

CS 1301 Homework 6- Random Color Fun

Due: Friday, March 14th, before 11:55pm PM EST.
Out of 130 points
Files to submit: hw6.py

For Help:

- TA Helpdesk – Schedule posted on class website.
- Email TAs

Notes:

PAIR PROGRAMMING Assignment: Work with your PAIR 2 partner!

For pair programming assignments, you and your partner should turn in identical assignments. Your Submission must not be substantially similar to another teams' submission. Collaboration at a reasonable level will not result in substantially similar code. Students may only collaborate with fellow students currently taking CS 1301, the TA's and the lecturer. Collaboration means talking through problems, assisting with debugging, explaining a concept, etc. You should not exchange code or write code for others.

- **Don't forget to include the required comments and collaboration statement (as outlined on the course syllabus).**
- **Do not wait until the last minute to do this assignment in case you run into problems.**
- **If you find a significant error in the homework assignment, please let a TA know immediately.**

Part I --- Introduction

Well, now you've spent some time getting to know your robot. Perhaps you even gave it a name and a backstory, let's get a bit more involved. This assignment is based around a previous one, so keep in mind all the methods/sensors you used in the avoid walls homework...

Mission:

With your team, you will need to satisfy the following: Your robot will be placed in an arena that will have yellow, red, blue, and green wall segments (12" long). You need to have your robot turn at full speed for a random amount of time by using the random module. The color of the wall in front of the robot when it stops spinning will determine an action that the robot must do. If the robot does not find a colored wall, spin again. Do this until it lands on a color. Spin for less than 10 seconds each time. The following colors and actions are associated: (red: beeping a song; green: doing a dance; yellow: back towards the wall behind you and stop when your sensors detect it; blue: go forward until you are close to the blue wall without touching it)

HINT: The camera can detect changes in scenery.

If you need help with the move functions, go to:

http://calicoproject.org/Calico_Myro#Movement_Functions

If you need help with the image processing functions, go here:

http://calicoproject.org/Calico_Myro#Image_processing

Part Two --- Turning it in, and Demo.

Be sure to put the lines “from Myro import *” and “initialize()” or “init()” at the beginning of the file (after the required comments). Be sure **not** to specify the port parameter in your initialize command, such as initialize(“com4”). This makes it very time consuming to grade if we have to go into your code and change the com port to the one that works on our specific system.

Reminder on collaboration statement and submission:

This is a pair assignment, but each person is responsible for their own submission.

Each group member needs to turn in hw6.py to T-square before the deadline.

Please include your name, and all your group members' names in the collaboration statement.

Demo:

Each group (**All members**) needs to come to the TA's help desk or recitation to demo the program to one of the TAs, preferably your grading TA. You will be asked questions regarding your code as well.

If one of the group members is not present for the demo, his/her grade will be based **ONLY** on the code portion (a possible 45 points) UNTIL they come see a TA to answer questions relating to the code.

Print out and bring a grading sheet (next page) to your demo! The TAs will likely not have copies.

Grading Criteria:

Demo (TA's Discretion, see next page) 75 pts

Code Grading Criteria

Uses Random function correctly 5pts

Code that prevents running into walls:

- **Uses getIR() when going backwards 8 pts**
- **Uses getObstacle() when going forwards 8 pts**
- **Gets within 6 inches of the wall 4 pts**

Code to detect/identify wall color:

- **Determines pixel color 5 pts**
- **Identifies color of wall 5 pts**

Code for five actions based upon wall color:

- **Plays a song when facing red wall 4 pts**
- **Dances when facing green wall 4 pts**
- **Backs up until sensing wall after facing yellow wall 4 pts**
- **Goes forward until sensing wall after facing blue wall 4 pts**
- **Keeps spinning if white wall 4 pts**

Robot Navigation Assignment TA Demonstration Grading Sheet

Group Members: _____

Demo TA: _____

Grading TA (if different): _____

20 pts _____ Robot navigated without hitting any walls!

5 pts _____ Uses random function correctly

20 pts _____ Robot does the correct action based on the wall segment

30 pts _____ All group members understood and could explain the code.

Total: _____ / 75