

Drexel University  
Goodwin School of Technology and Professional Studies  
Engineering Technology  
MET 205: Robotics and Mechatronics  
Lab 6 Sensors and Programming - RCX

**Objective:**

1. To learn interfacing sensors with the controller.
2. To pick and place objects.
3. Learning how to integrate the photoelectric switch sensor with robot controller.

Some More Commands:

1. DO (Digital Output)  
Syntax: DO(variable) = <expression>  
This command statement outputs the specified value to a DO (digital output) port.
2. Label Statement  
Syntax :< label>:  
This command defines labels that are located at the head of program lines. Labels must begin with a “\* “ and end with”:”.
3. GOTO Statement  
Syntax: GOTO <label>  
This statement will cause the robot to jump unconditionally to the <label> specified.
4. If Statement

```
IF <expression> THEN | <label 1> | | ELSE | <label 2> | |  
| <command statement 1> | | <command statement 2> | | ]
```

If the conditions of the <expression> are met, this command will execute block 1.

If there is and ELSE condition specified, and the condition is not met, the robot will move to block 2.

To continuously move between 2 points (A and B) at different speeds and turn the suction cup and the conveyor belt ON and OFF.

Solution:

1. \*TOP:
2. SPEED 20
3. MOVE P, P30
4. SPEED 20
5. MOVE P, P31
6. DELAY 1000
7. GOTO \*TOP

**Exercise:**

1. Write a program that picks an object from a certain location on the conveyor belt and then places it in another location of the belt. The conveyor stops while the robot picks or places. After that, then halt the program.

DO(#) Statement

DO(22) = 1 // turn the conveyor belt ON

DO(22) = 0 // turn the conveyor belt OFF

DO(24) = 1 // turn the suction cup ON

DO(24) = 0 // turn the suction cup OFF

2. Try 3 different speeds in the program. In each test, record the minimum delay for the suction cup to pick the object successfully. Plot a graph of minimum delay vs. speed percent (or speed (ipm or mm/s)).