**EXERCISE NUMBER**:**13**

**DATE**:20/11/2020

**Aim:**

An apparel shop wants to manage the items which it sells.25 min  
Write a python program to implement the class diagram given below.

**Class Description:  
Apparel class:**

1. Initialize static variable counter to 100
2. In the constructor, auto-generate item\_id starting from 101 prefixed by "C" for cotton apparels and "S" for silk apparels. Example – C101, S102, S103, C104 etc.
3. **calculate\_price():** Add 5% service tax on the price of the apparel and update attribute, price with the new value

**Cotton class:**

1. While invoking parent constructor from child constructor, pass "Cotton" as item\_type
2. **calculate\_price():** Update attribute, price of Apparel class based on rules given below
   1. Add service tax on price by invoking appropriate method of Apparel class
   2. Apply discount on price
   3. Add 5% VAT on final price

**Silk class:**

1. While invoking parent constructor from child constructor, pass "Silk" as item\_type
2. **calculate\_price():** Update attribute, price of Apparel class based on rules given below
   1. Add service tax on price by invoking appropriate method of Apparel class
   2. Identify points earned based on rules given below:

Silk apparels with price more than Rs. 10000, earn 10 points and anything less than or equal to that earn 3 points

* 1. Initialize attribute, points with the identified points
  2. Add 10% VAT on price

**Note:**Perform case sensitive string comparison

**Program:**

class Apparel:

counter=100

def \_\_init\_\_(self,price,item\_type):

Apparel.counter+=1

self.\_\_item\_id=item\_type[0]+str(Apparel.counter)

self.\_\_price=price

self.\_\_item\_type=item\_type

def calculate\_price(self):

self.\_\_price+=self.\_\_price\*0.05

def get\_item\_id(self):

return self.\_\_item\_id

def get\_price(self):

return self.\_\_price

def get\_item\_type(self):

return self.\_\_item\_type

def set\_price(self,price):

self.\_\_price=price

return self.\_\_price

class Cotton(Apparel):

def \_\_init\_\_(self,price,discount):

super().\_\_init\_\_(price,'Cotton')

self.\_\_discount=discount

def calculate\_price(self):

super().calculate\_price()

price=self.get\_price()

price-=price\*(self.\_\_discount/100)

price+=price\*0.05

self.set\_price(price)

return price

def get\_discount(self):

return self.\_\_discount

class Silk(Apparel):

def \_\_init\_\_(self,price):

super().\_\_init\_\_(price,'Silk')

self.\_\_points=None

def calculate\_price(self):

super().calculate\_price()

if(self.get\_price()>10000):

self.\_\_points=10

else:

self.\_\_points=3

return self.set\_price(self.get\_price()+(self.get\_price()\*0.1))

def get\_points(self):

return self.\_\_points

silk=int(input())

cotton=int(input())

discount=int(input())

a=Silk(silk)

print(a.calculate\_price())

b=Cotton(cotton,discount)

print(b.calculate\_price())

**Link:**

[**http://103.53.53.18/mod/vpl/forms/edit.php?id=328&userid=1734**](http://103.53.53.18/mod/vpl/forms/edit.php?id=328&userid=1734)

**Output:**

**Input:**

15

35

60

**Output:**

17.325

15.434999999999999

**Result:**

The program has been executed and expected output is obtained.