**Department of Information Technology**

**UIT2201 Programming and Data Structures**

**2022 – 2023**

**Exercise — 07**

**Part A**

**1.Write a program to model a real-time online shopping system using inheritance. The base class should be called Product, and it should have attributes for the name, price, and quantity of the product. The derived classes should be ElectronicProduct and ClothingProduct, which inherit from Product. Each derived class should have additional attributes specific to that type of product, such as the brand and model for ElectronicProduct, and the size and color for ClothingProduct. Implement methods in each class to display the product information. Additionally, override the display\_information() method in the derived classes to include the specific attributes of each product type. Also, implement a function in the derived classes to calculate the total price based on the quantity of the product. Finally, overload the ‘+’ operator in the derived classes to allow adding two products together offering a combo pack with the summed-up price tag**

**Code:**

'''

This programi is to  build a model of real-time online

shopping system using the concept of inheritance

'''

class Product:

    '''This base class is as called Product and it contains

    the name, price, and quantity of the product'''

    def \_\_init\_\_(self, name= '', price=0, quantity=0):

        self.name = name

        self.price = price

        self.quantity = quantity

        self.items=[[self.name,self.price,self.quantity,self.price\*self.quantity]]

    def get\_name(self):

        '''to return the name of the product'''

        return self.name

    def get\_price(self):

        '''to return the price of the product'''

        return self.price

    def get\_quantity(self):

        '''to return the quantity of the product'''

        return self.quantity

    def total\_price(self):

        '''to return the total price of the paroduct by multiplying

        the pice and quantity of the product'''

        return self.quantity \* self.price

    def display\_information(self):

        '''to return the information of the product'''

        print(f"name: {self.name}\n"

              f"price: {self.price}\n"

              f"quantity: {self.quantity}\n")

    def add\_items(self,other):

        '''to add deatils of every product in a list'''

        if isinstance(other,Product):

            self.items.append([other.get\_name(),

                                other.get\_price(),

                                other.get\_quantity(),

                                other.total\_price()

                                ])

        elif isinstance(other, ElectronicProduct):

            self.items.append([other.get\_name(),

                                other.get\_price(),

                                other.get\_quantity(),

                                other.total\_price(),

                                other.get\_brand(),

                                other.get\_model(),

                                ])

        elif isinstance(other, ClothingProduct):

            self.items.append([other.get\_name(),

                                other.get\_price(),

                                other.get\_quantity(),

                                other.total\_price(),

                                other.get\_size(),

                                other.get\_color(),

                                ])

    def get\_items(self):

        '''to return the list that contain details of the product'''

        return self.items

    def \_\_add\_\_(self,other):

        return self.get\_name()+"-"+other.get\_name() , self.total\_price() + other.total\_price()

class ElectronicProduct(Product):

    '''This base class is as called ElectronicProduct and it contains

    the name, price, quantity, brand,model of the product'''

    def \_\_init\_\_(self, name, price, quantity, brand, model):#constructor code

        super().\_\_init\_\_(name, price, quantity)

        self.brand = brand

        self.model = model

    def display\_information(self):

        '''to return the information of the product'''

        print(f"name: {self.name}\n"

              f"price: {self.price}\n"

              f"quantity: {self.quantity}\n"

              f"brand: {self.brand}\n"

              f"model: {self.model}\n")

    def get\_name(self):

        '''to return the name of the product'''

        return super().get\_name()

    def get\_price(self):

        '''to return the price of the product'''

        return super().get\_price()

    def get\_quantity(self):

        '''to return the quantity of the product'''

        return super().get\_quantity()

    def total\_price(self):

        '''to return the total price of the paroduct by multiplying

        the pice and quantity of the product'''

        return super().total\_price()

    def get\_brand(self):

        '''to return the brand of the electronic product'''

        return self.brand

    def get\_model(self):

        '''to return the model of ht electronic product'''

        return self.model

    def \_\_add\_\_(self,other):

        return self.get\_name() +'-'+other.get\_name() , self.total\_price() + other.total\_price()

class ClothingProduct(Product):

    '''This base class is as called ClothingProduct and it contains

    the name, price, quantity, size, color of the product'''

    def \_\_init\_\_(self, name, price, quantity, size, color):

        super().\_\_init\_\_(name, price, quantity)

        self.size = size

        self.color = color

    def display\_information(self):

        '''to return the information of the product'''

        print(f"name: {self.name}\n"

              f"price: {self.price}\n"

              f"quantity: {self.quantity}\n"

              f"brand: {self.size}\n"

              f"model: {self.color}\n")

    def get\_name(self):

        '''to return the name of the product'''

        return super().get\_name()

    def get\_price(self):

        '''to return the price of the product'''

        return super().get\_price()

    def get\_quantity(self):

        '''to return the quantity of the product'''

        return super().get\_quantity()

    def total\_price(self):

        '''to return the total price of the paroduct by multiplying

        the pice and quantity of the product'''

        return super().total\_price()

    def get\_size(self):

        '''to return the size of the clothing product'''

        return self.size

    def get\_color(self):

        '''to return the color of the clothing product'''

        return self.color

    def \_\_add\_\_(self,other):

        return self.get\_name() +'-'+other.get\_name() , self.total\_price() + other.total\_price()

#Driver code

if \_\_name\_\_ == "\_\_main\_\_":

    product = ["1.Milk","2.Butter","3.Ghee","4.Soap","5.Washing powder","6.Toothpaste"]

    e\_product = ["1.Fridge","2.Air pod","3.Speaker","4.Ear phone","5.Mobile phone","6.Laptop"]

    c\_product = ["1.Blazer","2.Hoodie","3.Jeans","4.T-shirt","5.Track","6.Shirt"]

    prod = Product()

    items = []

    while True:

        choice = int(input("Enter your Choice:\n1.General product\n2.Electronic product\n3.CLothing product\n4.Diplay bill\n"))

        if choice == 1:

            print(\*product,sep = '\n')

            prod\_choice = int(input("Enter your choice:"))

            prod\_name = input("Enter product name: ")

            price = int(input("Enter the price: "))

            qty = int(input("Enter the quantity: "))

            prod\_obj = Product(prod\_name, price, qty)

            items.append(prod\_obj)

            prod.add\_items(prod\_obj)

        elif choice == 2:

            print(\*e\_product, sep="\n")

            prod\_choice = int(input("Enter your choice: "))

            prod\_name = input("Enter product name: ")

            price = int(input("Enter the price: "))

            qty = int(input("Enter the quantity: "))

            brand = input("Enter the brand: ")

            model = input("Enter the model: ")

            prod\_obj = ElectronicProduct(prod\_name,price,qty,brand,model)

            items.append(prod\_obj)

            prod.add\_items(prod\_obj)

        elif choice == 3:

            print(\*c\_product, sep="  ")

            prod\_choice = int(input("Enter your choice: "))

            prod\_name = input("Enter product name: ")

            price = int(input("Enter the price: "))

            qty = int(input("Enter the quantity: "))

            size = input("Enter the size: ")

            color = input("Enter the color: ")

            prod\_obj = ClothingProduct(prod\_name,price,qty,size,color)

            items.append(prod\_obj)

            prod.add\_items(prod\_obj)

        elif choice == 4:

            values = []

            item\_cl = prod.get\_items()

            print(item\_cl[1:])

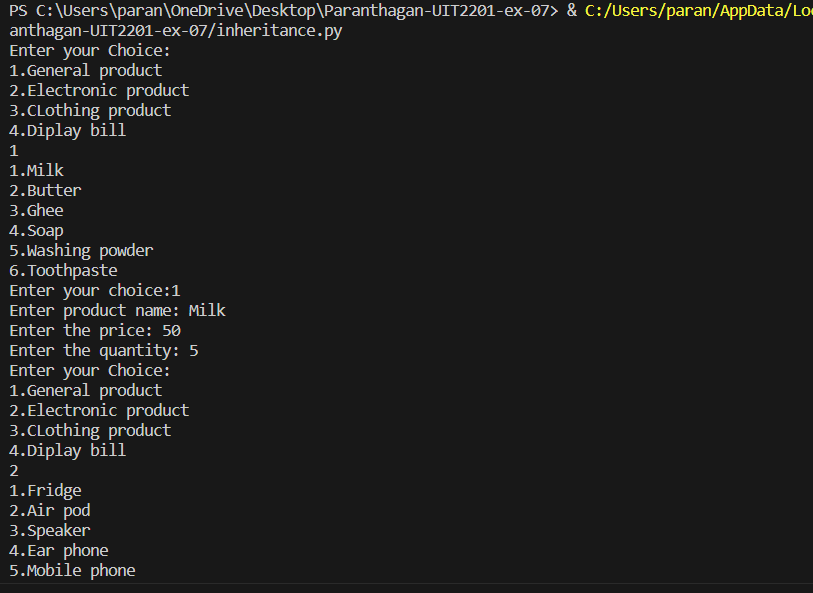
            break

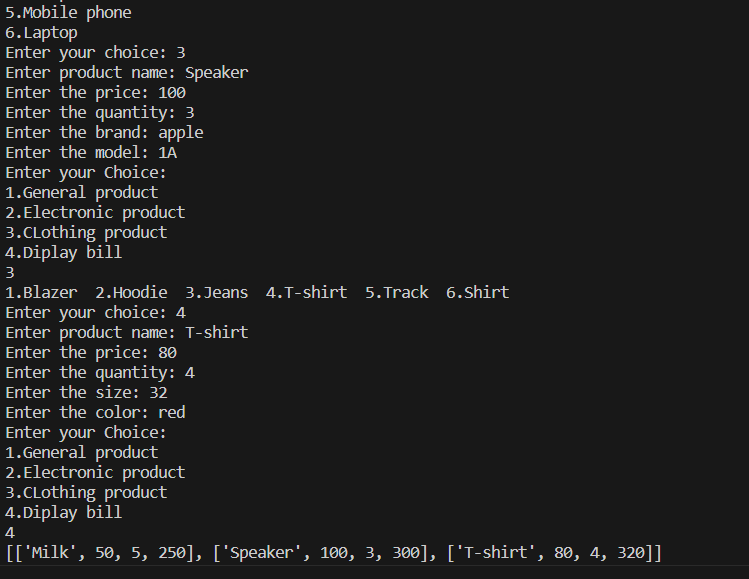
        else:

            print("Enter again!")

            continue

**Output:**

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