PA02: Monsters and Aliens

University of Virginia, Department of Computer Science
CS 1112 - Intro to Programming
Fall 2024

Due by: 11:00pm on Wednesday, September 25, 2024

Objective: The objective of this assignment is to introduce students to the concept of conditional statements in Python while exploring a fun monsters and aliens theme. By the end of this assignment, students should be able to understand and implement if, else, and elif statements to make decisions based on different scenarios.

1 Task

Note. This assignment can be completed in two different ways, when conditional statements are referred to in the write-up, they can either be, (i) **if-elif-else** statements, or (ii) **match-case** statements, depending on your choice of implementation.

You must match our file name, monsters_and_aliens.py, ***exactly***.
If you do not match our filename exactly, our autograder will be unlikely to find it, and it will therefore be unable to generate useful feedback to aid you on your submission.

1.1 Instructions

Imagine a world filled with monsters and aliens! Your task is to write a Python program that interacts with users and determines the appropriate response based on the characteristics of the creatures they encounter. **Please use the starter code that we provide for you.**

1. Write a Python program called `monsters_and_aliens.py` that prompts the user to enter the **name** of a creature and stores it in a variable called `creature_name`.
2. Using conditional statements, write code that performs the following tasks (Make sure to follow **THE EXACT STRING FORMATTING SHOWN!** For example, when it says **"monster" use all lowercase "monster" in your code, not "Monster"**):
   - If the *creature_name* is **"monster"**, print the message **"Watch out! Monsters are strong and dangerous."**
   - Else if the *creature_name* is **"alien"**, print the message **"Be cautious! Aliens are intelligent and mysterious."**
   - Else if the *creature_name* is **"unknown"**, print the message **"Unknown creature. Approach with caution!"**
   - *(Else)* If the input is **not "monster", "alien" or "unknown"**, print the message **"Not a valid type. The three types are monster, alien, and unknown."**
3. Test your program (by running it) with different creature names ("monster", "alien", "unknown", or something else) to verify that it produces the correct output for each scenario.
4. Extend your program to include additional characteristics for a monster and an alien. That is, add to the bodies of the previous *if-elif-elif-else* statements. *(Hint: Remember you can have nested if-statements!* ***Don't forget the proper indentation!)***:
   - If the *creature_name* is **"monster"** (and after printing the appropriate message from step 2), prompt the user to enter the **size** of the monster (small, medium, or large), and print a corresponding (and different) message for each based on its size. The monster size should be stored in a variable called ***"monster_size"***.
     - If the *"monster_size"* input is anything other than "small", "medium", or "large", print your own message conveying how scary the monster still is.
   - If the *creature_name* is **"alien"** (and after printing the appropriate message from steps 2), prompt the user to enter the **number of eyes** the alien has (0, 1, or 2) and print a corresponding (and different) message for each of the 3 values. The number of eyes should be stored in a variable called ***"eyes"***.
     - If the *"eyes"* input is anything other than 0, 1, or 2, print your own fun fact about aliens.
5. Test your program (by running it) with various scenarios, including different creature names, sizes, and number of eyes, to ensure it behaves as expected.

Keep the following in mind as you write your code, as you will be graded on these aspects:

- Don't forget your header at the top of your `.py` file (see section 2.1 below)
- Cite your resources clearly or state you did not use any
- Use appropriate variables names throughout your program
- To ensure the autograder can grade your submission, be sure to **match the provided print statements EXACTLY, including spacing and punctuation!** When asked to come up with your own print statements (like in step 4), you may print any appropriate message.
- Include comments throughout your code to explain what you are doing (for example, see the in-line comments below:)

```
food = "apple"  # This is a string that represents apple
if food == "pear":  # if the food item is a pear
   # indicate (print) that pears are not apples
   print("Pears are delicious, but they're not apples!")
elif food == "apple":  # if the food item is an apple
   # indicate (print) that apples are my favorite snack
   print("Found the apple! Apples are my favorite snack!")
. . .
```

1.2 Reflection

In a separate PDF document (preferably using about 150-250 words total), answer the following question(s):

1. Discuss your experience working with conditional statements in Python within the monsters and aliens theme. What challenges did you encounter? How do you think conditional statements can be useful in programming?

2 Submission and Collaboration Policy

2.1 Your Submission–Comment Header

Your `.py` file should contain the following information (header) at the **top** of your file:

```
# NAME: e.g. I. Lv. Sneks
# COMPUTING ID: e.g. ils3py@virginia.edu
# PA NUMBER and NAME: e.g. PA## - Name of the Assignment
# Resources used (if applicable):
```

For **Resources**, include URLs to any online resources where you studied or reviewed code that is specific to these problems, including any physical textbooks you referenced. Include any other resources you used here. *Note on resources:* Please feel free to refer to the lecture slides, demos, and in-class labs to complete this assignment (all located on Canvas).

Absolutely no collaboration with any fellow students (who are not current CS 1112 course TAs) is allowed. Your work must represent individual effort. You must write your own code: not *just* type it, but also compose it yourself as your own original work.

You must cite any and every source you consult, other than those explicitly provided by the course itself. If you work with, obtain or receive help from another source (Internet website, textbook, TA, tutor, online video, etc.), nothing should be copied or retyped into the submitted solution. References must be documented in a comment in the code on the assignment. Any copied work is an Honor Code violation.

2.2 Gradescope

2.2.1 Submitting on Gradescope

1. Go to Gradescope (linked in Canvas course website.)
2. Click on **PA02 – Monsters and Aliens** in the assignment list on Gradescope.
3. Upload your **Python program** as `monsters_and_aliens.py` and submit your code.
4. Include the **output** of your program for each scenario mentioned in the instructions. Do this by including a multi-line comment (or use multiple single-line comments) at the **bottom** of your file and paste the output after running your program (you probably would have to run your program several times to demonstrate a good sampling of program output).
5. Write your **reflection** in a separate document and save/download it as a **PDF** *(please ask us if you are unsure how to save your file in PDF format. We are happy to help!)*
6. Submit to the same Gradescope assignment **PA02 - Monsters and Aliens**
7. Ensure you have uploaded two (2) files **before** you submit.

Helpful guidance: Do not wait until the last minute to start this assignment! Remember you can **submit multiple times** to Gradescope. Look at the feedback you receive and then go back and fix your code, then you can resubmit. There is NO penalty for submitting multiple times to Gradescope. If you face any difficulties or have questions, post on Piazza. Also, don't hesitate to reach out to your professor or teaching assistants (TAs) for guidance. We are here to help!