RFID_BU - Ladder Diagram   **Page 1**
AdvManLab:MainTask:MainProgram
10/5/2017 9:08:56 PM
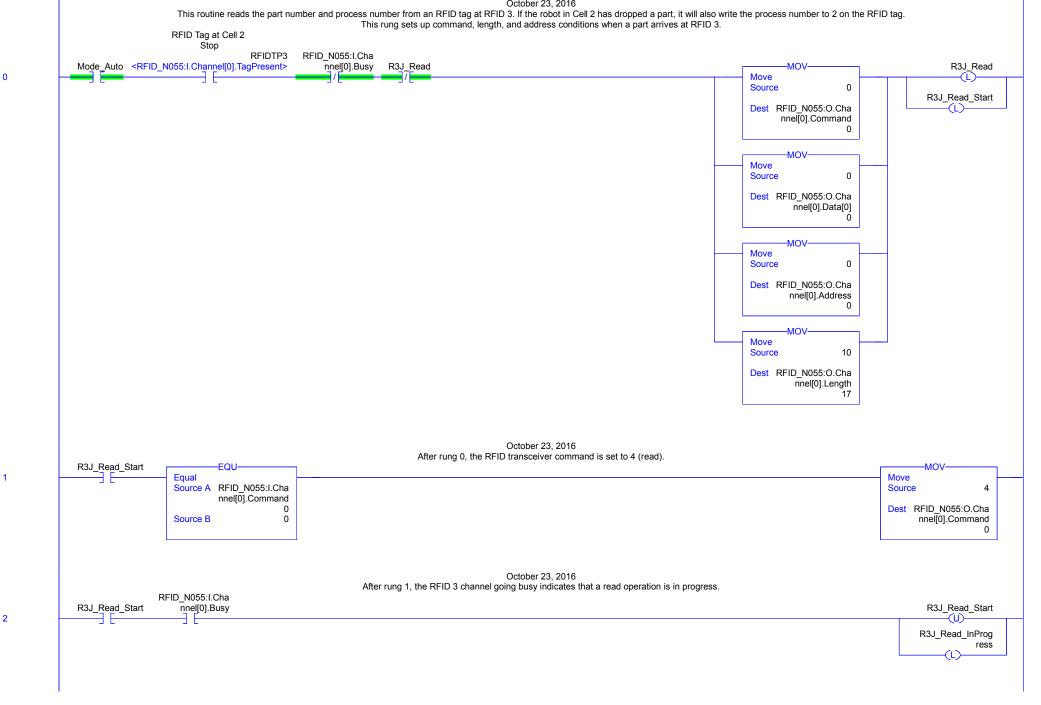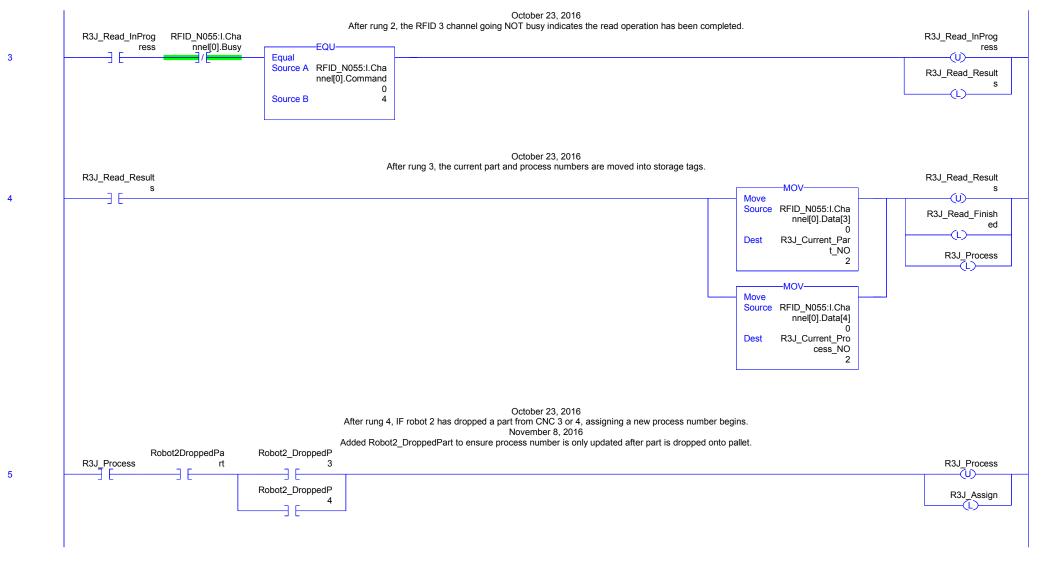Total number of rungs in routine: 19
C:\Users\VRMILLING\Documents\control_team_manuals\Logic W2017\AdvManLabCurrent.ACD

October 23, 2016
This routine reads the part number and process number from an RFID tag at RFID 3. If the robot in Cell 2 has dropped a part, it will also write the process number to 2 on the RFID tag.
This rung sets up command, length, and address conditions when a part arrives at RFID 3.

Rung 0

RFID Tag at Cell 2
Stop

Mode_Auto   <RFID_N055:I.Channel[0].TagPresent>

RFIDTP3
RFID_N055:I.Channel[0].Busy

R3J_Read

MOV
Move
Source   0
Dest   RFID_N055:O.Channel[0].Command
0

MOV
Move
Source   0
Dest   RFID_N055:O.Channel[0].Data[0]
0

MOV
Move
Source   0
Dest   RFID_N055:O.Channel[0].Address
0

MOV
Move
Source   10
Dest   RFID_N055:O.Channel[0].Length
17

R3J_Read
(L)

R3J_Read_Start
(L)

October 23, 2016
After rung 0, the RFID transceiver command is set to 4 (read).

Rung 1

R3J_Read_Start

EQU
Equal
Source A   RFID_N055:I.Channel[0].Command
0
Source B   0

MOV
Move
Source   4
Dest   RFID_N055:O.Channel[0].Command
0

October 23, 2016
After rung 1, the RFID 3 channel going busy indicates that a read operation is in progress.

Rung 2

R3J_Read_Start

RFID_N055:I.Channel[0].Busy

R3J_Read_Start
(U)

R3J_Read_InProgress
(L)

Rung 3

October 23, 2016
After rung 2, the RFID 3 channel going NOT busy indicates the read operation has been completed.

R3J_Read_InProgress   RFID_N055:I.Channel[0].Busy

EQU
Equal
Source A   RFID_N055:I.Channel[0].Command
                    0
Source B   4

R3J_Read_InProgress (U)
R3J_Read_Results (L)

Rung 4

October 23, 2016
After rung 3, the current part and process numbers are moved into storage tags.

R3J_Read_Results

MOV
Move
Source   RFID_N055:I.Channel[0].Data[3]
                    0
Dest   R3J_Current_Part_NO
                    2

MOV
Move
Source   RFID_N055:I.Channel[0].Data[4]
                    0
Dest   R3J_Current_Process_NO
                    2

R3J_Read_Results (U)
R3J_Read_Finished (L)
R3J_Process (L)

Rung 5

October 23, 2016
After rung 4, IF robot 2 has dropped a part from CNC 3 or 4, assigning a new process number begins.
November 8, 2016
Added Robot2_DroppedPart to ensure process number is only updated after part is dropped onto pallet.

R3J_Process   Robot2DroppedPart   Robot2_DroppedP3

Robot2_DroppedP4

R3J_Process (U)
R3J_Assign (L)

October 23, 2016
After rung 5, write new process number to 2. Keep part number the same. Note that address is set to 4 (process number) and length is set to 1.

6

RFID Tag at Cell 2
Stop
RFIDTP3

R3J_Assign   <RFID_N055:I.Channel[0].TagPresent>   RFID_N055:I.Channel[0].Busy

MOV
Move
Source   2
Dest   RFID_N055:O.Channel[0].Data[0]
                                    0

R3J_Assign
(U)

R3J_Write
(L)

MOV
Move
Source   4
Dest   RFID_N055:O.Channel[0].Address
                                    0

MOV
Move
Source   1
Dest   RFID_N055:O.Channel[0].Length
                                   17

MOV
Move
Source   0
Dest   RFID_N055:O.Channel[0].Command
                                    0

October 23, 2016
After rung 6, set the RFID transceiver command to 14 (write).

7

R3J_Write

EQU
Equal
Source A   RFID_N055:I.Channel[0].Command
                                    0
Source B   0

Enable_Process_
Update

MOV
Move
Source   14
Dest   RFID_N055:O.Channel[0].Command
                                    0

October 23, 2016
After rung 7, the RFID channel going busy indicates a write operation is in progress.

8

R3J_Write   RFID_N055:I.Channel[0].Busy

Enable_Process_
Update

R3J_Write
(U)

R3J_Write_Inprogress
(L)

October 23, 2016
After rung 8, the RFID channel going NOT busy indicates the write operation has completed.

9

R3J_Write_Inprogress
RFID_N055:I.Channel[0].Busy

```
          EQU
Equal
Source A    RFID_N055:I.Cha
            nnel[0].Command
                          0
Source B                 14
```

Enable_Process_Update

R3J_Write_Inprogress
(U)

R3J_Write_Finished_Check
(L)

October 23, 2016
After the write operation has completed, a new read operation is begun to check that write operation.

10

R3J_Write_Finished_Check

```
            MOV
Move
Source              0
Dest    RFID_N055:O.Cha
        nnel[0].Command
                      0
```

```
            MOV
Move
Source              0
Dest    RFID_N055:O.Cha
        nnel[0].Data[0]
                      0
```

```
            MOV
Move
Source              0
Dest    RFID_N055:O.Cha
        nnel[0].Address
                      0
```

```
            MOV
Move
Source             10
Dest    RFID_N055:O.Cha
        nnel[0].Length
                     17
```

R3J_Write_Finished_Check
(U)

R3J_Read_Check_Start
(L)

October 23, 2016
After rung 10, set the RFID transceiver comand to 4 (read).

11

R3J_Read_Check_Start

┤ ├

EQU
Equal
Source A RFID_N055:I.Channel[0].Command
                                    0
Source B   0

MOV
Move
Source   4

Dest RFID_N055:O.Channel[0].Command
                                    0

October 23, 2016
After rung 11, the RFID channel going busy indicates that the read operation is in progress.

12

R3J_Read_Check_Start   RFID_N055:I.Channel[0].Busy

┤ ├   ┤ ├

R3J_Read_Check_Start
(U)

R3J_Read_Check_InProgress
(L)

October 23, 2016
After rung 12, the RFID channel going NOT busy indicates that the read operation has completed.

13

R3J_Read_Check_InProgress   RFID_N055:I.Channel[0].Busy

┤ ├   ┤/├

EQU
Equal
Source A RFID_N055:I.Channel[0].Command
                                    0
Source B   4

R3J_Read_Check_InProgress
(U)

R3J_Read_Check_Results
(L)

October 23, 2016
After the read operation has completed, move the read process number into a storage tag.

14

R3J_Read_Check_Results

┤ ├

MOV
Move
Source RFID_N055:I.Channel[0].Data[4]
                                    0
Dest   R3J_Check_Process_NO
                                    2

R3J_Read_Check_Results
(U)

R3J_Read_Check_Fail
(L)

October 23, 2016
After rung 14, if the read process number is 2, the write operation was successful.

15

R3J_Read_Check_Fail

┤ ├

EQU
Equal
Source A R3J_Check_Process_NO
                                    2
Source B   2

R3J_Read_Check_Fail
(U)

R3J_Write_Pass
(L)

16

October 23, 2016
This rung executes once process number 2 has been successfully written to the RFID tag. It resets the robot and CNC tags.

R3J_Write_Pass — Robot2_DroppedP 3 — Robot2_DroppedP 3 (U) — R3J_Write_Pass (U)

CNC 3 has completed cutting the part
CNC_3_Done (U)

Robot2_DroppedP 4 — Robot2_DroppedP 4 (U)

CNC 4 has completed cutting the part
CNC_4_Done (U)

17

October 23, 2016
After rung 14, if the read process number is NOT 2, the write operation was not successful, and the write is restarted.

R3J_Read_Check_Fail

NEQ
Not Equal
Source A   R3J_Check_Process_NO
2
Source B   2

R3J_Read_Check_Fail (U)

R3J_Assign (L)

18

October 23, 2016
This rung executes after the part leaves RFID 3. It resets the tags so that this routine is ready for the next part.

RFID Tag at Cell 2
Stop
RFIDTP3
Mode_Auto   <RFID_N055:I.Channel[0].TagPresent> /

R3J_Read (U)

R3J_Read_Finished (U)

R3J_Process (U)

(End)