

# CODESYS beginner Tutorial II

Visualising with CODESYS

Version: 1.2

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## CODESYS beginner Tutorial II index

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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 <sup>1</sup>
- Beginner Tutorial IV: Resets and Interrupts <sup>2</sup>

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

## Objectives

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

- Update and save new CODESYS projects
- Visualise inputs and outputs in a virtual environment
- Run virtual simulations to test your programme
- Have the confidence to further explore the programming environment

## 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

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<sup>1</sup> Planned for release in October 2017

<sup>2</sup> Planned for release in November 2017

## How to visualise with XSoft – CODESYS 3

### Step 1: Open the program from the first tutorial

Rather than create a new program from scratch, we will design a visualisation screen for the project that was created in tutorial 1.

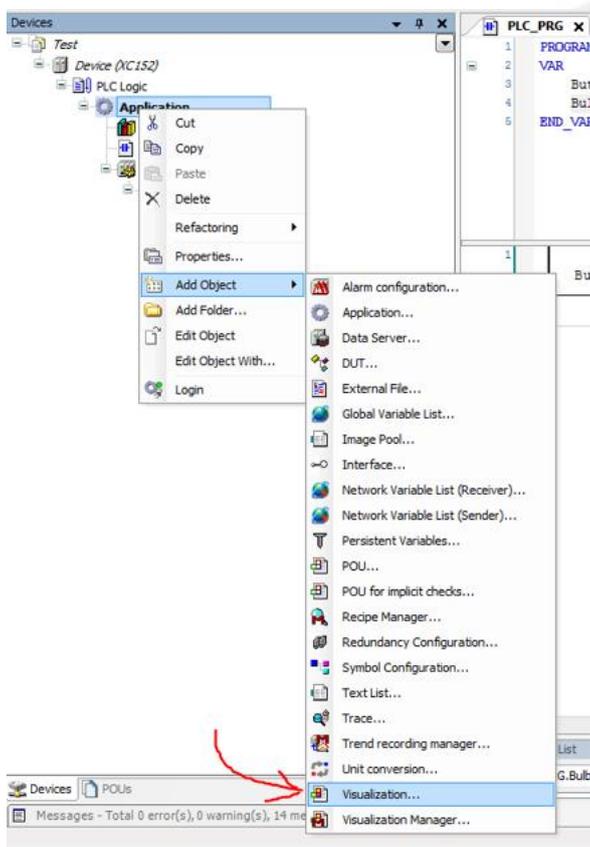
#### A) Open the program

Open your project from the tutorial 1. If you have not done it yet, please first complete tutorial 1.

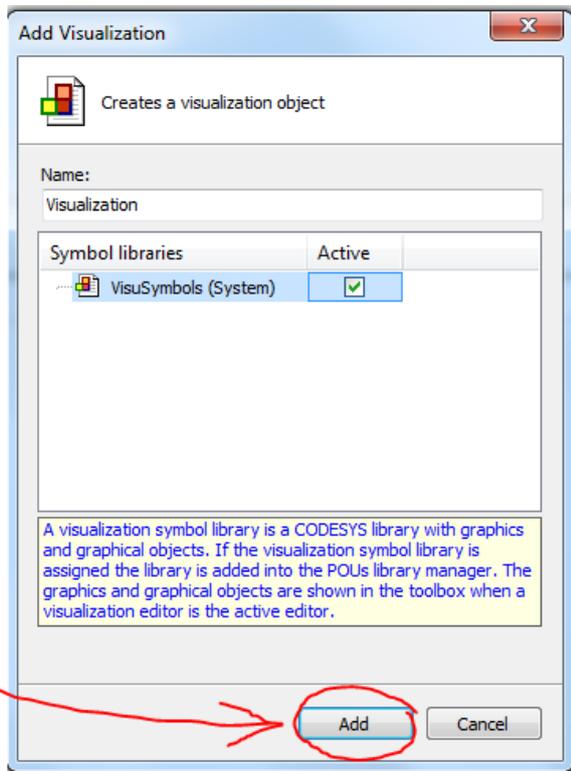
### Step 2: Add a visualisation screen into your project:

Open a visualisation screen for the program

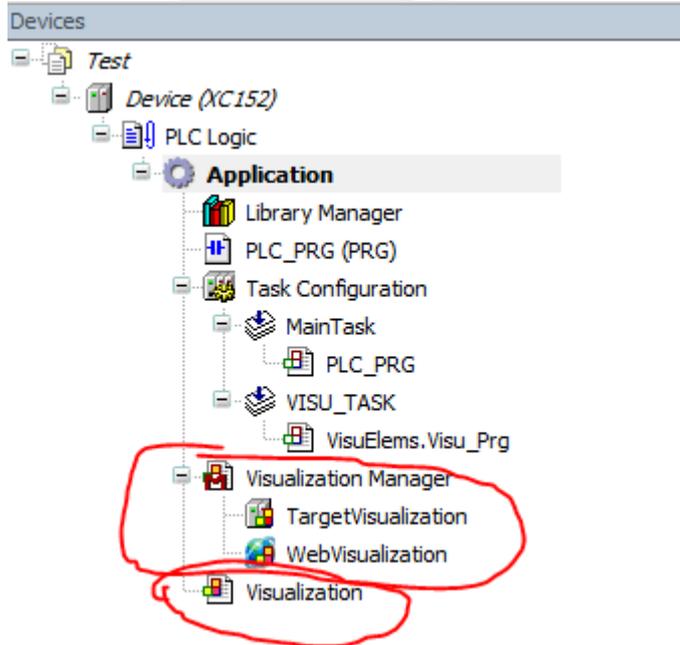
Right click on “Application” → Add Object → Visualisation



If you see this dialogue, click Add. This will add a visualisation manager if it's not already in your project.



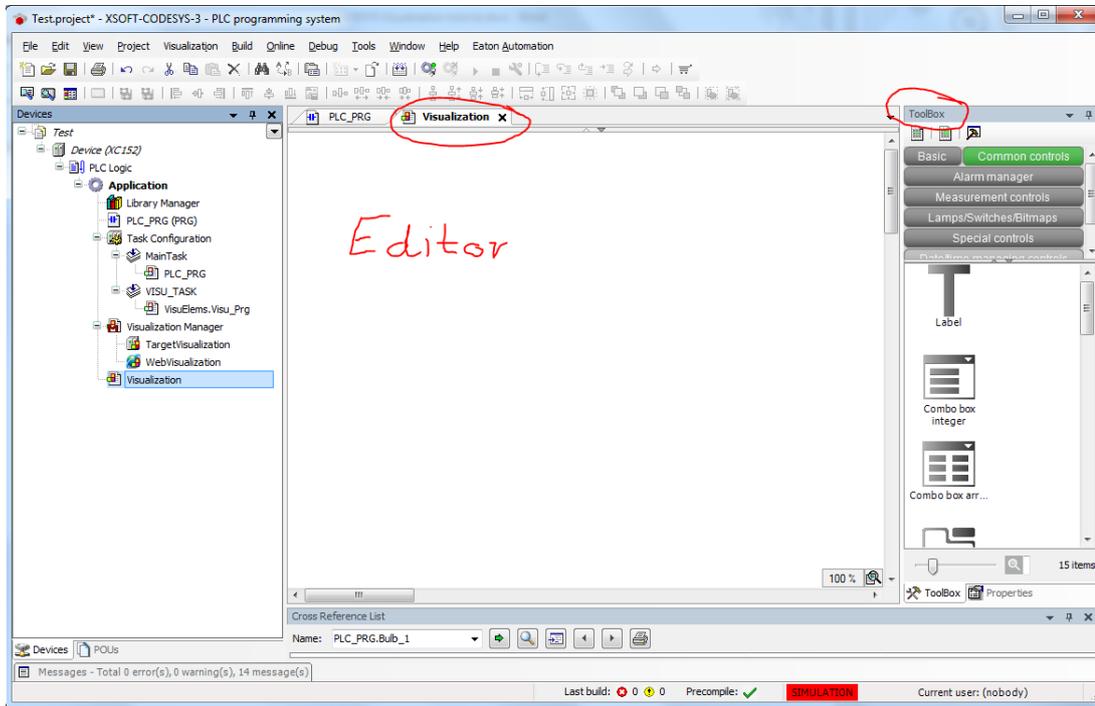
It will also add a visualisation screen, your project should look like this



If you don't see the "Visualization" object, then you can redo the step 1

## B) Open the visualisation editor

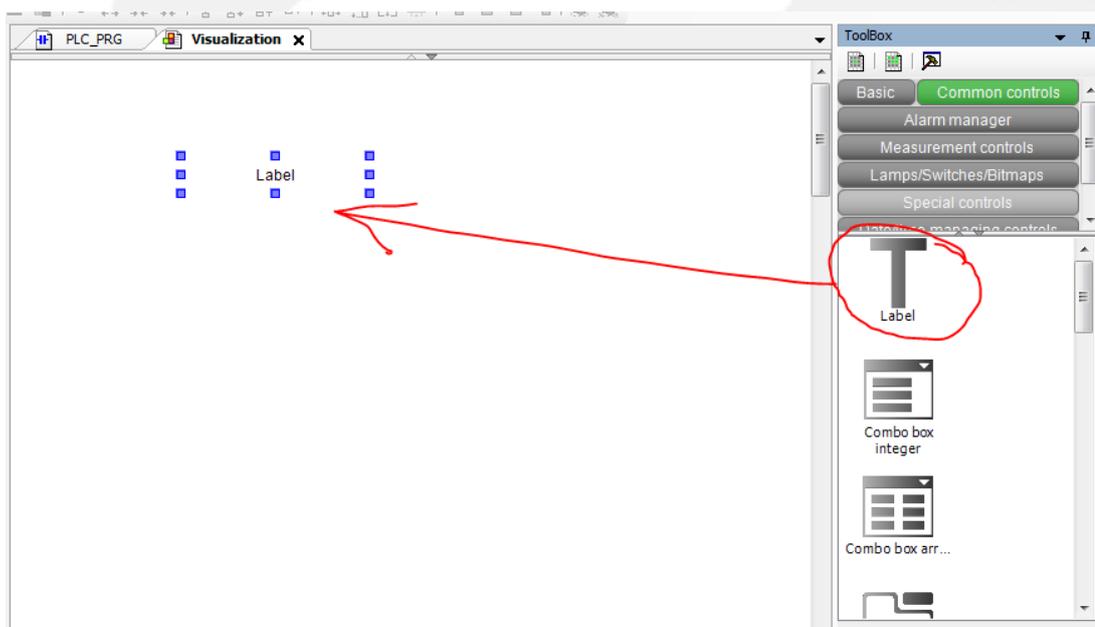
Now double click on the “Visualization” object, it will open the visualisation editor as shown below:



## Step 3: Add a title to the visualisation screen

### A) Select 'ToolBox' from the bottom right of the screen

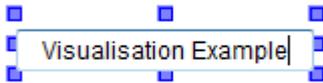
You can see the Toolbox in the above picture, which has got different set of controls that can be used in the Visualisation editor, select 'Common Controls'.



Drag “Label” control from toolbox and drop onto editor

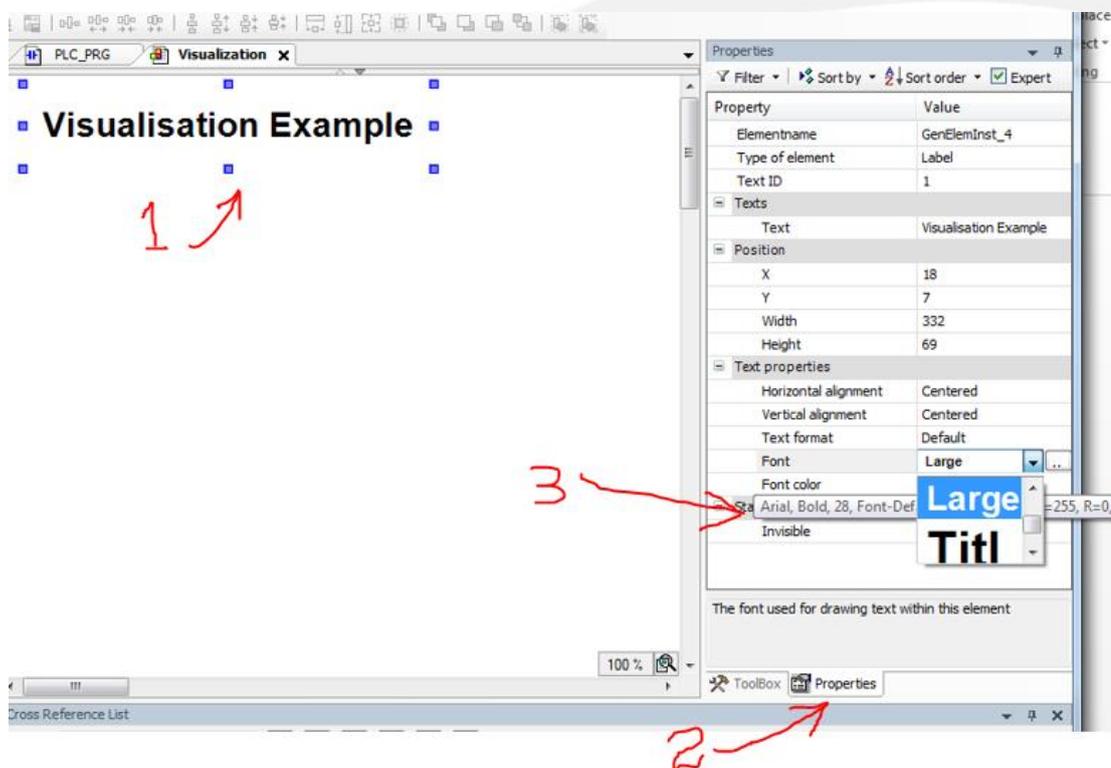
### C) Add a title to the visualisation screen

“Label” control can be used to show any text message on the screen. If you click on the text “Label”, you will be able to change the text



You can change the Font size by following steps:

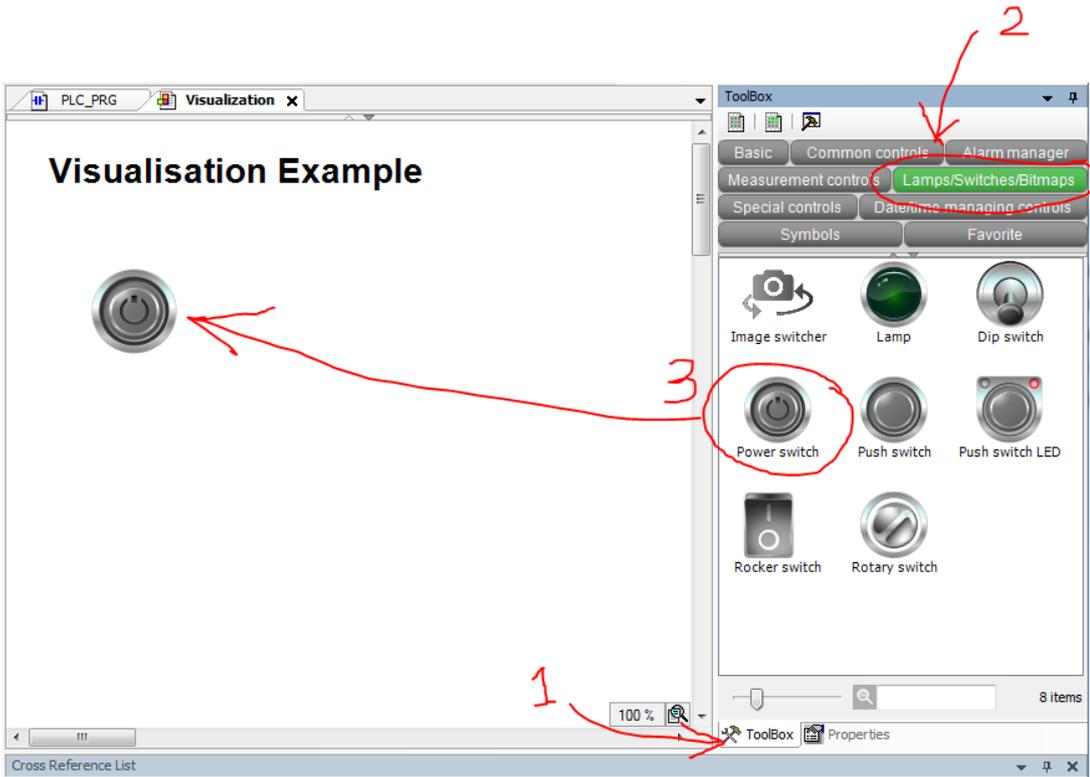
- 1) Click on Label
- 2) Click “Properties” at bottom of “ToolBox”
- 3) Select “Font” in the “Text Properties”



## Step 3: Add visualisation elements

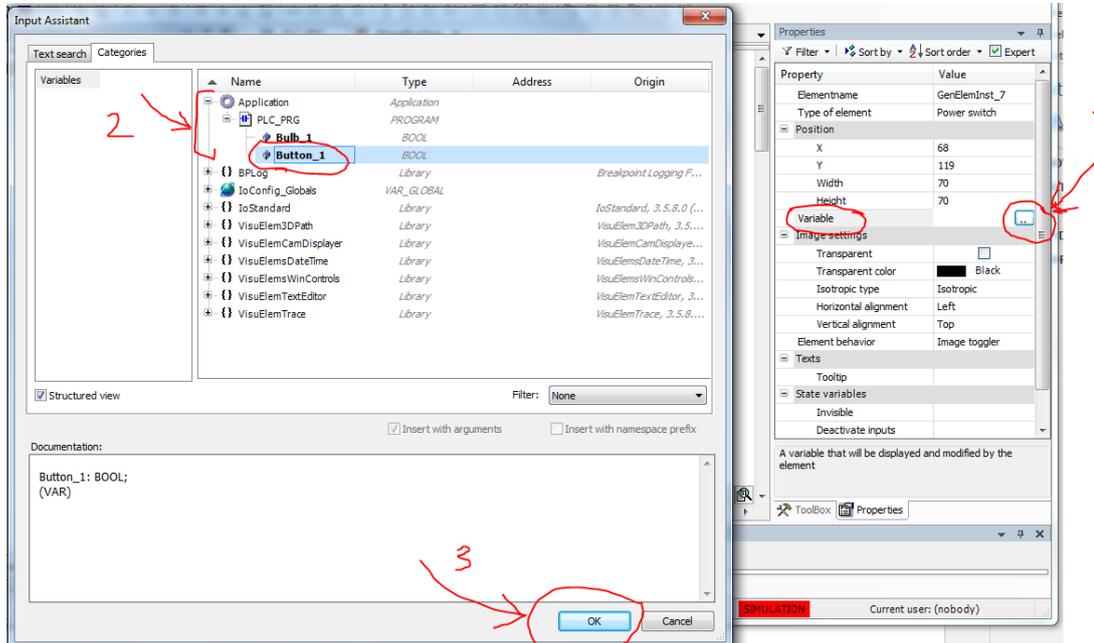
### A) Open the ToolBox

Click on "ToolBox", select "Lamps/Switches/Bitmaps" and drag "Power switch" onto visualisation editor as shown below

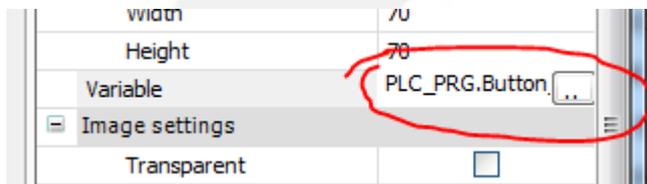


Now click on the “power switch” and open properties.

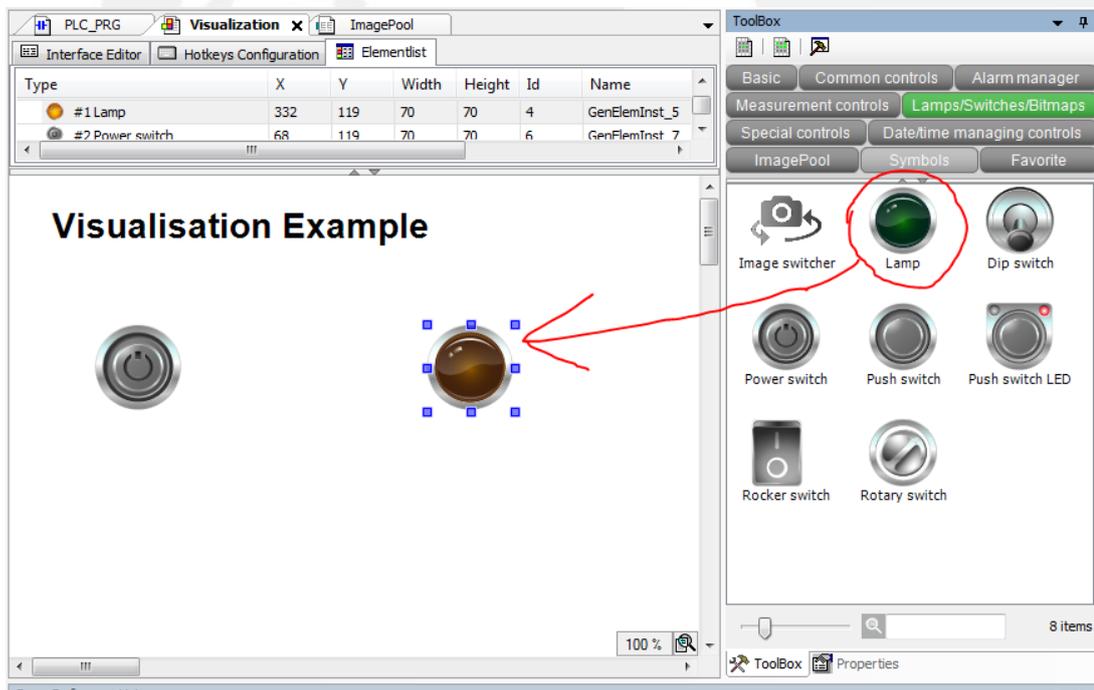
- 1) Select “Variable” from properties and click on button with “..”
- 2) From the variable tree, select Application → PLC\_PRG → Button\_1
- 3) Click Ok



Variable value will be filled as shown below:

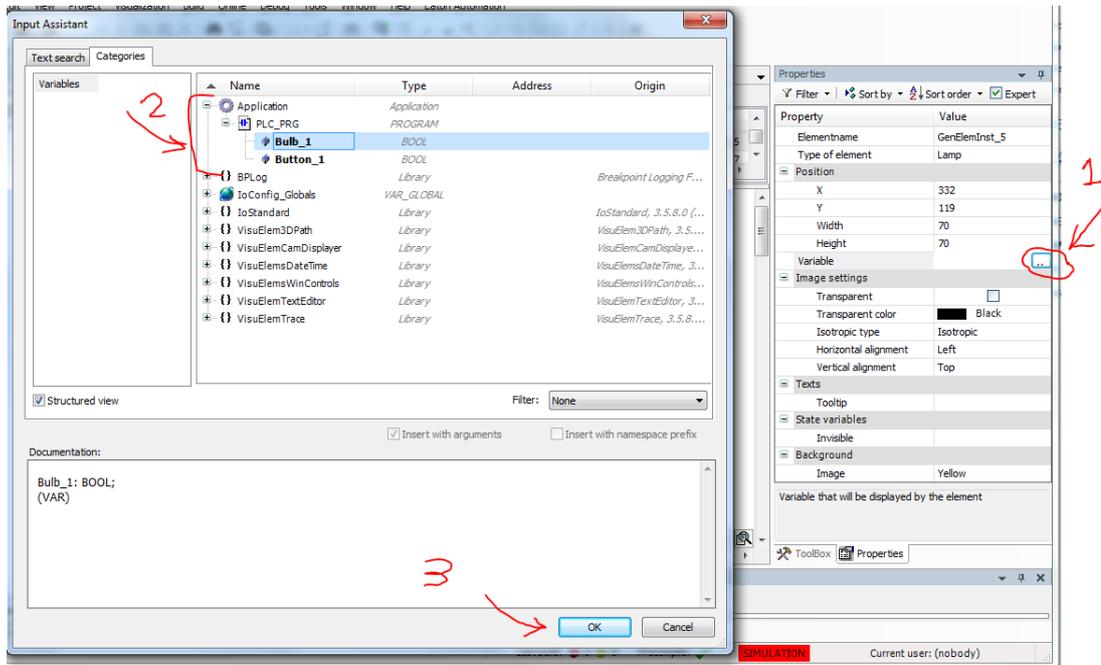


Now drag a “Lamp” from Toolbox and drop on visualisation editor

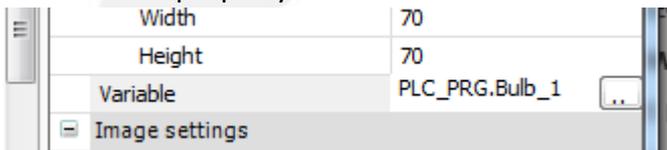


Open properties for Lamp:

- 1) Click on “..” button next to Variable.
- 2) From the variable tree, select Application → PLC\_PRG → Bulb\_1
- 3) Click O



The “Variable” property will look like this

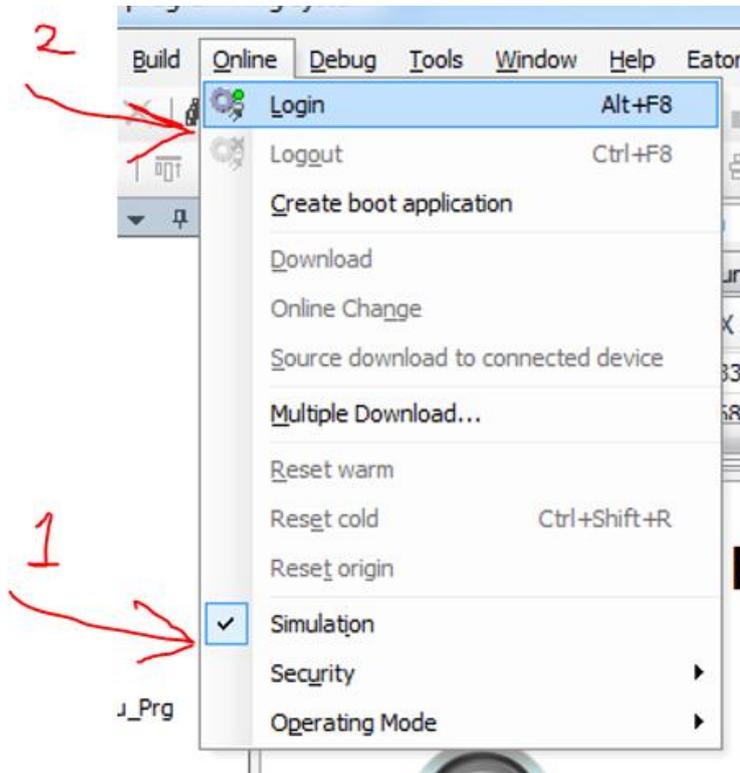


The application is complete now. We can now run the application to test it.

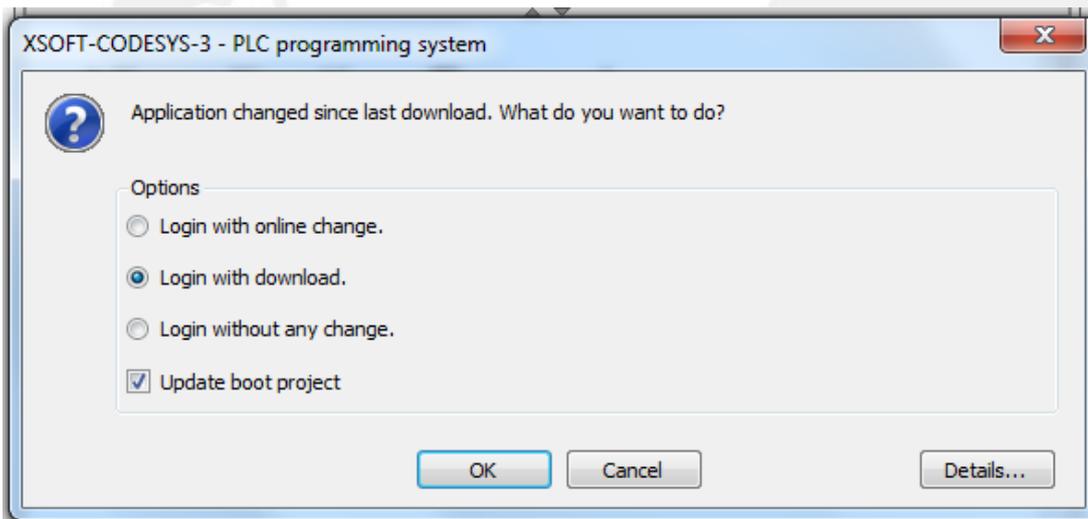
## Step 4: Testing

### A) Log in

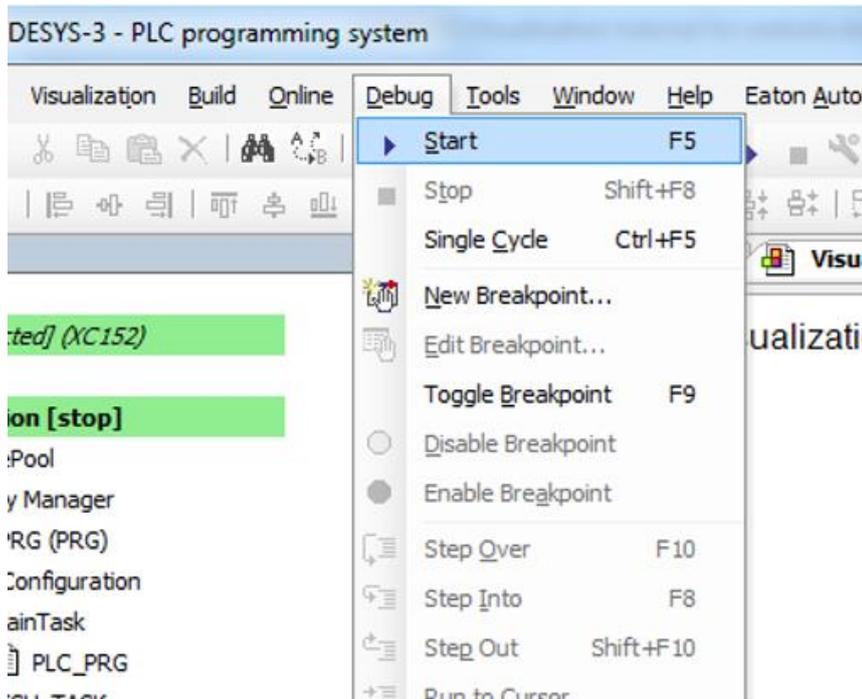
From the menu in the “Online” make sure that “Simulation” is ON. Then click on “Login”



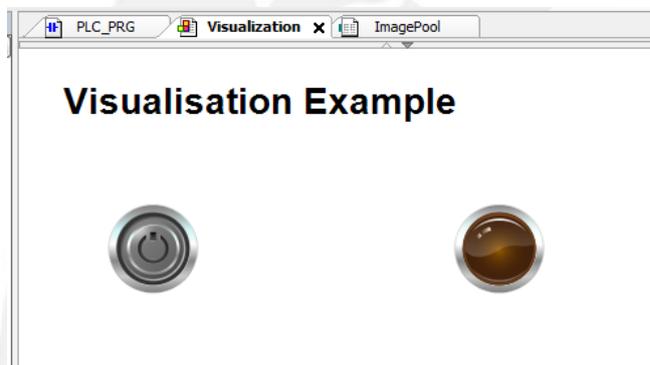
### B) Click “OK” on next screen



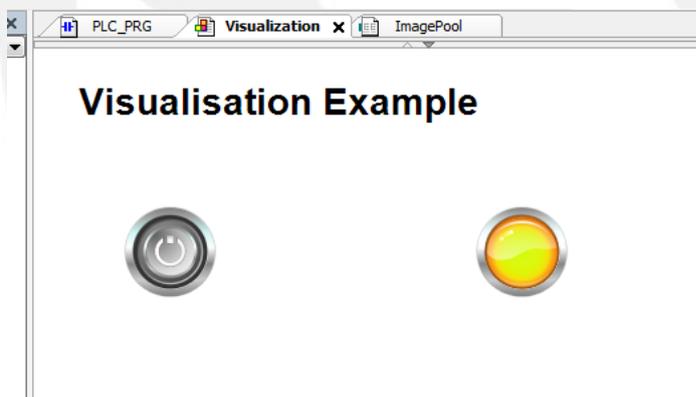
C) Now click “Debug → Start” to start the application



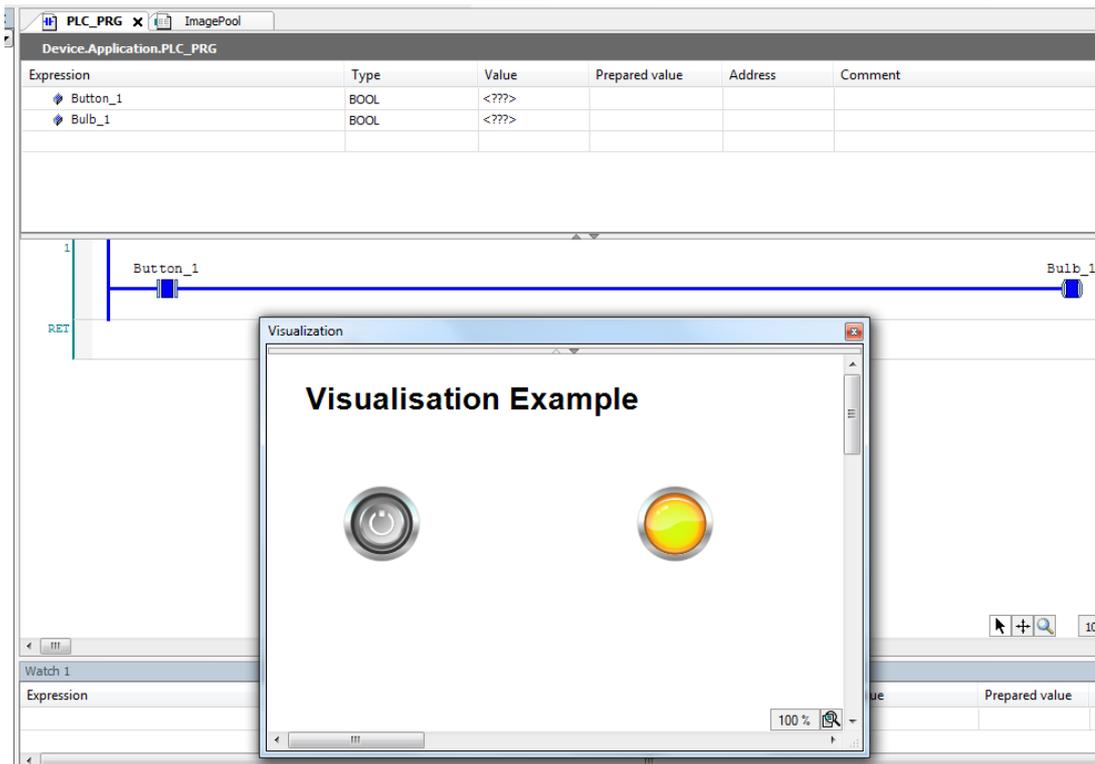
D) You will see the visualisation in Run mode on the screen



E) If click “Button” it will turn ON the lamp and vice versa:



- F) Separate the visualization screen by dragging and dropping it's tab off the menu bar, so that you can see the visualisation and the line diagram at the same time.
- G) If you check your program you will see that turning ON the "Button" on visualisation is actually turn ON the "Button\_1" variable in your program that will turn ON the "Bulb\_1" in the program. Because we have linked the controls on the visualisation with the variables so we can see the effect in the visualisation.



- H) This tutorial is complete now