Parallax and Actuator

Lab. Hour: 7:00~10:00pm. September 23h, 2013

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Introduction

In this lab we will assemble the Robotics Shield Kit (for Arduino) and manipulate servos included in the kit. First, assemble your kit and make it work. Please refer to the tutorial in the homepage of Parallax.

(Chapter 3. Assemble and Test your BOE Shield-Bot in http://learn.parallax.com/ShieldRobot).

Next, write your code to make your robot move as you want.

In lab 2, you will learn:

- How to turn on/off LEDs on the Board of Education Shield of Parallax.
- How to manipulate servos to move the robot.

Problem Specification

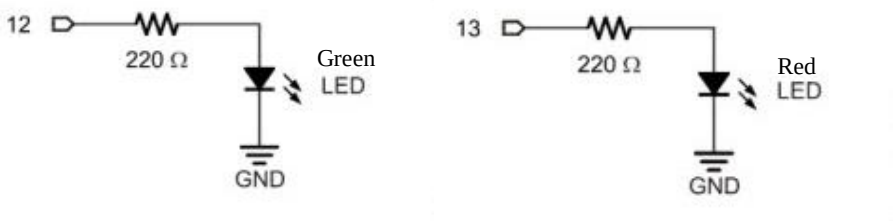
Assignment 1

Assemble your Robotics Shield Kit (for Arduino) and turn on/off the LEDs using its pins and breadboard.

Connect LEDs as described below:

Table 1 LED pins

LEDs	Digital Pin number
Red LED	13
Green LED	12



Each LED should be turned on and off in every second one after another like in Table 2.

Table 2 LED Action

Time Slices	1 (sec)	2	3	4	5	6
Red LED	On	Off	On	Off	On	Off
Green LED	Off	On	Off	On	Off	On

Assignment 2

Write Arduino code to manipulate your robot. Set the proper delay time and the constant values to control your robot. Make your robot move like below:

Table 3 Robot Action

Action	Duration (sec)
Go straight	2
Stop	1
Turn right	-
Stop	1
Go straight	2
Stop	1
Turn left	-
Stop	1
Go backward	2
Stop	-

Reports Evaluation Criteria

Each item listed below will be checked when your report is evaluated. Some points will be taken off if there is any omission or improper content.

Final Report

Please include followings in your final report:

- How LEDs are connected
- The constant 1500 is used for servo to stop: *servoRight.writeMicroseconds(1500)*. What does the 1500 means?
- Attach your program for the assignment 2 and explain it.

Notes

TAs are very strict on copying and plagiarizing. You can refer to books, papers and internet pages. However, you cannot borrow them 'as is' if you do not explicitly indicate the source that you have cited. Also, it is strongly recommended that to write down what you've understood in your words.

Your report does not need to include a cover page and you can format it freely. (Because TA do not evaluate how beautifully you format it.) However, the content of the report should be precise. We receive the report using the http://klms.kaist.ac.kr. You can submit your report (or a part of it) in hardcopy if you want to.

When you upload your compressed project file, preliminary report and final report, you must follow the format described below. Also you must use pdf format for preliminary and final reports.

Lab#_studentID.zip / ex) Lab5_20131234.zip

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