VIT - Vellore

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BCSE102P_VL2024250502365_ASSESSMENT_SET 3

BCSE102P_VL2024250502365_Assessment 3_Set 3

Attempt : 1
Total Mark : 20
Marks Obtained : 5

Section 1 : Coding

1. Problem Statement

David, a software engineer, has been given a task to modify a string where each alphabetic character is shifted to the next one in the alphabet (e.g., 'a' becomes 'b', 'z' becomes 'a'). He also needs to handle uppercase and lowercase letters separately, so 'Z' becomes 'A' and 'z' becomes 'a'.

You are required to complete the function shiftLetters, which is a friend function of the StringManipulation class, to perform this task. The program should take an input string, shift the letters accordingly, and display the modified string.

Answer

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

```
class StringManipulation {
public:
// You are using GCC

    //Type your code here...
    string str;
    StringManipulation(string& nem){
        str = nem;
    }
    friend void shiftLetters(string& str);
};

void shiftLetters(string& str) {
    //Type your code here...
    int n = sizeof(str);
    for(int i = 0; i < n; i ++){
        str[i] = str[i+1];
    }

}
void displayString(str)
    {
        cout<<"Modified String: ";
    }

int main() {
    string input;
    getline(cin, input);

    StringManipulation obj;

    shiftLetters(input);

    obj.displayString(input);

    return 0;
}
```

Status : Wrong ***Marks : 0/10***

2. Problem Statement

Emma works in a subscription service company where they offer different types of subscriptions: a basic subscription, a premium subscription with additional features, and a discount for basic subscriptions. Each subscription type has a base cost, and for the premium subscription, there are extra charges for additional features. For the basic subscription, a discount is applied to the premium cost.

Emma needs help in implementing a system that calculates the total cost based on the subscription type chosen by the customer. Your task is to implement the classes Subscription, PremiumSubscription, and BasicSubscription to calculate the subscription costs.

Subscription will be the base class.

PremiumSubscription will be a derived class from Subscription.

BasicSubscription will be a derived class from PremiumSubscription.

Formulas Used:

For Subscription, the total cost is calculated as:

total_cost = baseCost

For PremiumSubscription, the total cost is calculated as:

total_cost = baseCost + extraCost

For BasicSubscription, the total cost is calculated as:

total_cost = (baseCost + extraCost) - discount

Answer

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

// You are using GCC
class Subscription {
//write your code here...
    public:
```

```
    double base_cost;
    Subscription(double cost)
    {
        base_cost = cost;
    }

};

class PremiumSubscription : public Subscription {
//write your code here...
    public:
    float extra_cost;
    PremiumSubscription(float base_cost, float ext_cost) :
Subscription(base_cost){
        extra_cost = ext_cost;
    }
    double calculatePremiumCost(){
        return base_cost+extra_cost;
    }
};

class BasicSubscription : public PremiumSubscription{
//write your code here...
    public:
    float discount;
    BasicSubscription(double cost, double ext_cost, double dis) :
PremiumSubscription(base_cost,extra_cost) {
        discount = dis;
    }
    double costly = base_cost;
    double extra_costly = extra_cost;

    double total_cost = costly + extra_costly;

    double calculateBasicCost(){
        return total_cost - discount;
    }
};

int main() {
    double cost, extraCost, discount;
    int choice;
```

```
    cin >> choice;
    cin >> cost;

    if (choice == 1) {
        cin >> extraCost;
        PremiumSubscription premium(cost, extraCost);
        double totalCost = premium.calculatePremiumCost();
        cout << fixed << setprecision(2);
        cout << "Premium Subscription Total Cost: " << totalCost << endl;
    }
    else {
        cin >> extraCost >> discount;
        BasicSubscription basic(cost, extraCost, discount);
        double totalCost = basic.calculateBasicCost();
        cout << fixed << setprecision(2);
        cout << "Basic Subscription Total Cost: " << totalCost << endl;
    }

    return 0;
}
```

Status : Partially correct ***Marks : 5/10***