**Design Document: Rewards Spring Boot Application**

**1. Introduction**

This document outlines the design for a Spring Boot application that calculates reward points for customers based on their purchases. The application will award points according to the following rules:

* 2 points for every dollar spent over $100 in each transaction.
* 1 point for every dollar spent between $50 and $100 in each transaction.

**2. Requirements**

**Functional Requirements**

1. Record transactions for each customer.
2. Calculate reward points for each transaction.
3. Aggregate reward points per customer per month.
4. Provide total reward points for each customer over a three-month period.

**3. Architecture**

**3.1. Layers**

* **Presentation Layer**: RESTful APIs for interacting with the application.
* **Service Layer**: Business logic for calculating reward points.
* **Data Access Layer**: Interactions with the database to store and retrieve transaction data.

**3.2. Components**

* **Controller**: Handles HTTP requests and responses.
* **Service**: Contains business logic for calculating reward points.
* **Repository**: Interfaces with the database.

**4. Data Model**

**4.1. Entities**

* **Customer**
  + id: Long
  + name: String
* **Transaction**
  + id: Long
  + customerId: Long
  + amount: Double
  + date: LocalDate
* **RewardPoints**
  + customerId: Long
  + month: YearMonth
  + points: Integer

**5. API Endpoints**

**5.1. Customer Endpoints**

* GET /api/rewards/getAllCustomerDetails: Retrieve all customers.
* POST /api/rewards/ saveCustome: Create a new customer with all transactions.

**5.2. Reward Points Endpoints**

* GET /api/rewards/total/{customerId}: Retrieve total reward points for a specific customer.
* GET /api/rewards/monthly/{customerId}: Retrieve monthly reward points for a specific customer.

**6. Business Logic**

**6.1. Reward Points Calculation**

* For each transaction:
  + If amount > 100: points += 2 \* (amount - 100)
  + If 50 < amount <= 100: points += 1 \* (amount - 50)

**6.2. Monthly Aggregation**

* Group transactions by customer and month.
* Sum the points for each group.

**7. Database Schema**

**7.1. Tables**

* **Customer**
  + id (Primary Key)
  + name
* **Transaction**
  + id (Primary Key)
  + customer\_id (Foreign Key)
  + amount
  + date
* **RewardPoints**
  + customer\_id (Foreign Key)
  + month
  + points