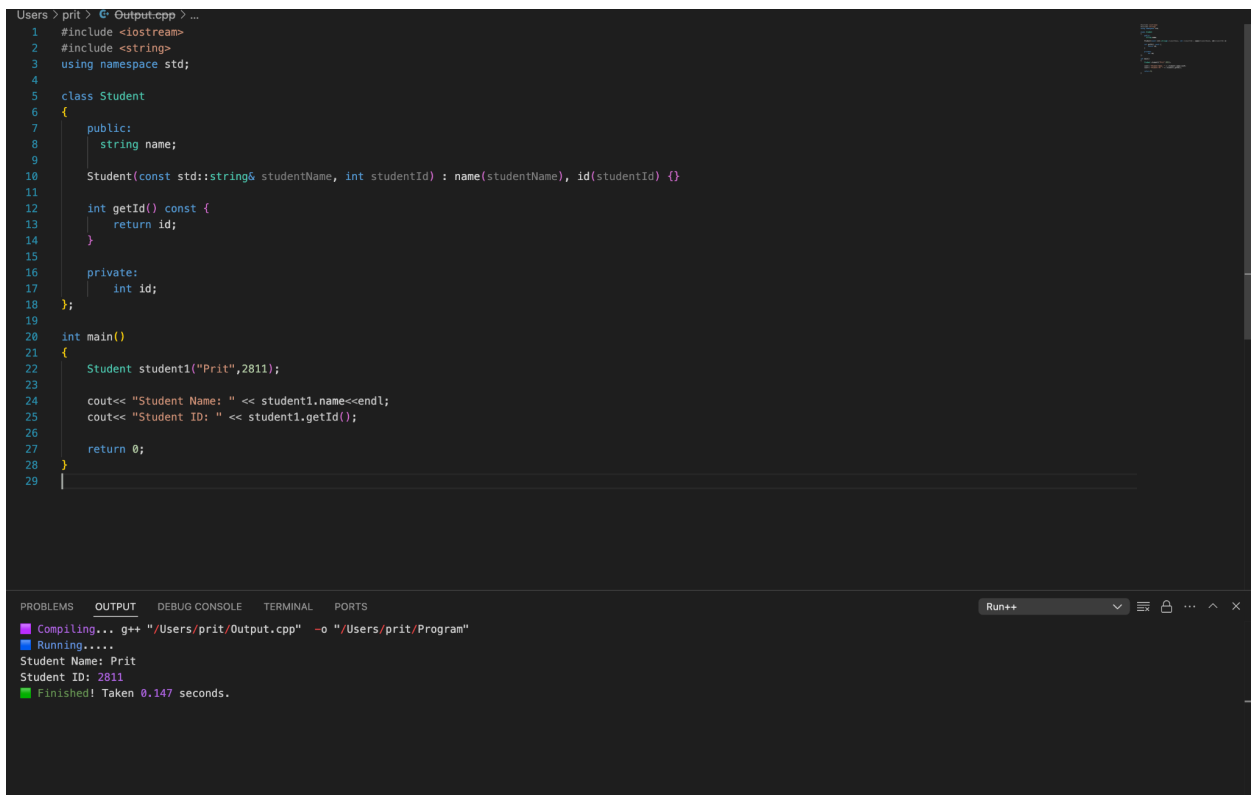


GITHUB QUESTIONS AND OUTPUT

PRIT MORI RA2411042010083

Q2) imagine you are designing a Student class. In this class, the student's name should be directly accessible (public), but the id should be private and accessible only through a getter function.

- (a) How would you declare the Student class with a public name member and a private id member?
- (b) Provide a code snippet that demonstrates creating a Student object, directly modifying the name, and accessing the id via its getter function.
- (c) Why might a designer choose to allow direct access to some members while restricting others?



```
Users > prit > Output.cpp > ...
1  #include <iostream>
2  #include <string>
3  using namespace std;
4
5  class Student
6  {
7  public:
8      string name;
9
10     Student(const std::string& studentName, int studentId) : name(studentName), id(studentId) {}
11
12     int getId() const {
13         return id;
14     }
15
16 private:
17     int id;
18 };
19
20 int main()
21 {
22     Student student1("Prit", 2811);
23
24     cout<< "Student Name: " << student1.name<<endl;
25     cout<< "Student ID: " << student1.getId();
26
27     return 0;
28 }
29
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Run++

Compiling... g++ "/Users/prit/Output.cpp" -o "/Users/prit/Program"

Running.....

Student Name: Prit

Student ID: 2811

Finished! Taken 0.147 seconds.

Q4) Design a C++ class named Book with the following attributes:

title (string)

author (string)

isbn (string)

available (boolean)

Design a class named Library with the following attributes:

books (an array or vector of Book objects)

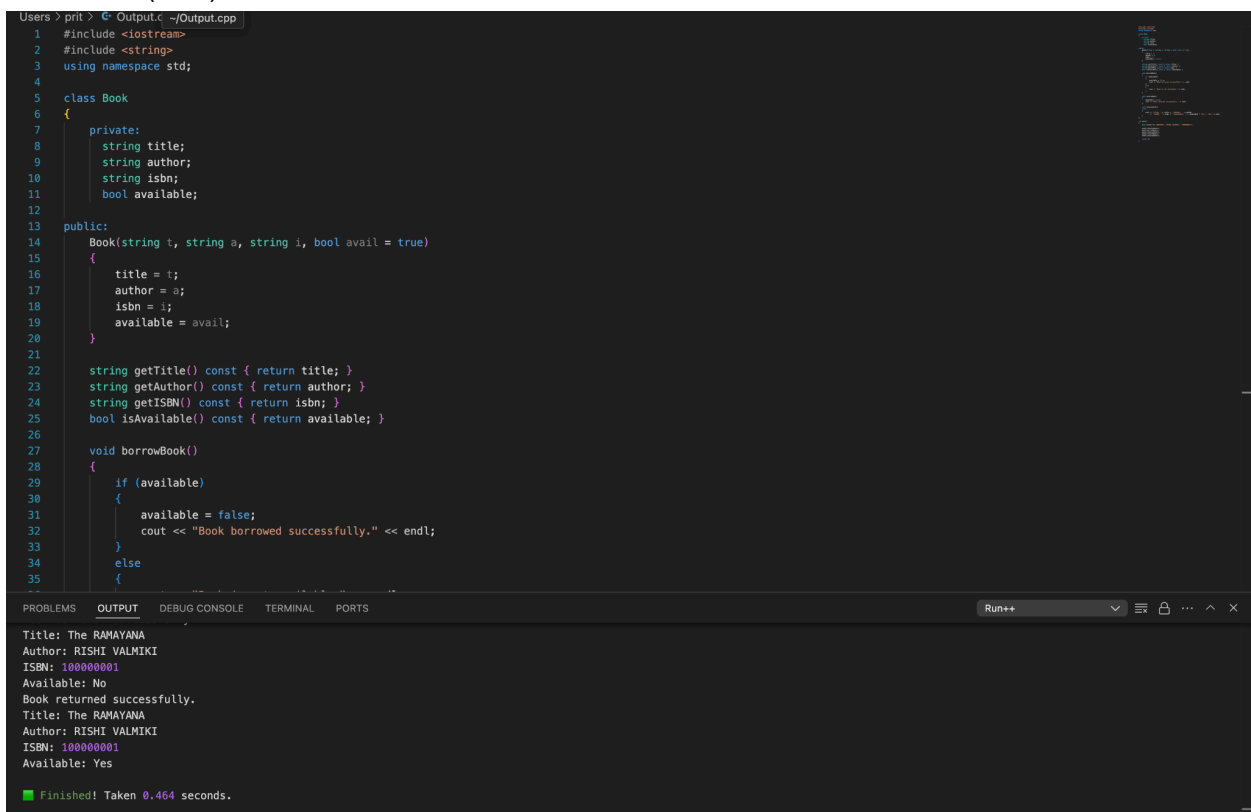
Methods:

addBook(book): Adds a new book to the library.

searchBookByTitle(title): Searches for a book based on its title.

borrowBook(isbn): Marks a book as unavailable if it's available.

returnBook(isbn): Marks a book as available.



```
Users > prit > E:\Output < ~/Output.cpp
1 #include <iostream>
2 #include <string>
3 using namespace std;
4
5 class Book
6 {
7     private:
8         string title;
9         string author;
10        string isbn;
11        bool available;
12
13    public:
14        Book(string t, string a, string i, bool avail = true)
15        {
16            title = t;
17            author = a;
18            isbn = i;
19            available = avail;
20        }
21
22        string getTitle() const { return title; }
23        string getAuthor() const { return author; }
24        string getISBN() const { return isbn; }
25        bool isAvailable() const { return available; }
26
27        void borrowBook()
28        {
29            if (available)
30            {
31                available = false;
32                cout << "Book borrowed successfully." << endl;
33            }
34            else
35            {
36
37            }
38        }
39    };
40
41 int main()
42 {
43     Book b1("The RAMAYANA", "RISHI VALMIKI", "100000001", true);
44     cout << "Title: " << b1.getTitle() << endl;
45     cout << "Author: " << b1.getAuthor() << endl;
46     cout << "ISBN: " << b1.getISBN() << endl;
47     cout << "Available: " << b1.isAvailable() << endl;
48     b1.borrowBook();
49     cout << "Book returned successfully." << endl;
50     Book b2("The RAMAYANA", "RISHI VALMIKI", "100000001", false);
51     cout << "Title: " << b2.getTitle() << endl;
52     cout << "Author: " << b2.getAuthor() << endl;
53     cout << "ISBN: " << b2.getISBN() << endl;
54     cout << "Available: " << b2.isAvailable() << endl;
55     return 0;
56 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Run++

Title: The RAMAYANA
Author: RISHI VALMIKI
ISBN: 100000001
Available: No
Book returned successfully.
Title: The RAMAYANA
Author: RISHI VALMIKI
ISBN: 100000001
Available: Yes

Finished! Taken 0.464 seconds.

Question:3

Design a C++ class named BankAccount with the following attributes:

accountNumber (integer)

balance (double)

accountHolderName (string)

Methods:

deposit(amount): Adds the specified amount to the balance.

withdraw(amount): Deducts the specified amount from the balance, if sufficient funds are available.

displayBalance(): Displays the current balance.

Write a program that:

Creates a BankAccount object.

Prompts the user to enter account details and initial balance.

Allows the user to perform deposit and withdrawal operations.

Displays the final balance

```
main.cpp
1 #include <iostream>
2 #include <string>
3 using namespace std;
4
5 class BankAccount
6 {
7     private:
8         int accountNumber;
9         double balance;
10        string accountHolderName;
11
12    public:
13        BankAccount(int accNumber, string accHolderName, double initialBalance)
14        {
15            accountNumber = accNumber;
16            accountHolderName = accHolderName;
17            balance = initialBalance;
18        }
19
20        void deposit(double amount)
21        {
22            if (amount > 0)
23            {
24                balance = balance + amount;
25                cout << "Deposit successful. New balance: " << balance << endl;
26            }
27            else
28            {
29                cout << "Invalid deposit amount. Please enter a positive value." << endl;
30            }
31        }
32    };
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Users > prit > Output.cpp > ...
1  #include <iostream>
2  using namespace std;
3
4  class Vehicle
5  {
6  public:
7      int speed;
8      float fuelLevel;
9
10     Vehicle(int spd, float fuel) : speed(spd), fuelLevel(fuel) {}
11
12     void displayStatus()
13     const
14     {
15         cout<<"Speed:"<< speed <<" km/h, Fuel Level: "<< fuelLevel<<" liters\n";
16     }
17 };
18
19 int main()
20 {
21     Vehicle car(0, 50.0f);
22     int Vehicle::*ptrSpeed = &Vehicle::speed;
23
24     void (Vehicle::*ptrDisplay)() const = &Vehicle::displayStatus;
25
26     car.*ptrSpeed = 80;
27     (car.*ptrDisplay)();
28
29     return 0;
30 }
31

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Run++

Compiling... g++ "/Users/prit/Output.cpp" -o "/Users/prit/Program"

Running.....

Speed:80 km/h, Fuel Level: 50 liters

Finished! Taken 0.324 seconds.