Bahria University, Islamabad

Department of Software Engineering

Computer Programming Lab

(Fall-2023).

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Lab Journal: 7

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Task No:	Task Wise Marks		Documentation Marks		Total Marks (20)
	Assigned	Obtained	Assigned	Obtained	
1	3		5		
2	2				
3	2				
4	2				
5	2				
6	2				
7	2				

Comments:

Signature

Task 1: (Bibliotheca) Library System with Fine Calculation Feature

Create a C++ program for a library system with the following features:

1. Issue and Return: Users can borrow and return books. Implement a user-friendly

interface for these operations.

2. Fine System: Introduce a fine system for late returns. Assign a fine of $1 per day for

overdue books. Ensure that the program calculates fines accurately and displays

appropriate messages.

3. User Notifications: Notify users about fines incurred due to late returns. Display clear

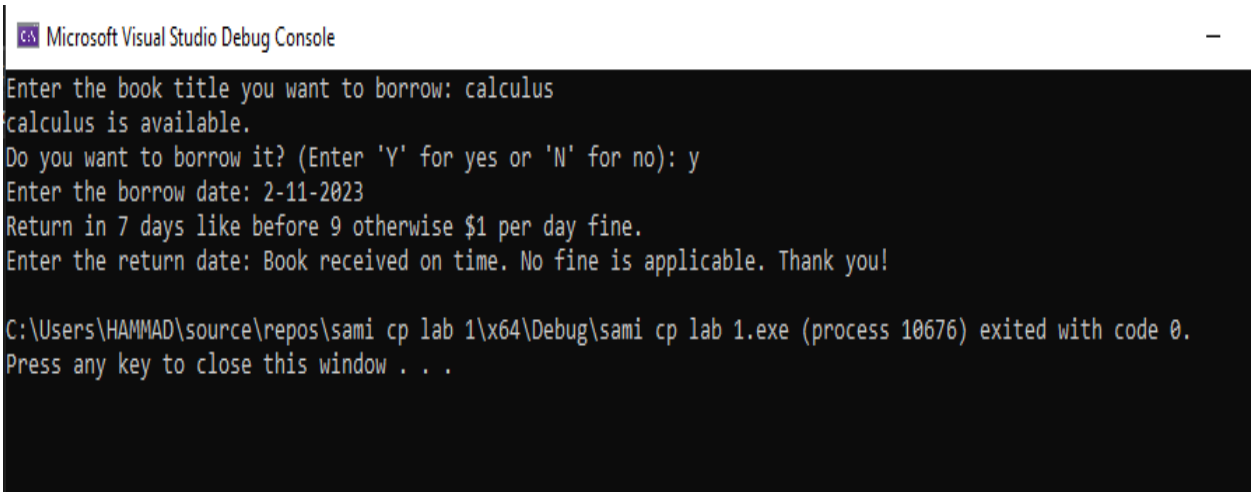
messages for successful transactions and fine notifications.

Code:

```
#include <iostream>
using namespace std;

int main() {
   string bookTitle, userChoice;
   int borrowDate, daysToReturn, returnDate, fine = 0;

   cout << "Enter the book title you want to borrow: ";
   cin >> bookTitle;
   cout << bookTitle << " is available." << endl;

   cout << "Do you want to borrow it? (Enter 'Y' for yes or 'N' for no): ";
   cin >> userChoice;

   if (userChoice == "Y" || userChoice == "y") {
      cout << "Enter the borrow date: ";
      cin >> borrowDate;

      daysToReturn = borrowDate + 7;
      cout << "Return in 7 days like before " << daysToReturn << " otherwise $1 per day fine." << endl;

      cout << "Enter the return date: ";
      cin >> returnDate;

      if (returnDate > daysToReturn) {
         fine = (returnDate - daysToReturn) * 1;
         cout << "Fine: $" << fine << ". Please pay if you've exceeded the due date." << endl;
      }
      else {
         cout << "Book received on time. No fine is applicable. Thank you!" << endl;
```

```
        }
    }
    else if (userChoice == "N" || userChoice == "n") {
        cout << "Thank you for your response." << endl;
    }
    else {
        cout << "Invalid input. Please enter 'Y' or 'N'." << endl;
    }

    return 0;
}
```

Screenshot:



Task 2: Prime Number Generator and Checker

Create a C++ program that:

1. User Option: Ask the user whether they want to find prime numbers in a given range

or check if a specific number is prime.

2. Finding Prime Numbers:

• Users input a range, and the program displays all prime numbers within that range.

• Use loops to iterate through the range and decision statements to identify prime numbers.

3. Checking Prime Numbers:

• Users input a number, and the program displays whether it's prime or not.

• Implement a reliable algorithm to check for prime numbers.

Code:

```
#include <iostream>
using namespace std;

int main() {
    int option;
    cout << "Select an option (1 for finding primes, 2 for checking a number): ";
    cin >> option;

    switch (option) {
    case 1:
        int start, end;
        cout << "Enter the range (start and end): ";
        cin >> start >> end;

        cout << "Prime numbers in the range " << start << " to " << end << " are:" << endl;
        for (int num = start; num <= end; num++) {
            if (num <= 1)
                continue;

            int isPrime = 1;

            for (int i = 2; i * i <= num; i++) {
                if (num % i == 0) {
                    isPrime = 0;
                    break;
                }
            }

            if (isPrime)
                cout << num << " ";
        }
        cout << endl;
        break;

    case 2:
        int num;
        cout << "Enter a number to check if it's prime: ";
```

```
        cin >> num;

        if (num <= 1) {
            cout << num << " is not prime." << endl;
        }
        else {
            int isPrime = 1;

            for (int i = 2; i * i <= num; i++) {
                if (num % i == 0) {
                    isPrime = 0;
                    break;
                }
            }

            cout << num << (isPrime ? " is prime." : " is not prime.") << endl;
        }
        break;

    default:
        cout << "Invalid option. Please choose 1 or 2." << endl;
    }

    return 0;
}
```

Screenshots: