Lab 7 Prelab Assignment (Week 10, March 10 - 14)

Reading Assignment:
Lab Book (Carley and Khosla) Chapter 13 (Programming); Lecture notes

Prelab Questions: None

Experiment 1: Testing the Robot – Follow the steps below and record your results.
1) Turn the Robot Off.
2) Plug in the teach pendant
3) Turn the Robot on.
4) Press the reset switch located on the robot, which should reset the counter.
5) Press and hold the buttons corresponding to the first action you wish the robot to perform (i.e. turn left = left button; go straight = left and right button, etc.). While pressing those buttons, press and hold the Enter button until the robot performs the action. (It may be a split second or so until the robot responds). As the robot performs the action it is saving that command into memory and incrementing the counter.
6) After the robot performs the action, release the Enter button and repeat step 5, entering the SECOND command, then THIRD command and so forth. The robot should perform each command as the Enter button is pressed.
7) When all the commands are entered a reset counter command needs to be programmed. To do this, follows step 5 with all four command buttons pressed. The robot should move straight with the light and buzzer on. This puts into memory a reset counter command.
8) Now press and hold the RESET push-button switch on the robot. This manually keeps the counter at zero. With the RESET switch pressed, disconnect the teach pendant. As soon as you let go of the RESET switch the robot will begin to execute the commands as they were entered. It will repeat itself as soon as it reaches the last command that was entered (which was the reset counter command). At any time you can press the RESET switch to reset the counter to zero (again, nothing will happen until you release the RESET switch, then it will go to the first command).

Experiment 2: Program your robot to navigate a “maze” marked on the floor of the lab.

9) Set the clock at 2 Hz and program the robot to do the following commands (a) run forward ten steps, (b) turn left ten times, (c) turn right ten times. After each experiment, measure and record the distance and angle the robot moved.
10) Program your robot so that it can self navigate through the maze. When this is done, show your robot (even if it doesn’t work) and your lab write-up to the TA and have the TA record your score. Make sure you check that all of your scores in the grade book are correct before you leave!