

CS 1301

## **Individual: Homework 4 – Debut of a New Superhero**

**Due Thursday September 24<sup>th</sup>, 2015 before 11:55pm**

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.

Piazza Support website or email TA's for grading specific questions.

Instructor's office hours – linked from course syllabus

### 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.

You have just accidentally discovered that your robot is more special than you originally thought: it has Superpowers! However, your robot needs your help. Since these are newfound abilities, your robot does not know how to perform them, and as such, needs to practice. Also don't forget! Since all memorable superheroes have theme songs, and your new little superhero wants to become memorable, it is your job to come up with a theme song for it. You can find a reference to Myro functions that will help you and your little robot to learn how to perform its abilities and play its theme song here:

[http://calicoproject.org/Calico\\_Myro](http://calicoproject.org/Calico_Myro)

## **Part 1: It's "Learning" Time! (50 Points)**

(Play on words on The Thing's phrase "It's Clobberin Time!")

It has come time for your robot to learn its new superpowers! Your job is to teach your robot how to **perform 3 newfound abilities**. Each ability should last for **at least 10 seconds**.

Examples of abilities:

- Vortex: moving in a circle (Flash)
- Radar sense: it keeps moving until it senses something in front of it (Daredevil)
- Agility: moving around in different directions, i.e. simulating they are dodging something (Spiderman)

- **Essentially just make the robot do something more than move forward**
- You are allowed (and encouraged) to make your own helper functions that contain individual abilities. Try to include comments that specify what the ability is intended to be.
- Get creative!

You're not done yet! You also have to create your robot's theme song. Get familiarized on how to use the beep() function to create different tones. You are encouraged to make a helper function for the theme song as well. The theme song must last for **at least 15 seconds with a minimum of 5 different notes/beeps**.

Finally, create a function called **signatureAbility()** that plays the theme song at the beginning, then one of its newfound abilities, i.e. whichever one will be its signature ability, and finally prints out the name of the robot (use the getName() function). Your robot does not need to play its theme song and perform its ability at the same time, but if you can figure out how to do that then all the more power to you! Place the remaining two abilities into their own functions called **secondAbility()** and **thirdAbility()**. Save the functions 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 (50 Points)

You have succeeded in teaching your robot its new abilities. Now it is time to put them to the test. A supervillain has entered the city and it is up to you to stop him!

Write a menu function called **battleMenu()** that will determine the number of abilities your robot does in order to try to stop the supervillain. You can have it so that when the user inputs 1, the robot does the signatureAbility(), when they input 2 the robot does the signatureAbility() and the secondAbility(), and for 3 the robot does all 3 abilities. You will need to use conditionals ("if" statements) and a while loop to create a menu that gives the user **3 different options for the number of abilities it performs and an option to exit the program**. Whenever the user decides to exit the program (i.e. inputs 4) then have it **print** "You have won the battle!" If the user **inputs an incorrect choice**, **print** the appropriate message ("I'm sorry, that is not a valid choice.") and prompt the user for input **again**.

SAMPLE INPUT:

Here is how battleMenu() might work:

```
1. One Ability
2. Two Abilities
3. Three Abilities
4. Exit
Which option would you like? 2
```

(The robot performs 2 abilities. The program doesn't show the menu until the robot finishes performing its abilities)

```
1. One Ability
2. Two Abilities
3. Three Abilities
```

4. Exit

Which option would you like? **5**

**I'm sorry, that is not a valid choice.**

1. One Ability

2. Two Abilities

3. Three Abilities

4. Exit

Which option would you like? **4**

**You won the battle!**

### **Part 3: Turning it in**

Once you are done, submit hw4.py to T-Square. 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: It's "Learning" Time (50 Points)

- Functions named correctly (signatureAbility, secondAbility, thirdAbility) **5 Points**
- Each ability is at least 10 seconds **15 Points**
  - **(5 Points per ability)**
- signatureAbility function performs theme song then one of the three abilities then prints out its name using getName() **20 Points**
- Theme Song is at least 15 seconds with at least 5 different beeps **10 Points**

Part 2: Write Menu (50 Points)

- Function named correctly (battleMenu) **5 Points**
- Displays a menu with options **5 Points**
- Accepts input from the user **10 Points**
- Loops and exits correctly **10 Points**
- Handles cases correctly with conditionals **20 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.*