Application Menu and Queries to Implemented

PART A (Application Menu flow) *** be sure to scroll to end of document for PART B which has the queries

This section illustrates the application flow as a sequence of menus for the **Customer Loyalty Marketplace** system. We expect you to follow this program flow strictly to enable uniformity of testing. Interfaces can be either text-based or graphical.

You must validate all user input and display appropriate error messages whenever necessary prompting the user to re-enter his input, even if it may not be explicitly stated.

Start Pages

Home

Display	Menu	Input	Output
Display the menu	1. Login 2. Sign Up 3. showQueries 4. Exit	Enter choice (1-3)	Go to the appropriate page. If an Exit is chosen, terminate the program.

Login

Display	Menu	Input	Output

Display	Menu	Input	Output
Ask the user to input the following details in the order shown below, followed by the menu. A. User ID B. Password	1. Sign-in 2. Go Back	After entering details, choose options 1-2 from the menu	If the user chooses 1, validate credentials and recognize if the user is an Admin, Brand, or Customer to go to the correct **Landing page**. Print "Login Incorrect" for invalid credentials and ask to enter again. If the user chooses 2, discard the input (if any) and directly go to **Home page**

User Type

Display	Menu	Input	Output
Ask the user to choose whether they want to create a Customer or Brand account	1. Brand Sign-up 2. Customer Sign-up 3. Go Back	Enter choice (1-3)	If the user chooses 1, go to **Brand Sign up page**, If the user chooses 2, go to **Customer Sign up page**, and if users chooses 3 go to **Home page**

Brand Sign up

Display	Menu	Input	Output

Ask the Brand to input the details given in the project description.	1. Sign-up 2. Go Back	Take input from user about the new Brand. After entering details, choose options 1-2 from the menu	If the user chooses 1, save his entered information into database creating an account for this user and go to **Login page** after displaying an appropriate message. If the user chooses 2, discard the input (if any) and directly go to **User Type page**

Customer Sign up

Display	Menu	Input	Output
Ask the Customer to input the details given in the project description.	1. Sign-up 2. Go Back	Take input from user about the new Customer. After entering details, choose options 1-2 from the menu	If the user chooses 1, save his entered information into database creating an account for this user and go to **Login page** after displaying an appropriate message. If the user chooses 2, discard the input (if any) and directly go to **User Type page**

Admin: Landing

Display	Menu	Input	Output

Display the menu	1. Add brand 2. Add customer 3. Show brand's info 4. Show customer's info 5. Add activity type 6. Add reward type 7. Log out	Enter choice (1-7)	Display the correct page depending on choices 1-6. For 7, logout and return to the **Home page**

Admin: Add brand

Display	**Menu**	**Input**	**Output**
Ask the admin to input the details given in the project description that the Brand has to have.	1. addBrand 2. Go Back	Take input from an admin about the new Brand. After entering details, choose options 1-2 from the menu	If the user chooses 1, save his entered information into database creating an account for this user and go to **Admin: Landing page** after displaying an appropriate message. If the user chooses 2, discard the input (if any) and directly go to **Admin: Landing page**

Admin: Add customer

Display	**Menu**	**Input**	**Output**

| Ask the admin to input the details given in the project description that the Customer has to have. | 1. addCustomer

2. Go Back | Take input from an admin about the new Customer.

After entering details, choose options 1-2 from the menu | If the user chooses 1, save his entered information into database creating an account for this user and go to **Admin: Landing page** after displaying an appropriate message.
If the user chooses 2, discard the input (if any) and directly go to **Admin: Landing page** |

Admin: Show brand's info

Display	Menu	Input	Output
Ask an admin to input the following details in the order shown below, followed by the menu. A. Brand's User ID	1. showBrandInfo 2. Go Back	After entering details, choose options 1-2 from the menu	If the user chooses 1, show the information of the related brand in case of any errors show appropriate error message and stay at the same page **Admin: Show brand's info** If the user chooses 2, discard the input (if any) and directly go to **Admin: Landing page**

Admin: Show customer's info

Display	Menu	Input	Output

Display	Menu	Input	Output
Ask an admin to input the following details in the order shown below, followed by the menu. A. Customer's User ID	1. showCustomerInfo 2. Go Back	After entering details, choose options 1-2 from the menu	If the user chooses 1, show the information of the related customer in case of any errors show appropriate error message and stay at the same page **Admin: Show Customer's info** If the user chooses 2, discard the input (if any) and directly go to **Admin: Landing page**

Admin: Add activity type

Display	Menu	Input	Output
Ask the admin to input the details of the new activity type. A. Activity name B. Activity code	1. addActivityType 2. Go Back	Take input from an admin about the new Activity type. After entering details, choose options 1-2 from the menu	If the user chooses 1, save his entered information into database creating new activity type and stay at the same page as admin may want to add multiple activity types **Admin: Add activity type page** If the user chooses 2, discard the input (if any) and directly go to **Admin: Landing page**

Admin: Add reward type

Display	Menu	Input	Output

| Ask the admin to input the details of the new reward type.

A. Reward name
B. Reward code | 1. addRewardType

2. Go Back | Take input from an admin about the new Reward type.

After entering details, choose options 1-2 from the menu | If the user chooses 1, save his entered information into database creating new reward type and stay at the same page as admin may want to add multiple reward types **Admin: Add reward type page** If the user chooses 2, discard the input (if any) and directly go to **Admin: Landing page** |

Brand: Landing

Display	Menu	Input	Output
Display the menu	1. addLoyaltyProgram 2. addRERules 3. updateRERules 4. addRRRules 5. updateRRRules 6. validateLoyaltyProgram 7. Log out	Enter choice (1-5)	Display the correct page depending on choices 1-6. For 7, logout and return to the **Home page**

Brand: LoyaltyProgram

Display	Menu	Input	Output
Display the menu	1. Regular 2. Tier 3. Go back	Ask the user to choose options 1-3 from the Menu	If the user chooses 1 go to **Brand: Regular** page If the user chooses 2 go to **Brand: Tier** page and if the user chooses 3 go back to **Brand: Landing**

Brand: Regular

Display	Menu	Input	Output
Display the menu	1. Activity Types 2. Reward Types 3. Go back	Ask the user to choose options 1-3 from the Menu	If the user chooses 1 go-to **Brand: Activity Types** page If the user chooses 2 go-to **Brand: Reward** Types page and if the user chooses 3 go back to **Brand: LoyaltyProgram**

"Loyalty Points" was removed (you can leave it if you already implemented it, but it won't be used)

Brand: Activity Types

Display	Menu	Input	Output
Display the menu	1. Purchase 2. Leave a review 3. Refer a friend 4. Go back	Ask the user to choose options 1-4 from the Menu	If the user chooses 1-3 record all the information of Activity types in the database and stay at this page **Brand: Activity Types** to add more types **OR** choose 4, directly go to **Brand: Regular**

Brand: Reward Types

Display	Menu	Input	Output
Ask the user to input the following details below, followed by the menu. * Quantity for the chosen option	1. Gift Card 2. Free Product 3. Go back	Take input from the user(the quantity for the desired reward). After entering details, choose options 1-3 from the menu	If the user chooses 1-2 record all the information of Reward types in the database and stay at this page **Brand: Reward Types** to add more types **OR** choose 3, directly go to **Brand: Regular**

Brand: Tier

Display	Menu	Input	Output

Display the menu	1. Tiers Set up 2. Activity Types 3. Reward Types 4. Go back	Ask the user to choose options 1-4 from the Menu	If the user chooses 1 go-to **Brand: Tiers set up** page and If the user chooses 2 go-to **Brand: Activity Types** page and If the user chooses 4 go to **Brand: Reward Types page** and if the user chooses 5 go back to **Brand: LoyaltyProgram**

<mark>"Loyalty Points" was removed (you can leave it if you already implemented it, but it won't be used)</mark>

Brand: Tiers Set up

Display	Menu	Input	Output
Ask the user to input the following details in the order shown below, followed by the menu. A. Number of tiers (max 3) B. Name of the tiers (in increasing order of precedence) <mark>C. pointsrequired(the lower bound of points of each entered tier. For example if it is 100 then Customer needs to gain at least 100 to be in that tier)</mark>	1. Set up 2. Go back	Ask the user to choose options 1-2 from the Menu	If the user chooses 1 record all the information of Tiers in the database and got to page **Brand: Tier** If the user chooses 3, directly go to **Brand: Tier**

D. multipliers per tier (multiplies the points based on tier)			

Brand: Activity Types

Display	Menu	Input	Output
Display the menu	1. Purchase 2. Leave a review 3. Refer a friend 4. Go back	Ask the user to choose options 1-4 from the Menu	If the user chooses 1-3 record all the information of Activity types in the database and stay at this page **Brand: Activity Types** to add more types **OR** choose 4, directly go to **Brand: Tier**

Brand: Reward Types

Display	Menu	Input	Output
Ask the user to input the following details below, followed by the menu. * Quantity for the chosen option	1. Gift Card 2. Free Product 3. Go back	Take input from the user(the quantity for the desired reward). After entering details, choose options 1-3 from the menu	If the user chooses 1-2 record all the information of Reward types in the database and stay at this page **Brand: Reward Types** to add more types **OR** choose 3, directly go to **Brand: Tier**

Brand: addRERules

Display	Menu	Input	Output
Ask the brand to input the details of the new RE rule. A. Brand reward rule code B. Activity category C. number of points	1. addRERule 2. Go Back	Take input from the brand about the new RE rule. After entering details, choose options 1-2 from the menu	If the user chooses 1, save his entered information into database creating new RE rule and stay at the same page as brand may want to add multiple RE rules **Brand: addRERule page** If the user chooses 2, discard the input (if any) and directly go to **Brand: Landing page**

Brand: updateRERule

Display	Menu	Input	Output
Ask the brand to input the details of the new RE rule. A. Brand reward rule code B. Activity category C. number of points	1. updateRERule 2. Go Back	Take input from a brand about the updated RE rule. After entering details, choose options 1-2 from the menu	If the user chooses 1, save his entered information into database updating RE rule and stay at the same page as brand may want to update multiple RE rules **Brand: updateRERule page** If the user chooses 2, discard the input (if any) and directly go to **Brand: Landing page**

Brand: addRRRules

Display	Menu	Input	Output
Ask the brand to input the details of the new RR rule. A. Brand reward rule code B. Reward category C. number of points	1. addRRRule 2. Go Back	Take input from a brand about the new RR rule. After entering details, choose options 1-2 from the menu	If the user chooses 1, save his entered information into database creating new RR rule and stay at the same page as brand may want to add multiple RE rules **Brand: addRRRule page** If the user chooses 2, discard the input (if any) and directly go to **Brand: Landing page**

Brand: updateRRRule

Display	Menu	Input	Output
Ask the brand to input the details of the new RR rule. A. Brand reward rule code B. Reward category C. number of points	1. updateRRRule 2. Go Back	Take input from a brand about the updated RR rule. After entering details, choose options 1-2 from the menu	If the user chooses 1, save his entered information into database updating RR rule and stay at the same page as brand may want to update multiple RR rules **Brand: updateRRRule page** If the user chooses 2, discard the input (if any) and directly go to **Brand: Landing page**

Brand: validateLoyaltyProgram

Display	Menu	Input	Output
Display Menu	1. Validate 2. Go back	Ask the user to choose options 1-2 from the Menu	If the user chooses 1 if the set up was done in compliance with the requirements given in the project description validation is satisfied and the success message has to be printed and the user is returned to **Brand: Landing** page otherwise error message is printed and user is returned to Brand**: Landing** page. If the user chooses 2, directly go to **Brand: Landing**

Customer: Landing

Display	Menu	Input	Output
Display the menu	1. Enroll in Loyalty Program 2. Reward Activities 3. View Wallet 4. Redeem Points 5. Log out	Enter choice (1-5)	Display the correct page depending on choices 1-4. For 5, logout and return to the **Home page**

Customer: Enroll in Loyalty Program

Display	Menu	Input	Output
Display the <mark>Available loyalty programs by name</mark>	1. Enroll in Loyalty Program 2. Go back	Ask the user to choose options 1-2 from the Menu <mark>after the user chooses the loyalty program</mark>	If the user chooses 1 and the user is not enrolled in the loyalty program, a success message has to be printed and <mark>save information into database</mark> and the user is returned to the **Customer: Landing** page. Otherwise an error message is printed and the user is returned to the **Customer: Landing** page. If the user chooses 2, directly go to **Customer: Landing**

Customer: Reward Activities

Display	Menu	Input	Output
<mark>Display the list of joined Loyalty Programs. Based on the selection the Menu will vary</mark>	1. Purchase 2. Leave a review 3. Refer a friend 4. Go back	Ask the user to choose options 1-4 from the Menu <mark>(the options may be reduced as some Loyalty programs may not</mark>	If the user chooses 1 go to **Customer: Purchase**. If the user chooses 2 go to **Customer: Leave a review.** if the user chooses 3 go to **Customer: Refer a friend.** If the user chooses 4 go to **Customer: Landing.**

		have some activities)	

Customer: Purchase

Display	Menu	Input	Output
Display the menu. Ask the user to select the gift card to use for purchase (if any).	1. Purchase 2. Go back	Take input from the user about the purchase.	If the user chooses 1, record all the purchase information in the database and go to page **Customer: Reward Activities** If the user chooses 2, discard the input and directly go to **Customer: Landing**

Customer: Leave a review

Display	Menu	Input	Output
Ask the user to input the following details below, followed by the menu. * Contents of the review	1. Leave a review 2. Go back	Take input from the user about the review.	If the user chooses 1, record the review information in the database and go to page **Customer: Reward Activities.** If the user chooses 2, discard the input and directly go to **Customer: Landing**

Customer: Refer a friend

Display	Menu	Input	Output

Display the menu	1. Refer 2. Go back	Ask the user to choose options 1-2 from the Menu	Display the correct content and stay on this page. For 2, directly go to **Customer: Landing**

A customer gains points once they use "Refer a friend" activity (just clicking on it). We are assuming the ideal case scenario which is far from real life.

Customer: View Wallet

Display	Menu	Input	Output
Display the contents of wallet	1. Go back	None	Display the content of the user's wallet and stay on this page. If the user chooses 1, directly go to **Customer: Landing**

Customer: Redeem Points

Display	Menu	Input	Output
Ask the user to select from the rewards option, followed by the quantity for the chosen option.	1. Rewards Selection 2. Go back	Take input from the user about which reward to redeem.	If the user chooses 1, check the RRRules and record this redeem activity in the database if valid, showing success information and go to page **Customer: Reward Activities.** If the user chooses 2, directly go to **Customer: Landing**

PART B (Queries)

The list below comprises the queries that you should implement as part of the submission (prior to demo). The **"Show queries"** menu option referred to in PART A of this document should generate a queries menu that has a list of numbers corresponding to the queries below (or the query texts). The queries menu should then produce the answer for each corresponding query when selected. For example, selecting 1 from the displayed menu should show the result of query 1 on this list.

Note that some queries contain highlighted phrases. These are just placeholder entity names. Exact names will be given later based on our actual sample data.

1. List all customers that are not part of Brand02's program.
2. List customers that have joined a loyalty program but have not participated in any activity in that program (list the customerid and the loyalty program id).
3. List the rewards that are part of Brand01 loyalty program.
4. List all the loyalty programs that include "refer a friend" as an activity in at least one of their reward rules.
5. For Brand01, list for each activity type in their loyalty program, the number instances that have occurred.
6. List customers of Brand01 that have redeemed at least twice.
7. All brands where total number of points redeemed overall is less than 500 points
8. For Customer C0003, and Brand02, number of activities they have done in the period of 08/1/2021 and 9/30/2021.