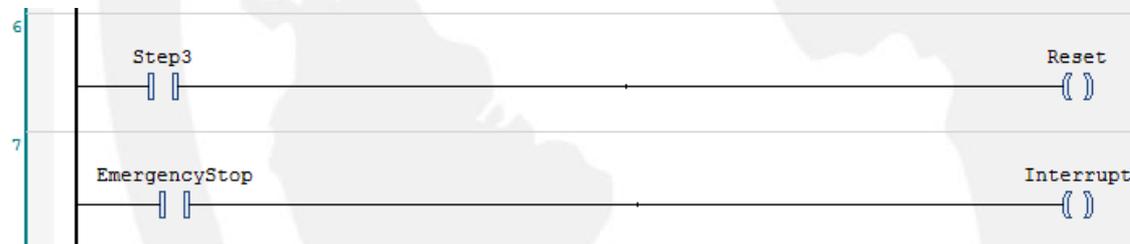
Again, the actions required to setup the networks should be familiar, so without detailed explanation we will continue.

Step 3: Create two new inverted contacts

On network 1, place two inverted contacts like so. When these contacts become FALSE, they will 'break' the circuit.
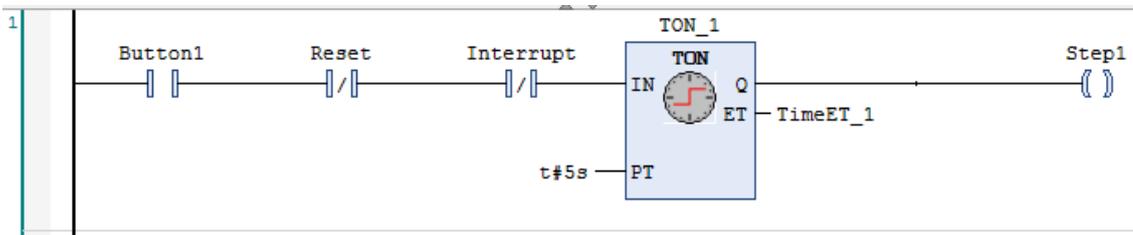
Step 4: Add a new push button to the visualisation

Place a 'Push Switch' into your visualisation using the toolbox. Then set the variable to the 'EmergencyStop' contact.
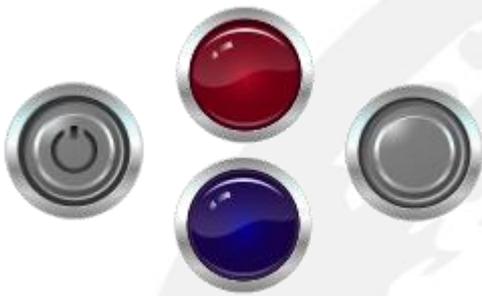
Step 5: Run the program

Before running the program, don't forget to use the Clean all action under the build tab. When you run the program, press the on button on your visualisation. The program should run through the sequence of lights as before, but you should now see that the light sequence resets itself and repeats from the start.

This is because the inverted 'Reset' contact on network 1, becomes FALSE when the Reset coil on network 6 becomes TRUE. The Reset coil becomes TRUE once all the step sequences are complete, and effectively breaks the circuit on network 1 which in turn resets all the timers and actually sets the Reset coil back to FALSE.

Now try pressing the Push Button that has just been added, midway through your light sequence. You should see that the program sets the first bulb on, and will remain in this state until pressed again. Pressing the push button again restarts the light sequence from the beginning.

The Push Button works identically to how the circuit resets. When the EmergencyStop contact becomes TRUE, the Interrupt coil becomes TRUE. In turn, the Interrupt contact on network 1 becomes FALSE which breaks the circuit.