

Digital Assignment – 2 (Code of Book-store Management System)

Write the code for the idea you presented for real-life problem in Digital Assignment – 1 and specify the functions for **Insertion**, **Deletion** and **Searching**

Code

a) Defining structure for book record and Creating a new book-record (node)

```
struct books
{
    int bookid;
    int genid;
    int price;
    int qty;
    struct books *next;
};

struct books *newn(int bid, int gid, int prc, int qt)
{
    struct books *new_node = new struct books;
    new_node->bookid = bid;
    new_node->genid = gid;
    new_node->price = prc;
    new_node->qty = qt;
    new_node->next = NULL;
    return new_node;
}
```

b) Inserting a new Book-record

```
struct books *insert(struct books *head, int bid, int gid, int prc, int qt)
{
    struct books *ptr = newn(bid, gid, prc, qt);
    if(head == NULL)
    {
        head = ptr;
    }

    else
    {
        struct books *temp = head;
        while(temp->next!=NULL)
```

```

        {
            temp = temp->next;
        }
        temp->next=ptr;
    }
    return head;
}

```

c) Checking the presence of a book-record

```

int find(struct books *head, int bid)
{
    int f = 0;
    struct books *temp = head;
    while(temp!=NULL)
    {
        if(temp->bookid==bid)
        {
            f=1;
            break;
        }
        temp = temp->next;
    }
    return f;
}

```

d) Finding a book-record (if present)

```

struct books *findn(struct books *head, int bid)
{
    struct books *temp = head;
    struct books *ptr = NULL;
    while(temp!=NULL)
    {
        if(temp->bookid==bid)
        {
            ptr = temp;
            break;
        }
        temp = temp->next;
    }
    return ptr;
}

```

e) Deleting a book-record

```
struct books *del(struct books *head, int bid)

{
    int fo = find(head, bid);
    if(fo==1)
    {
        struct books *temp = findn(head,bid);
        struct books *ptr = head;
        if(ptr==temp)
        {
            head = head->next;
            delete temp;
        }
        else
        {
            while(ptr->next!=temp)
            {
                ptr = ptr->next;
            }
            ptr->next = temp->next;
            delete temp;
        }
        cout<<"Deletion done"<<endl;
        return head;
    }
    else
    {
        cout<<"Invalid Operation"<<endl;
    }
}
```

f) Buying Book(s)

```
struct books *buy(struct books *head, int bid, int qty)

{
    int fo = find(head, bid);
    if(fo==1)
    {
        struct books *temp = findn(head,bid);
        if(temp->qty==0)
            cout<<"Required book is sold out."<<endl;
        else if(temp->qty<qty)
```

```

        cout<<"We don't have the desired quantity of books."<<endl;

        else
        {
            temp->qty = temp->qty - qty;
            double price = (double)(temp->price*qty);
            cout<<"Please pay an amount of "<<price<<endl;
            return head;
        }
    }
    else
    {
        cout<<"Book Unavailable."<<endl;
    }
}

```

g) Menu Function

```

int menu()
{
    int ch;
    cout<<"=====MENU===== "<<endl;
    cout<<"1. Insert a Record."<<endl;
    cout<<"2. Find a Book Record"<<endl;
    cout<<"3. Delete a Book Record"<<endl;
    cout<<"4. Buy Book"<<endl;
    cout<<"5. Display the Records"<<endl;
    cout<<"6. Quit"<<endl;
    cout<<"Enter your choice from 1-6: ";
    cin>>ch;
    return ch;
}

```

h) Driver Function

```

#include <iostream>
using namespace std;
int main()
{
    struct books *b[4] = {NULL, NULL, NULL, NULL};
    int choice;
    choice = menu();
    while(choice<=5)
    {

```

```

if(choice==1)
{
    int bid, gid, prc, qt;
    cout<<"Enter Book ID: ";
    cin>>bid;
    cout<<"Enter Genre ID: ";
    cin>>gid;
    cout<<"Enter Book's Price: ";
    cin>>prc;
    cout<<"Enter Quantity of Books available: ";
    cin>>qt;
    b[gid] = insert(b[gid],bid, gid, prc, qt);

    choice = menu();
}

else if(choice==2)
{
    int fo, bid, gid;
    cout<<"Enter the following details of the book to be found:"<<endl;
    cout<<"Enter Book ID: ";
    cin>>bid;
    cout<<"Enter Genre ID: ";
    cin>>gid;
    fo = find(b[gid], bid);
    if(fo==1)
    {
        cout<<"Book is available with us.\n";
        struct books *temp = findn(b[gid], bid);
        cout<<"[Book ID: "<<temp->bookid<<" , Genre ID: "<<temp-
>genid<<" , Price: "<<temp->price<<" , Quantity: "<<temp->qty<<"]"<<endl;
    }
    else
        cout<<"Book is unavailable.\n";
    choice = menu();
}

else if(choice==3)
{
    int bid, gid;
    cout<<"Enter the following details of the book to be deleted:"<<endl;
    cout<<"Enter Book ID: ";
    cin>>bid;
    cout<<"Enter Genre ID: ";
    cin>>gid;

```

```

        b[gid] = del(b[gid], bid);
        choice = menu();
    }
    else if(choice==4)
    {
        int bid, gid, qty;
        cout<<"Enter the following details of the book to be purchased:"<<endl;
        cout<<"Enter Book ID: ";
        cin>>bid;
        cout<<"Enter Genre ID: ";
        cin>>gid;
        cout<<"Enter Quantity of Book: ";
        cin>>qty;
        b[gid] = buy(b[gid], bid, qty);
        choice = menu();
    }

    else if(choice==5)
    {
        int i = 0;
        for(i=0;i<4;i++)
        {
            struct books *temp = b[i];
            if(temp==NULL)
            {
                cout<<"Books of this genre unavailable"<<endl;
            }
            else
            {
                while(temp!=NULL)
                {
                    cout<<"[Book ID: "<<temp->bookid<<", Genre ID:
"<<temp->genid<<", Price: "<<temp->price<<", Quantity: "<<temp->qty<<"]"<<"->";
                    temp=temp->next;
                }
                cout<<"\n";
            }
        }
        cout<<"\n";
        choice = menu();
    }
}
cout<<"Thank You\n";
}

```

Sample Data to work upon

Genre	ID
Comic	0
Horror	1
Academic	2
History	3

Book Name	Genre ID	Book ID	Serial ID	Price	Qty
Geronimo Stilton: Beginning	0	1001	101	350	20
Discovery of India	3	1002	NULL	300	50
Geronimo Stilton: Rumble in the Jungle	0	1003	102	350	30
IT	1	1004	NULL	300	0
CS with Python By Sumita Arora XI	2	1005	51	400	20
CS with Python By Sumita Arora XII	2	1006	52	400	30
JEE Prep Book for Class XI Physics	2	1007	151	370	15

Note: We are NOT taking Serial ID into account for this code.

Output

1. Inserting above records

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 1
Enter Book ID: 1001
Enter Genre ID: 0
Enter Book's Price: 350
Enter Quantity of Books available: 20
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 1
Enter Book ID: 1002
Enter Genre ID: 0
Enter Book's Price: 300
Enter Quantity of Books available: 50
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 1
Enter Book ID: 1003
Enter Genre ID: 3
Enter Book's Price: 350
Enter Quantity of Books available: 30
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 1
Enter Book ID: 1004
Enter Genre ID: 1
Enter Book's Price: 267
Enter Quantity of Books available: 0
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 1
Enter Book ID: 1006
Enter Genre ID: 2
Enter Book's Price: 450
Enter Quantity of Books available: 10
```



```

=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 1
Enter Book ID: 1005
Enter Genre ID: 2
Enter Book's Price: 400
Enter Quantity of Books available: 20

=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 1
Enter Book ID: 1007
Enter Genre ID: 2
Enter Book's Price: 370
Enter Quantity of Books available: 55
=====MENU=====

```

Displaying the book records available with us (will be done after every operation)

```

=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 5
[Book ID: 1001, Genre ID: 0, Price: 350, Quantity: 20]->[Book ID: 1002, Genre ID: 0, Price: 300, Quantity: 50]->
[Book ID: 1004, Genre ID: 1, Price: 267, Quantity: 0]->
[Book ID: 1005, Genre ID: 2, Price: 400, Quantity: 20]->[Book ID: 1006, Genre ID: 2, Price: 450, Quantity: 10]->[Book ID: 1007, Genre ID: 2, Price: 370, Quantity: 55]->
[Book ID: 1003, Genre ID: 3, Price: 350, Quantity: 30]->

```

2. Deleting an existing record

```

=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 3
Enter the following details of the book to be deleted:
Enter Book ID: 1005
Enter Genre ID: 2
Deletion done
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 5
[Book ID: 1001, Genre ID: 0, Price: 350, Quantity: 20]->[Book ID: 1002, Genre ID: 0, Price: 300, Quantity: 50]->
[Book ID: 1004, Genre ID: 1, Price: 267, Quantity: 0]->
[Book ID: 1006, Genre ID: 2, Price: 450, Quantity: 10]->[Book ID: 1007, Genre ID: 2, Price: 370, Quantity: 55]->
[Book ID: 1003, Genre ID: 3, Price: 350, Quantity: 30]->

```

3. Deleting a non-existing record

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 3
Enter the following details of the book to be deleted:
Enter Book ID: 1001
Enter Genre ID: 3
Invalid Operation
```

4. Finding a non-existing record

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 2
Enter the following details of the book to be found:
Enter Book ID: 1001
Enter Genre ID: 3
Book is unavailable.
```

5. Finding an existing record

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 2
Enter the following details of the book to be found:
Enter Book ID: 1006
Enter Genre ID: 2
Book is available with us.
[Book ID: 1006, Genre ID: 2, Price: 450, Quantity: 10]
```

6. Buying Book which are available

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 4
Enter the following details of the book to be purchased:
Enter Book ID: 1007
Enter Genre ID: 2
Enter Quantity of Book: 30
Please pay an amount of 11100
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 5
[Book ID: 1001, Genre ID: 0, Price: 350, Quantity: 20]->[Book ID: 1002, Genre ID: 0, Price: 300, Quantity: 50]->
[Book ID: 1004, Genre ID: 1, Price: 267, Quantity: 0]->
[Book ID: 1006, Genre ID: 2, Price: 450, Quantity: 10]->[Book ID: 1007, Genre ID: 2, Price: 370, Quantity: 25]->
[Book ID: 1003, Genre ID: 3, Price: 350, Quantity: 30]->
```

7. Buying Books which are less than required quantity

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 4
Enter the following details of the book to be purchased:
Enter Book ID: 1007
Enter Genre ID: 2
Enter Quantity of Book: 30
We don't have the desired quantity of books.
```

8. Buying Books which are unavailable

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 4
Enter the following details of the book to be purchased:
Enter Book ID: 1007
Enter Genre ID: 0
Enter Quantity of Book: 12
Book Unavailable.
```

9. Buying Books which are sold out

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 4
Enter the following details of the book to be purchased:
Enter Book ID: 1004
Enter Genre ID: 1
Enter Quantity of Book: 5
Required book is sold out.
```

10. When wrong option entered in menu:

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 1006
Thank You
```

11. When you want to Quit the program

```
=====MENU=====
1. Insert a Record.
2. Find a Book Record
3. Delete a Book Record
4. Buy Book
5. Display the Records
6. Quit
Enter your choice from 1-6: 6
Thank You
```