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Project 8 report

This project is about class and object.

The program keeps asking clients for inputs as whether do they need more ice cream. And calculate the total cartons of ice cream used using the upfront inputs determined by the client.

The implementation of the program is to set up 3 classes, one of Scoop, one of Carton, and one of IceCreamShoppe. Each class wrapped in the attributes of the dimensions as radius, height, and extra. Then there are also functions built in the class as check the volume of scoop / carton, whether there are enough ice cream for another scoop, and serve a scoop.

By using the objects and there built in function, it is easy to realize the whole flow in main() function, instead of building several functions then organize them in the main() function.

The followings are screen shots of 2 runs.

```
~/NEU/CS5001/project8/IceCreamShoppe
❯ python3 Application.py
What is the radius of your first scooper? 3.0
What is the radius of your second scooper? 4.0
What is the radius of your carton? 3
What is the height of your carton? 5
Would you like more ice cream? (Enter 1 for yes and 0 for no) 1
How many 3.0 scoops would you like? 3
How many 4.0 scoops would you like? 5
Would you like more ice cream? (Enter 1 for yes and 0 for no) 1
How many 3.0 scoops would you like? 2
How many 4.0 scoops would you like? 7
Would you like more ice cream? (Enter 1 for yes and 0 for no) 0
You used 17 cartons of ice cream.
```

```
~/NEU/CS5001/project8/IceCreamShoppe
❯ python3 Application.py
What is the radius of your first scooper? 2.0
What is the radius of your second scooper? 3.0
What is the radius of your carton? 4.0
What is the height of your carton? 8.0
Would you like more ice cream? (Enter 1 for yes and 0 for no) 1
How many 2.0 scoops would you like? 3
How many 3.0 scoops would you like? 3
Would you like more ice cream? (Enter 1 for yes and 0 for no) 1
How many 2.0 scoops would you like? 4
How many 3.0 scoops would you like? 4
Would you like more ice cream? (Enter 1 for yes and 0 for no) 1
How many 2.0 scoops would you like? 4
How many 3.0 scoops would you like? 3
Would you like more ice cream? (Enter 1 for yes and 0 for no) 1
How many 2.0 scoops would you like? 3
How many 3.0 scoops would you like? 4
Would you like more ice cream? (Enter 1 for yes and 0 for no) 1
How many 2.0 scoops would you like? 4
How many 3.0 scoops would you like? 4
Would you like more ice cream? (Enter 1 for yes and 0 for no) 0
You used 8 cartons of ice cream.
```

One of the interesting thing is that in the IceCreamShoppe class, it will only open a new carton when there is not enough ice cream for another scoop. And the process is continuous. Which means, even the client input several times for more ice cream, it will not affect the total counts.

However, if we initiate a new Carton and increment the num of used at the beginning of the serve() function, it will start over and open a new carton each time we called serve(), regardless of whether the previous one is used up or not. Hence, I need to add another attribute in IceCreamShoppe as carton, to record the previous carton. Initially, it will be None. It will become a new Carton each time the remaining is not enough for a new scoop, and the num of used carton will increment by 1.

In this way it could solve the continuous problem.

Acknowledgement:

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