

E-Scratch Cards App & Dashboard (Q-Lotto)

A Web & Mobile Platform to demonstrate operationalization of
electronic lottery management.

Design Manual

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1.0 Introduction

This document is developed to further highlight and discuss system functionality for qLotto as identified in the functional requirements specification document. Here the goal is to present a more technical and visualized/ mockup views of how the qLotto application would look like when finally developed.

This document will showcase the proposed database modelling as well as the database tables that would be used for the project. As was earlier stated in previous documentations, use would be made of the MySQL relational database system to store/ persist data for the application. The document will also illustrate the navigation options that would be adopted for the application for a great user experience. More so, wireframe mockups for the different intended screens will be presented to aid visualization while the development of the final application is ongoing.

2 Database Backend

Database table specifications

Customers Table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	bigint(20)		UNSIGNED	No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
2	first_name	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
3	last_name	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
4	phone_number	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
5	email	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
6	sex	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
7	address_line1	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
8	address_line2	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
9	date_registered	date			No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
10	date_of_birth	date			No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
11	created_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Disabled values
12	updated_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Disabled values

Customer_Scratchcards Table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	bigint(20)		UNSIGNED	No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
2	customer_id	bigint(20)		UNSIGNED	No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
3	code	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
4	status	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
5	created_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Disabled values
6	updated_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Disabled values

Customer_Payments Table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	bigint(20)		UNSIGNED	No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
2	customer_id	bigint(20)		UNSIGNED	No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
3	payment_date	date			No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
4	status	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
5	reference	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
6	amount	double			No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
7	mode_of_payment	double			No	None		Change Drop Primary Unique Index Spatial Fulltext Disabled values
8	created_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Disabled values
9	updated_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Disabled values

Customer_Lottery_Entries Table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	bigint(20)		UNSIGNED	No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
2	customer_id	bigint(20)		UNSIGNED	No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
3	scratchcard_id	bigint(20)		UNSIGNED	No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
4	entry_code	varchar(255)	utf8mb4_unicode_ci		No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
5	status	varchar(255)	utf8mb4_unicode_ci		No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
6	play_count	varchar(255)	utf8mb4_unicode_ci		No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
7	created_at	timestamp			Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
8	updated_at	timestamp			Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values

Lottery_Draws Table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	bigint(20)		UNSIGNED	No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
2	draw_date	datetime			No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
3	winning_code	varchar(255)	utf8mb4_unicode_ci		No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
4	status	varchar(255)	utf8mb4_unicode_ci		No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
5	created_at	timestamp			Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
6	updated_at	timestamp			Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values

Lottery_Winners Table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	bigint(20)		UNSIGNED	No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
2	draw_id	bigint(20)		UNSIGNED	No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
3	customer_lottery_entry_id	bigint(20)		UNSIGNED	No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
4	winning_amount	decimal			No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
5	created_at	timestamp			Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
6	updated_at	timestamp			Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values

Users Table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	bigint(20)		UNSIGNED	No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
2	name	varchar(255)	utf8mb4_unicode_ci		No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
3	email	varchar(255)	utf8mb4_unicode_ci		No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
4	email_verified_at	timestamp			Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
5	password	varchar(255)	utf8mb4_unicode_ci		No	None		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
6	is_banned	boolean			No	0		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
7	remember_token	varchar(100)	utf8mb4_unicode_ci		Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
8	created_at	timestamp			Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values
9	updated_at	timestamp			Yes	NULL		Change, Drop, Primary, Unique, Index, Spatial, Fulltext, InnoDB values

Roles table Permissions

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/>	1 id	bigint(20)		UNSIGNED	No	None		Change Drop Primary Unique Index Spatial Fulltext Object storage
<input type="checkbox"/>	2 name	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Object storage
<input type="checkbox"/>	3 guard_name	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Object storage
<input type="checkbox"/>	4 created_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Object storage
<input type="checkbox"/>	5 updated_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Object storage

Table Roles_Permission

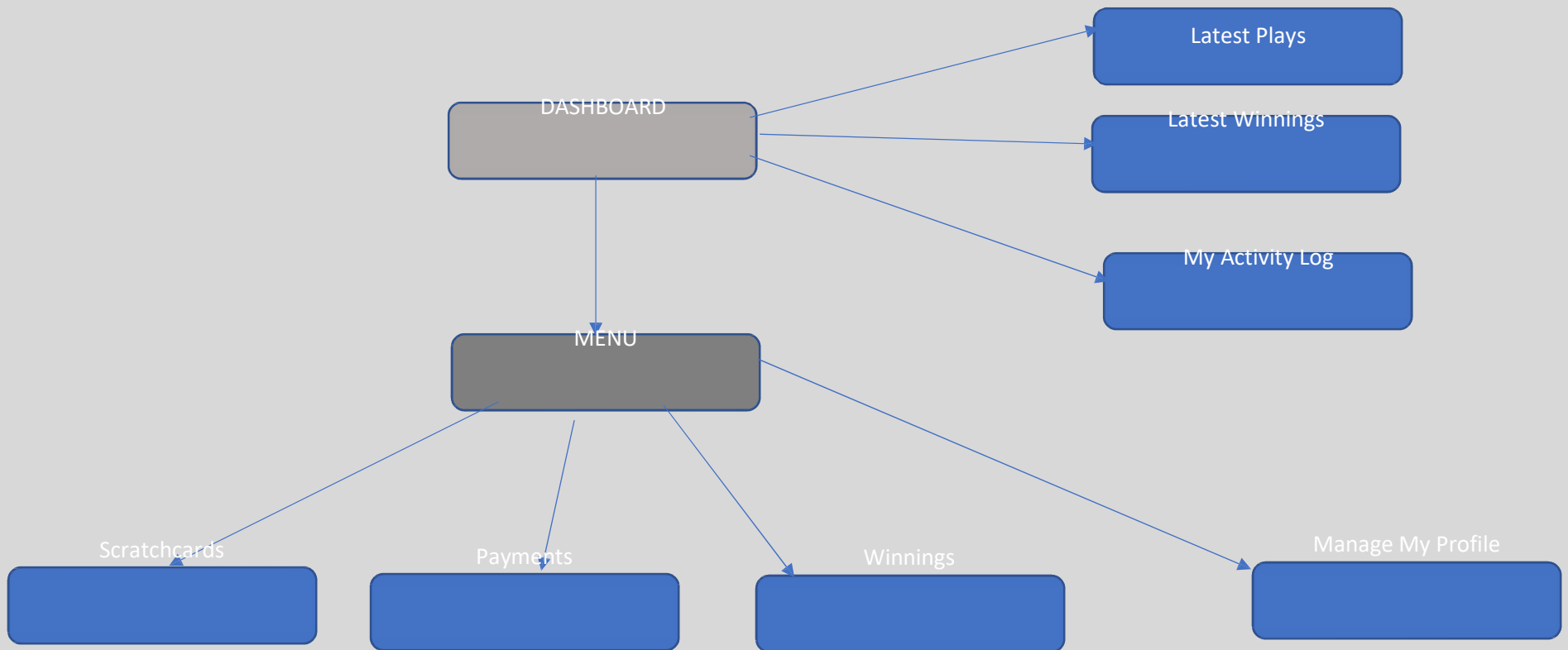
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/>	1 id	bigint(20)		UNSIGNED	No	None		Change Drop Primary Unique Index Spatial Fulltext Object storage
<input type="checkbox"/>	2 name	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Object storage
<input type="checkbox"/>	3 guard_name	varchar(255)	utf8mb4_unicode_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Object storage
<input type="checkbox"/>	4 created_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Object storage
<input type="checkbox"/>	5 updated_at	timestamp			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Object storage

Table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/>	1 permission_id	bigint(20)		UNSIGNED	No	None		Change Drop Primary Unique Index Spatial Fulltext Object storage
<input type="checkbox"/>	2 role_id	bigint(20)		UNSIGNED	No	None		Change Drop Primary Unique Index Spatial Fulltext Object storage

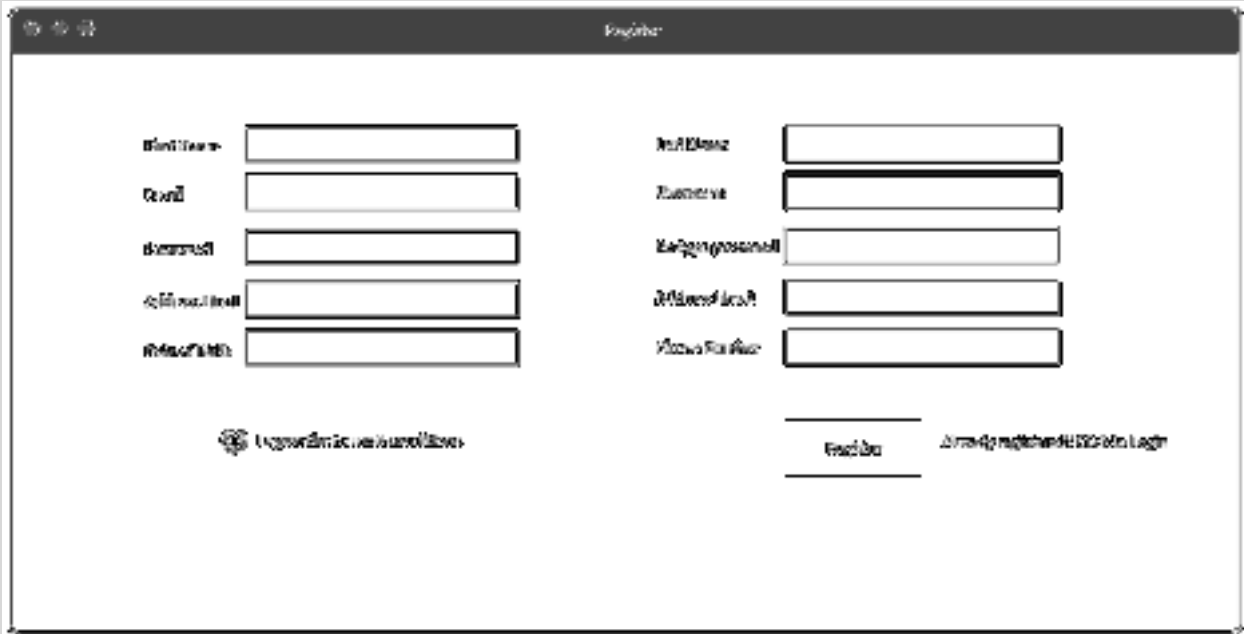
3. Navigation Diagram

Logged-In Customer navigations



4 User Interface Wireframes

Customer Registration

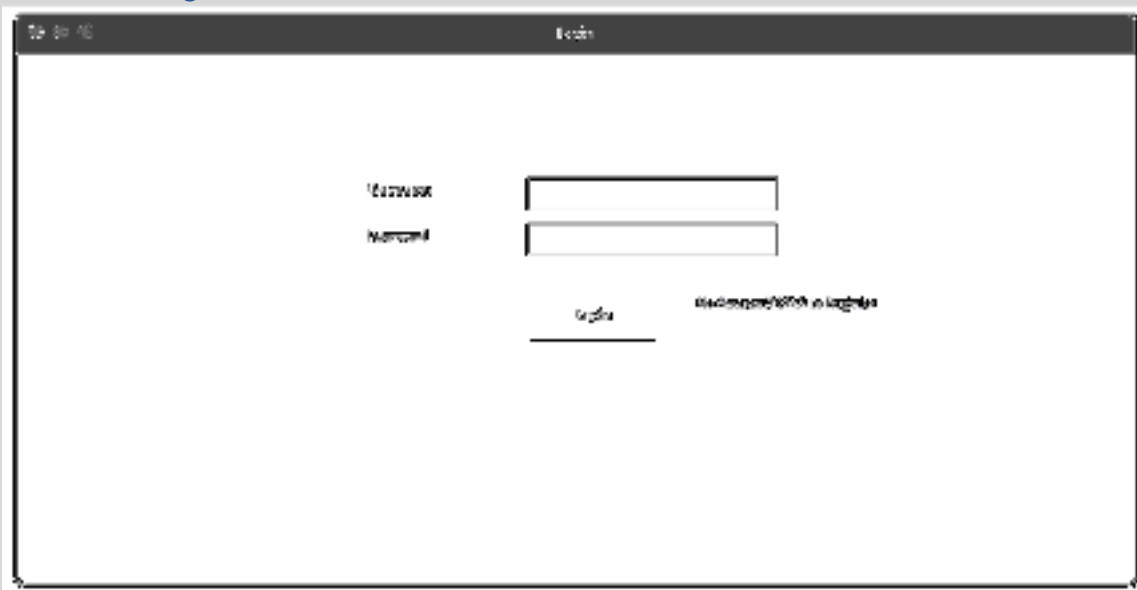


The registration form is titled "Register" and is organized into two columns of input fields. The left column contains five fields labeled "First Name", "Last Name", "Email", "Phone Number", and "Address". The right column contains four fields labeled "Password", "Repeat Password", "Date of Birth", and "Gender". Below the fields, there is a "Register" button and a link for "Forgot Password? or Login".

First Name	<input type="text"/>	Password	<input type="text"/>
Last Name	<input type="text"/>	Repeat Password	<input type="text"/>
Email	<input type="text"/>	Date of Birth	<input type="text"/>
Phone Number	<input type="text"/>	Gender	<input type="text"/>
Address	<input type="text"/>		

[Forgot Password? or Login](#)

Customer Login



The login form is titled "Login" and features two input fields: "Email" and "Password". Below the fields, there is a "Login" button and a link for "Forgot Password? or Register".

Email	<input type="text"/>
Password	<input type="text"/>

[Forgot Password? or Register](#)

Manage My Profile

Manage My Profile

Personal Information

My Account Information

Profile Picture

Admin Information

First Name

Last Name

Work Address

Email Address

Phone Number

Address Line 1

Address Line 2

Postal Code

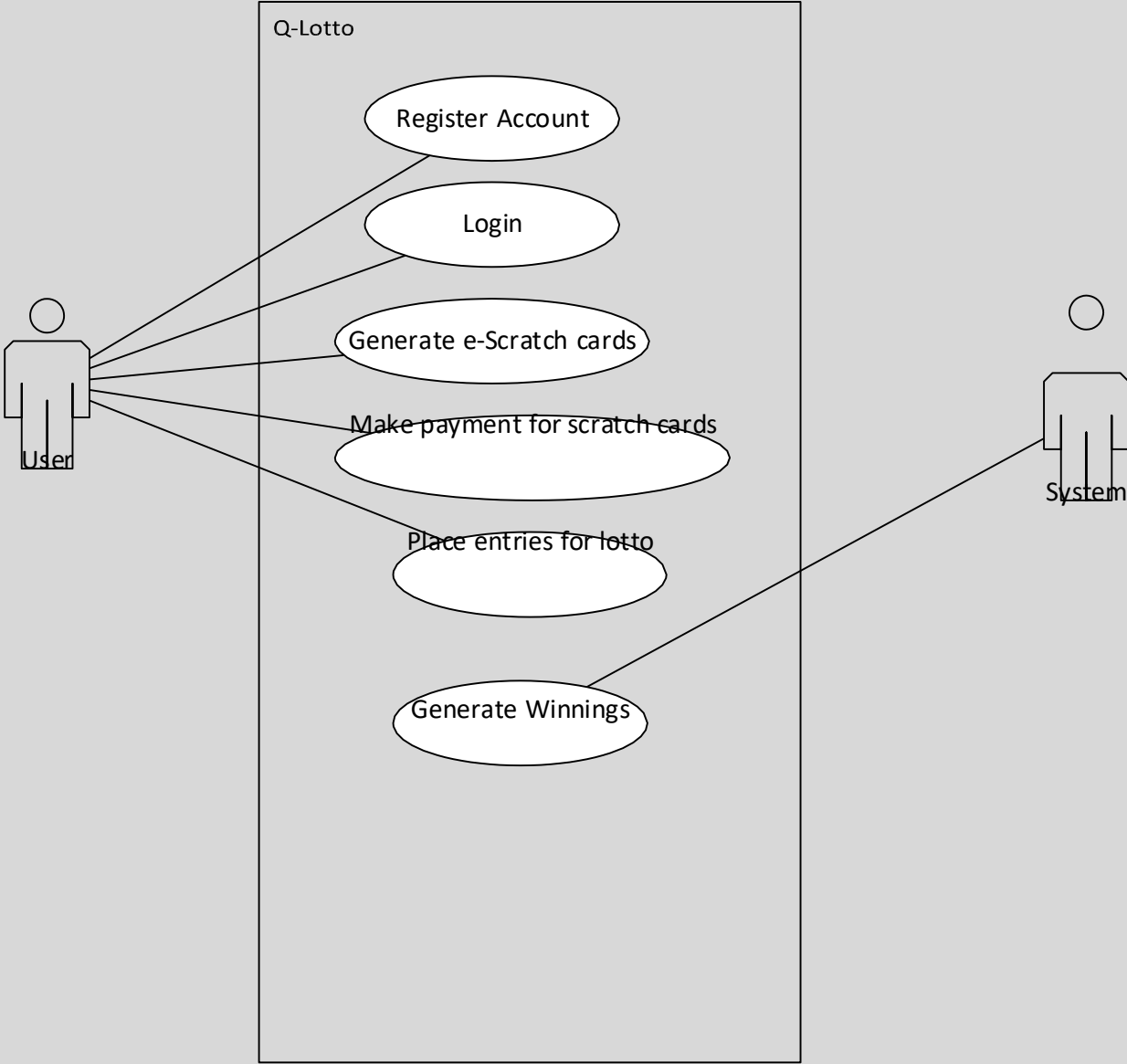
Save Profile

Customer List

Customer List

ID	Name	Email/Username	Address	Phone Number	Registration Date
1	John Doe	john.doe@abc.com	123 Main St, New York, NY 10001	212-555-1234	2023-01-15
2	Jane Smith	jane.smith@xyz.com	456 Elm St, Los Angeles, CA 90001	310-555-5678	2023-02-20
3	Bob Johnson	bob.johnson@def.com	789 Oak St, Chicago, IL 60601	312-555-9012	2023-03-10
4	Alice Brown	alice.brown@ghi.com	101 Pine St, San Francisco, CA 94101	415-555-3456	2023-04-05
5	Charlie Davis	charlie.davis@jkl.com	202 Cedar St, Austin, TX 78701	512-555-7890	2023-05-01

5.0 Use Case Diagrams



6.0 Use Cases

6.1 User Registration/ Signup

Actors:

User

Pre-conditions:

The User has access to the internet and can access the application via a web browser or through the mobile application

Description:

When the user accesses the application, he/ she can see an actionable button which when followed presents a registration form for the user to register his/ her account. Where validation errors are encountered during the registration process, these are displayed/ communicated to the user for possible correction.

In order to finalize the registration process, users are expected to verify their accounts via email verification strategies.

6.2 User Login

Actors:

User

Pre-conditions

The user has completed the account creation/ registration process and can access the application via web/ mobile.

Description

When the user accesses the application and follows the login link, he proceeds to supply his valid username and password for verification/ validation. Where the supplied login details don't match those stored in the application database, a failed login message is communicated to the user. However, if the login detail correctly matches those stored in the application database, the system proceeds to execute One Time Password (OTP)

verification for the user account using the user registered email address. With the OTP routine, a securely generated literal is sent to the user registered email and the user is expected to provide back the literal in a displayed form. The login process is successfully completed only when the user correctly enters the OTP literal. A user has a maximum of 3 attempts to complete the OTP process, which when exhausted successively results in a temporary suspension of the account as part of security.

6.3 Ticket/ Scratch Card generation

Actors: User

Precondition:

The user is duly logged in.

Description:

The user clicks on the generate scratch card button on the application (web & mobile), and the system securely generates a string of 16 “charactered” numbers based on system preferences for a fixed cost. This generated number is tied to the customer account and available for entry into the lottery system on payment of allotted fee for the scratch card.

6.4 Payment for Scratch Cards

Actors:

User, payment system/ gateway

Precondition:

The user has generated e-scratch cards

Description:

User is presented with a list of scratch cards available for payment. He proceeds to select one or multiple of the items for payment. On selection of the items, an electronic invoice for the items is generated and user is prompted to choose from available list of payment processors with which to settle the invoice. On selection of payment processor, the user is navigated to the payment processor system for the settlement of the invoice. On completion of the payment processing, the payment processor navigates the user back to the application and where payment was success processed, the system updates payment status and makes the generated scratch card available for use and entry for lottery.

6.5 Drawing of Winning Lottery Numbers

Actors:

Admin user,

Precondition:

Description

The system supports weekly as well as on-demand drawing of winning lottery numbers. When the admin user activates the drawing of lottery numbers for possibly winning, the system securely draws and generates winning numbers using a highly Random Number Generator algorithm which will be developed as part of the outcome from this research.



DECLARATION

- I declare that all material in this submission e.g. thesis/essay/project/assignment is entirely my/our own work except where duly acknowledged.
- I have cited the sources of all quotations, paraphrases, summaries of information, tables, diagrams or other material; including software and other electronic media in which intellectual property rights may reside.
- I have provided a complete bibliography of all works and sources used in the preparation of this submission.
- I understand that failure to comply with the Institute's regulations governing plagiarism constitutes a serious offense.

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Date: 20/04/2020