

Project1 by:

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## **Project name: loyalty program/points management system**

### **Description:**

In the current highly competitive business ecosystem companies need something to give them an advantage over other businesses such as a loyalty program.

This is a loyalty program software that includes rewards like gift cards, discount vouchers, cashback, digital punch cards, and more to enable businesses of all industries to reward and incentivize frequent customers and allow businesses to create campaigns to improve promotional pushes based on customer data/engagement patterns, survey/review completions, and internal business conditions.

### **Inputs/outputs:**

#### ☐ User information

- customer (name, password, phone number)
- manager (name, password, phone number)

#### ☐ Customer

- Log in.
- View rewards (points, coupons, offers) information (amount, expiration dates, locations)
- Use rewards.
- Log out.

#### ☐ Manager

- Log in.
- View system analytics (user usage data, reward information)
- Edit System (add/remove/change rewards, send notification messages)

#### ❖ Stockholder definition

##### A. The client

The company using and investing in the program.

##### B. The customer

The users using and interacting with the loyalty system.

##### C. Other stakeholders

payment companies affected by the various changes in transactions.

##### D. Vendors/Partners

other businesses that have partnership with the loyalty program such as (providing offers or services in exchange for loyalty point program).

## The scope of the work

### A. The current situation

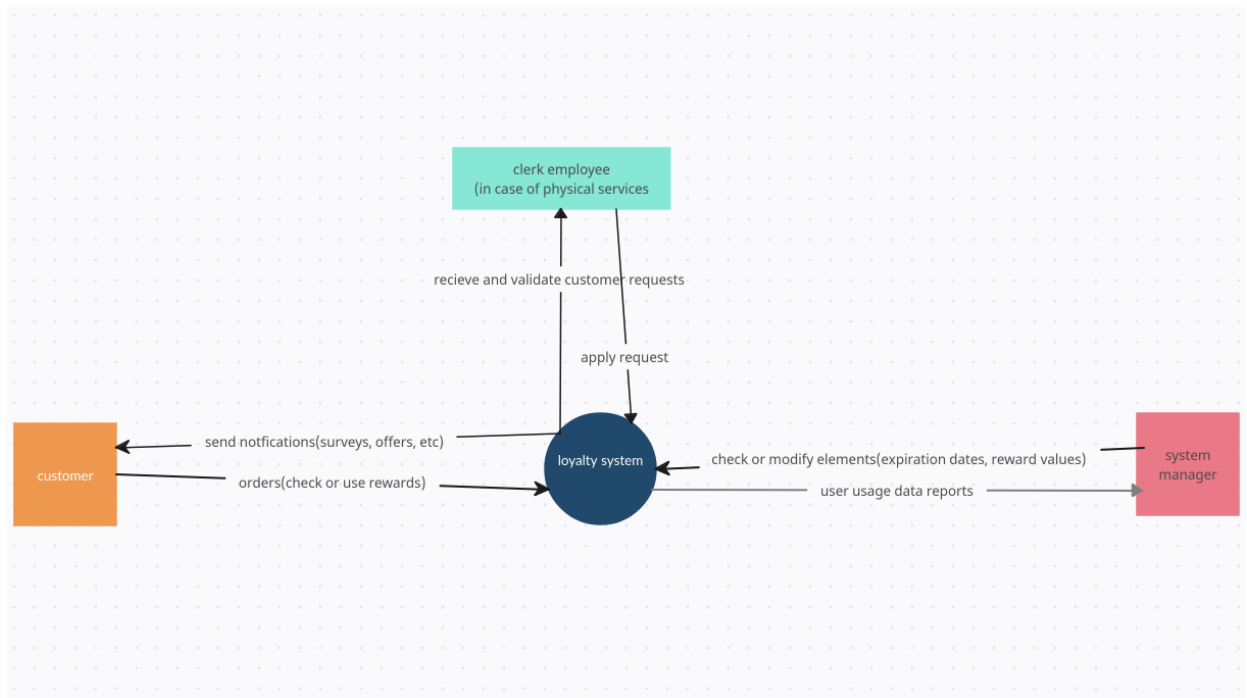
#### 1. Content

Currently many businesses do not have any incentive for repeat customers and those that do only have their rewards and sales viewable by going physically to a branch or by asking an employee.

#### 2. Motivation

By creating a reason/incentive for customers repeatedly using the services of a company, long term profits are more likely to increase by making customers loyal to a single company and discouraging the use of rival companies products.

### Context diagram



Functional requirement:

ID	Requirement Definition
<b>FR1</b>	<b>User Registration</b>
FR1.1	The system should allow new Customers to register and existing Customers to log in.
<b>FR2</b>	<b>Personalized Accounts</b>
FR2.1	The system should allow customers to edit their account and select what reward they like the most.
<b>FR3</b>	<b>Points Management</b>
FR3.1	The system should track the points earned and spent by each customer.
FR3.2	The system should update the point balances when customers earn or redeem points.
<b>FR4</b>	<b>Reward Redemption</b>
FR4.1	Customers should be able to redeem their points for rewards.
<b>FR5</b>	<b>Management System of Reward</b>
FR5.1	The System Manager should be able to (create, delete, update) the rewards and make it visible to the Customers.
<b>FR6</b>	<b>Promotional Campaigns</b>
FR6.1	The client should be able to create promotional campaigns based on customer survey/review completions, and internal business conditions.
<b>FR7</b>	<b>Reporting and Analytics</b>
FR7.1	The system should provide reports on key metrics such as total points earned and redeemed, most popular rewards, expiring points date, etc.
<b>FR8</b>	<b>Automated Marketing Tools</b>
FR8.1	The system could include automated marketing tools, such as email marketing or push notifications, to keep customers engaged and informed about the loyalty program.
<b>FR9</b>	<b>Customer Feedback</b>
FR9.1	The system should provide a feature for customers to give feedback or reviews on the rewards they redeemed and their overall experience with the loyalty program.
<b>FR10</b>	<b>Customer Support</b>
FR10.1	The system should provide a way for customers to get support if they have issues or questions about the loyalty program.
<b>FR11</b>	<b>Tiered Loyalty Programs</b>
FR11.1	The system could allow businesses to create tiered loyalty programs where customers unlock new benefits as they earn more points.
<b>FR12</b>	<b>Fraud Detection</b>
FR12.1	The system should have mechanisms in place to detect and prevent fraudulent activities, such as point farming or reward scalping.
<b>FR13</b>	<b>User Tutorial</b>
FR13.1	The system should include a tutorial to help users understand how to use the loyalty program software. This could include step-by-step instructions, FAQs, video tutorials, etc.
<b>FR14</b>	<b>Partnership Management</b>

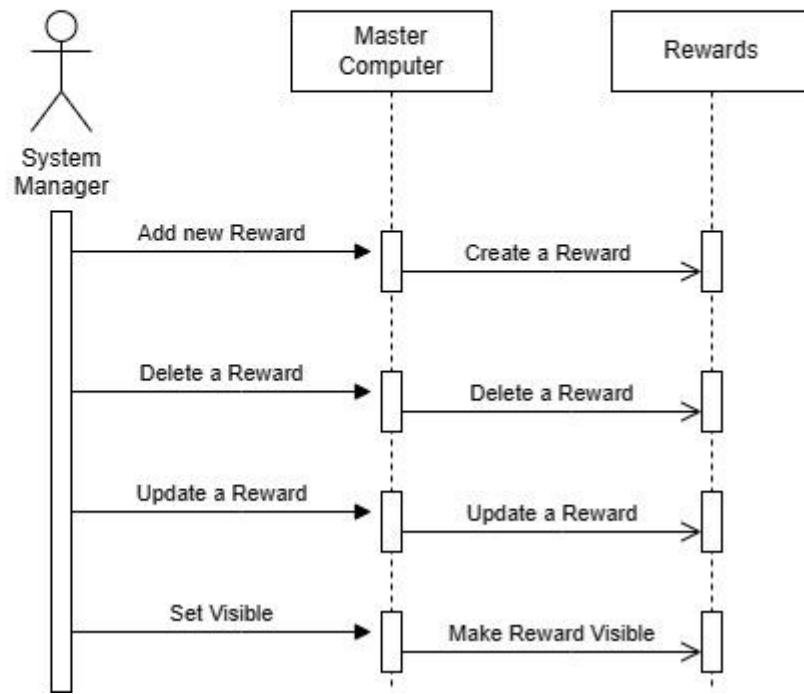
FR14.1	The system should allow the business with other businesses partnerships to offer additional rewards. This includes the ability to track which rewards come from which partners, manage the terms of the partnership, and handle the redemption of rewards offered by partners.
<b>FR15</b>	<b>Nearby Store Location</b>
FR15.1	The system should provide a feature for customers to find nearby stores or businesses that are part of the loyalty program.

Non-Functional requirement:

ID	Requirement Definition
<b>NFR1</b>	<b>Accessibility</b>
NFR1.1	The system should be accessible to all users, complying with accessibility standards and guidelines.
<b>NFR2</b>	<b>Real-Time Updates</b>
NFR2.1	The system should provide real-time updates on points balance, new rewards, and promotional campaigns to the customers.
<b>NFR3</b>	<b>Security</b>
NFR3.1	The system should ensure that all transactions are secure, and that customer data is protected.
<b>NFR4</b>	<b>Multi-channel Access</b>
NFR4.1	The system should be accessible via multiple channels, such as a web interface, mobile app, etc., to provide a seamless experience for users.
<b>NFR5</b>	<b>Multilingual Support</b>
NFR5.1	If the business operates in multiple countries, the system should support multiple languages.
<b>NFR6</b>	<b>System Scalability</b>
NFR6.1	The system should be able to handle a large number of users and transactions without performance degradation.
<b>NFR7</b>	<b>System Availability</b>
NFR7.1	The system should be available 24/7 for users to earn and redeem points

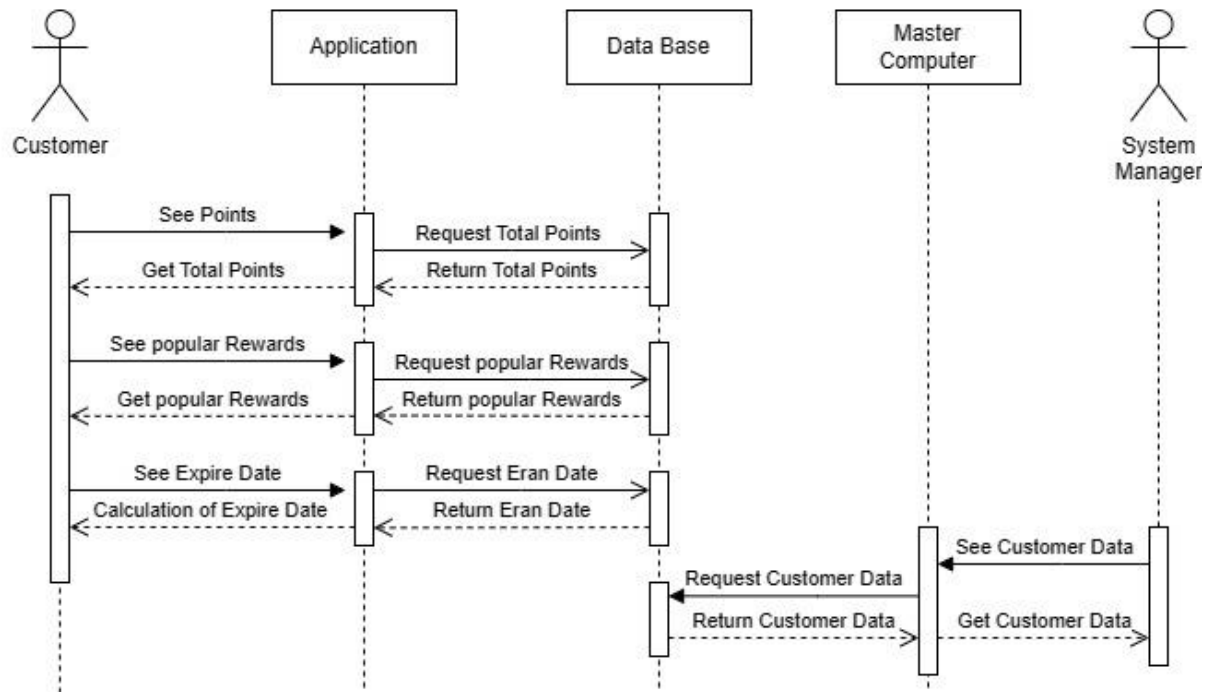
The Sequence Diagram:

## Management System of Reward



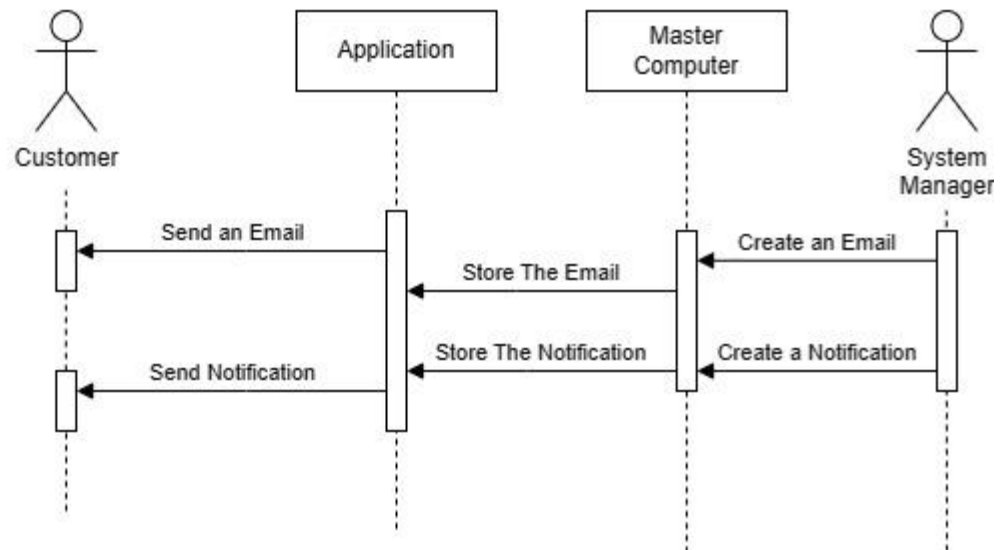
In this Diagram the system manager enters the system from the Master Computer, then he/she be able to create a new reward, or delete a reward, or update an existing reward, after that he/she decide whither to make the customers see it or not.

## Reporting and Analytics



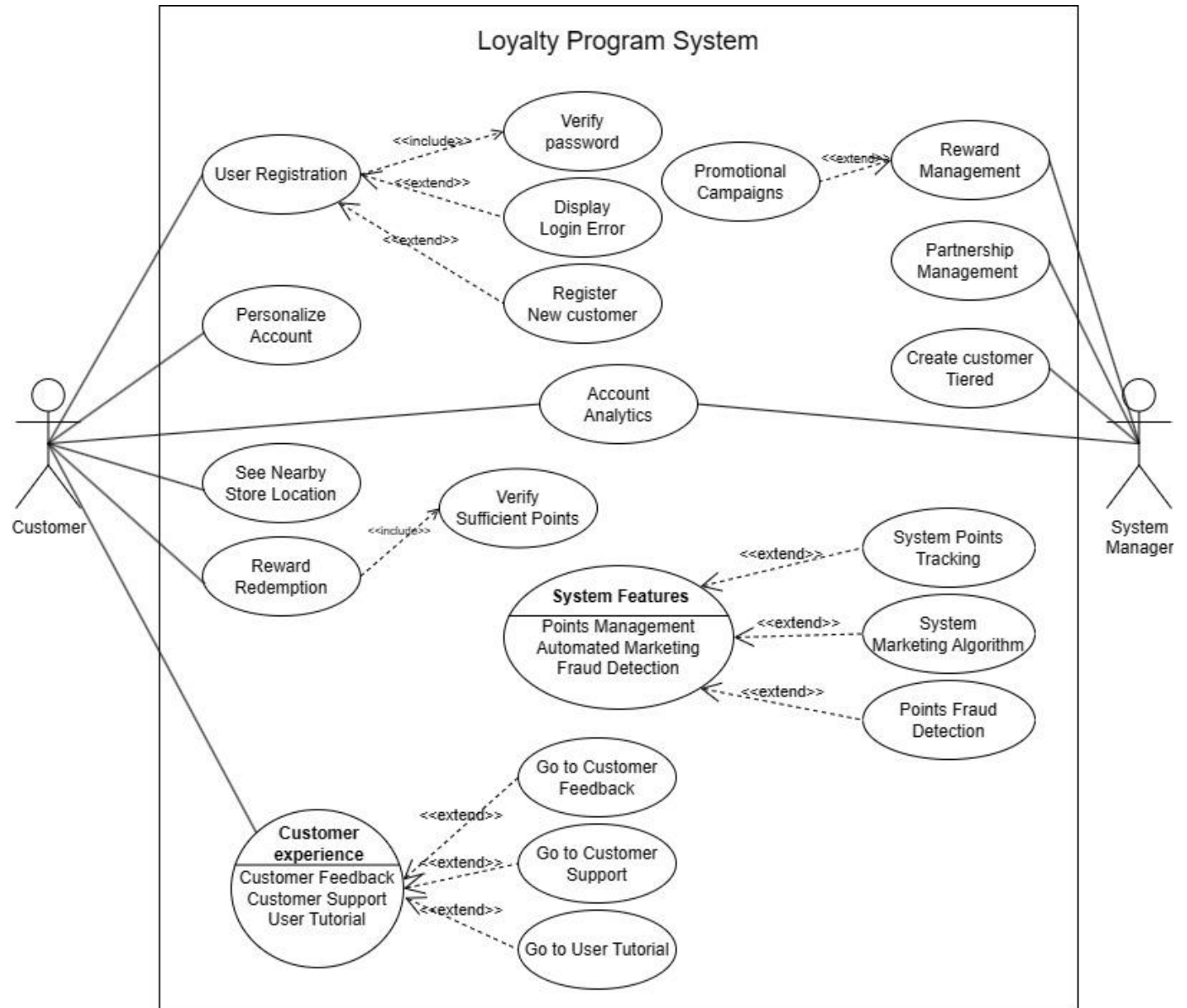
In this Diagram the customer access the application, the he/she can see the points they earn, or see the most popular rewards, and also can see the expiration date for their points, (Note: the application calculate the expiration date from the points earn date and the current date), moreover the manager can also get the customers data such as (Email, Phone Number, Points earn and redeemed, etc.) from the master computer, which get the data from the data base.

## Automated Marketing Tools



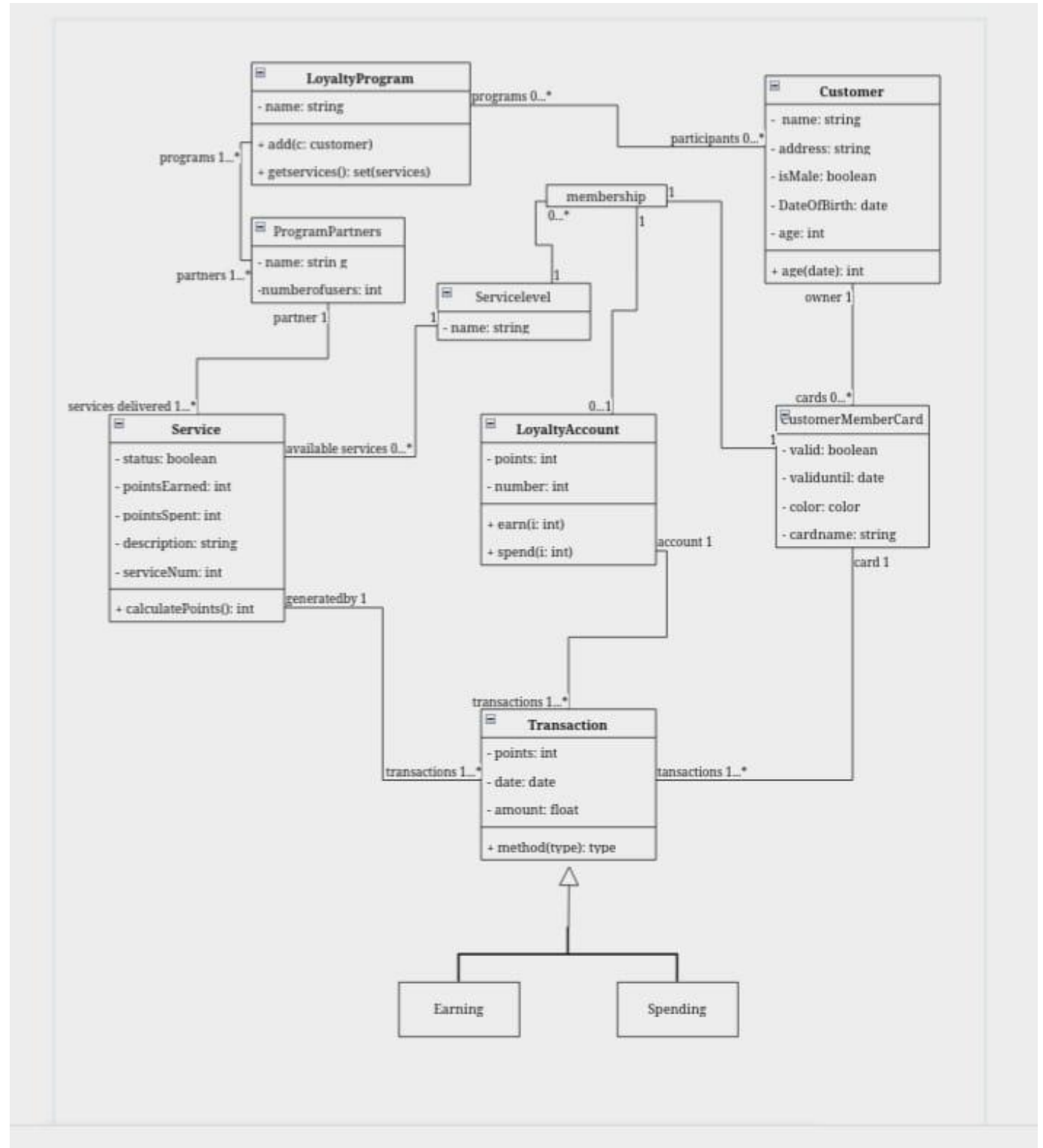
In this Diagram the customer gets Emails and Notification from the application on a regular basis, thus it will make the customers more engaged with the loyalty program, also the notifications and emails are written by the manager, then the application get it from the master computer and store it until the appropriate time comes to send it.

## The Use Case Diagram:





## The Class Diagram:



- The central class in the model is **LoyaltyProgram**. If the system only administers a single loyalty program, then it will contain only one instance of this class.
- In the case the system administers multiple loyalty programs, then many instances of this class will be present in the system.

- A company that offers its customers membership in a loyalty program is called a **ProgramPartner**.
- More than one company can enter the same program. In that case, customers who enter the loyalty program can profit from **services** rendered by any of the participating companies.
- Every customer of a program partner can enter the loyalty program by signing up/filling a form and obtaining a membership card.
- The objects of class **Customer** represent the people who have entered the program.
- The membership card, represented by the class **CustomermemberCard**, is issued to one person.
- Most loyalty programs allow customers to save points. Each individual program partner decides when and how many points are allotted for a certain purchase.
- The saved points can be used to buy/spend on specific services from one of the program partners.
- To account for the points that are saved by a customer, every membership can be associated with a **LoyaltyAccount**.
- There are two types of transactions.
  - 1- Transactions where the customer obtains points are represented by a subclass of Transaction called **Earning**.
  - 2- Transactions where the customer spends/uses points, are represented by a subclass of Transaction called **Spending**.
- To administer different levels of service, the class **ServiceLevel** is used (such as silver/gold/platinum/etc. tiers).
- If the program has no tiers, then there is only one level/tier.