

**OBJECT ORIENTED PROGRAMMING IN C++  
WINTER SEMESTER 2021-22  
CHALLENGING TASK**

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Date: 26-04-2022

**Question:**

A book shop maintains the inventory of books that are being sold at the shop. The list includes details such as author, title, price, publisher and stock position. whenever a customer wants a book, the sales person inputs the title & author and the system searches the list and displays whether it is available or not. if it is not, an appropriate message is displayed. if it is, then the system displays the book details and request for the number of copies required. if the requested copies are available, the total cost of the requested copies is displayed, otherwise the message "Required copies not in stock" is displayed.

Design a system using a class called books with suitable member functions and constructors. use new operator in constructors to allocate memory space required.

#price of the books should be updated as and when required. use a private member function to implement this.

#the stock value of each book should be automatically updated as soon as a transaction is completed.

#the number of successful and unsuccessful transactions should be recorded for the purpose of statistical analysis. use static data members to keep count of transactions.

**Program:**

```
#include<iostream>                                     //NAME: M. DHANUSHRAJ
#include<string>                                       //Reg.No: 21BAI10111.
using namespace std;
class Book
{
    private:
        string author;
        string title;
        double price;
        string publisher;
        int stock;
    public:

        Book(){}

        Book(string author,string title,double price,string publisher,int stock)
        {
            this->author=author;
            this->title=title;
            this->price=price;
```

```
        this->publisher=publisher;
        this->stock=stock;
    }

    string getAuthor()
    {
        return author;
    }

    void setAuthor(string author)
    {
        this->author = author;
    }

    string getTitle()
    {
        return title;
    }

    void setTitle(string title)
    {
        this->title = title;
    }

    float getPrice()
    {
        return price;
    }

    void setPrice(float price)
    {
        this->price = price;
    }

    string getPublisher()
    {
        return publisher;
    }

    void setPublisher(string publisher)
    {
        this->publisher = publisher;
    }

    int getStock()
    {
        return stock;
    }

    void setStock(int quantity)
    {
        this->stock = quantity;
    }
}
```

```

        bool decreaseQuantityStock(int quantity)
        {
            if(this->stock-quantity>=0)
            {
                this->stock-=quantity;
                return true;
            }
            else
            {
                return false;
            }
        }
    };

int searchBook(Book books[],int totalNumberBooks,string title,string author);

int main ()
{
    int numberSuccessful=0;
    int unsuccessfulTransactions=0;
    int totalNumberBooks=0;
    Book books[100];
    int ch=-1;

    string author;
    string title;
    double price;
    string publisher;
    int stock;

    while(ch!=5){
        cout<<"1. Add a new book\n";
        cout<<"2. Edit a book price\n";
        cout<<"3. Buy a book\n";
        cout<<"4. Display statistic\n";
        cout<<"5. Exit\n";
        cout<<"Your choice: ";
        cin>>ch;
        cin.ignore();
        if(ch==1)
        {
            cout<<"Enter author of book: ";
            getline(cin,author);
            cout<<"Enter title of book: ";
            getline(cin,title);
            cout<<"Enter a price of book: ";
            cin>>price;
            cin.ignore();
            cout<<"Enter publisher of book: ";
            getline(cin,publisher);

```

```

        cout<<"Enter the number of books: ";
        cin>>stock;
        Book newBook(author,title,price,publisher,stock);
        books[totalNumberBooks]=newBook;
        totalNumberBooks++;
        cout<<"\nA new book has been added.\n\n";
    }
    else if(ch==2)
    {
        if(totalNumberBooks>0)
        {
            cout<<"Enter title of book: ";
            getline(cin,title);
            cout<<"Enter author of book: ";
            getline(cin,author);
            int selectedBook=searchBook(books,totalNumberBooks,title,author);
            if(selectedBook!=-1)
            {
                int quantity;
                cout<<"Enter a new price of the book: ";
                cin>>price;
                if(price>0)
                {
                    books[selectedBook].setPrice(price);
                    cout<<"\nThe book price has been updated.\n\n";
                }
            }
            else
            {
                cout<<"\nWrong the book title or author.\n\n";
            }
        }
        else
        {
            cout<<"\nThe book shop is empty.\n\n";
        }
    }
    else if(ch==3)
    {
        if(totalNumberBooks>0)
        {
            cout<<"Enter title of book: ";
            getline(cin,title);
            cout<<"Enter author of book: ";
            getline(cin,author);
            int selectedBook=searchBook(books,totalNumberBooks,title,author);
            if(selectedBook!=-1)
            {
                int quantity;
                cout<<"Enter the number of books you Want to buy: ";
                cin>>quantity;
                if(books[selectedBook].decreaseQuantityStock(quantity))
                {

```

```

        float orderPrice=quantity*books[selectedBook].getPrice();
        cout<< "\nThe book has been bought.";
        cout<< "\nThe order price is: "<<orderPrice<<"\n\n";
        numberSuccessful++;
    }
    else
    {
        cout<<"The book is out of stock.\n\n";
        unsuccessfulTransactions--;
    }
}
else
{
    cout<<"\nWrong the book title or author.\n\n";
}
}
else
{
    cout<<"\nThe book shop is empty.\n\n";
}
}
else if(ch==4)
{
    cout<<"The number of successful transactions are: "<<numberSuccessful<<"\n";
    cout<<"The number of unsuccessful transactions are:
"<<unsuccessfulTransactions<<"\n";
}
else if(ch==5)
{
    cout<<"\n Ended";
}
else
{
    cout<<"\nSelect a correct menu item.\n\n";
}
}
system("pause");
return 0;
}

int searchBook(Book books[],int totalNumberBooks,string title,string author)
{
    for(int i=0;i<totalNumberBooks;i++){
        if(books[i].getTitle().compare(title)==0 && books[i].getAuthor().compare(author)==0){
            return i;
        }
    }
    return -1;
}

```

## OUTPUT:

C:\Users\Dhaush Raj\Documents\21BAI10111 C++ Challenging Task.exe

1. Add a new book
2. Edit a book price
3. Buy a book
4. Display statistic
5. Exit

Your choice: 1

Enter author of book: Dr. A.P.J. ABDUL KALAM

Enter title of book: WINGS OF FIRE

Enter a price of book: 300

Enter publisher of book: UNIVERSITY PRESS

Enter the number of books: 500

A new book has been added.

1. Add a new book
2. Edit a book price
3. Buy a book
4. Display statistic
5. Exit

Your choice: 1

Enter author of book: Dr. A.P.J. ABDUL KALAM

Enter title of book: WINGS OF FIRE PART-02

Enter a price of book: 400

Enter publisher of book: UNIVERSITY PRESS

Enter the number of books: 500

A new book has been added.

1. Add a new book
2. Edit a book price
3. Buy a book
4. Display statistic
5. Exit

Your choice: 2

Enter title of book: WINGS OF FIRE

Enter author of book: Dr. A.P.J. ABDUL KALAM

Enter a new price of the book: 350

The book price has been updated.

1. Add a new book
2. Edit a book price
3. Buy a book
4. Display statistic
5. Exit

Your choice: 3

Enter title of book: WINGS OF FIRE

Enter author of book: Dr. A.P.J. ABDUL KALAM

Enter the number of books you Want to buy: 100

The book has been bought.  
The order price is: 35000

1. Add a new book
2. Edit a book price
3. Buy a book
4. Display statistic
5. Exit

Your choice: 3

Enter title of book: WINGS OF FIRE PART-02

Enter author of book: Dr. A.P.J. ABDUL KALAM

Enter the number of books you Want to buy: 100

The book has been bought.  
The order price is: 40000

1. Add a new book
2. Edit a book price
3. Buy a book
4. Display statistic
5. Exit

Your choice: 4

The number of successful transactions are: 2

The number of unsuccessful transactions are: 0

1. Add a new book
2. Edit a book price
3. Buy a book
4. Display statistic
5. Exit

Your choice: 5

Press any key to continue . . .