Computer applications- (IE-322) final report:

**Customer Loyalty Points Management System**

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**Introduction:**

For our Ie-322 project, we wanted to build something useful, and useable using visual studious, so we came up with a customer loyalty points system. It's the kind of thing we see in stores all the time; you make purchases, earn points, and get rewards or discounts. We used C# in Visual Studio to create the app, which lets businesses register customers, track their purchases, and give them points. And to add some creativity to the app we added a small twist—for loyal customers who visit more often, they get multiplied points. It was a great way to turn our creative idea to something real and practical that a famous stores get used of it.

**Objectives**

Track customer purchases and assign points accordingly.

Implement a dynamic points system, where frequent users earn more points.

Provide functionality for customers to redeem points for products or discounts.

Add an annual random gifting system on National Day and Foundation Day.

**Tools & Technologies**

**Programming Language:** C#

**IDE:** Visual Studio

**Framework:** .NET (WinForms)

**System Features**

**Customer Registration**

Customer ID registration by their phone number

Information storage (Phone Number, Points, Visits this Month, Date of Creation)

Account login for customer interaction

Update current month and last month visited when logging in

**Item Basket**

Ability to select section of food (eg. Drinks, Sandwiches, Dessert)

Choose an Item from the selected section

Add Item to Basket, and ability to remove items from the basket

Cost of each item shown in basket and total cost are shown below

**Loyalty Points Engine**

Points awarded per purchase, points depend on amount of purchase

For each $1 spent, 4 points awarded

Additional points multiplier (Either 1.25x , 1.5x, 1.75x, or 2x) for frequent customers

Point multiplier based on customer purchase frequency for each month (visits per month)

**Point Multiplier System**

Program registers visitors per month, hidden t points awarded at end of each month based on frequency of visit.

Tiers of visit frequency are there, maximum t cap is given for each tier

Customer unlocks point multiplier based on current tier

Customer’s whose visitation is less than previous months get penalty, penalty based on previous tier - current tier

Table of t points, tiers, and penalties:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Penalty, tier difference | T points to unlock modifier | T points cap | T Points added at end of month | Tier | Frequency of visits |
| 4 tiers: - 80 | 400 | 600 | 200 | 4 | +4 |
| 3 tiers: - 60 | 300 | 399 | 150 | 3 | 3 |
| 2 tiers: - 40 | 200 | 299 | 100 | 2 | 2 |
| 1 tier: - 20 | 100 | 199 | 50 | 1 | 1 |
| 0 tiers: - 0 | - | - | 0 | 0 | 0 |

**Redemption System**

View accumulated points based on previous purchases

For each 40 points, discount of $1

Choose number of points you wish to apply

Notify customer of remaining points

**Special Days Gifts**

In foundation day and national day, there are free gifts for any customer

The gift is one random item from our menu

**Workflow**

Customer registers through the system, log ins when ready to purchase

Items added and removed according to the wishes of the customer

Apply accumulated points if available to get discount

On every purchase, visits per month updated and points added

Points are calculated and updated in the customer’s profile

Point multiplier is calculated and updated each new month, updates when log in

**User Roles**

**Customer**: Registers, purchases items, views point, redeems discount.

**Administrator**: Add items and remove them from basket, registers the customers and logs them in, tell customers of special gifts if available.

**Additional Features Currently not available in Program:**

Storage of customer data in database, so customer information isn’t lost after each closing of application

Item manager that adds items and removes items from sections.

Ability to promote an item to customers and their ability to purchase such items using points

Further refining of program to avoid bugs where data type is incorrect causes crashes

**Conclusion**

We have faced some challenges in this project, but overall, it was a great learning experience. We struggled at first learning new tools, fixing bugs, and figuring out how to work better as a team. But over time, we started to get the hang of things, and it was enjoyable to see that our project could be useful . Our project is simple, functional, and something that could be useful in real life, especially for startup stores. we learned a lot about coding in visual studios, problem solving, and working as a team.