CPS 499/592 — *Intro to Robotics*
Spring 2023 — *Lab* 01

Assigned: 2023-02-06
Due: 2023-02-15

Overview

The purpose of this assignment is two-fold:

1. To determine the development teams for the semester. A team consists of either 2 or 3 people. **You will not be permitted to change teams later. This decision is final.**
2. To ensure that you can write and execute programs for our iRobot Create 2 robots.

Task 1: Form a Team

For this task, you are responsible for fill out out a table similar to the following:

Name	**UD-ID**	**UD E-mail**	**alternate contact method**
Nick Stiffler (self)	xxxx	nstiffler1@udayton.edu	phone: 937-229-3849
Student 1 (← real name)	yyyy	student1@udayton.edu	email: student1@gmail.com
Student 2 (← real name)	zzzz	student2@udayton.edu	phone: 937-867-5309

The motivation behind this task is simple, to ensure that you have multiple ways to reach each team member.

Group Grading

In **future labs** (meaning all those **AFTER** this one), only one person per group will need to submit a deliverable. *Typically*, every member of the group receives the same mark on a lab assignment.

Deviations to Group Grading Policy

However, in very rare instances this is not the case. If a team member is not pulling their weight, I will only intervene if the team can demonstrate that they have attempted to communicate with the individual prior to notifying me.

tldr; Keep receipts.

Task 2: First Program

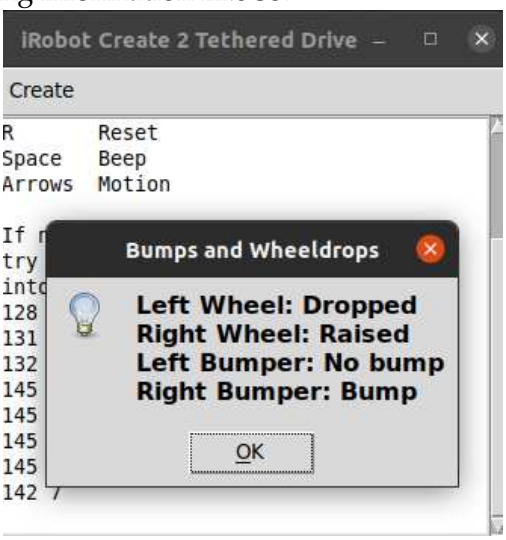
Write a program that extends the `Create2_TetheredDrive.py` file found at

- "Isidore" ⟶ "Resources" ⟶ "Create Notes": Create2_TetheredDrive.py, **or**
- `https://github.com/DrR0b0tN1ck/Create2_TetheredDrive`

to perform the following task(s).

Task

Add a callback event for the 'B' key that will query the Robot's "*Bumps and Wheel Drops*" sensor and will print to corresponding information like so:



Question(s)

At this point we are querying a single sensor value. Provide a few sentence explanation on what you would attempt to do if you were required to list the following sensor information:

- Bumps and Wheeldrops
- Cliff sensors (cliff left, cliff front left, cliff front right, cliff right)

CPS 499/592 – DELIVERABLE – LAB 01

I will be accepting one document for the deliverable. Below are the details regarding this document.

Filetype: pdf if it is not a pdf ... 5 points will be deducted
Filename: Lab 01ṗdf
The header of the document should look like the following example:

> Team Members: Nicholas Stiffler, Student1, Student2
> Course: CPS 499/592
> Assignment: Lab 01

There are 2 major components to the deliverable:

1. **Python Code**
   All of the code that you used needs to be included in the submission in a folder called "code".
2. **Report**
   This component requires you do the following:
   - Provide the table described in **Task 1**
   - Write a brief 1-page report describing the steps your team took to accomplish the task.
     - What resources did you use?
     - What built-in python methods did you use?
     - What did you learn?
   - The answer to the question(s) posed in **Task 2**

Below is the grading rubric I will use when evaluating your submission.

- The deliverable should be an archive (.zip, .tgz., etc) that contains the following
  - A pdf file for the report.
  - A "code" directory that contains all of the code you used for the assignment.
- The demo requires a time, scheduled either outside of class or on a designated lab day where you will show Dr. Stiffler that your project works, and he will ask questions about your design decisions, etc.
- **Your submission will not be graded without demoing the project**

CPS 499/592 – Cover Sheet – Lab 01

Team number: _____
Names:

_____

_____

_____

_____

Task 1 functionality (30):

- □ Contact information for yourself
- □ Contact information for team member #1.
- □ Contact information for team member #2.

Task 2 functionality (30):

- □ Query the specified sensor(s).
- □ Decode the sensor values returned by the Create2.
- □ Create a callback function to display the sensors values.
- □ Have a Tkinter window pop-up displaying the decoded sensor values.

Style (20):
The following refers to your code, which should be submitted **as part of your Team's deliverable document**.

- □ One function per command?
- □ No duplication of executable code?
- □ No magic numbers?
- □ Names match functionality?
- □ Adequate comments?
- □ Comments match code?
- □ Consistent formatting?

Documentation (20):

- □ Report is complete and clear?
- □ Required sections exist? (i.e. Answered any questions posed in the assignment document)

Other comments:

Total: