InfoTc 1040 Introduction to Problem Solving and Programming
Zoo Class

In this programming assignment, you will create the following:

- An Animal class that stores information about an animal.
- A Zoo class that stores and displays Animal objects.
- A zookeeper program that uses the Animal and Zoo classes.

These elements are described below.

Animal Class

Write a class named Animal with the following attributes and methods. Save this class as *Animal.py*

Attributes

`__animal_type`: a hidden attribute used to indicate the animal's type. For example: gecko, walrus, tiger, etc.

`__name`: a hidden attribute used to indicate the animal's name.

`__mood`: a hidden attribute used to indicate the animal's mood. For example: happy, hungry, or sleepy.

Methods

`__init__`: this method should create the three attributes above and assign their default values.

The value of `__mood` should be set randomly. Generate a random number between 1 and 3. Then:

If the number is 1, the `__mood` field should be set to a value of "happy".
If the number is 2, the `__mood` field should be set to a value of "hungry".
If the number is 3, the `__mood` field should be set to a value of "sleepy".

`get_animal_type`: this method should return the value of the `__animal_type` field.

`get_name`: this method should return the value of the `__name` field.

`check_mood`: this method should return the value of the `__mood` field.

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Zoo Class

Write a class named Zoo with the following attributes and methods. Save this class as *Zoo.py*

Attributes

`__animals`: a list used to store Animal objects.

Methods

`__init__`: use this method to create an empty list for `__animals`.

`add_animal`: this method should receive an Animal object and append it to the `__animals` list.

`show_animals`: this method will print information about each of the Animal objects within `__animals`. If no Animals have been added to the list, it should print out a message saying that there are no Animals.

Zookeeper Program

Once you have written the Animal and Zoo classes, create another program called *zookeeper.py*. This program will use *Animal.py* and *Zoo.py* as modules.

In zookeeper.py, create a Zoo object and print a menu with three options: Add Animal, Show Animals, and Exit.

Add Animal: choosing this option should prompt the user to enter the type and name of an Animal. Use that input to create an Animal object and use the Zoo object's `add_animal` method to store the animal.

Show Animals: choosing this option should trigger the Zoo object's `show_animals` method.

Exit: this should exit the program.

If exit is not selected, the program should loop and display the options again.

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Sample Program Operation

User input is highlighted in **orange**.

```
Zoo Options
-----------
1. Add Animal
2. Show Animals
3. Exit

What would you like to do? 2

Animal List
-----------
There are no animals in your zoo!

Zoo Options
-----------
1. Add Animal
2. Show Animals
3. Exit

What would you like to do? 1

What type of animal would you like to create? Platypus
What is the animal's name? Penelope

Zoo Options
-----------
1. Add Animal
2. Show Animals
3. Exit

What would you like to do? 1

What type of animal would you like to create? Fox
What is the animal's name? Frank

Zoo Options
-----------
1. Add Animal
2. Show Animals
3. Exit
```

```
What would you like to do? 1

What type of animal would you like to create? Shark
What is the animal's name? Sally

Zoo Options
-----------
1. Add Animal
2. Show Animals
3. Exit

What would you like to do? 2

Animal List
-----------
Penelope the Platypus is sleepy
Frank the Fox is hungry
Sally the Shark is hungry

Zoo Options
-----------
1. Add Animal
2. Show Animals
3. Exit

What would you like to do? 3

Thank you for visiting the zoo!
```

Error Checking

Invalid input should not cause the program to crash. Make sure to handle errors properly. For example:

```
Zoo Options
-----------
1. Add Animal
2. Show Animals
3. Exit

What would you like to do? -1
Please select a valid option.
```

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```
What would you like to do? one
Please enter a numeric value.

What would you like to do? 4
Please select a valid option.

What would you like to do? 3

Thank you for visiting the zoo!
```

Testing

Run the program you write and verify that the information entered matches the information displayed and that the input prompts and output utilize the format specification provided.

Submission

Put your *Animal.py*, *Zoo.py,* and *zookeeper.py* files in a folder named **<lastname><firstname>Zoo** and zip the folder. Do not include characters other than a-z and A-Z in the folder name. The zip file is to be submitted for this assignment.

If you need additional help, post your questions on the class Help discussion board or contact an eLearning mentor.