

## CMSC 143: Object-Oriented Programming with Robots

# Lab 5: Online Robots

Due October 8, 2015

Online robots like the telegarden<sup>1</sup> combine the Internet with robotics to provide telepresence. In this lab, you will create a Python program that when run, builds a webpage describing the state of your robot.

You will write a Python program that generates HyperText Markup Language (HTML) code which you can then upload to a webserver or look at locally in a web browser. You are encouraged to post the resulting HTML file to your student web space on Bard's student webserver<sup>2</sup>.

First, you should read the first few HTML tutorials provided by the w3schools.com<sup>3</sup>. HTML is a markup language, meaning that along with the actual content (the data) the text file also contains annotations of the content (meta-data). In HTML, the annotations, or tags, are predetermined commands that describe the structure of the document and also how it should be displayed (e.g. `body`, `a`, `img`). The HTML tags are enclosed in angle brackets and the tags are often found in open/close pairs.

Guidelines for the webpage:

1. Robot: You must show the robot's name and some of the robot's sensor values (light, infrared, battery).
2. HTML: You must use a heading, a link, an image, a list, a table.

Beyond those specific guidelines, you should be as creative as possible. You might include or provide links to some of the programs you have created.

### Learning Objectives

- Work with File I/O
- Use HTML
- Create a Meta-Program

### Deliverables

Submit an electronic copy of your lab using moodle. Your program should have your name, email, assignment description, the date, and collaboration statement at the top of the file as a comment. Your submission should be a zip file that expands to a folder with at least these two files:

```
cmssc143-lab5-LASTNAME-FIRSTNAME/  
  lab5.py  
  lab5.html
```

### Notes

You should create helper functions that generate HTML as strings for certain elements. For example, you might create a function `createUList(1)` that generates the HTML necessary for displaying each element of the list 1. Also, if you are interested in having the web page automatically refresh (to continually show the status of the robot, for example), you can use the following tag inside the `HEAD` section of the HTML page: `<meta http-equiv="refresh" content="1" />`. And to prevent the browser from caching images use: `<img src = "FILENAME.JPG?v=CURRENTTIME">` where `CURRENTTIME` is changing based on the `currentTime()` function.

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<sup>1</sup><http://www.usc.edu/dept/garden/>

<sup>2</sup><http://inside.bard.edu/bits/software/ftp/>

<sup>3</sup>[http://www.w3schools.com/html/html\\_intro.asp](http://www.w3schools.com/html/html_intro.asp)