Chapter 12 Simon Says Game

Use four illuminated push buttons to build the game Simon Says.
Use a fifth button to start the game.
Use a sixth light to signal the game is done good.
Use a seventh light to signal the game is done bad.

Simon Says is a sequential game that plays a four-note tune. This lab has no sound so lights will have to do. After the start button is pushed, one light at a time is turned on. The player must mimic or push the button attached to the light. First one light is lit, then two, then three, etc., until a final number is attained. Assume 15 is the final number of steps in the game. The steps are repeated each time the game is played. The values are to be **stored in a table and re-used.**

A Add a three-position switch to allow for easy, middle, hard ranges varying the number of steps from 10 to 15 to 20.

B Automatically rotate through 3 different sets of conditions for each range – easy, middle, and hard.

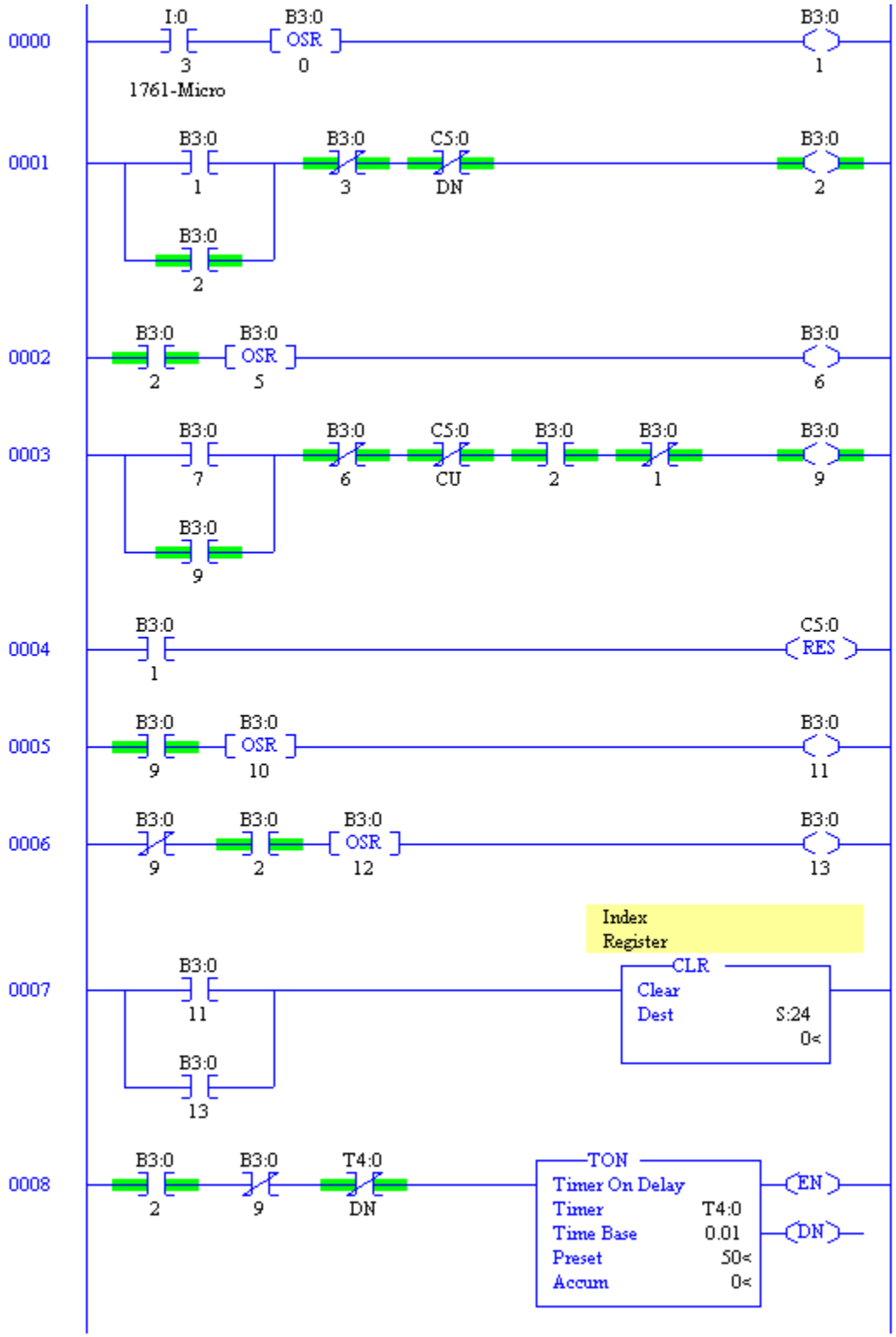
C Vary the speed that the lights are display as the player gets closer to the last step.

D Create a teach mode using a separate button to teach the game a sequence of steps.

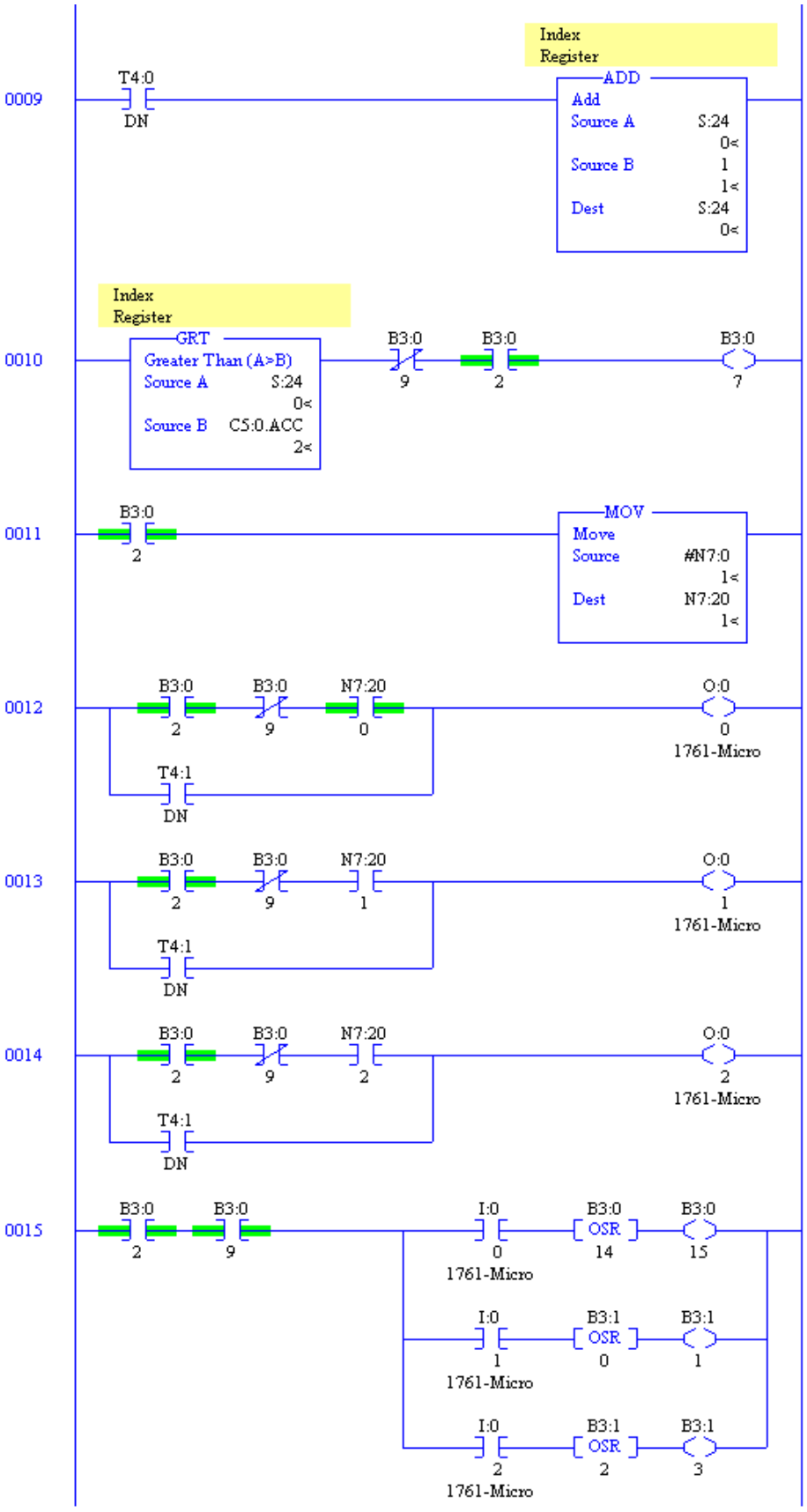
Use the program starting on the next page as a suggested beginning point for your logic:

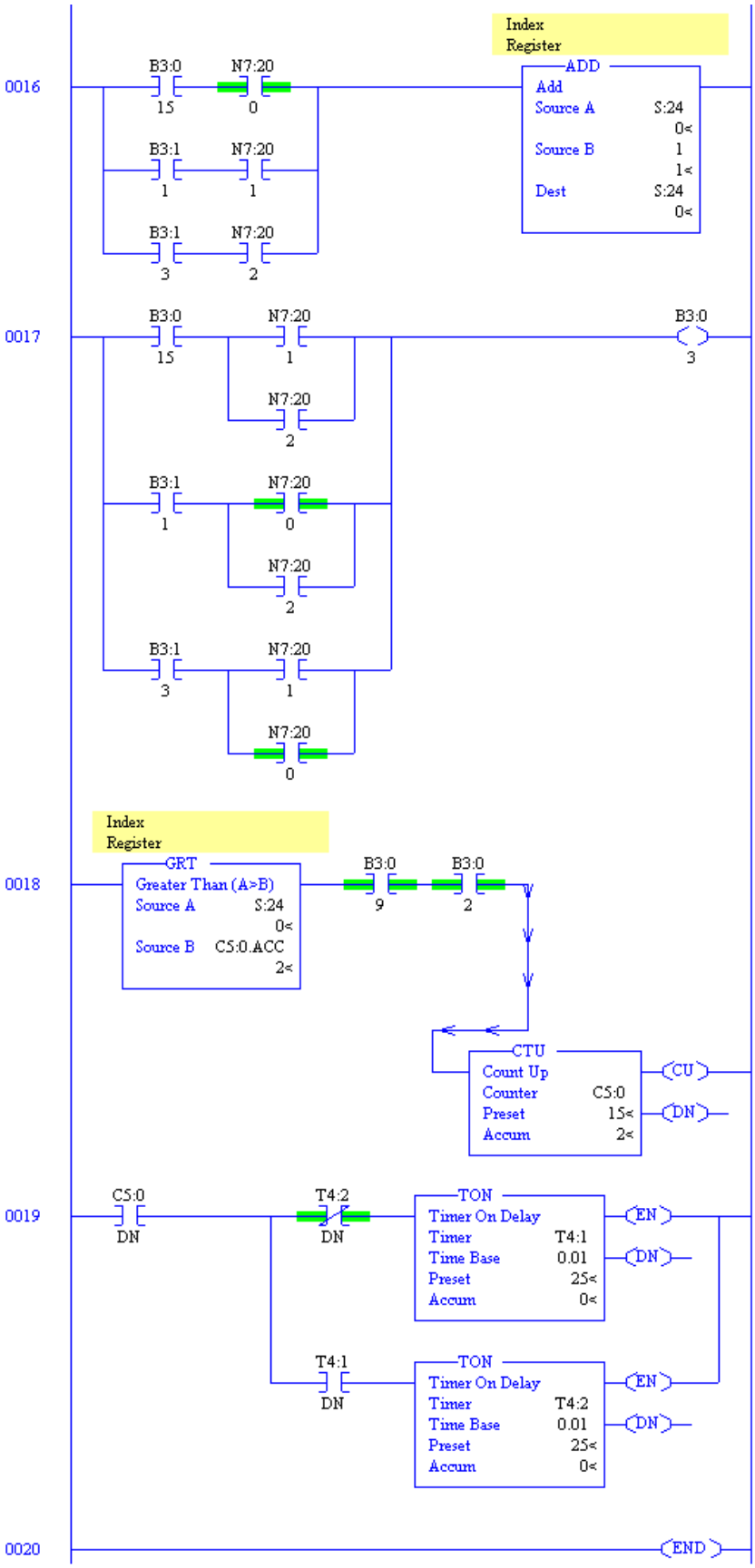
Simon Says Game

The program below is programmed for three, not four buttons and is programmed using indexed addressing from the SLC architecture PLCs from A-B.

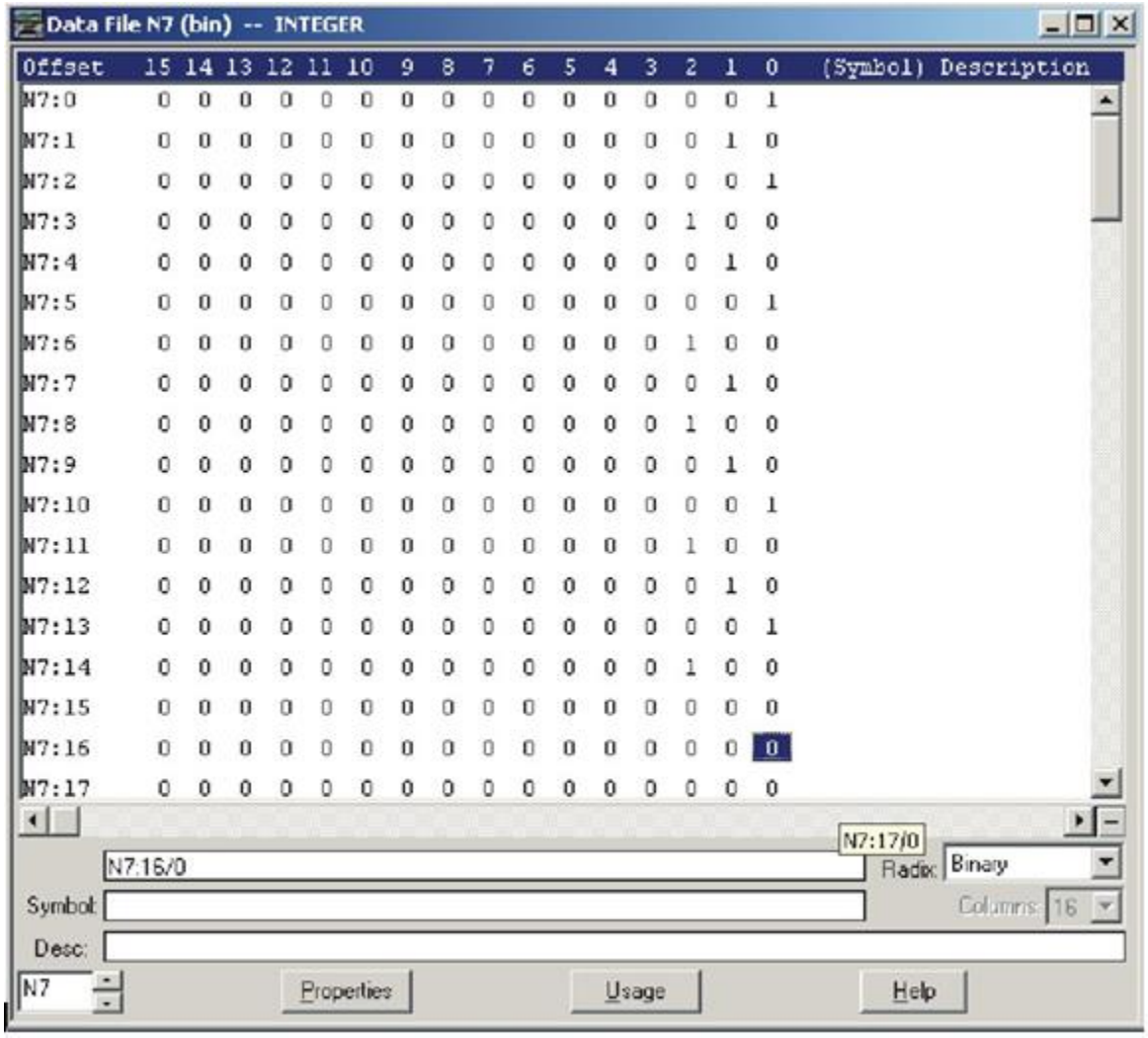


Simon Says Game Program in SLC


Index
Register
0009
T4:0
DN
ADD
Add
Source A S:24
0<
Source B 1
1<
Dest S:24
0<
Index
Register
0010
GRT
Greater Than (A>B)
Source A S:24
0<
Source B C5:0.ACC
2<
B3:0
9
B3:0
2
B3:0
7
0011
B3:0
2
MOV
Move
Source #N7:0
1<
Dest N7:20
1<
0012
B3:0
2
B3:0
9
N7:20
0
T4:1
DN
O:0
0
1761-Micro
0013
B3:0
2
B3:0
9
N7:20
1
T4:1
DN
O:0
1
1761-Micro
0014
B3:0
2
B3:0
9
N7:20
2
T4:1
DN
O:0
2
1761-Micro
0015
B3:0
2
B3:0
9
I:0
0
1761-Micro
B3:0
OSR
14
B3:0
15
I:0
1
1761-Micro
B3:1
OSR
0
B3:1
1
I:0
2
1761-Micro
B3:1
OSR
2
B3:1
3


Index
Register
0016
B3:0
15
N7:20
0
B3:1
1
N7:20
1
B3:1
3
N7:20
2
ADD
Add
Source A S:24
0<
Source B 1
1<
Dest S:24
0<
0017
B3:0
15
N7:20
1
N7:20
2
B3:1
1
N7:20
0
N7:20
2
B3:1
3
N7:20
1
N7:20
0
B3:0
3
Index
Register
0018
GRT
Greater Than (A>B)
Source A S:24
0<
Source B C5:0.ACC
2<
B3:0
9
B3:0
2
CTU
Count Up
Counter C5:0
Preset 15<
Accum 2<
CU
DN
0019
C5:0
DN
T4:2
DN
TON
Timer On Delay
Timer T4:1
Time Base 0.01
Preset 25<
Accum 0<
EN
DN
T4:1
DN
TON
Timer On Delay
Timer T4:2
Time Base 0.01
Preset 25<
Accum 0<
EN
DN
0020
END

In addition to the program, a table must be filled in starting at N7:0 in the N7 file.



Simon Says Game Program in SLC – Array of Lights

The file above must be inserted for the game to work correctly. Set the Radix to *Binary* and enter each word from N7:0 to N7:14 with either a 1 in the bit 0, 1, 2 or 3 position. The entry may also be entered in the *integer* format using numbers 1, 2, 4, and 8. The game will be played using these entries.

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