Progress Academy Sofia Christmas Break Homework

These tasks use and build upon what you have learned in the past month. They are designed to also help you learn new things and push yourselves to think like a programmer. Don't worry if you cannot complete them. I would like to see that you've made the effort.

If somewhere along the way you feel that the exercise gives you too much freedom and is not completely clear of what approach you should take - this is intended. Be prepared to explain why did you prefer your design instead of the other options.

Object Oriented Programming can be overwhelming. There are some more casual toy exercises at http://www.practicepython.org/ and at codewars/codefights/hackerrank. Light Python-oriented reading I recommend for the holy night can be found at https://automatetheboringstuff.com/.

PRACTICE PRACTICE PRACTICE and have a great Christmas :)

Evgeni

Task 1

The Song List App

You will create a simple application that will allow a user to create a list of favorite songs, play the songs, and view other data about the songs. It'll be like Spotify/iTunes/etc, but worse.

This app will have two classes, Song and List, and a list can contain many songs.

A. A Song should have the following attributes: 1. title - The name of the song. 2. artist - The creator of the song. This will be represented using a string. 3. duration - The length of a song in seconds. This will be represented by a number. 4. lyrics - The lyrics of the song. This will be represented with a string.

One should be able to call the title, artist, duration, and lyrics methods on a particular Song instance to view any of those pieces of information.

B. A Song should also have a play method, which will "play" the song. For now "playing" means just printing the lyrics. And yes, the play method could just be the same as the lyrics one. But you would be fixing this little quirk sometime in the future.

C. A Song should have a method called "friendly_duration" which should return the duration of the Song in minutes and seconds. For example, if this method is called on a Song with a duration of 150 seconds, it should return: "2 minutes, 30 seconds."

D. Songs can be added to a List. Create a method called "add_song" to do so.

E. A List should a have a method called "play", which will play all of the songs in the List.

F. A List should have a method called "shuffle" which will play all of the songs in the List in random order.

G. A List should have a method called "duration" which will return the total number of seconds of the entire list, based on the sum of the durations of all the Songs in that List.

Task 2

The ToDo App

Hey, <your name>, make me a program that like helps keep track of stuff I have to do. Or whatever.

Hint: Implement a class ToDoList. A user should be able to create instances of the class which represent separate lists. Each of the lists will contain a number of TaskEntries(maybe another class,huh?) and will have methods for adding, updating, removing and searching TaskEntries.
Bonus task: Add a method which sorts the TaskEntries in a ToDoList by date.

Task 3

The E-Commerce App

You need to create the foundations of an e-commerce website for B2C retailer. Define:

A. A class for customer called User
B. A class for items in inventory called Item
C. A shopping cart class called Card.

Some rules you should watch out for are:

A. Items go in Carts and Users can have multiple Carts.
B. Multiple items can go in Carts, including more than one of any single item.
