CDAC MUMBAI

Day 6 Assignment

1. **You are required to create a virtual library management system that allows users to borrow and return books. The system should keep track of the available books, borrowed books, and user information.**

Features:

- The system should have a Book class with attributes such as bookId, title, author, and isAvailable.
- The system should have a User class with attributes such as userId, name, and booksBorrowed.
- Implement a constructor in the Book class to initialize its attributes.
- Implement a constructor in the User class to initialize its attributes.
- Use a static method to display the menu options for users to choose from.
- Implement a switch statement to handle user inputs and perform corresponding actions.
- Use loops to continuously display the menu until the user chooses to exit.
- Allow users to borrow a book by entering the book ID and check if the book is available.
- Allow users to return a book by entering the book ID and update the availability status.
- Display appropriate messages for successful and unsuccessful operations.

Expected Input/Output:

Welcome to the Virtual Library Management System!

1. Borrow a Book
2. Return a Book
3. Display Available Books
4. Display Borrowed Books
5. Exit

Enter your choice: 1

Enter your user ID: 101
Enter the book ID you want to borrow: 201

Book borrowed successfully!

Enter your choice: 3

Available Books:
Book ID: 201, Title: "Java Programming", Author: "John Doe"

Enter your choice: 2

Enter your user ID: 101
Enter the book ID you want to return: 201

Book returned successfully!

Enter your choice: 5

Exiting Virtual Library Management System. Thank you!

2. **Here are some code snippets with intentional errors. Your task is to identify and correct the errors: (If you are not able to find out then, read more about that error, solve and again implement)**

Problem A:

```
public class Main {
   public static void main(String[] args) {
      int x = 5;
      double y = 10;
      int z = x + y;
      System.out.println("Sum: " + z);
   }
}
```

Expected Output:
Sum: 30

Problem B:

```
public class Main {
   public static void main(String[] args) {
      for (int i = 1; i < 5 ; i++) {
         System.out.println("Number: " + i);
      }
   }
}
```

Expected Output:

Number: 1
Number: 2
Number: 3
Number: 4
Number: 5

Problem C:

```
public class Main {
   public static void main(String[] args) {
      int x = 10;
      if (x == System.out.println("x is 10")) {
         System.out.println("x is 10");
      } else {
         System.out.println("x is not 10");
      }
   }
}
```

Expected Output:

x is 10

Problem D:

```
public class Main {
   public static void main(String[] args) {
      int[] numbers = {1, 2, 3, 4, 5};
      for (int i = 0; i < numbers.length + 1; i++) {
         System.out.println("Number: " + numbers[i]);
      }
   }
}
```

Expected Output:

Number: 1
Number: 2
Number: 3
Number: 4
Number: 5

Problem E:

```
public class Main {
   public static void main(String[] args) {
      int[] numbers= {1, 2, 3, 4, 5};
      for (int i = 0; i < numbers.length ; i++) {
         System.out.println("Number: " + numbers[5]);
      }
   }
}
```

Expected Output:

Number: 1
Number: 2
Number: 3
Number: 4
Number: 5

Problem F:

```
public class main {
   Public static void main(string[] args) {
      float x = 5;
      float y = 10;
      float z = x + y;
      System.out.println("Sum:  + z);
   }
}
```

Expected Output:

Sum: 30

Note: Hit and trial different permutation and combination in syntax to find out which error comes in what, then try to solve it. If still making the same error then, read that particular concept in depth. (In interviews snippets are being asked and you have to tell what is the output and if there is any error (Logical or syntactical)). Try as much as you can on a daily basis.

3. **Write a Java program that takes two integers as input and uses the conditional operator (ternary operator) to determine and print the larger of the two numbers.**

   Instructions:

   - Create a Java class named ConditionalOperatorExample.
   - Inside the main method, prompt the user to enter two integers.
   - Use the conditional operator to compare the two numbers and assign the larger number to a variable.
   - Print the larger number.

Expected Output:
Enter the first number: 10
Enter the second number: 20
Larger number: 20

4. **Write a Java program to reverse a given string without using any built-in method. Implement a method reverseString that takes a string as input and returns the reversed string.**

Example:
Input: "Hello"
Output: "olleH"

5. **Write a Java program to check if a given string is a palindrome or not. Implement a method isPalindrome that takes a string as input and returns true if the string is a palindrome, otherwise returns false.**

Example:
Input: "racecar"
Output: true

Best feeling when all of you are eager to solve the assignments. You are on right track. It's the last assignment for Logic building sessions. **ALL THE BEST !!!!!!!!**