Lab #12
Classes and Objects

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Goals

The goal of this lab is to practice using Python 3. Specifically, you will practice:

- Classes and objects

Instructions

All work is due at the **end of your lab** and must be submitted to Brightspace in the proper place. Unless otherwise instructed, submissions must be python files (e.g. files that end with *.py*). Any other format, even if it is plain text, will **not** be graded. Messy or otherwise unreadable code will lose points. Lab submissions can be all in the same file, but please label with comments to which task code belongs. IMPORTANT: Any code that is commented out will not be graded. **RUN YOUR CODE TO MAKE SURE IT WORKS!!!**

For all tasks in this lab, you must test your classes by creating objects, assigning values to the data members and calling the functions.

Task 1

Define a class, *SSBody*, which models a solar system body (planet, asteroid, star, or moon). The class should have the following data members.

- Mean distance from star:
- Radius (at the equator): in kilometers
- Habitable for humans: boolean
- Name: string
- Satellites (i.e., moons, asteroids which orbit this body): list
- Mean surface temperature

The class should have the following member functions.

- Default constructor
- Parameterized constructor
- Get/Set functions
- Add Satellite function
- Remove Satellite function, which removes satellites from the list based on the name.

- Print: This function should print *some* of the data members (which ones are up to you). It should also call the print function of all of its satellites. Printing should look neat.

Task 2

Write a small program to model a solar system using your class from Task 1. It can either be our own solar system, or you may make one up on your own. For our solar system, you can find relevant data on Wikipedia.

Your program should model a star, several planets and at least one of the planets should have a moon. All bodies should use the class from Task 1. The star object should store all the planets in its list of satellites. And those planets that have moons should store the moons in their list of satellites.

Once the solar system is created. Call the print function on the star so that you can see if everything works as expected.