ICS004   PLC Exercise 4   PLC Simulator

Lab Objectives

In this lab you will learn the following:

- Getting familiar with the PLC simulator in the Do-more-Designer
- Establishing a communication link between the software and the simulator.
- Executing a ladder diagram using the simulator or the hardware.
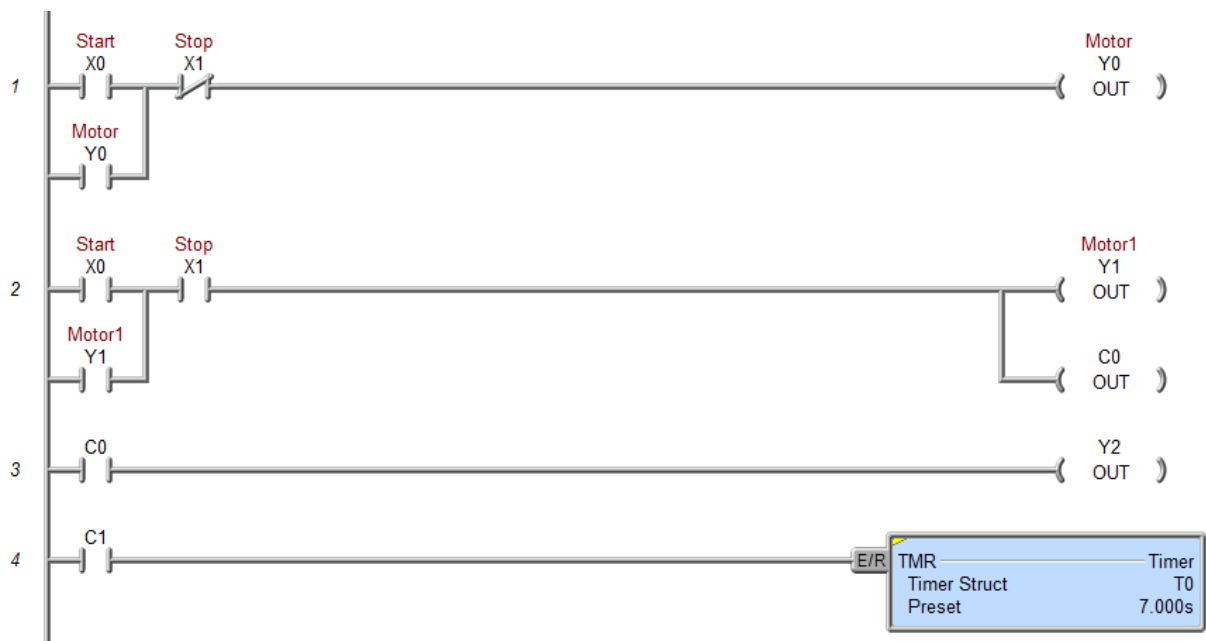
Lab Duration

30 – 45 minutes

Lab Procedure

The procedure will be discussed for both an existing program or anew program.

Using an Existing Program

1. Open the Seal-in Circuit program already created and save it as PLC Simulator-Internals.
2. Modify the program so that it looks like the one below.

3. Save and download the program.
4. To go from the hardware to the simulator, select the **PLC/Disconnect** from the menu, the following window will appear, click **OK**.
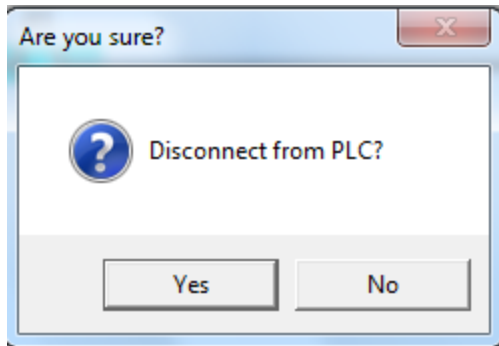
5. If the **PLC/Disconnect** is not available, select connect to get connected to the hardware as discussed in the seal-in circuit. Go back to step 4 when done.
6. Click **PLC/Connect** and in the displayed window, in the **Links** section choose the Simulator name and click **Select**.
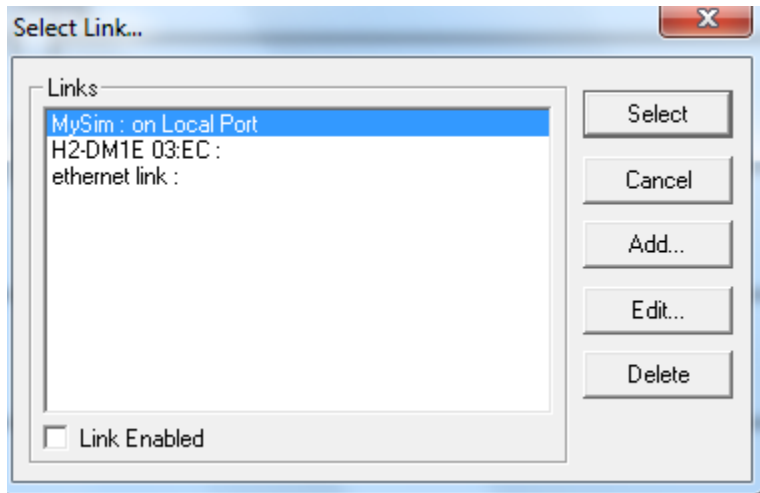
7. Click on the **Go Online and View the Disk Project** shown below.
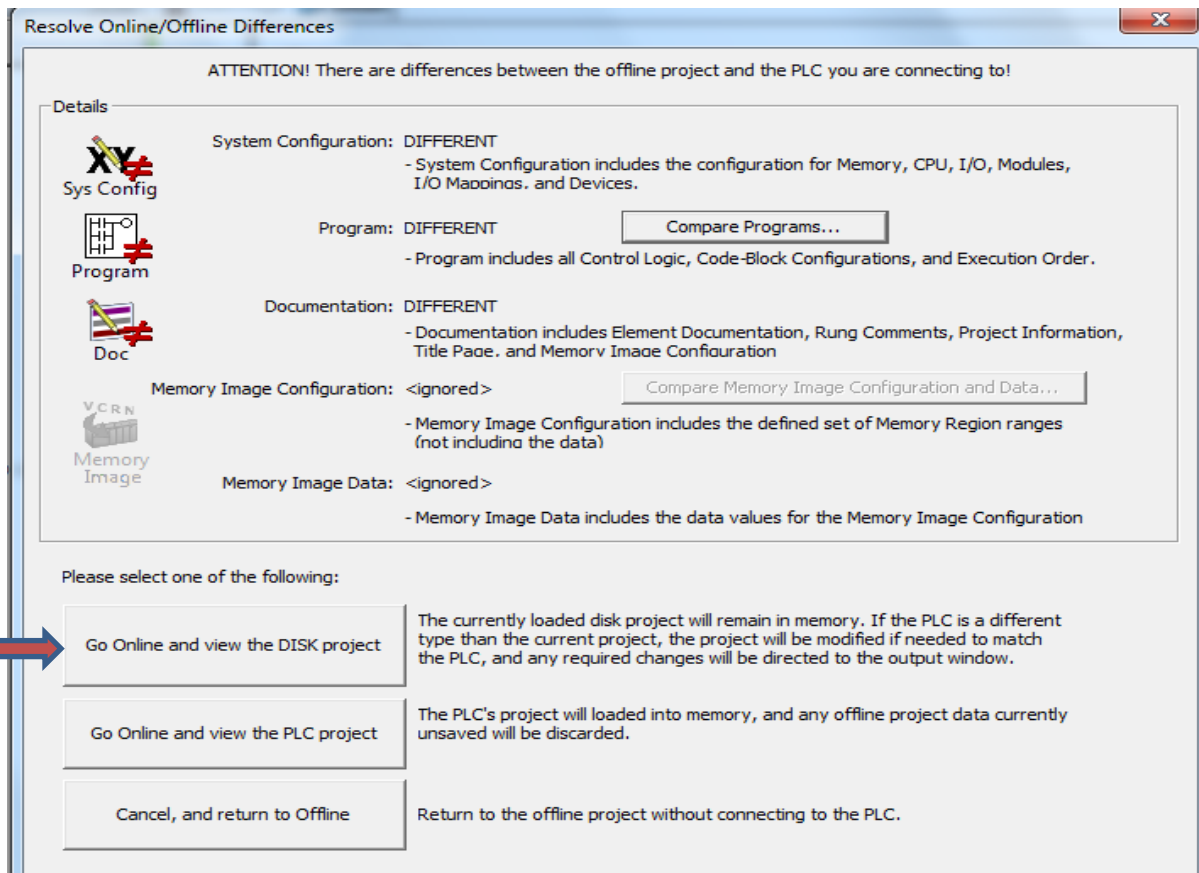
8. When the window below appears, click on **Yes**. This allows switching from one PLC type (Hardware H2-DM1E) to another type (Simulator DM-SIM).

9. Select **Continue Online** when the following window appears.

10. If an error window appears, select **No**.
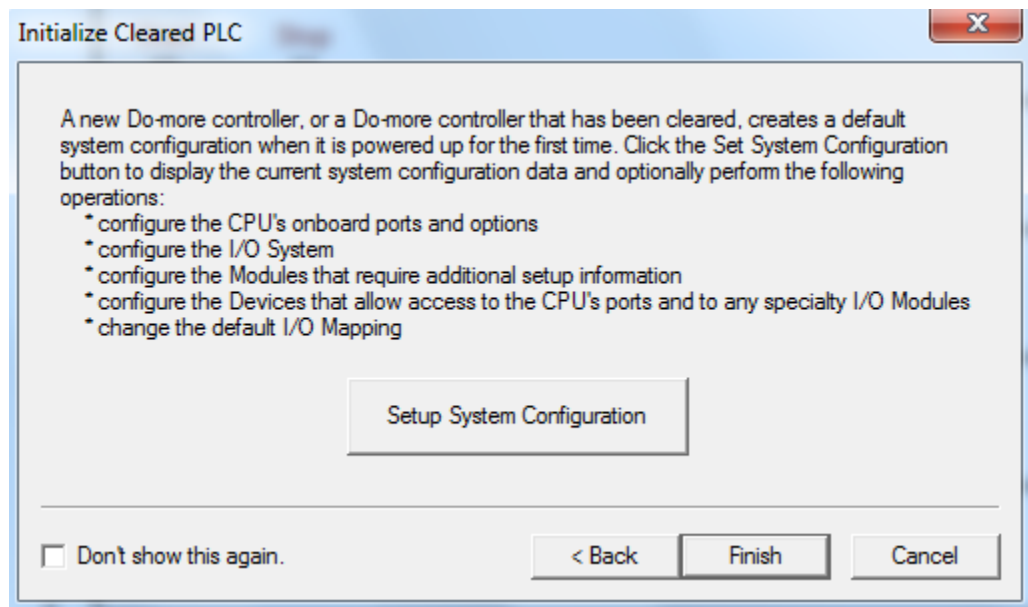11. Select **Next** when the window below appears.

Initialize Cleared PLC

A new Do-more controller, or Do-more controller that has been cleared, needs to have its internal, real-time clock set. Click the Set PLC Clock button to set the Current Time, the Time Zone and the Daylight Savings Adjustment option.

Set PLC Clock

☐ Don't show this again.   < Back   Next >   Cancel

12. Click **Finish** in the window below.

Initialize Cleared PLC

A new Do-more controller, or a Do-more controller that has been cleared, creates a default system configuration when it is powered up for the first time. Click the Set System Configuration button to display the current system configuration data and optionally perform the following operations:
 * configure the CPU's onboard ports and options
 * configure the I/O System
 * configure the Modules that require additional setup information
 * configure the Devices that allow access to the CPU's ports and to any specialty I/O Modules
 * change the default I/O Mapping

Setup System Configuration

☐ Don't show this again.   < Back   Finish   Cancel

13. The switching from the hardware PLC to the simulator is now complete.
14. Click on **Write PLC** icon to download the program to the simulator.
15. Make sure the mode of the PLC is **Run**, otherwise change it from **Program**.
16. To switch from simulator to hardware, start from step 4 above.
17. To start testing the program, display the simulator interface shown below and adjust the status of the input(s) and observe the behavior of the output(s).
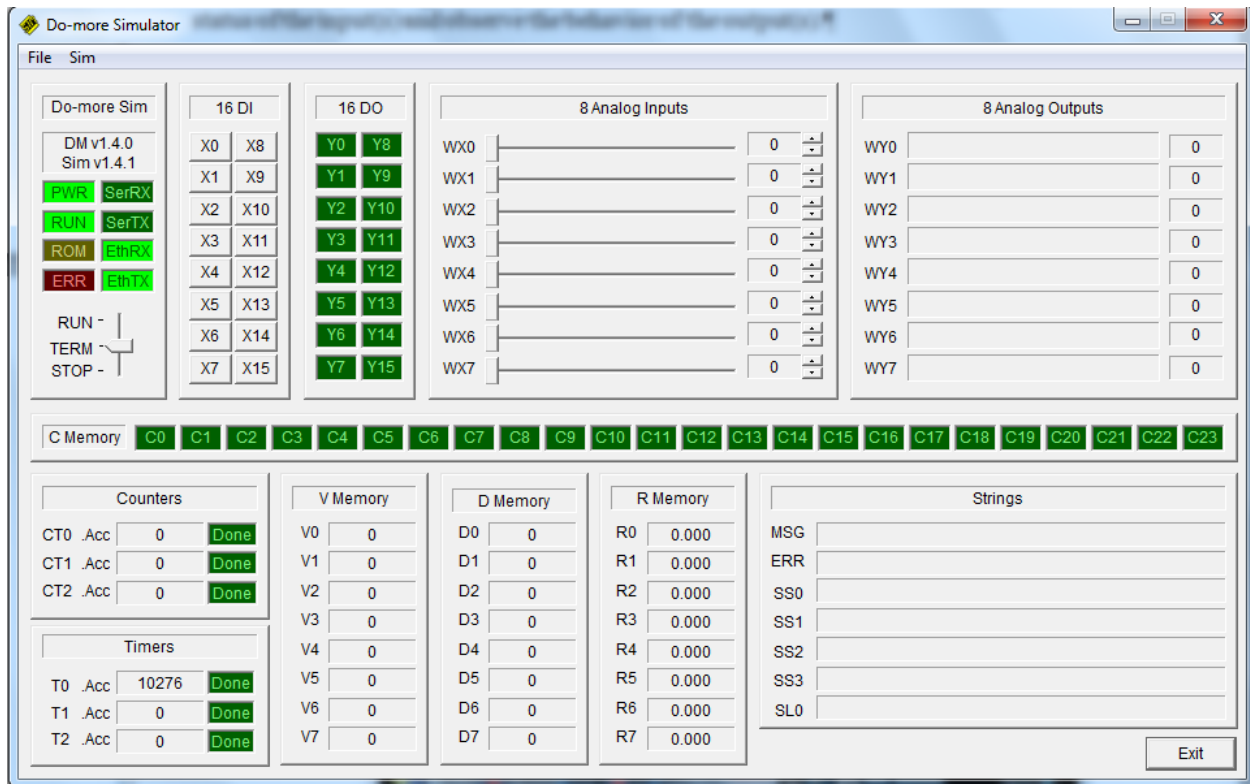
Internals

18. The instructions (Y0 and Y1) in the branches of rung 1 and 2 are input instructions with output addresses. They are called internals that usually do not represent actual devices. They are either internal contacts found in control relays or single bits inside memory such as C0 and C1 in the program. The state of the internals depends on the output's state (when used as both input and output).

Modifying the state of internals

To modify the state of the internals use either step 19 or 20 below.

19. Right click on the internal in the program and select the **Force Element** option. This allows you to either turn it on or off. Clicking on the **Unforce Element** option will disable the force function and return the instruction to its original sate.

20. Proceed as follows:

A) In the **Do-more Designer**, click on **Data** in the toolbar, the following window will appear in the left lower of the interface..

B) Type