DSA Lab Assignment 1 - (53457) M. Abdullah

Problem:

You are required to build a class to represent the a glass of Ice Cream Shake. Call your class IceCreamShake. An Ice cream shake will have following characteristics

1. flavor (sting) // can be vanilla, strawberry, chocolate, etc
2. scoops (int): represents the counts of ice-cream scoops cannot go beyond 6
3. volume (float):// the volume of shake including the ice cream scoops in milliliters
4. calories (float):// kCals of calories in this shake
5. fruitTopping(bool) ://tells whether this shake has a fruit topping or not Provide these methods
6. parameterized constructor IceCreamShake(string t, int s, float vol, float cal, bool top)
7. Provide setters for flavor, volume and calorie and fruitTopping
8. Provide getters for all of the variables
9. Provide a method addScoop() which represents the action of adding a scoop of ice cream to this shake. Three things will happen inside this method
    a. The count of scoops will increase by 1. Make sure that the count of scoops cannot exceed 6.
    b. The calorie value increases by 100
    c. The volume increases by 75 ml
10. Provide a method takeASip() which represents the action of taking a sip of the shake which will result in decreasing the volume. Assume that the volume consumed in 1 sip is 5 ml. Code this function accordingly

11. Provide a method isEmpty() which will return a bool true if the shake is finished i.e. nothing left and false other wise
12. Provide a method calculatePrice which calculates and returns the price (float) of this shake as following
    - . Each scoop costs Rs. 60 for chocolate flavor, 80 for strawberry, 50 for vanilla and 100 for any other.
13. If the shake as fruit topping then an additional Rs. 150 are added to the total price
14. The price is calculated by adding the scoop and fruit price and the value is returned

Provide a function print that will print the details about this object in a formatted manner

Problem Solving

Dived right into the code.

Code

```
#include<iostream>
#include<string>
#include<conio.h>
using namespace std;
// I like to play with pointers so I'll use them excessively
class IceCreamShake {
    private:
    string flavour;
    int scoops;
    float volume,calories;
    bool fruitToping;
    float totPrice;
    public:
    // Parameterized constructor
```

```
    /*IceCreamShake(string t,int s,float vol,float cal,bool top)
    flavour(t), scoops(s), volume(vol), calories(cal), fruitTopi


    // I'm changing the parameterized Constructors to my thinkin
    // three parameters flavour,scopes and toping . Because we c
    // two with scoops
    IceCreamShake(string t,int s,bool top) :
    flavour(t), scoops(s), volume(75*scoops), calories(100*scoop
    // If parameterized constructor is not used then and only th
    void setFlavour(string s) { flavour = s;}
    void setScoops(int s) { scoops = s;}
    void setVolume() { volume = 75*scoops;}
    void setCalories() { calories = 100*scoops;}
    void setFruitTopping(bool top) { fruitToping = top;}
    // Getter for every variable
    string getFlavour() { return flavour; }
    int getScoops() { return scoops; }
    float getVolume() { return volume; }
    float getCalories() {return calories;}
    bool getTopping() { return fruitToping;}
    // Add scoop function
    void addScoops() {
        if(scoops<=6) {
            scoops = scoops + 1;
            volume = volume+75;
            this->calories = this->calories+100;
        }
        else {
            cout<<"You can't add more scoops because you have al
        }
    }

    // Now we will drink our iceCreamShake or eat it? I'm confus
    void takeSip() {
        this->volume = this->volume-5;
```

```
    }
    // Have you finished (drinking) ,.... (eating ) your shake?
    // mam please give me this answer
    bool isEmpty() {
        return this->volume <= 0? true:false;// Ternary conditio
    }
    // Now you have eaten let's discuss about the price, friend
    float calculatePrice() {
        if(flavour=="Chocolate") {
            this->totPrice = 60*this->scoops;// This keyword is
        }
        else if(flavour=="Vanilla") {
            this->totPrice = 50*this->scoops;
        }
        else if(flavour=="Strawberry") {
            this->totPrice = 80*this->scoops;
        }
        else {
            this->totPrice = 100*this->scoops;
        }
        this->totPrice = this->fruitToping ? totPrice+150:totPri
        // Above line is so you don't get bored
        return this->totPrice;
    }
};
// display menu function is from my side to you
    void displayMenu() {
        cout<<"\t\t\t\t\tMenu"<<endl;
        cout<<"1- Chocolate...................../- 60 (Scoop)"<
        cout<<"2- Vanilla....................../- 50 (Scoop)"
        cout<<"3- Strawberry.................../- 80 (Scoop)"<
        cout<<"4- Special....................../- 100 (Scoop
        // This is business
    }
// Now the main course of code
int main() {
```

```
    IceCreamShake* shake;
    string fl;int sc;bool frTop;int choice;
    cout<<"\t\t\t\t\tWelcome to Ice Cream Shake shop"<<endl;
    cout<<"\t\t\t\t\t----------------------------------------"<<
    displayMenu();
    cout<<"Enter your choice: "<<endl;
    cin>>choice;
    switch(choice) {
        case 1:
            fl="Chocolate";
            break;
        case 2:
            fl="Vanilla";
            break;
        case 3:
            fl="Strawberry";
            break;
        case 4:
            fl="Special";
            break;
        default:
            fl = "Chocolate"; // because kids like it you know
    }
    cout<<"How many sccops would you like? "<<endl;
    cin>>sc;
    cout<<"Would you like fruit topping? "<<endl;
    cout<<"Press Y/y for yes and any other for no"<<endl;
    char fr;
    cin>>fr;
    frTop = fr=='Y'||fr=='y'? true:false;
    // now we will call object with parameterized constructor
    shake = new IceCreamShake(fl,sc,frTop);
    cout<<"Want another scoop?"<<endl;
    cout<<"Press Y/y for yes and any other for no"<<endl;
    char anSc;
    cin>>anSc;
```

```
    if(anSc=='Y'||anSc=='y')
        shake->addScoops();// I decisively didn't use brackets
    float totVol = shake->getVolume();
    while(!shake->isEmpty()) {
        shake->takeSip();
    }
    cout<<"\t\t\t\t------Your Bill------"<<endl;
    cout<<"Flavour: "<<shake->getFlavour()<< endl;
    cout<<"Scoops: "<<shake->getScoops()<<endl;
    cout<<"Total Calories: "<<shake->getCalories()<<endl;
    cout<<"Fruit Topping: "<<(shake->getTopping() ? "Yes\n":"No\
    cout<<"Total Volume: "<<totVol<<endl;
    cout<<"Price of Shake: "<<shake->calculatePrice();
    delete shake;
    getch();
    return 0;
}
```

Output