CS 1301
Individual: Homework 4 – Getting to Know Your Robot
Due: Wednesday, March 2nd, before 6 PM
Out of 100 points

Files to submit: **dance.py**
                              menu.py
                              (2 files total)

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
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, Robot, Dance! (55 points)

Hopefully by now, you've gotten your robot out of the box and made friends with it (or at least acquaintances); given it a name and a long, intricate history. Well, how about now you take it out to a dance?

Of course, you'll have to teach your robot to dance. Using the movement functions:

http://wiki.roboteducation.org/Myro_Reference_Manual#Movement_Functions

have your robot do a little dance. The dance should last for at least 30 seconds, and contain at least 3 distinct dance moves. Don't just go back and forth for 30 seconds; vary

the dance a bit. Pretend your robot is well-versed in rhythm and soul, or is at least a little spastic. In addition to the movement, your robot should also make some noise! The **beep()** function is very helpful – it allows the robot produce various tones.   You are allowed (and encouraged) to make your own helper functions that contain individual dance moves.

Write your dance as a function called **dance()**, and save it into a file called **dance.py**. As always, please name your file exactly as requested.

Part 2 – Dance Remix (45 Pts)

Now that you've taught your robot how to dance, you demonstrate it to your friends and family. They are very impressed by its performance, but each wants the robot to do his or her own version of the dance. You can't simply alter dance() to please everybody-- what can you do? Luckily, with a little Python, you can let anyone customize your robot's dance routine without having to teach him or her how to program.

For this part of the assignment, you'll use conditionals ("if" statements) and a while loop to create a menu that allows the user to select a dance step. Name the function that contains this menu **menu()**, and save it in a file called **menu.py**. If you used helper functions in your dance() from the first part of the assignment, you can re-use those. (copy and paste them into the new file) If not, you'll need to create a few short functions that cause the robot to do a particular dance move for a few seconds. Your menu must implement **at least 3 distinct dance choices**, plus **an option to exit the program**. If the user types something invalid, you should let them know and print the menu again.

Here's an example of how menu() might work. The user's input is shown in blue.

```
1. The Charleston
2. The Tango
3. The Foxtrot
0. Exit
Which dance step would you like? 1
```

(The robot does a dance move called the Charleston. The program doesn't show the menu again until this move finishes a few seconds later.)

```
1. The Charleston
2. The Tango
3. The Foxtrot
0. Exit
Which dance step would you like? 5
I'm sorry, I don't know that one.
1. The Charleston
2. The Tango
```

```
3. The Foxtrot
0. Exit
Which dance step would you like? 0
Have a good day! (The danceMenu() function terminates.)
```

Part 3 – Turning it in

Once you're done, please submit **dance.py** and **menu.py** to T-Square. If you submit both functions in the same file, you will lose 10 points!

Remember – if there are serious errors in a part of the homework, you will lose credit for that particular part. If your file fails to run at all, you will lose 50% credit for the entire homework. **Please test your code thoroughly before turning it in!**

Part 4 – Grading Rubric

Part 1 – Dance – 55 points
       Function named correctly (dance) – 5 points
       Dance lasts for at least 30 seconds – 20 points
       Contains at least 3 distinct moves – 15 points
       Robot beeps – 10 points
       Creativity – 5 points
Total for part 1: 55 points

Part 2 – Menu – 45 points
       Function and file are named correctly (menu) - 5 points
       Displays a menu - 5
       Accepts input from the user - 10
       Loops correctly - 5
       Handles three cases with conditionals - 10
       Shows off 3 distinct moves - 5
       Exits correctly - 5
Total: 45 points

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

Written By: Melody Nailor, Spring 2009; Kevin Jones, Summer 2009.