

Daily practice-a

1) Using ArrayList

Create Book class

i d, title, author, availability

ArrayList of Book.

void display menu

if choice = Add

i d, title, author

Add new book

void search book

if (book.title == title)

(book).

void removeBook(id)

if (book.bookid == id)

(remove book)

Output:

Book Added

101 Java James

Book found

Book removed

2) Linked list

use linkedlist package

create class Book

i d, title, borrowName,

static <LinkedList <Book> issued Books - new LinkedList<

void issue book

i d, title, borrower

Add book deto issuedBooks

Print "Book issued"

Display issued books

Remove book 101

print "book returned"

stop

Output:

Book issued

101 Java Ravi

Book returned

3. Hash set

Create HashSet<Book>bookSet

Add Book(101,"Java","James")

Add Book(101,"Java","James")

FOR each book in bookSet

 print details

END For

Stop.

Output:

Book Added

Duplicated not allowed

101 Java James.

4. TreeSet:

Create TreeSet<Book> bookSet

Add Book("Python")

Add Book("Java")

Add Book("C")

Display BookTree (sorted)

Stop

Output:

C

Java

python

5. Hashmap:

Start

Create Hashmaps<Integer, Book> bookMap, map of books

put(101, Java)

put(102, python)

Search key 101

Print result

Remove key 101

Display all books

Stop

Output:

Book Found: Java

Book Removed

102 python

6. Iterator:

Start

Create ArrayList<Book> bookList

Add 2 books

Create Iterator

while hasNext

Print book

END while

Use iterator.remove() for id of book which you want to stop

Output:

101 Java

102 Python

Book Removed

7: Multiple collection:

Start

Create ArrayList books

Create HashSet authors

Add Book(101, Java, James)

Add author to authorsSet

Add Book(102, Python, John)

Add author to authorsSet

Display authors

STOP

Output:

James

John

8: TreeMap:

Start

Create TreeMap<Integer, Books>

put(102, python)

put(101, Java)

Display TreeMap (sorted by key)

STOP

Output:

101 Java

102 Python

9. Linked List Hash Map

Start

Create Hashmap all books

Create LinkedList issuedbooks

Add books to all books.

Issue book 01 → add to issuedbooks

Display issuedbooks

Display availablebooks

Stop.

Output:

Issued: 101 Java

Available: 102 python

10. Array Index out of bounds exception

Start

Create book array size 2

Try

Add 3 books.

Catch ArrayIndexOutOfBoundsException for book

Print "Array Full".

End Try

Stop

Output:

Book added

Book added

Array full

11. Null pointer exception:

Start:

Book book=null

Try

print book.title

Catch

Null pointer exception

print "Book not found"

Stop:

Output:

Book not found.

12. Class not found exception:

Start

Try

Class.forName("Book")

Catch classNotFoundException

print "Class not found"

Stop:

Output:

Class not found

13. IOException

Start

Try

Open file "books.txt"

Catch

IOException

print "File Error"

STOP

Output:

file error

14 Multiple catch

Start

Try

Read integer input

Catch

inputMismatchException

print "Invalid Input"

Catch

NullPointerException

print "Null Error"

Catch

IOException

print "IO Error"

Stop

Output:

Invalid input

15 Throws keyword

function readFile() throws IOException

Read file

MAIN

TRY

readFile()

Catch

IOException

Print "Exception handled"

Stop

Output:

Exception Handled

16. Custom exception:

Start

Try

If book not found

 Throw BookNotFoundException

catch BookNotFoundException

 print "Book not available".

Stop

Output:

Book Not Available.

17. Finally block:

Start

Try

 open file

catch exception

 print "Error"

Finally

 close file

 print "file closed"

Stop

Output:

Error

file closed

18. Exception during issue:

Start

if book already issued

 Throw Exception

catch Exception

 print "Book Already Issued"

Output:

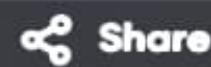
Book Already Issued

Stop



```
80  public static void main(String[] args) {  
81  
82      while (true) {  
83          System.out.println("1. Add Book");  
84          System.out.println("2. Issue Book");  
85          System.out.println("3. Return Book");  
86          System.out.println("4. Display Available Books");  
87          System.out.println("5. Display Issued Books");  
88          System.out.println("6. Exit");  
89          int ch = sc.nextInt();  
90          sc.nextLine();  
91  
92          switch (ch) {  
93              case 1 -> addBook();  
94              case 2 -> issueBook();  
95              case 3 -> returnBook();  
96              case 4 -> displayAvailable();  
97              case 5 -> displayIssued();  
98              case 6 -> System.exit(0);  
99          }  
100     }  
101 }
```

```
1. Add Book  
2. Issue Book  
3. Return Book  
4. Display Available Books  
5. Display Issued Books  
6. Exit  
4  
Available Books:  
1. Add Book  
2. Issue Book  
3. Return Book  
4. Display Available Books  
5. Display Issued Books  
6. Exit
```



```
8
9     BufferedReader br = null;
10
11    try {
12        br = new BufferedReader(new FileReader("books.txt"
13                                ));
14        String line;
15
16        while ((line = br.readLine()) != null) {
17            System.out.println(line);
18        }
19    } catch (IOException e) {
20        System.out.println("File error occurred.");
21    } finally {
22        try {
23            if (br != null)
24                br.close();
25        } catch (IOException e) {
26            System.out.println("Error closing file.");
27        }
28    }
29 }
```

Main.java



Run

Clear

```
28     String title = sc.nextLine();
29
30     books[index] = new Book(id, title);
31 }
32
33 static void searchBook(int index) {
34     try {
35         books[index].display();
36     } catch (NullPointerException e) {
37         System.out.println("Book not found.\n");
38     }
39 }
40
41 public static void main(String[] args) {
42
43     addBook(0);
44
45     System.out.print("Enter index to search: ");
46     int index = sc.nextInt();
47
48     searchBook(index);
49 }
50 }
```

▲ Enter Book ID: 33
Enter Title: tears
Enter index to search: 2
Book not found.

==== Code Execution Successful ===



```
1 import java.util.ArrayList;
2 import java.util.Iterator;
3 import java.util.Scanner;
4
5 class Book {
6     int bookId;
7     String title;
8     String author;
9
10    Book(int bookId, String title, String author) {
11        this.bookId = bookId;
12        this.title = title;
13        this.author = author;
14    }
15
16    void display() {
17        System.out.println("ID: " + bookId + ", Title: " +
18            title + ", Author: " + author);
19    }
20
21 public class Main {
```

---- Library Management System ----

1. Add Book
2. Display Books
3. Remove Book
4. Exit

Enter your choice: 1

Enter Book ID: 25

Enter Title: tiger

Enter Author: saniya

Book added successfully.

---- Library Management System ----

1. Add Book
2. Display Books
3. Remove Book
4. Exit

Enter your choice:

Main.java



Share

Run

Clear

Output

```
88     switch (choice) {  
89         case 1:  
90             addBook();  
91             break;  
92         case 2:  
93             searchBook();  
94             break;  
95         case 3:  
96             removeBook();  
97             break;  
98         case 4:  
99             displayBooks();  
100            break;  
101        case 5:  
102            System.out.println("Exiting...");  
103            System.exit(0);  
104        default:  
105            System.out.println("Invalid choice.\n");  
106    }  
107}  
108}  
109}  
110}
```

---- Library Management System ----

- 1. Add Book
- 2. Search Book by ID
- 3. Remove Book
- 4. Display All Books
- 5. Exit

Enter your choice: 2

Enter Book ID to search: 32

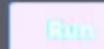
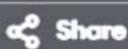
Book not found.

---- Library Management System ----

- 1. Add Book
- 2. Search Book by ID
- 3. Remove Book
- 4. Display All Books
- 5. Exit

Enter your choice: |

Main.java



Clear

```
1 public class Main {  
2  
3     public static void main(String[] args) {  
4  
5         try {  
6             Class.forName("Book");  
7             System.out.println("Book class loaded successfully."  
8             );  
9         } catch (ClassNotFoundException e) {  
10             System.out.println("Book class not found.");  
11         }  
12     }  
13 }
```

Output

Book class not found.

==== Code Execution Successful ===

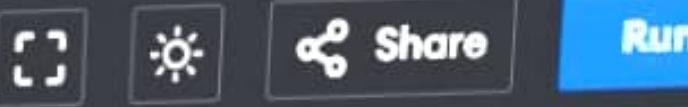


```
62     System.out.println("3. Exit");
63     System.out.print("Enter your choice: ");
64
65     int choice = sc.nextInt();
66     sc.nextLine();
67
68     switch (choice) {
69         case 1:
70             addBook();
71             break;
72         case 2:
73             displayBooks();
74             break;
75         case 3:
76             System.out.println("Exiting...");
77             System.exit(0);
78         default:
79             System.out.println("Invalid choice.\n");
80     }
81 }
82 }
83 }
84 }
```

---- Library Management System ----
1. Add Book
2. Display Books (Sorted by Title)
3. Exit
Enter your choice: 2
No books available.

---- Library Management System ----
1. Add Book
2. Display Books (Sorted by Title)
3. Exit
Enter your choice:

Main.java



```
2 import java.io.FileReader;
3 import java.io.IOException;
4
5 public class Main {
6
7     public static void main(String[] args) {
8
9         try {
10             BufferedReader br = new BufferedReader(new
11                 FileReader("books.txt"));
12             String line;
13
14             while ((line = br.readLine()) != null) {
15                 System.out.println(line);
16
17             br.close();
18         } catch (IOException e) {
19             System.out.println("File missing or unreadable.");
20         }
21     }
22 }
23
```

Run

Main.java



Share

Run

```
27         if (b.bookId == id) {  
28             System.out.println("Book Found: " + b.title);  
29             return;  
30         }  
31     }  
32     throw new BookNotFoundException("Book not found.");  
33 }  
34  
35 public static void main(String[] args) {  
36  
37     library.add(new Book(101, "Java Programming"));  
38     library.add(new Book(102, "Python Basics"));  
39  
40     System.out.print("Enter Book ID to search: ");  
41     int id = sc.nextInt();  
42  
43     try {  
44         searchBook(id);  
45     } catch (BookNotFoundException e) {  
46         System.out.println(e.getMessage());  
47     }  
48 }  
49 }
```



Main.java



Run

Output

Clear

```
63
64  public static void main(String[] args) {
65
66    while (true) {
67      System.out.println("1. Add Book");
68      System.out.println("2. Delete Book");
69      System.out.println("3. Search Book");
70      System.out.println("4. Display All Books");
71      System.out.println("5. Exit");
72      int ch = sc.nextInt();
73      sc.nextLine();
74
75    switch (ch) {
76      case 1 -> addBook();
77      case 2 -> deleteBook();
78      case 3 -> searchBook();
79      case 4 -> displayBooks();
80      case 5 -> System.exit(0);
81    }
82  }
83}
84}
85|
```

- 1. Add Book
 - 2. Delete Book
 - 3. Search Book
 - 4. Display All Books
 - 5. Exit
- 2
- Enter Book ID: 24
- Book deleted.
- 1. Add Book
 - 2. Delete Book
 - 3. Search Book
 - 4. Display All Books
 - 5. Exit



```
25         int id = sc.nextInt();
26         sc.nextLine();
27
28         System.out.print("Enter Title: ");
29         String title = sc.nextLine();
30
31         book = new Book(id, title);
32
33         FileWriter fw = new FileWriter("bookdata.txt");
34         fw.write(book.bookId + " " + book.title);
35         fw.close();
36
37         System.out.println("Book saved.");
38     } catch (InputMismatchException e) {
39         System.out.println("Invalid input type.");
40     } catch (NullPointerException e) {
41         System.out.println("Book object is null.");
42     } catch (IOException e) {
43         System.out.println("File error occurred.");
44     }
45 }
46 }
47 }
```



```
31 }
32
33 public class Main {
34
35     public static void main(String[] args) {
36
37         HashSet<Book> library = new HashSet<>();
38
39         library.add(new Book(101, "Java Programming", "James
40             Gosling"));
40         library.add(new Book(102, "Python Basics", "Guido van
41             Rossum"));
41         library.add(new Book(101, "Java Programming", "James
42             Gosling"));
42
43         System.out.println("Available Books:");
44
45         for (Book b : library) {
46             b.display();
47         }
48     }
49 }
50 }
```

Available Books:

ID: 101, Title: Java Programming, Author: James Gosling

ID: 102, Title: Python Basics, Author: Guido van Rossum

==== Code Execution Successful ===

Main.java



Share

Run

```
15     static void issueBook(int id) throws
16         BookAlreadyIssuedException {
17             if (issuedBooks.contains(id)) {
18                 throw new BookAlreadyIssuedException("Book already
19                     issued.");
20             }
21             issuedBooks.add(id);
22             System.out.println("Book issued successfully.");
23     }
24
25     public static void main(String[] args) {
26         System.out.print("Enter Book ID to issue: ");
27         int id = sc.nextInt();
28         try {
29             issueBook(id);
30         } catch (BookAlreadyIssuedException e) {
31             System.out.println(e.getMessage());
32         }
33     }
34 }
```

```
7  static void readBooks() throws IOException {
8      BufferedReader br = new BufferedReader(new FileReader
9          ("books.txt"));
10     String line;
11
12     while ((line = br.readLine()) != null) {
13         System.out.println(line);
14     }
15
16     br.close();
17
18     public static void main(String[] args) {
19
20         try {
21             readBooks();
22         } catch (IOException e) {
23             System.out.println("Error reading file.");
24         }
25     }
26 }
27
28
```

Error reading file.

==== Code Execution Successful ===



```
91         break;
92     }
93 }
94
95 if (!removed) {
96     System.out.println("Book ID not found.\n");
97 }
98 }
99
100 public static void main(String[] args) {
101
102     while (true) {
103         System.out.println("---- Library Management System
104             ----");
105         System.out.println("1. Add Book");
106         System.out.println("2. Display All Books");
107         System.out.println("3. Search Book by Title");
108         System.out.println("4. Remove Book by ID");
109         System.out.println("5. Exit");
110         System.out.print("Enter your choice: ");
111
112         int choice = sc.nextInt();
113         sc.nextLine();
```

---- Library Management System ----

1. Add Book
2. Display All Books
3. Search Book by Title
4. Remove Book by ID
5. Exit

Enter your choice: 3

Enter title to search: 5

Book not found.

---- Library Management System ----

1. Add Book
2. Display All Books
3. Search Book by Title
4. Remove Book by ID
5. Exit

Enter your choice:

Main.java



Run

Output

Clear

```
82         int choice = sc.nextInt();
83         sc.nextLine();
84
85         switch (choice) {
86             case 1:
87                 issueBook();
88                 break;
89             case 2:
90                 returnBook();
91                 break;
92             case 3:
93                 displayIssuedBooks();
94                 break;
95             case 4:
96                 System.out.println("Exiting...");
97                 System.exit(0);
98             default:
99                 System.out.println("Invalid choice.\n");
100        }
101    }
102}
103}
104|
```

---- Library Management System ----

- 1. Issue Book
- 2. Return Book
- 3. Display Issued Books
- 4. Exit

Enter your choice: 4

Exiting...

==== Code Execution Successful ===



```
40     for (int i = 0; i < count; i++) {  
41         books[i].display();  
42     }  
43     System.out.println();  
44 }  
45  
46 public static void main(String[] args) {  
47  
48     while (true) {  
49         System.out.println("1. Add Book");  
50         System.out.println("2. Display Books");  
51         System.out.println("3. Exit");  
52         int ch = sc.nextInt();  
53         sc.nextLine();  
54  
55         switch (ch) {  
56             case 1 -> addBook();  
57             case 2 -> displayBooks();  
58             case 3 -> System.exit(0);  
59         }  
60     }  
61 }  
62 }
```

- 1. Add Book
- 2. Display Books
- 3. Exit

```
55     System.out.println();
56 }
57
58 public static void main(String[] args) {
59
60     while (true) {
61         System.out.println("1. Add Book");
62         System.out.println("2. Display Books");
63         System.out.println("3. Display Authors");
64         System.out.println("4. Exit");
65         int ch = sc.nextInt();
66         sc.nextLine();
67
68         switch (ch) {
69             case 1 -> addBook();
70             case 2 -> displayBooks();
71             case 3 -> displayAuthors();
72             case 4 -> System.exit(0);
73         }
74     }
75 }
76 }
77 }
```

Output

- 1. Add Book
 - 2. Display Books
 - 3. Display Authors
 - 4. Exit
- 3
- Authors:
- 1. Add Book
 - 2. Display Books
 - 3. Display Authors
 - 4. Exit