


ISAT 252 - ANALYTICAL METHODS

PYTHON LAB #10: OBECT ORIENTED PROGRAMMING

DUE DATE: MONDAY, APRIL 20TH 2015

OBJECTIVES:

- Develop object-oriented programs by writing code to create classes and methods
- Instantiate classes to create and use objects

DELIVERABLES: (40 POINTS)

1. Soft copies of:

a. Your working program(s) on FTP site

b. Your answers to the worksheet questions on Canvas

THE PET CLASS (10 POINTS)

1. Pet Class

Write a class named Pet, which should have the following data attributes:

• _ _name (for the name of a pet)

• _ _animal_type (for the type of animal that a pet is. Example values are 'Dog', 'Cat', and 'Bird')

• _ _age (for the pet's age)

The Pet class should have an _ _init_ _ method that creates these attributes. It should also have the following methods:

• set_name

This method assigns a value to the __name field.

• set_animal_type

This method assigns a value to the _ _animal_type field.

•set_age

This method assigns a value to the __age field.

•get_name

This method returns the value of the name field.

•get_type

This method returns the value of the type field.

•get_age

This method returns the value of the age field.

Once you have written the class, write a program that creates an object of the class and prompts the user to enter the name, type,and age of his or her pet. This data should be stored as the object's attributes. Use the object's accessor methods to retrieve the pet's name, type, and age and display this data on the screen

THE CAR CLASS (20 POINTS)

2. Car Class

Write a class named Car that has the following data attributes:

• __year_model (for the car's year model)

• __make (for the make of the car)

• __speed (for the car's current speed)

The Car class should have an _ _init_ _ method that accept the car's __year_model and make as arguments. These values should be assigned to the object's __year, __model and __make data attributes. It should also assign 0 to the __speed data attribute.

The class should also have the following methods:

• accelerate

The accelerate method should add 5 to the speed data attribute each time it is called.

• brake

The brake method should subtract 5 from the speed data attribute each time it is called.

• get_speed

The get_speed method should return the current speed.

Next, design a program that creates a Car object, and then calls the accelerate method five times. After each call to the accelerate method, get the current speed of the car and display it. Then call the brake method five times. After each call to the brake method, get the current speed of the car and display it.

ISAT 252

Worksheet 10: OOP (10 points)

Name: _____ Section: _____

1. The _____ programming practice is centered on creating objects.

a. object-centric

b. objective

c. procedural

d. object-oriented

2. An object is a(n) _____.

a. blueprint

b. cookie cutter

c. variable

d. instance

3. By doing this you can hide a class's attribute from code outside the class.

a. avoid using the self parameter to create the attribute

b. begin the attribute's name with two underscores

c. begin the name of the attribute with private_ _

d. begin the name of the attribute with the @ symbol

4. The _____ method is automatically called when an object is created.

a. _ _init_ _

b. init

c. _ _str_ _

d. _ _object_ _

5. A set of standard diagrams for graphically depicting object-oriented systems is provided by _____.

a. the Unified Modeling Language

b. flowcharts

c. pseudocode

d. the Object Hierarchy System