

Tutorial 8: Defining Classes

Due: Friday, March 27, 2020

1: Spheres

- a) Write a class to represent spheres. Your class should implement the following methods:
- `__init__(self, radius)`** Creates a sphere having the given radius.
 - `getRadius(self)`** Returns the radius of this sphere.
 - `surfaceArea(self)`** Returns the surface area of the sphere.
 - `volume(self)`** Returns the volume of the sphere.
- b) The radius of the earth is about 6370 km, the radius of Jupiter is about 69910 km, and the radius of Mercury is about 2440 km. Assuming that the planets are all perfect spheres, use your sphere class to calculate the surface area and volume of each planet.

Hints: $V = \frac{4}{3}\pi r^3$ $A = 4\pi r^2$

2: Movies

- a) Create a class to represent movies that you'd like to recommend to your friends and family. Your class should implement the following methods:
- `__init__(self, title, year, ... etc...)`** Creates a movie with relevant movie information such as movie title, movie year, your "star rating," your review, and any other data you think would be helpful to a movie object.
 - `__str__(self)`** Returns a string that names the movie and year the movie came out, for example: "Casablanca (1942)"
- b) Test your class by using it to create a movie object based on your favourite movie.

3: Fantasy Character Design

Develop a class for a fantasy character that inherits the properties of the FantasyCharacter class provided on CuLearn (FantasyCharacterClassExample.py). Include at least one new instance variable and one new method for your child class. Ensure that you preserve the instance variables and methods from the FantasyCharacter class.

Here is a list of famous fantasy characters if you need some inspiration:

<https://theportalist.com/50-of-the-best-fantasy-characters-ever>