Homework 4

CS 2000: Python Programming Language

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In this assignment we will build online shopping cart using object-oriented programming in Python. It is worth 10 points and is due (03/02/2018). (2 Extra credits for program correctness and output formatting)

(1) Build Customer class with the following specifications:

- Define the __init__ and __str__ methods for the Costumer class
- Here is an example interaction in Python shell demonstrating how your class work after implementing these two methods:

  >>> John = Customer ("John", " Doe", 5559355150, ['jodoe@wmich.edu', 'jmedoe@gmail.com'], 02/02/2018, {})

  >>> print(John)

  Doe, John – Phone Number: 5559355150 – Email Address(es): jodoe@wmich.edu, jmedoe@gmail.com – Date: 02/02/2018 – Purchase history: {}

- Define a method add_contact that allows you to add new costumer information. This method has no parameter, and it returns a customer record.
- Define a method look_contact that looks up a contact by last name. The method should accept the last name as an argument and print each contact that matches the last name on a new line.
  - Extend this method to allow users to optionally specify a first name to narrow down the results when multiple contacts have the same last name. If multiple contacts have the same first name then you can specify a phone number.

(2) Build the ItemToPurchase class with the following specifications:

- Define the __init__ and __str__ methods for the ItemToPurchase class

- Attributes
  - item_name (string)
  - item_price (float)
  - item_quantity (int)
  - item_description (string)
- define a method print_item_cost
  - Ex. of print_item_cost() output: Using exception if the entered price <=0

```
Winter gloves 10 @ $3 = $30
```

- The __str__ method output of this class is the item description as follow:

```
Bottled Water: Deer Park, 12 oz.
```

(3) Build the ShoppingCart class with the following data attributes and related methods:

- Parameterized constructor which takes the customer name and date as parameters
- Attributes
    - customer_name (string)
    - current_date (string)
    - cart_items (list)
- Methods
    - add_item()
        - Adds an item to cart_items list. Has parameter ItemToPurchase. Does not return anything.
    - remove_item()
        - Removes item from cart_items list. Has a string (an item's name) parameter. Does not return anything.
        - If item name cannot be found, output this message: `Item not found in cart. Nothing removed. Using exception`
    - modify_item()
        - Modifies an item's description, price, and/or quantity. Has parameter ItemToPurchase. Does not return anything.
        - If item can be found (by name) in cart, check if parameter has default values for description, price, and quantity. If not, modify item in cart.
        - If item cannot be found (by name) in cart, output this message: `Item not found in cart. Nothing modified. Using exception`
    - return_item()
        - Returns items if the costumer's name and the returned item(s) exist in the shopping website database. Output this message: `The item found and returned successfully`
        - If neither costumer's name and the returned item are not found, output this message: `The item is not found`
    - get_num_items_in_cart()
        - Returns quantity of all items in cart. Has no parameters.
    - get_cost_of_cart()
        - Determines and returns the total cost of items in cart. Has no parameters.
    - print_total()
        - Outputs total of objects in cart.
        - If cart is empty, output this message: `SHOPPING CART IS EMPTY. Using exception`
    - print_descriptions()
        - Outputs each item's description.

      Ex. of print_total() output:

```
John Doe's Shopping Cart - February 2, 2018
Number of Items: 8

Nike Romaleos 2 @ $189 = $378
Chocolate Chips 5 @ $3 = $15
Powerbeats 2 Headphones 1 @ $128 = $128

Total: $521
```

Ex. of print_descriptions() output:

```
John Doe's Shopping Cart - February 2, 2018

Item Descriptions
Nike Romaleos: Volt color, Weightlifting shoes
Chocolate Chips: Semi-sweet
Powerbeats 2 Headphones: Bluetooth headphones
```

(4) In main section of your code, prompt the user for a number of costumers. For each customer, provide customer's contact info, today's date and purchase history as specified in (1). Create an object of type Customer and ShoppingCart.

(5) Implement the print_menu() function. print_menu() has a ShoppingCart parameter, and outputs a menu of options to manipulate the shopping cart. Each option is represented by a single character. Build and output the menu within the function.

If an invalid character is entered, continue to prompt for a valid choice. *Hint: Implement Quit before implementing other options.* Call print_menu() in the main() function. Continue to execute the menu until the user enters q to Quit.

Ex:

```
MENU
a - Add item to cart
r - Remove item from cart
c - Change item quantity
u - Return items
i - Output items' descriptions
o - Output shopping cart
q - Quit

Choose an option:
```

(5) Implement Output shopping cart menu option.
Ex:

```
OUTPUT SHOPPING CART
John Doe's Shopping Cart - February 2, 2018
Number of Items: 8

Nike Romaleos 2 @ $189 = $378
```

```
Chocolate Chips 5 @ $3 = $15
Powerbeats 2 Headphones 1 @ $128 = $128

Total: $521
```

(6) Implement Output item's description menu option.

Ex.

```
OUTPUT ITEMS' DESCRIPTIONS
John Doe's Shopping Cart - February 2, 2018

Item Descriptions
Nike Romaleos: Volt color, Weightlifting shoes
Chocolate Chips: Semi-sweet
Powerbeats 2 Headphones: Bluetooth headphones
```

(7) Implement Add item to cart menu option.

Ex:

```
ADD ITEM TO CART
Enter the item name:
Nike Romaleos
Enter the item description:
Volt color, Weightlifting shoes
Enter the item price:
189
Enter the item quantity:
2
```

(8) Implement remove item menu option.

Ex:

```
REMOVE ITEM FROM CART
Enter name of item to remove:
Chocolate Chips
```

(9) Implement Change item quantity menu option.
Ex:

```
CHANGE ITEM QUANTITY
Enter the item name:
Nike Romaleos
Enter the new quantity:
3
```

10) Implement return item menu option

Ex:

```
RETURN ITEM
Enter the customer name:
John Doe
Doe, Jhon –Phone Number: 5559355150 …. –Purchase history: {Chocolate chips: 3,
Nike Romaleos: 1}
Enter name of item to return:
Chocolate Chips
The item is found and returned successfully
```

(11) The online shopping cart program stops executing when the user choose an option q for the last customer entered.

Output example:

Enter the number of customers:
2
Enter customer info. #1
Enter customer's first name:
John
Enter customer's last name:
Doe
Enter customer's phone no.:
…
Enter customer's email address(es):
…
Enter today date:
…..

Doe, John – Phone Number: 5559355150 – Email Address(es): jodoe@wmich.edu, jmedoe@gmail.com – Date: February 2, 2018 – Purchase history: {}

Enter customer info. #2
Enter customer's first name:
Emily
Enter customer's last name:
Smith
Enter customer's phone no.:
……
Enter customer's email address(s):
…..

Enter today date:
….

Smith, Emily – Phone Number: 4449355150 – Email Address(es): emsmith@gmail.com – Date: February 2, 2018 – Purchase history: {}

Customer name: John Doe
Today's date: February 2, 2018

MENU
a - Add item to cart
r - Remove item from cart
c - Change item quantity
u - Return items
i - Output items' descriptions
o - Output shopping cart
q - Quit

Choose an option:
a

ADD ITEM TO CART
Enter the item name:
Nike Romaleos
Enter the item description:
Volt color, Weightlifting shoes
Enter the item price:
189
Enter the item quantity:
2

MENU
a - Add item to cart
r - Remove item from cart
c - Change item quantity
u - Return items
i - Output items' descriptions
o - Output shopping cart
q - Quit

Choose an option:
o

OUTPUT SHOPPING CART
John Doe's Shopping Cart - February 2, 2018
Number of Items: 8

Nike Romaleos 2 @ $189 = $378

Chocolate Chips 5 @ $3 = $15
Powerbeats 2 Headphones 1 @ $128 = $128

Total: $521

MENU
a - Add item to cart
r - Remove item from cart
c - Change item quantity
u - Return items
i - Output items' descriptions
o - Output shopping cart
q - Quit

Choose an option:
c

CHANGE ITEM QUANTITY
Enter the item name:
Nike Romaleos
Enter the new quantity:
3

MENU
a - Add item to cart
r - Remove item from cart
c - Change item quantity
u - Return items
i - Output items' descriptions
o - Output shopping cart
q - Quit

Choose an option:
i

OUTPUT ITEMS' DESCRIPTIONS
John Doe's Shopping Cart - February 2, 2018
Item Descriptions
Nike Romaleos: Volt color, Weightlifting shoes
Chocolate Chips: Semi-sweet
Powerbeats 2 Headphones: Bluetooth headphones

MENU
a - Add item to cart
r - Remove item from cart
c - Change item quantity

u - Return items
i - Output items' descriptions
o - Output shopping cart
q - Quit

Choose an option:
r

REMOVE ITEM FROM CART
Enter name of item to remove:
Chocolate Chips

MENU
a - Add item to cart
r - Remove item from cart
c - Change item quantity
u - Return items
i - Output items' descriptions
o - Output shopping cart
q - Quit

Choose an option:
u

RETURN ITEM
Enter the customer name:
John Doe
Doe, John –Phone Number: 5559355150 .... –Purchase history: { Nike Romaleos: 3, Powerbeats 2 Headphones: 3,
}
Enter name of item to return:
Nike Romaleos
The item is found and returned successfully

MENU
a - Add item to cart
r - Remove item from cart
c - Change item quantity
u - Return items
i - Output items' descriptions
o - Output shopping cart
q - Quit

Choose an option:
q

Customer name: Emily Smith
Today's date: February 2, 2018

MENU
a - Add item to cart
r - Remove item from cart
c - Change item quantity
u - Return items
i - Output items' descriptions
o - Output shopping cart
q - Quit

Choose an option:
a.
.
.
.

- What to turn in:

(Remember READABILITY COUNTS!)

- On e-Learning, submit your Python file whose name <hw#4_LastName.py>. Please format your Python code in the following manner:

  # Name: <your name here>
  # Date: <#/#/#>
  # Homework: <#>
  # Your code