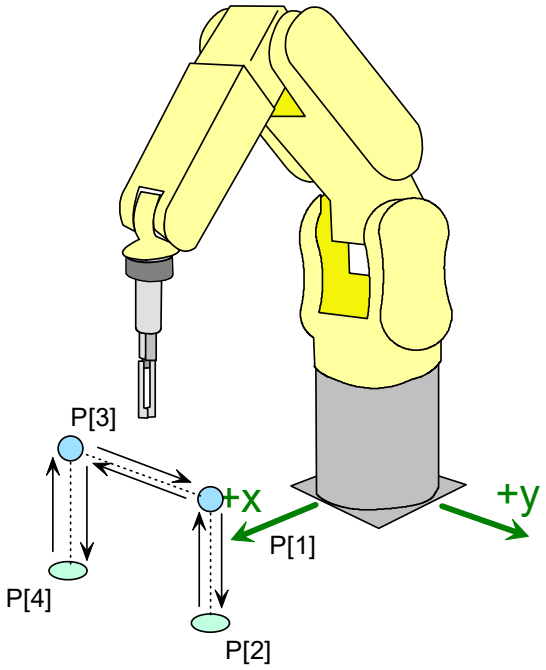
MECHATRONICS II

PROJECT

FANUC PICK-AND-PLACE



PARTS LIST

1. Fanuc robot (controller, pendant)

INTRO

Industrial automation is becoming ubiquitous. A key part of industrial automation is industrial robotics. Fanuc is one of the largest industrial robotics companies. One of the most common tasks that robots are used for is PICK-AND-PLACE tasks. In this task a robot picks up an item and moves it to another location. One example would be picking up items off of a conveyor and placing them into a package. This allows for fast and cheap assembly of product into its packaging.

REFER to the FANUC GUIDE by CT and any posted videos.

Students should glean from the guide and videos the following topics: coordinate systems (world and joint), jogging the robot, I/O control (laser and gripper), programming, and motion instructions.

EXERCISE

Program the robot to pick up a AA battery, move it to another location and set it down. Then pick it up and return it to the original position. The program will also loop to repeat this process. The task steps are shown below.

1. The Fanuc robot moves to a position over an upright standing AA battery. (P[1])
2. The gripper opens.
3. The robot moves down with the gripper around the battery. (P[2]).
4. The gripper closes to grab the battery.
5. The robot moves back up to position P[1]
6. The robot moves to a new position P[3]
7. The robot moves straight down so the battery is nearly on the platform (P[4]).
8. The gripper opens to release the battery.
9. The robot rises up (back to P[3]).
10. The robot drops back down to P[4].
11. The gripper closes to grab the battery again.
12. The robot moves up to P[3].
13. The robot moves back to position P[1].
14. The robot moves down so the battery is new on the platform (P[2]).
15. The gripper moves up to P[1].

Then revise the program so the process above repeats (use JMP LBL and LBL).

CODE

Your code will look something like this.

```
1:   LBL[1]
2:J  P[1]  5% FINE            // above batt
3:   RO[3: GRIPPER]=ON        // open gripper
4:J  P[2]  5% FINE            // lower over batt
5:    RO[3: GRIPPER]=OFF      // close gripper
6:J  P[1]  5% FINE            // rise up
7:J  P[3]  5% FINE            // move to new position
8:J  P[4]  5% FINE            // lower down
9:    RO[3: GRIPPER]=ON       // open gripper
10:J  P[3]  5% FINE           // rise up
11:J  P[4]  5% FINE           // drop back down
12:   RO[3: GRIPPER]=OFF      // close gripper, grab batt
13:J  P[3]  5% FINE           // rise up
14:J  P[1]  5% FINE           // move back to orig pos, above
15:J  P[2]  5% FINE           // drop down
16:   RO[3: GRIPPER]=ON       // open gripper
17:J  P[1]  5% FINE           // rise up
18:   JMP LBL[1]
```

SUBMISSION

Show the instructor that your code works.