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**Project Report**

LIBRARY FINE CALCULATOR BASED ON LATE DAYS

**STUDENT 1: M. Hannan Faisal**

**REG NO: BCPE243044**

**STUDENT2: Adeel Haider Zulqarnain**

**REG NO: BCPE243042**

**Submitted To: MR WAQAS AYUB SHAH**

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### ****1. Introduction****

Libraries are crucial for academic, professional, and personal development. To ensure books are returned on time, libraries typically impose fines for late returns. Manually calculating the fines can be tedious and prone to error, especially in large libraries. This project aims to automate the fine calculation process for overdue books using a simple system that takes the number of late days and the fine rate as input to compute the total fine.

### ****2. Problem Statement****

The task is to design a system that calculates the fine for books returned late to the library. The library's fine system charges a predefined rate for every day a book is overdue. The system needs to automate the process to help librarians quickly determine the fine based on the late days provided by the user.

The system must:

* Accept the number of late days as input.
* Apply a fine rate per day to compute the total fine.
* Handle any invalid inputs gracefully and provide the correct output.

### ****3. Methodologies Used****

#### 3.1 **User Interface**

The Library Fine Calculator is implemented with a simple command-line interface (CLI) where users input the number of late days and the fine rate per day. The program then calculates and displays the total fine.

#### 3.2 **Formula for Fine Calculation**

The fine is calculated using the following formula:

Total Fine=Late Days×Fine Rate per Day\text{Total Fine} = \text{Late Days} \times \text{Fine Rate per Day}Total Fine=Late Days×Fine Rate per Day

Where:

* **Late Days**: The number of days the book is overdue.
* **Fine Rate per Day**: The rate at which the fine is charged per day.

#### 3.3 **Development Environment**

* **Programming Language**: C++
* **IDE**: Code::Blocks, Visual Studio, or any C++ IDE
* **Operating System**: Windows/Linux/MacOS

### ****4. Code****

Here is the C++ code for the Library Fine Calculator:

#include<iostream>

using namespace std;

int main()

{

int days;

cout<<"Enter the number of days:";

cin>>days;

if(days>0 && days<=5)

{

cout<<"**\n**Per Day Fine Amount is : 0.4";

cout<<"**\n**Total Fine Amount is : "<<days\*0.4;

}

else if(days>=6 && days<=10)

{

cout<<"**\n**Per Day Fine Amount is : 0.6";

cout<<"**\n**Total Fine Amount is : "<<days\*0.6;

}

else if(days>10 && days<=30)

{

cout<<"**\n**Per Day Fine Amount is : 0.8";

cout<<"**\n**Total Fine Amount is : "<<days\*0.8;

}

else

{

cout<<"**\n**membership will be cancelled.";

}

return 0;

}

### ****5. Results****

Upon executing the code, the user is prompted to enter the number of late days and the fine rate. The program then computes the total fine and displays the result.

#### Example 1:

* **Late Days**: 5
* **Fine Rate per Day**: 0.4$

**Output**:

Total fine amount is: 2$

#### Example 2:

* **Late Days**: 10
* **Fine Rate per Day**: 0.6$

**Output**:

Total fine amount is: 5$

#### Example of Invalid Input:

* **Late Days**: days more than 30

**Output**:

Membership is cancelled

### ****6. References****

* **C++ Documentation** - Official C++ language documentation for understanding syntax and features
* **GeeksforGeeks C++ Tutorials** - A comprehensive guide to learn C++ programming
* **Stack Overflow** - A forum for programmers where users can get help with coding problems





