Allen Bradley SLC-500 Getting Started Lab

This is a basic lab exercise to learn how to create a program in RSLogix500. Prior to this lab the student should have performed the RSLinx lab exercise.

Objectives:
Upon completion of this lab exercise the student should be able to:
1. Execute the RSLogix500 software
2. Create a new project and configure the I/O
3. Enter a 3 rung program with basic relay instructions
4. Explain the operation of the XIC, XIO and OTE instructions
5. Download a program to the SLC-500 processor and go online
6. Change the mode of the processor with RSLogix500
7. Monitor the bits in the I/O image tables

Procedure:
1. Key in the following program with the following steps as specified in the following sequence.

   ![PLC program with relay type instructions.](image)

   **Figure 1.** PLC program with relay type instructions.

Steps to Execute RSLogix, create a project and configure the I/O:

*It is important to understand that the user should have RSLinx running and communicating with the SLC-500 processor they want to configure the project to.*
1 Execute the RSLogix500 software by going to the application menu, Choose the Rockwell Software folder, Then choose RSLogix500 English folder, and then the application of RSLogix500 English.

2 The application should look like this on your computer screen.

3 Click on the File pull down menu, and choose New, to create a new project.

4 The user must create a Processor Name. Maximum length is 8 characters. Do not leave it as the default name of UNTITLED. Also, click on the pull down menu of Driver to verify communications with the RSLinx driver.
5 The RSLogix500 project is now created.

The next step is to click on “IO Configuration” to have the software read the I/O rack to determine what modules are in each slot.

6 The I/O Configuration menu appears. Click on the “Read IO Config button.

7 The user will be prompted with the communication information to the processor the software will be going Online to.

Click the Read IO Config button.

8 The software will read in module type at each slot.

The user will get a prompt to resize the data tables to match the I/O modules.

Click the OK button.
The I/O configuration and the processor type will appear in the window.

Some basic information on the ladder display:
On the ladder display, the user will see information similar to the following graphic.
*Instructions run the program. In this example, they look like Normally Open (XIC) and Normally Closed (XIO) contacts.

*An address (such as I:1/1) is assigned to an instruction.

*The user can also assign an Address Symbol to an address. In this example DIAGN_INDIC is assigned to I:1/1 address. A symbol can be 15 character long and will appear in all caps.

*An Address Description is assigned to an address, and will appear anytime the address is shown on the screen.

*The rung number will indicate where in the program the rung resides.

![Figure 2. Interpreting the ladder logic in RSLogix500.](image)

The following graphic illustrates some key areas of the Project View screen of RSLogix500.
Figure 3. Identifying information on the RSLogix500 ladder view.

Programming the ladder program:

1. Click on the New Rung button On the Online Toolbar three times to create 3 rungs in the program.

2. The rungs will appear. The lower case “e” along the rung stands for edit.
   The user can also right click on the edge of the rung to edit.

3. Click, hold and drag down an XIC (Normally Open) instruction from the Instruction Toolbar to the first rung.
   When the rung shows a green box, unclick the mouse to place the XIC on the rung.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Click, hold and drag an XIO (Normally Closed) instruction from the Instruction Toolbar, and drop on the first rung.</td>
</tr>
<tr>
<td>5</td>
<td>Type in the symbols as shown in this graphic. They will be</td>
</tr>
<tr>
<td>6</td>
<td>Click, hold and drag an OTE (regular coil) from the Instruction Toolbar to the first rung.</td>
</tr>
<tr>
<td>7</td>
<td>Type in Symbol named (INTERNAL) on the coil.</td>
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<tr>
<td>8</td>
<td>Another way to program is to type in the mnemonic. Double click on the rung edge. Type in XIC space OTE and press enter.</td>
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<tr>
<td>9</td>
<td>The rung then appears.</td>
</tr>
<tr>
<td>10</td>
<td>Put in the next rung by typing XIO space OTE and press Enter.</td>
</tr>
</tbody>
</table>
11 Type in OUTPUT1 on the coil in rung 2:1.

Type in OUTPUT2 on the coil in rung 2:2.

12 The next step is to assign the addresses to the instructions.

Right mouse click on the B3-Binary file, and choose the Open option.

13 The B3 file opens in the data view.

Click, hold and drag the B3/0 bit from the data view to the coil on the first rung.

When the green block appears by the coil. Unclick the mouse.

14 Notice that now the B3/0 address is assigned the symbol named INTERNAL.

15 Open up the output data file.

Click, hold and drag the bit 1 and bit 2 to the corresponding OTE instructions on the ladder display.
<table>
<thead>
<tr>
<th>Step</th>
<th>Instruction</th>
</tr>
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<tbody>
<tr>
<td>16</td>
<td>Open the Input data file. Click, hold and drag bit 4 and bit 5 to the corresponding instructions on rung 2:0.</td>
</tr>
<tr>
<td>17</td>
<td>Click the Verify Project button on the top toolbar. This compiles the project to make sure it can be downloaded.</td>
</tr>
<tr>
<td>18</td>
<td>The following should be what the program looks like.</td>
</tr>
<tr>
<td>19</td>
<td>The next step is to download the project to the processor. Click on the Comms pull down menu and choose System Comms.</td>
</tr>
<tr>
<td>20</td>
<td>The RSLogix500 app connect to the RSLinx. Choose the processor to download the project into. Click the Download button.</td>
</tr>
</tbody>
</table>
21 RSLogix500 will request that the user save the project.  

The user can name the project something different from the Processor Name.  

Click the Save button.

22 A menu verifies that the new project will be downloaded into the processor and will write over the old project.  

Click the Yes button.

23 If the processor is in the Run Mode, a menu will prompt the user to put the processor in the Program mode for download.  

Click the Yes button.

24 The project will start the download.

25 When the download is complete, there will be a prompt to go back to the Run Mode.

26 RSLogix500 will prompt the user to go Online.  

Click the Yes button.
The project should show on the screen running. Notice in the upper left of the screen, the processor mode is shown. It is currently in the Remote Run mode.

**Lab Procedure:**

1. Change the SLC-500 to the Remote Program mode.
   a. What is the state of the processor scan, on or off?
   b. What is the state of the “RUN” indicator on the SLC-500 processor?

2. Change the SLC-500 to the Remote Run mode.
   a. What is the state of the processor scan, on or off?
   b. What is the state of the “RUN” indicator on the SLC-500 processor?

3. Put all the simulator switches in the off (non-active) state.
   a. What instructions in the ladder view is highlighted?
   b. What does a highlighted instruction indicate?

4. Now turn on the SELSW5 input.
   a. Is there any change in instruction highlighting in the ladder view window?
   b. Turn off the SELSW5 input.
   c. Explain the correlation between the input module status indicator light and the instructions highlighting.

5. With the SELSW5 input off, turn on SELSW4 input.
   a. Is there highlight on the XIC instruction in rung 0?
   b. What is the status of OUTPUT1 and OUTPUT2?

6. Turn off SELSW4 input.
   a. What is the status of OUTPUT1 and OUTPUT2?

7. Monitor the input and output image tables.
To monitor an input image table, put the pointer on an input address on the ladder view screen, then right mouse click and choose the option of “Goto Datatable”.

Questions:

1. T F A project can be downloaded into a processor that is in the Run Mode.

2. What does it mean to configure the I/O?

3. What is it called when a project is sent from the computer to the PLC?
   a. Upload
   b. Download
   c. Copy
   d. Move

4. What ladder file number is the default or main file number?

5. T F RSLinx is required if the user wants to go Online to the PLC.

6. T F RSLinx is required if the user wants to program Offline.

7. What data file number stores the Binary bits by default?

8. What is the mnemonic for a Normally Closed type of instruction?
   a. XIC
   b. XIO
   c. OTE
   d. XIN

9. What does the address, I:1/1 mean?

10. What does it mean if an instruction is highlighted in the ladder view window?
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