**Question**

A superclass Stock has been defined to store the details of the stock of a retail store. Define a subclass Purchase to store the details of the items purchased with the new rate and updates the stock.

Some of the members of the classes are given below:   
Class name: Stock  
Data members/instance variables:  
item: to store the name of the item  
qt: to store the quantity of an item in stock  
rate: to store the unit price of an item  
amt: to store the net value of the item in stock  
Member functions:  
Stock (…): parameterized constructor to assign values to the data members  
void display(): to display the stock details  
Class name: Purchase  
Data members/instance variables:  
pqty: to store the purchased quantity  
prate: to store the unit price of the purchased item  
Member functions/ methods:  
Purchase(…): parameterized constructor to assign values to the data members of both classes  
void update (): to update stock by adding the previous quantity by the purchased quantity and replace the rate of the item if there is a difference in the purchase rate. Also, update the current stock value as (quantity \* unit price)  
void display(): to display the stock details before and after updation.

Specify the class Stock, giving details of the constructor() and void display(). Using the concept of inheritance, specify the class Purchase, giving details of the constructor(), void update() and void display().

**Algorithm**

Start

1. Define a class `Stock` with the following instance variables:

- `item`: a String to store the name of the item.

- `qty`: an integer to store the quantity of the item.

- `rate`: an integer to store the rate per unit of the item.

- `amt`: an integer to store the net value of the item (quantity \* rate).

2. Define a constructor for the class `Stock`:

- Accept parameters `i` (item name), `q` (quantity), and `r` (rate).

- Initialize `item` with `i`.

- Initialize `qty` with `q`.

- Initialize `rate` with `r`.

- Calculate `amt` as `qty \* rate`.

3. Define a method `display()` for the class `Stock`:

- Print the name of the item.

- Print the quantity.

- Print the rate per unit.

- Print the net value.

4. Define a class `Purchase` that extends `Stock` with the following instance variables:

- `pqty`: an integer to store the purchase quantity.

- `prate`: an integer to store the purchase rate.

5. Define a constructor for the class `Purchase`:

- Accept parameters `a` (item name), `b` (initial quantity), `c` (initial rate), `pq` (purchase quantity), and `pr` (purchase rate).

- Call the superclass constructor with `a`, `b`, and `c`.

- Initialize `pqty` with `pq`.

- Initialize `prate` with `pr`.

6. Define a method `update()` for the class `Purchase`:

- Add `pqty` to `qty`.

- If `prate` is not equal to `rate`, update `rate` to `prate`.

- Recalculate `amt` as `qty \* rate`.

7. Define a method `display()` for the class `Purchase`:

- Print a message indicating the stock before purchase.

- Call the superclass `display()` method.

- Call the `update()` method to update the stock with the purchase details.

- Print a message indicating the stock after purchase.

- Call the superclass `display()` method again to show the updated stock.

8. Define a class `Test2` with the main method:

- Create a `Scanner` object to read input from the user.

- Prompt the user to enter the name of the item.

- Prompt the user to enter the total quantity of the item in stock.

- Prompt the user to enter the rate per unit of the item.

- Prompt the user to enter the number of items purchased.

- Prompt the user to enter the rate per unit of the purchased items.

- Create an object of the class `Purchase` with the entered details.

- Call the `display()` method of the `Purchase` object to show the stock details before and after the purchase.

End

**Variable Description**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Data Type** | **Purpose** |
| item | String | To store the name of the item |
| rate | int | To store rate of item |
| amt | int | To store rate\*qty |
| qty | int | To store qty purchased |
| pqty | int | To store the initial quantity purchased |
| prate | int | To store the initial price |
| name | String | To store the name entered by user |
| pq | int | To store the current quantity |
| pr | int | To store the current rate |