



EEI3372 MINI PROJECT DOCUMENTATION

Task 02



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Introduction

This mini project is based on creating a library system for an university with the relevant resources and with the different functions. In this mini project, I have designed and implemented a program for open university library using Python programming language. The library has 4 types of resources - Books, Magazines, Educational DVDs, and Lecture CDs. Each resource has a set of attributes such as title, subject, rental price per day, number of copies, etc. The program allows students to borrow a resource according to their requirements and provides several features such as adding a new resource, removing a resource, viewing available/unavailable resources, lending a resource, and updating the resource when received back.

Assumptions

The library system is managed by the IT staff of the university library

And the stakeholders of the system are students and staff.

Each resource type (book, magazine, DVD, and CD) has a unique identifier (ISBN number, magazine number, DVD number, CD number) that distinguishes it from other resources.

All resources may have many copies and no copies available and they all have rental prices per day.

Resources can only be rented for a certain period of time before they must be returned it.

The program does not account for the possibility of lost resources or theft.

Problems and solutions

1. After completing the add/remove function of a resource I was not sure about is the book is added/removed. So, after that, I called the function to show available resources to confirm it.

```
Please choose the operation you wish to perform
1-Add a Book
2-Remove a Book
3-Show Available Books
4-Show Unavailable Books
5 - Lend Books
6 -Receive Books
7 - Display all the Books
8- Back to Main menu
0 - Quit
Please select your choice:1
Enter ISBN number of the book:ISBN0004
Enter title of the book:Atomic Habits
Enter format of the book:Hardcover
Enter subject of the book:Science
Enter rental price per day of the book:30
7 - Display all the Books
8- Back to Main menu
0 - Quit
Please select your choice:3
ISBN NO:ISBN0001, Title:photosynthesis,FORMAT:Hardcover,SUBJECT:Science,rental price per day:15.0,number of copies:4
ISBN NO:ISBN0003, Title:The hitler,FORMAT:Hardcover,SUBJECT:History,rental price per day:10.0,number of copies:2
ISBN NO:ISBN0004, Title:Atomic Habits,FORMAT:Hardcover,SUBJECT:Science,rental price per day:30.0,number of copies:4
Please choose the operation you wish to perform
```

2. I faced an error like the “function is not defined” when I call a function. Then I rechecked my code and found an indentation problem and fixed it. And it ran successfully.
3. Some input functions got some errors because some of the class attributes are integers and some of them are strings. I forgot to define them separately.

```
__copies = input("Enter number of copies of the book:")  
__rental_price = input("Enter rental price per day of the book:")
```

After that, I corrected it like the below and the error was fixed.

```
__rental_price = float(input("Enter rental price per day of the book:"))  
__copies = int(input("Enter number of copies of the book:"))
```

4. I wanted to add another Python file into another Python file to do the process. So, I used this program to import one Python file into another one.

```
from Bookmodel import Book
```

Source codes and outputs

The main page of the system

```

1  from BookFunction import BookFunction
2  from MagazineFunction import MagazineFunction
3  from DVDFunction import DVDFunction
4  from LectureCDFunction import CDFunction
5
6  bookfunc = BookFunction()
7  megfunc = MagazineFunction()
8  DVDfunc = DVDFunction()
9  CDFunc = CDFunction()
10
11 def mainmenu():
12     print("Main Menu")
13     print("=====")
14     print("1 - Books")
15     print("2 - Magazine")
16     print("3 - Educational DVD")
17     print("4 - Lecture CD")
18     print("5 - Quit")
19
20
21
22 def submenu1():
23     choice = 1
24     selected_resource = "Book"
25
26     while choice > 0:
27         print("Please choose the operation you wish to perform")
28         print(f"1-Add a {selected_resource}")
29         print(f"2-Remove a {selected_resource}")
30         print(f"3-Show Available {selected_resource}s")
31         print(f"4-Show Unavailable {selected_resource}s")
32         print(f"5 - Lend {selected_resource}s")
33         print(f"6 -Receive {selected_resource}s")
34         print(f"7 - Display all the {selected_resource}s ")
35         print(" 8- Back to Main menu")
36         print("0 - Quit")
37
38         try:
39             choice = int(input("Please select your choice:"))
40
41         except ValueError:
42             print("Invalid input, Try again")
43
44         if choice == 1:
45             bookfunc.addfunc()
46         elif choice == 2:
47             bookfunc.removefunc()
48         elif choice == 3:
49             bookfunc.available()
50         elif choice == 4:
51             bookfunc.unavailable()
52         elif choice == 5:
53             bookfunc.lend()
54         elif choice == 6:
55             bookfunc.update_again()
56         elif choice == 7:
57             CDFunc.show_all()
58         elif choice == 8:
59             mainmenu()
60         else:
61             print("Invalid input")
62
63
64 def submenu2():
65
66     choice = 1
67     selected_resource = "Magazine"
68
69     while choice > 0:
70         print("Please choose the operation you wish to perform")
71         print(f"1-Add a {selected_resource}")
72         print(f"2-Remove a {selected_resource}")
73         print(f"3-Show Available {selected_resource}s")
74         print(f"4-Show Unavailable {selected_resource}s")
75         print(f"5 - Lend {selected_resource}s")
76         print(f"6 -Receive {selected_resource}s")
77         print(f"7 - Display all the {selected_resource}s ")
78         print(" 8- Back to Main menu")
79         print("0 - Quit")
80
81         try:
82             choice = int(input("Please select your choice:"))
83
84         except ValueError:
85             print("Invalid input, Try again")
86
87         if choice == 1:
88             megfunc.addfunc()
89         elif choice == 2:
90             megfunc.removefunc()
91         elif choice == 3:
92             megfunc.available()
93         elif choice == 4:
94             megfunc.unavailable()
95         elif choice == 5:
96             megfunc.lend()
97         elif choice == 6:
98             megfunc.update_again()
99         elif choice == 7:
100             CDFunc.show_all()
101         elif choice == 8:
102             mainmenu()
103         else:
104             print("Invalid input")
105
106

```

```

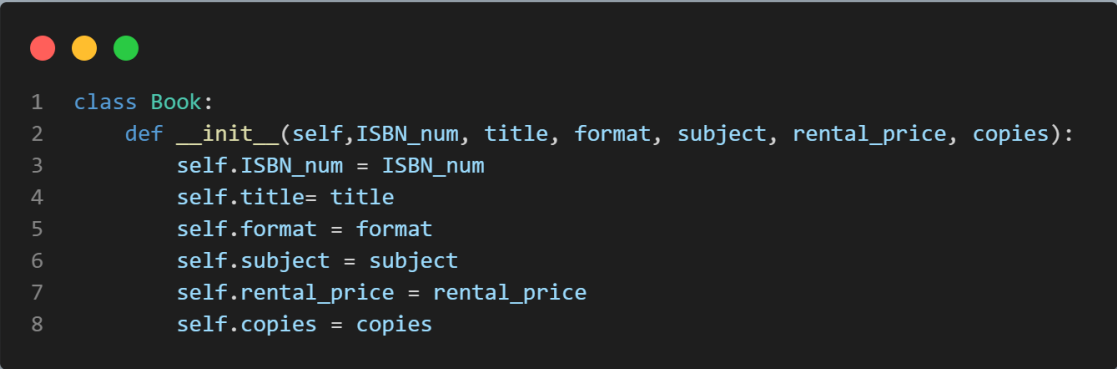
1  def submenu3():
2      choice = 1
3      selected_resource = "Educational DVD"
4
5      while choice > 0:
6          print("Please choose the operation you wish to perform")
7          print("1-Add a {selected_resource}")
8          print("2-Remove a {selected_resource}")
9          print("3-Show Available {selected_resource}s")
10         print("4-Show Unavailable {selected_resource}s")
11         print("5 - Lend {selected_resource}s")
12         print("6 - Receive {selected_resource}s")
13         print("7 - Display all the {selected_resource}s ")
14         print("8- Back to Main menu")
15         print("0 - Quit")
16
17         try:
18             choice = int(input("Please select your choice:"))
19
20         except ValueError:
21             print("Invalid input, Try again")
22
23         if choice == 1:
24             DVDfunc.addfunc()
25         elif choice == 2:
26             DVDfunc.removefunc()
27         elif choice == 3:
28             DVDfunc.available()
29         elif choice == 4:
30             DVDfunc.unavailable()
31         elif choice == 5:
32             DVDfunc.lend()
33         elif choice == 6:
34             DVDfunc.update_again()
35         elif choice == 7:
36             CDfunc.show_all()
37         elif choice == 8:
38             mainmenu()
39         else:
40             print("Invalid input")
41
42
43  def submenu4():
44
45      choice = 1
46      selected_resource = "Lecture CD"
47
48      while choice > 0:
49          print("Please choose the operation you wish to perform")
50          print("1-Add a {selected_resource}")
51          print("2-Remove a {selected_resource}")
52          print("3-Show Available {selected_resource}s")
53          print("4-Show Unavailable {selected_resource}s")
54          print("5 - Lend {selected_resource}s")
55          print("6 - Receive {selected_resource}s")
56          print("7 - Display all the {selected_resource}s ")
57          print("8- Back to Main menu")
58          print("0 - Quit")
59
60          try:
61              choice = int(input("Please select your choice:"))
62
63          except ValueError:
64              print("Invalid input, Try again")
65
66          if choice == 1:
67              CDfunc.addfunc()
68          elif choice == 2:
69              CDfunc.removefunc()
70          elif choice == 3:
71              CDfunc.available()
72          elif choice == 4:
73              CDfunc.unavailable()
74          elif choice == 5:
75              CDfunc.lend()
76          elif choice == 6:
77              CDfunc.update_again()
78          elif choice == 7:
79              CDfunc.show_all()
80          elif choice == 8:
81              mainmenu()
82          else:
83              print("Invalid input")
84
85
86
87
88
89
90
91
92
93
94  print(" Welcome to OUSL library system")
95  print("*****")
96  selected_resource = 1
97  while selected_resource > 0:
98      mainmenu()
99
100     try:
101         selected_resource = int(input("Please select your option:"))
102     except ValueError:
103         print("Invalid selection")
104         mainmenu()
105
106     if selected_resource == 1:
107         submenu1()
108     elif selected_resource == 2:
109         submenu2()
110     elif selected_resource == 3:
111         submenu3()
112     elif selected_resource == 4:
113         submenu4()
114     elif selected_resource == 5:
115         quit()
116
117
118
119
120
121

```

Book

Source code

Creating the book model for the class Book



```
1 class Book:
2     def __init__(self,ISBN_num, title, format, subject, rental_price, copies):
3         self.ISBN_num = ISBN_num
4         self.title= title
5         self.format = format
6         self.subject = subject
7         self.rental_price = rental_price
8         self.copies = copies
```

Creating the functions for add a book, remove a book, viewing available/unavailable books, lending a book, and updating the book when received back.

```
1 from Bookmodel import Book
2 def print_info(book):
3     print(f"ISBN NO:{book.ISBN_num}, Title:{book.title},FORMAT:{book.format},SUBJECT:{book.subject},rental_price_per_day:{book.rental_price},number_of_copies:{book.copies}")
4
5 class BookFunction:
6     def __init__(self):
7         self.list_of_books = []
8         self.initial_data()
9
10    def initial_data(self):
11        Book1 = Book(ISBN_num = "ISBN0001", title = "photosynthesis", format= "Hardcover", subject = "Science", rental_price = 15.00, copies = 4)
12        Book2 = Book(ISBN_num = "ISBN0002", title = "Zoology", format= "Paperback", subject = "Science", rental_price = 20.00, copies = 0)
13        Book3 = Book(ISBN_num = "ISBN0003", title = "The hitler", format= "Hardcover", subject = "History", rental_price = 10.00, copies = 2)
14        self.list_of_books.append(Book1)
15        self.list_of_books.append(Book2)
16        self.list_of_books.append(Book3)
17
18
19
20    def addfunc(self):
21        __isbn = input("Enter ISBN number of the book:").strip().upper()
22        __title = input("Enter title of the book:").strip()
23        __format = input("Enter format of the book:")
24        __subject = input("Enter subject of the book:")
25        __rental_price = float(input("Enter rental price per day of the book:"))
26        __copies = int(input("Enter number of copies of the book:"))
27        Book_New = Book(ISBN_num = __isbn, title = __title, format= __format, subject = __subject, rental_price = __rental_price, copies = __copies)
28        self.list_of_books.append(Book_New)
29
30        print("Book added successfully")
31
32    def removefunc(self):
33        removeBook = input("Enter the ISBN number of the book you want to remove:")
34        matched= list(books for books in self.list_of_books if books.ISBN_num == removeBook)
35        for books in matched:
36            self.list_of_books.remove(books)
37        print("Book removed successfully")
38
39
40
41
42
43    def available(self):
44        matched = list(books for books in self.list_of_books if books.copies > 0)
45        for books in matched:
46            print_info(book = books)
47
48
49
50
51
52    def unavailable(self):
53        matched = list(books for books in self.list_of_books if books.copies == 0)
54        for books in matched:
55            print_info(book = books)
56
57
58
59    def show_all(self):
60        for books in self.list_of_books:
61            print_info(book = books)
62
63
64
65    def lend(self):
66        removeBook = input("Enter the ISBN number: ")
67        __copies = int(input("enter lend copies:"))
68        matched= list(books for books in self.list_of_books if books.ISBN_num == removeBook)
69        for books in matched:
70            books.copies -= __copies
71        print("Book lent")
72
73    def update_again(self):
74        removeBook = input("Enter the ISBN number: ")
75        __copies = int(input("enter received copies:"))
76        matched= list(books for books in self.list_of_books if books.ISBN_num == removeBook)
77        for books in matched:
78            books.copies += __copies
79        print(f"Book Received with {__copies} copies")
```

Outputs

Add a book.

```
Welcome to OUSL library system
*****
Main Menu
=====
1 - Books
2 - Magazine
3 - Educational DVD
4 - Lecture CD
5 - Quit
Please select your option:1
Please choose the operation you wish to perform
1-Add a Book
2-Remove a Book
3-Show Available Books
4-Show Unavailable Books
5 - Lend Books
6 -Receive Books
7 - Display all the Books
8- Back to Main menu
0 - Quit
Please select your choice:1
Enter ISBN number of the book:ISBN0004
Enter title of the book:Atomic Habits
Enter format of the book:Paperback
Enter subject of the book:Science
Enter rental price per day of the book:20.00
Enter number of copies of the book:3
Book added successfully
```

Remove a book.

```
Please choose the operation you wish to perform
1-Add a Book
2-Remove a Book
3-Show Available Books
4-Show Unavailable Books
5 - Lend Books
6 -Receive Books
7 - Display all the Books
8- Back to Main menu
0 - Quit
Please select your choice:2
Enter the ISBN number of the book you want to remove:ISBN0004
Book removed successfully
```


Show available books.

```
Please choose the operation you wish to perform
1-Add a Book
2-Remove a Book
3-Show Available Books
4-Show Unavailable Books
5 - Lend Books
6 -Receive Books
7 - Display all the Books
8- Back to Main menu
0 - Quit
Please select your choice:3
ISBN NO:ISBN0001, Title:photosynthesis,FORMAT:Hardcover,SUBJECT:Science,rental_price_per_day:15.0,number_of_copies:4
ISBN NO:ISBN0003, Title:The hitler,FORMAT:Hardcover,SUBJECT:History,rental_price_per_day:10.0,number_of_copies:2
```

Show unavailable books.

```
Please choose the operation you wish to perform
1-Add a Book
2-Remove a Book
3-Show Available Books
4-Show Unavailable Books
5 - Lend Books
6 -Receive Books
7 - Display all the Books
8- Back to Main menu
0 - Quit
Please select your choice:4
ISBN NO:ISBN0002, Title:Zoology,FORMAT:Paperback,SUBJECT:Science,rental_price_per_day:20.0,number_of_copies:0
```

Lend a book

```
Please choose the operation you wish to perform
1-Add a Book
2-Remove a Book
3-Show Available Books
4-Show Unavailable Books
5 - Lend Books
6 -Receive Books
7 - Display all the Books
8- Back to Main menu
0 - Quit
Please select your choice:5
Enter the ISBN number: ISBN0001
enter lend copies:1
Book lent
```

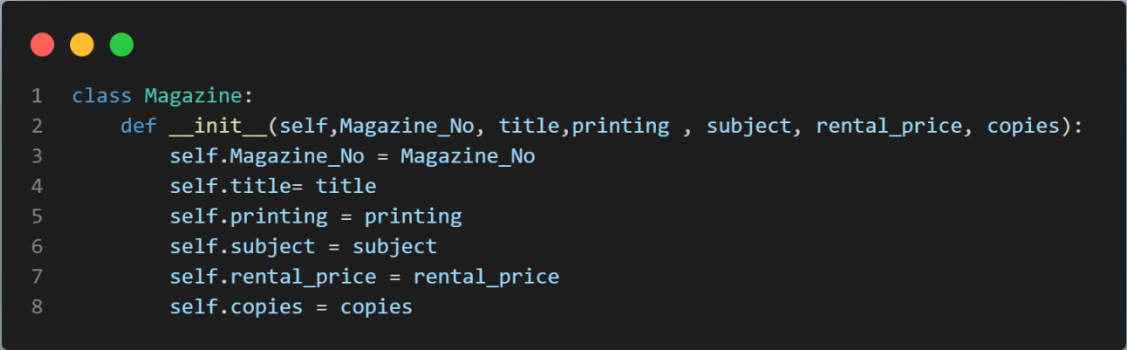
Receive a book again.

```
Please choose the operation you wish to perform
1-Add a Book
2-Remove a Book
3-Show Available Books
4-Show Unavailable Books
5 - Lend Books
6 -Receive Books
7 - Display all the Books
8- Back to Main menu
0 - Quit
Please select your choice:6
Enter the ISBN number: ISBN0001
enter received copies:1
Book Received with 1 copies
```

Magazine

Source code

Creating the Magazine model for the class Magazine



```
1 class Magazine:
2     def __init__(self,Magazine_No, title,printing , subject, rental_price, copies):
3         self.Magazine_No = Magazine_No
4         self.title= title
5         self.printing = printing
6         self.subject = subject
7         self.rental_price = rental_price
8         self.copies = copies
```

Creating the functions for add a magazine, remove a magazine, viewing available/unavailable magazines, lending a magazine, and updating the magazine when received back.

```
1 from magazinemodel import Magazine
2 def print_info(magazine):
3     print(f'Magazine No:{magazine.Magazine_No}, Title:{magazine.title},printing:{magazine.printing},SUBJECT:{magazine.subject},rental_price_per_day:{magazine.rental_price},number_of_copies:{magazine.copies}')
4
5 class MagazineFunction:
6     def __init__(self):
7         self.list_of_magazine = []
8         self.initial_data()
9
10    def initial_data(self):
11        Mag1 = Magazine(Magazine_No ="01",title = "History of Cricket",printing= "color", subject ="Sports",rental_price = 5.00,copies = 7)
12        Mag2 = Magazine(Magazine_No ="02", title = " Evolution of the Computer", printing=" black&white", subject ="Technology",rental_price = 3.00,copies = 21)
13        Mag3 = Magazine(Magazine_No ="03",title = "Women's Empower",printing= "color", subject ="History", rental_price =10.00,copies = 0)
14        self.list_of_magazine.append(Mag1)
15        self.list_of_magazine.append(Mag2)
16        self.list_of_magazine.append(Mag3)
17
18
19
20    def addfunc(self):
21        __magNo = int(input("Enter Magazine No of the Magazine:"))
22        __title = input("Enter title of the Magazine:").strip()
23        __printing = input("Enter printed method(color / Black&White) of the Magazine:")
24        __subject = input("Enter subject of the Magazine:")
25        __rental_price = float(input("Enter rental price per day of the Magazine:"))
26        __copies = int(input("Enter number of copies of the Magazine:"))
27        Magazine_New = Magazine(Magazine_No = __magNo,title = __title,printing= __printing, subject = __subject,rental_price = __rental_price,copies = __copies)
28        self.list_of_magazine.append(Magazine_New)
29
30        print("Magazine added successfully")
31
32    def removefunc(self):
33        removeMag = int(input("Enter the Magazine No of the Magazine you want to remove:"))
34        matched= list(Magazines for Magazines in self.list_of_magazine if Magazines.Magazine_No == removeMag)
35        for Magazines in matched:
36            self.list_of_magazine.remove(Magazines)
37        print("Magazine removed successfully")
38
39
40
41
42
43    def available(self):
44        matched = list (Magazines for Magazines in self.list_of_magazine if Magazines.copies > 0)
45        for Magazines in matched:
46            print_info(magazine = Magazines)
47
48
49
50
51
52    def unavailable(self):
53        matched = list(Magazines for Magazines in self.list_of_magazine if Magazines.copies == 0)
54        for Magazines in matched:
55            print_info(magazine = Magazines)
56
57
58
59    def show_all(self):
60        for Magazines in self.list_of_magazine:
61            print_info(magazine = Magazines)
62
63
64
65    def lend(self):
66        removeMag = int(input("Enter the Magazine number: "))
67        __copies = int(input("enter lend copies:"))
68        matched= list(Magazines for Magazines in self.list_of_magazine if Magazines.Magazine_No == removeMag)
69        for Magazines in matched:
70            Magazines.copies -= __copies
71        print("Magazine lent")
72
73    def update_again(self):
74        removeMag = int(input("Enter the Magazine number: "))
75        __copies = int(input("enter received copies:"))
76        matched= list(Magazines for Magazines in self.list_of_magazine if Magazines.Magazine_No == removeMag)
77        for Magazines in matched:
78            Magazines.copies += __copies
79        print(f'Magazine Received with {__copies} copies')
```

Outputs

Add a Magazine.

```
Welcome to OUSL library system
*****
Main Menu
=====
1 - Books
2 - Magazine
3 - Educational DVD
4 - Lecture CD
5 - Quit
2 - Magazine
3 - Educational DVD
4 - Lecture CD
5 - Quit
Please select your option:2
Please choose the operation you wish to perform
1-Add a Megazine
2-Remove a Megazine
3-Show Available Megazines
4-Show Unavailable Megazines
5 - Lend Megazines
6 -Receive Megazines
7 - Display all the Megazines
8- Back to Main menu
0 - Quit
Please select your choice:1
Enter Magazine No of the Magazine:04
Enter title of the Magazine:IT world
Enter printed method(color / Black&white) of the Magazine:black&white
Enter subject of the Magazine:Technology
Enter rental price per day of the Magazine:15.00
Enter number of copies of the Magazine:5
Magazine added successfully
```

Remove a magazine.

```
Please choose the operation you wish to perform
1-Add a Megazine
2-Remove a Megazine
3-Show Available Megazines
4-Show Unavailable Megazines
5 - Lend Megazines
6 -Receive Megazines
7 - Display all the Megazines
8- Back to Main menu
0 - Quit
Please select your choice:2
Enter the Magazine No of the Magazine you want to remove:03
Magazine removed successfully
```

Show available magazines.

```
Please choose the operation you wish to perform
1-Add a Magazine
2-Remove a Magazine
3-Show Available Megazines
4-Show Unavailable Megazines
5 - Lend Megazines
6 -Receive Megazines
7 - Display all the Megazines
8- Back to Main menu
0 - Quit
Please select your choice:3
Magazine No:01, Title:History of Cricket,printing:color,SUBJECT:Sports,rental_price_per_day:5.0,number_of_copies:7
Magazine No:02, Title: Evolution of the Computer,printing: black&white,SUBJECT:Technology,rental_price_per_day:3.0,number_of_copies:21
Magazine No:4, Title:IT world,printing:black&white,SUBJECT:Technology,rental_price_per_day:15.0,number_of_copies:5
```

Show unavailable magazines.

```
Please choose the operation you wish to perform
1-Add a Magazine
2-Remove a Magazine
3-Show Available Megazines
4-Show Unavailable Megazines
5 - Lend Megazines
6 -Receive Megazines
7 - Display all the Megazines
8- Back to Main menu
0 - Quit
Please select your choice:4
Magazine No:03, Title:Women's Empower,printing:color,SUBJECT:Science,rental_price_per_day:10.0,number_of_copies:0
```

Lend a magazine

```
Please choose the operation you wish to perform
1-Add a Magazine
2-Remove a Magazine
3-Show Available Megazines
4-Show Unavailable Megazines
5 - Lend Megazines
6 -Receive Megazines
7 - Display all the Megazines
8- Back to Main menu
0 - Quit
Please select your choice:5
Enter the Magazine number: 02
enter lend copies:1
Magazine lent
```

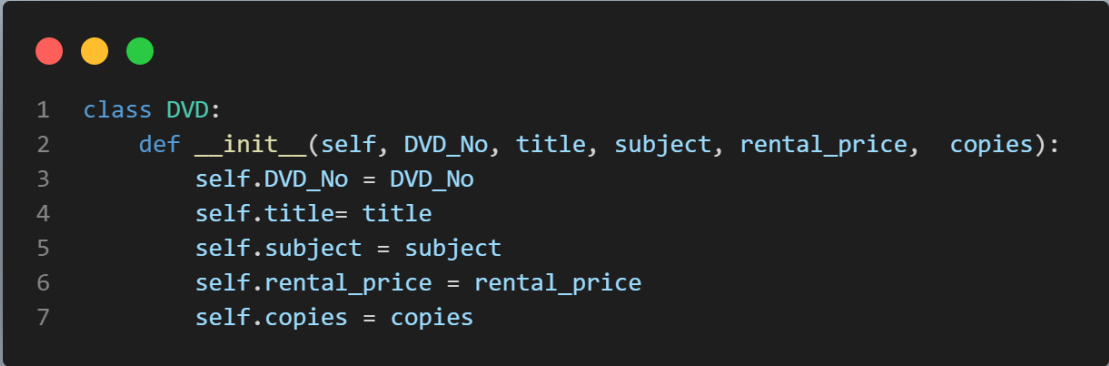
Receive a magazine again.

```
Please choose the operation you wish to perform
1-Add a Magazine
2-Remove a Magazine
3-Show Available Megazines
4-Show Unavailable Megazines
5 - Lend Megazines
6 -Receive Megazines
7 - Display all the Megazines
8- Back to Main menu
0 - Quit
Please select your choice:6
Enter the Magazine number: 02
enter received copies:1
Magazine Received with 1 copies
```

Educational DVD

Source code

Creating the Education DVD model for the class DVD



```
1 class DVD:
2     def __init__(self, DVD_No, title, subject, rental_price, copies):
3         self.DVD_No = DVD_No
4         self.title= title
5         self.subject = subject
6         self.rental_price = rental_price
7         self.copies = copies
```

Creating the functions for adding a DVD, removing a DVD, viewing available/unavailable DVDs, lending a DVD, and updating the DVD when received back.

```
1 from EduDVDmodel import DVD
2 def print_info(DVD):
3     print(f"DVD No:{DVD.DVD_No}, Title:{DVD.title},SUBJECT:{DVD.subject},rental_price_per_day:{DVD.rental_price},number_of_copies:{DVD.copies}")
4
5 class DVDFunction:
6     def __init__(self):
7         self.list_of_DVD = []
8         self.initial_data()
9
10    def initial_data(self):
11        dvd1 = DVD(DVD_No ="01",title = "Birth of the Solar System", subject ="Astronomy",rental_price = 2.50,copies = 10)
12        dvd2 = DVD(DVD_No ="02", title ="Pythagoras Theorem", subject ="Math",rental_price = 1.00,copies = 50)
13        dvd3 = DVD(DVD_No ="03",title = "Data structures", subject ="Technology", rental_price =5.50,copies = 0)
14        self.list_of_DVD.append(dvd1)
15        self.list_of_DVD.append(dvd2)
16        self.list_of_DVD.append(dvd3)
17
18
19
20    def addfunc(self):
21        __dvdNo = int(input("Enter DVD No of the DVD:"))
22        __title = input("Enter title of the DVD:").strip()
23        __subject = input("Enter subject of the DVD:")
24        __rental_price = float(input("Enter rental price per day of the DVD:"))
25        __copies = int(input("Enter number of copies of the DVD:"))
26        DVD_New = DVD(DVD_No =__dvdNo,title = __title, subject =__subject,rental_price = __rental_price,copies = __copies)
27        self.list_of_DVD.append(DVD_New)
28
29        print("DVD added successfully")
30
31    def removefunc(self):
32        removeDVD = int(input("Enter the DVD No of the DVD you want to remove:"))
33        matched= list(DVDs for DVDs in self.list_of_DVD if DVDs.DVD_No == removeDVD)
34        for DVDs in matched:
35            self.list_of_DVD.remove(DVDs)
36        print("DVD removed successfully")
37
38
39
40
41
42    def available(self):
43        matched = list (DVDs for DVDs in self.list_of_DVD if DVDs.copies > 0)
44        for DVDs in matched:
45            print_info(DVD = DVDs)
46
47
48
49
50
51    def unavailable(self):
52        matched = list(DVDs for DVDs in self.list_of_DVD if DVDs.copies == 0)
53        for DVDs in matched:
54            print_info(DVD = DVDs)
55
56
57
58
59    def show_all(self):
60        for DVDs in self.list_of_DVD:
61            print_info(DVD = DVDs)
62
63
64
65    def lend(self):
66        removeDVD = int(input("Enter the DVD number: "))
67        __copies = int(input("enter lend copies:"))
68        matched= list(DVDs for DVDs in self.list_of_DVD if DVDs.DVD_No == removeDVD)
69        for DVDs in matched:
70            DVDs.copies -= __copies
71        print("DVD lent")
72
73
74    def update_again(self):
75        removeDVD = int(input("Enter the DVD number: "))
76        __copies = int(input("enter received copies:"))
77        matched= list(DVDs for DVDs in self.list_of_DVD if DVDs.DVD_No == removeDVD)
78        for DVDs in matched:
79            DVDs.copies += __copies
80        print(f"DVD Received with {__copies} copies")
```

Outputs

Add a DVD.

```
2 - Magazine
3 - Educational DVD
4 - Lecture CD
5 - Quit
Please select your option:3
Please choose the operation you wish to perform
1-Add a Educational DVD
2-Remove a Educational DVD
3-Show Available Educational DVDs
4-Show Unavailable Educational DVDs
5 - Lend Educational DVDs
6 -Receive Educational DVDs
7 - Display all the Educational DVDs
8- Back to Main menu
0 - Quit
Please select your choice:1
Enter DVD No of the DVD:04
Enter title of the DVD:Algorithms
Enter subject of the DVD:Technology
Enter rental price per day of the DVD:4.00
Enter number of copies of the DVD:3
DVD added successfully
```

Remove a DVD

```
Please choose the operation you wish to perform
1-Add a Educational DVD
2-Remove a Educational DVD
3-Show Available Educational DVDs
4-Show Unavailable Educational DVDs
5 - Lend Educational DVDs
6 -Receive Educational DVDs
7 - Display all the Educational DVDs
8- Back to Main menu
0 - Quit
Please select your choice:2
Enter the DVD No of the DVD you want to remove:04
DVD removed successfully
```

Show available DVDs

```
Please choose the operation you wish to perform
1-Add a Educational DVD
2-Remove a Educational DVD
3-Show Available Educational DVDs
4-Show Unavailable Educational DVDs
5 - Lend Educational DVDs
6 -Receive Educational DVDs
7 - Display all the Educational DVDs
8- Back to Main menu
0 - Quit
Please select your choice:3
DVD No:01, Title:Birth of the Solar System,SUBJECT:Astronomy,rental_price_per_day:2.5,number_of_copies:10
DVD No:02, Title:Pythagoras Theorem,SUBJECT:Math,rental_price_per_day:1.0,number_of_copies:50
```


Show unavailable DVDs

```
Please choose the operation you wish to perform
1-Add a Educational DVD
2-Remove a Educational DVD
3-Show Available Educational DVDs
4-Show Unavailable Educational DVDs
5 - Lend Educational DVDs
6 -Receive Educational DVDs
7 - Display all the Educational DVDs
8- Back to Main menu
0 - Quit
Please select your choice:4
DVD No:03, Title:Data structures,SUBJECT:Technology,rental price per day:5.5,number of copies:0
```

Lend DVD

```
Please choose the operation you wish to perform
1-Add a Educational DVD
2-Remove a Educational DVD
3-Show Available Educational DVDs
4-Show Unavailable Educational DVDs
5 - Lend Educational DVDs
6 -Receive Educational DVDs
7 - Display all the Educational DVDs
8- Back to Main menu
0 - Quit
Please select your choice:5
Enter the DVD number: 02
enter lend copies:10
DVD lent
```

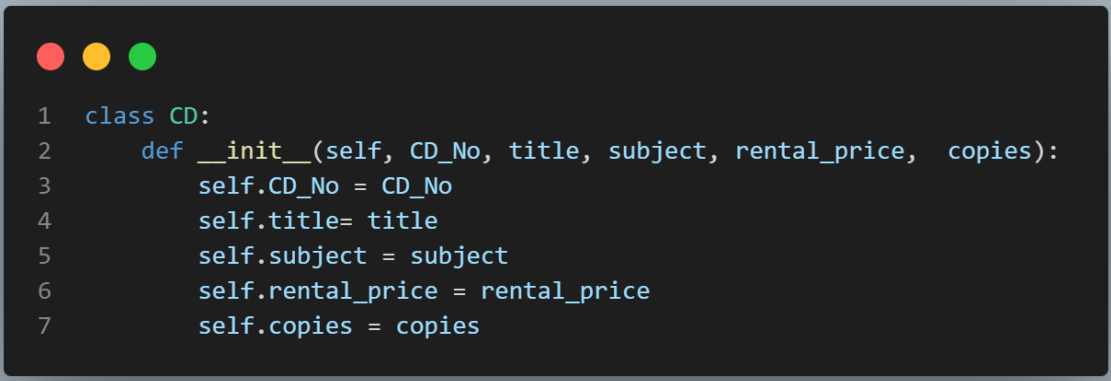
Receive a DVD again

```
Please choose the operation you wish to perform
1-Add a Educational DVD
2-Remove a Educational DVD
3-Show Available Educational DVDs
4-Show Unavailable Educational DVDs
5 - Lend Educational DVDs
6 -Receive Educational DVDs
7 - Display all the Educational DVDs
8- Back to Main menu
0 - Quit
Please select your choice:6
Enter the DVD number: 02
enter received copies:05
DVD Received with 5 copies
```

Lecture CD

Source code

Creating the Lecture CD model for the class CD



```
1 class CD:
2     def __init__(self, CD_No, title, subject, rental_price, copies):
3         self.CD_No = CD_No
4         self.title= title
5         self.subject = subject
6         self.rental_price = rental_price
7         self.copies = copies
```

Creating the functions for adding a CD, removing a CD, viewing available/unavailable CDs, lending a CD, and updating the CD when received back.

```

1  from LectureCDmodel import CD
2  def print_info(CD):
3      print(f"CD No:{CD.CD_No}, Title:{CD.title},SUBJECT:{CD.subject},rental_price_per_day:{CD.rental_price},number_of_copies:{CD.copies}")
4
5  class CDFunction:
6      def __init__(self) :
7          self.list_of_CD = []
8          self.initial_data()
9
10     def initial_data(self):
11         cd1 = CD(CD_No ="01",title = "Basics of Western Music", subject ="Music",rental_price = 1.5,copies =11)
12         cd2 = CD(CD_No ="02", title ="Japanese Language", subject =" Foreign Language",rental_price = 30.00,copies = 40)
13         cd3 = CD(CD_No ="03",title = "Sets and functions", subject ="Math", rental_price =10.00,copies = 0 )
14         self.list_of_CD.append(cd1)
15         self.list_of_CD.append(cd2)
16         self.list_of_CD.append(cd3)
17
18
19
20     def addfunc(self):
21         __cdNo = int(input("Enter CD No of the CD:"))
22         __title = input("Enter title of the CD:").strip()
23         __subject = input("Enter subject of the CD:")
24         __rental_price = float(input("Enter rental price per day of the CD:"))
25         __copies = int(input("Enter number of copies of the CD:"))
26         CD_New = CD(CD_No =__cdNo,title = __title, subject = __subject,rental_price = __rental_price,copies = __copies)
27         self.list_of_CD.append(CD_New)
28
29         print("DVD added successfully")
30
31     def removefunc(self):
32         removeCD = int(input("Enter the CD No of the CD you want to remove:"))
33         matched= list(CDs for CDs in self.list_of_CD if CDs.CD_No == removeCD)
34         for CDs in matched:
35             self.list_of_CD.remove(CDs)
36         print("CD removed successfully")
37
38
39
40
41
42     def available(self):
43         matched = list (CDs for CDs in self.list_of_CD if CDs.copies > 0)
44         for CDs in matched:
45             print_info(CD = CDs)
46
47
48
49
50
51     def unavailable(self):
52         matched = list(CDs for CDs in self.list_of_CD if CDs.copies == 0)
53         for CDs in matched:
54             print_info(CD = CDs)
55
56
57
58
59     def show_all(self):
60         for CDs in self.list_of_CD:
61             print_info(CD = CDs)
62
63
64     def lend(self):
65         removeCD = int(input("Enter the CD number: "))
66         __copies = int(input("enter lend copies:"))
67         matched= list(CDs for CDs in self.list_of_CD if CDs.CD_No == removeCD)
68         for CDs in matched:
69             CDs.copies -= __copies
70         print("DVD lent")
71
72     def update_again(self):
73         removeCD = int(input("Enter the CD number: "))
74         __copies = int(input("enter received copies:"))
75         matched= list(CDs for CDs in self.list_of_CD if CDs.CD_No == removeCD)
76         for CDs in matched:
77             CDs.copies += __copies
78         print(f"CD Received with {__copies} copies")

```

Outputs

Add a CD.

```
Welcome to OUSL library system
*****
3 - Educational DVD
4 - Lecture CD
5 - Quit
Please select your option:4
Please choose the operation you wish to perform
1-Add a Lecture CD
2-Remove a Lecture CD
3-Show Available Lecture CDs
4-Show Unavailable Lecture CDs
5 - Lend Lecture CDs
6 -Receive Lecture CDs
7 - Display all the Lecture CDs
8- Back to Main menu
0 - Quit
Please select your choice:1
Enter CD No of the CD:04
Enter title of the CD:korean language
Enter subject of the CD:foreign language
Enter rental price per day of the CD:3.50
Enter number of copies of the CD:3
CD added successfully
```

Remove a CD

```
Please choose the operation you wish to perform
1-Add a Lecture CD
2-Remove a Lecture CD
3-Show Available Lecture CDs
4-Show Unavailable Lecture CDs
5 - Lend Lecture CDs
6 -Receive Lecture CDs
7 - Display all the Lecture CDs
8- Back to Main menu
0 - Quit
Please select your choice:2
Enter the CD No of the CD you want to remove:04
CD removed successfully
```

Show available CDs

```
Please choose the operation you wish to perform
1-Add a Lecture CD
2-Remove a Lecture CD
3-Show Available Lecture CDs
4-Show Unavailable Lecture CDs
5 - Lend Lecture CDs
6 -Receive Lecture CDs
7 - Display all the Lecture CDs
8- Back to Main menu
0 - Quit
Please select your choice:3
CD No:01, Title:Basics of Western Music,SUBJECT:Music,rental_price_per_day:1.5,number_of_copies:11
CD No:02, Title:Japanese Language,SUBJECT: Foreign Language,rental_price_per_day:30.0,number_of_copies:40
```

Show unavailable CDs

```
Please choose the operation you wish to perform
1-Add a Lecture CD
2-Remove a Lecture CD
3-Show Available Lecture CDs
4-Show Unavailable Lecture CDs
5 - Lend Lecture CDs
6 -Receive Lecture CDs
7 - Display all the Lecture CDs
8- Back to Main menu
0 - Quit
Please select your choice:4
CD No:03, Title:Sets and functions,SUBJECT:Math,rental_price_per_day:10.0,number_of_copies:0
```

Lend CDs

```
Please choose the operation you wish to perform
1-Add a Lecture CD
2-Remove a Lecture CD
3-Show Available Lecture CDs
4-Show Unavailable Lecture CDs
5 - Lend Lecture CDs
6 -Receive Lecture CDs
7 - Display all the Lecture CDs
8- Back to Main menu
0 - Quit
Please select your choice:5
Enter the CD number: 02
enter lend copies:15
CD lent
```

Receive CD again

```
Please choose the operation you wish to perform
1-Add a Lecture CD
2-Remove a Lecture CD
3-Show Available Lecture CDs
4-Show Unavailable Lecture CDs
5 - Lend Lecture CDs
6 -Receive Lecture CDs
7 - Display all the Lecture CDs
8- Back to Main menu
0 - Quit
Please select your choice:6
Enter the CD number: 02
enter received copies:10
CD Received with 10 copies
```

Flowchart of the Programme

