Library Management System in C++

C++ Code Implementation:

```
#include <iostream>
#include <string>

using namespace std;

// Base class: Person
class Person {
protected:
    string name;  // Protected data member

public:
    // Function to set name
    void setName(string n) {
        name = n;
    }

    // Function to get name
    string getName() {
        return name;
    }
};

// Derived class: LibraryMember
class LibraryMember : public Person {
private:
    int memberID;
    int booksBorrowed;

public:
    // Constructor
    LibraryMember(string n, int id, int books) {
        setName(n);  // Call base class function
        memberID = id;
        booksBorrowed = books;
    }

    // Function to get member ID
    int getMemberID() {
        return memberID;
    }

    // Function to get books borrowed
    int getBooksBorrowed() {
        return booksBorrowed;
    }
};
```

```
// Derived class: PremiumMember (inherits from LibraryMember)
class PremiumMember : public LibraryMember {
private:
    double membershipFee;

public:
    // Constructor
    PremiumMember(string n, int id, int books, double fee)
        : LibraryMember(n, id, books) {  // Call base class constructor
        membershipFee = fee;
    }

    // Function to get membership fee
    double getMembershipFee() {
        return membershipFee;
    }
};

// Main function to demonstrate functionality
int main() {
    // Create an instance of PremiumMember
    PremiumMember pMember("Alice", 101, 5, 99.99);

    // Display details
    cout << "Name: " << pMember.getName() << endl;
    cout << "Member ID: " << pMember.getMemberID() << endl;
    cout << "Books Borrowed: " << pMember.getBooksBorrowed() << endl;
    cout << "Membership Fee: $" << pMember.getMembershipFee() << endl;

    return 0;
}
```