

Python Programming

Inheritance Homework 4

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Teaching, Training and Coaching since more than a decade!

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Problem #1: IKEA's Items

- Manager said: *“In our system, items are either simple or complex. A complex item consists of other items. Those items themselves could consist of other items, and so on. Items share name, id and price. Then some items might have more details like a chair’s color. Notice, a complex item price is actually the total price of its inner items. For example, one of our special chairs consists of 2 left legs (each for \$65) and 1 right leg. This right leg is actually a base (for \$30) and an extension (for \$70). The total price of this special chair is $65+65+30+70 = \$230$ ”.*
- Implement a simple system that represents this logic
- Create some exceptions that might be useful

Problem #2: Package Delivery Service

- Design classes (no main) for a package delivery service (E.g. FedEx):
 - A standard package has a sender address, receiver address, weight in kg and price per kg
 - Total cost is: $\text{weight in kg} \times \text{price per kg}$
 - Address is: name, string and city
 - A 2-day package is similar to standard package with an added fixed fee for the total cost
 - A heavy package is similar to standard package but with extra penalty for packages weight > 100 kg
 - If weight > 100 kg, then extra fees: $(\text{weight} - 100) * \text{extra weight price in kg}$

Problem #3: Our Dictionary

- We would like to **extend** the built-in **dict** data structure to force any given key that is float to be an integer. For every conversion, print that
 - Please revise the dict lecture. There are **several ways** to add/change keys
 - Don't try to cover compound operators like +=
 - Do extensive testing for the possible cases [according to what we learned]

```
dct = MyDict()
dct[10.5] = 20
dct[(4, 5)] = 'Mostafa'
print(10.5 in dct)
print(dct)
```

```
Update: 10.5 - 20
→ Do Conversion to 10.5
Update: (4, 5) - Mostafa
False
{10: 20, (4, 5): 'Mostafa'}
```

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”