

CS 1301

Individual: Homework 4 – Getting to Know Your Robot

Due: Friday February 14th before 11:55 PM

Out of 100 points

Files to submit: hw4.py

This is an INDIVIDUAL assignment!

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.

For Help:

- TA Helpdesk – Schedule posted on class website.
- Email TAs
- Instructor's office hours

Notes:

- 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 1 Dance and sing, little robot! (45 points)

You are going out tonight, and you are so excited to have a robot friend that you brought it along as your wingman. Because you want to impress your friends, you are going to teach your robot to kill it in the dance floor. You can find a reference to Myro functions that will help you and your little robot to learn how to dance here: http://calicoproject.org/Calico_Myro.

Your job is to help your robot friend find a “signature dance”. The dance should last at least **30 seconds**, and it should contain at least **four distinct dance moves**. You will not receive credit if your robot simply goes back and forth for the entire dance. You are allowed (and encouraged) to make your own helper functions that contain individual dance moves.

However, your job is not done yet! You also want to show your friends that your robot friend is a distant cousin of Grammy winners Daft Punk, so you are going to teach it how to sing. Get familiarized on how to use the beep() function to create different tones. You are encouraged to

write a helper function for the song as well. Singing does not include beeping in a single tone. Your robot should sing a “song” with a length of at least 15 notes/beeps and carry some sort of melody.

Finally, write your robot’s “signature move” and song as a function called `danceOff()`, and save it into a file called `hw4.py`. You will have points taken off if your function and/or file are not named correctly.

Part 2 Write Menu

So you’ve succeeded in dancing with your robot and bonding with it. After a lot of hesitation and consideration, you nervously decide to ask the artificial love of your life it would like to come home with you and spend the night. To your surprise and delight, it agrees!

After being overjoyed with the thoughts of cuddling and watching a movie with your robot, you come to the staggering realization that it doesn’t know how to move around your humble abode. After all, you only ever taught it how to dance!

To remedy this, you will need to write a function that allows you to control your robot and direct it around your home. Name this function **`remoteControl()`**.

You will need to use conditionals (“if” statements) and a while loop to create a menu that gives the user 5 options. The first option should be to move the robot forward for **half a second**. The second option should be to turn the robot around a full **180 degrees**. The third and fourth options should be to rotate the robot **left or right 90 degrees**. The fifth option should be to **exit the program**.

Here's an example of how `remoteControl()` might work. The user's input is shown in red.

```
1. Forward for half a second
2. Reverse direction (180 degrees)
3. Turn right (90 degrees)
4. Turn left (90 degrees)
0. Exit
Which dance step/song would you like? 1
```

(The robot does moves forward for half a second. The program doesn't show the menu again until the robot finishes moving a half-second later.)

```
1. Forward for half a second
```

2. Turn Backwards (180 degrees)
3. Turn Right
4. Turn Left
0. Exit

Which dance step/song would you like? 5

I'm sorry, that's not a valid choice

1. Forward for half a second
2. Turn Backwards (180 degrees)
3. Turn Right
4. Turn Left
0. Exit

Which dance step/song would you like? 0

See you later!

Part 3 Turning It In

Once you are done, submit **hw4.py** to TSquare. Remember, if there are serious errors in a part of the homework, you will lose credit for that particular part. However, **if your file completely fails to run, it will not be graded and will receive an automatic zero.** Please test your code thoroughly before turning it in!

Rubric

Part 1 Dance (50 points)

- Function named correctly (danceOff) 5 points
- Dance is at least 30 seconds 10 points
- Contains at least 4 different moves 20 points (5 points per move)
- Robot sings (basically it plays different notes) 15 points

Part 2 Remote Control (50 points)

- Function named correctly (remoteControl) 5 points
- Displays a menu with options 5 points
- Accepts input from the user 10 points
- Loops correctly 10 points
- Handles five cases with conditionals 15 points
- Exits correctly 5

You can earn up to 5 points bonus [discretion of the TAs] for extra creativity/general awesomeness, for a possible total of 105/100.