Institute of Computer Technology

B. Tech. Computer Science and Engineering

Semester: III

Sub: Object-Oriented Programming

Course Code: 2CSE303

Practical Number:9

Objective:

To learn about class, object, constructor, control structure, loop, array, string, abstraction, encapsulation, polymorphism, switch case, interface and etc.

Q1. Make an appropriate simple project, where you have to take information (like: rollno, name, std, semester, course, subject and fee) from the user, and accordingly you have to perform the following by using switch or do-while loop condition.

1. Read minimum 5 record of given object.
2. Display all record information on screen.
3. Search record by id or name.
4. Update record by id or name.
5. Delete record by id or name.

Code :

```
import java.util.Scanner;

class Book {
    int bookID;
    String bookName;

    // Constructor
    Book(int bookID, String bookName) {
        this.bookID = bookID;
        this.bookName = bookName;
    }

    // Display Book details
    void displayBook() {
        System.out.println("Book ID: " + bookID + ", Book Name: " + bookName);
    }
}

public class LibraryManagement {
    static Scanner sc = new Scanner(System.in);
    static Book[] books = new Book[5]; // Array to store 5 book records
```

```
    public static void main(String[] args) {
        int choice;
        do {
            System.out.println("\nLibrary Management");
            System.out.println("1. Add Book");
            System.out.println("2. Display All Books");
            System.out.println("3. Search Book by ID");
            System.out.println("4. Update Book by ID");
            System.out.println("5. Delete Book by ID");
            System.out.println("6. Exit");
            System.out.print("Enter your choice: ");
            choice = sc.nextInt();

            switch (choice) {
                case 1:
                    addBooks();
                    break;
                case 2:
                    displayBooks();
                    break;
                case 3:
                    searchBook();
                    break;
                case 4:
                    updateBook();
                    break;
                case 5:
                    deleteBook();
                    break;
                case 6:
                    System.out.println("Exiting...");
                    break;
                default:
                    System.out.println("Invalid choice. Try again.");
            }
        } while (choice != 6);
    }

    // Method to add books
    public static void addBooks() {
        for (int i = 0; i < books.length; i++) {
            System.out.print("Enter Book ID: ");
            int id = sc.nextInt();
            sc.nextLine(); // Consume newline
            System.out.print("Enter Book Name: ");
            String name = sc.nextLine();
            books[i] = new Book(id, name);
```

```
        }
        System.out.println("Books added successfully.");
    }

    // Method to display all books
    public static void displayBooks() {
        for (Book book : books) {
            if (book != null) {
                book.displayBook();
            }
        }
    }

    // Method to search for a book by ID
    public static void searchBook() {
        System.out.print("Enter Book ID to search: ");
        int id = sc.nextInt();
        boolean found = false;
        for (Book book : books) {
            if (book != null && book.bookID == id) {
                book.displayBook();
                found = true;
                break;
            }
        }
        if (!found) {
            System.out.println("Book not found.");
        }
    }

    // Method to update a book's name by ID
    public static void updateBook() {
        System.out.print("Enter Book ID to update: ");
        int id = sc.nextInt();
        sc.nextLine(); // Consume newline
        boolean updated = false;

        for (Book book : books) {
            if (book != null && book.bookID == id) {
                System.out.print("Enter new Book Name: ");
                book.bookName = sc.nextLine();
                updated = true;
                System.out.println("Book updated successfully.");
                break;
            }
        }

        if (!updated) {
```

```
            System.out.println("Book not found.");
        }
    }

    // Method to delete a book by ID
    public static void deleteBook() {
        System.out.print("Enter Book ID to delete: ");
        int id = sc.nextInt();
        boolean deleted = false;
        for (int i = 0; i < books.length; i++) {
            if (books[i] != null && books[i].bookID == id) {
                books[i] = null; // Remove the book
                deleted = true;
                break;
            }
        }
        if (deleted) {
            System.out.println("Book deleted successfully.");
        } else {
            System.out.println("Book not found.");
        }
    }
}
```

Output :

Library Management

1. Add Book

2. Display All Books

3. Search Book by ID

4. Update Book by ID

5. Delete Book by ID

6. Exit

Enter your choice: 1

Enter Book ID: 1

Enter Book Name: qqq

Enter Book ID: 2

Enter Book Name: qqqq

Enter Book ID: 3

Enter Book Name: qqqqq

Enter Book ID: 4

Enter Book Name: qqqqqq

Enter Book ID: 5

Enter Book Name: qqqqqqq

Books added successfully.

Library Management

1. Add Book

2. Display All Books

3. Search Book by ID

4. Update Book by ID

5. Delete Book by ID

6. Exit

Enter your choice: 2

Book ID: 1, Book Name: qqq

Book ID: 2, Book Name: qqqq

Book ID: 3, Book Name: qqqqq

Book ID: 4, Book Name: qqqqqq

Book ID: 5, Book Name: qqqqqqq

Library Management

1. Add Book

2. Display All Books

3. Search Book by ID

4. Update Book by ID

5. Delete Book by ID

6. Exit

Enter your choice: 3

Enter Book ID to search: 2

Book ID: 2, Book Name: qqqq

Library Management

1. Add Book

2. Display All Books

3. Search Book by ID

4. Update Book by ID

5. Delete Book by ID

6. Exit

Enter your choice: 4

Enter Book ID to update: 5

Enter new Book Name: q

Book updated successfully.

Library Management

1. Add Book

2. Display All Books

3. Search Book by ID

4. Update Book by ID

5. Delete Book by ID

6. Exit

Enter your choice: 2

Book ID: 1, Book Name: qqq

Book ID: 2, Book Name: qqqq

Book ID: 3, Book Name: qqqqq

Book ID: 4, Book Name: qqqqqq

Book ID: 5, Book Name: q

Library Management

1. Add Book

2. Display All Books

3. Search Book by ID

4. Update Book by ID

5. Delete Book by ID

6. Exit

Enter your choice: 5

Enter Book ID to delete: 1

Book deleted successfully.

Library Management

1. Add Book

2. Display All Books

3. Search Book by ID

4. Update Book by ID

5. Delete Book by ID

6. Exit

Enter your choice: 2

Book ID: 2, Book Name: qqqq

Book ID: 3, Book Name: qqqqq

Book ID: 4, Book Name: qqqqqq

Book ID: 5, Book Name: q

Library Management

1. Add Book

2. Display All Books

3. Search Book by ID

4. Update Book by ID

5. Delete Book by ID

6. Exit

Enter your choice: 6

Exiting...