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

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

Functional Specification

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1.0 Introduction

This document is developed to identify, specify and describe the overall system functionality for the software application, E-Scratch Card. E-Scratch Card is a suite of software application, web & mobile, conceived to provide secure automation of the management and operational rules of e-scratch cards as it relates to running of on-line lotteries. The document will amongst others highlight and discuss the development phases that would be undertaken to actualize the design & implementation of the project.

This document will be divided into different sections including the functional and non-functional requirements, actors and use cases of the system, system metrics as well as possible mockups for the system.

2.0 Project Description

E-Scratch Card is a secure electronic scratch card application that helps users participate in online lottery. It will be developed as a multi-faceted application system with web and mobile application components. With the application suite, users will be able to purchase electronic scratch cards over diverse payment channels and register lottery entries conveniently. The system will allow for the generation of lottery draws as well as the determination of winnings. The system will feature extensive usage of data protection and security algorithms including but not limited to encryption strategies in the protection of sensitise system and user data. On completion of draws, users will be communicated on their winnings for possible claim.

Overall the system is intended to provide ease of use for users, while enforcing and guaranteeing high levels of system and data security.

3.0 Target users

E-Scratch Card is targeted at all categories of people (especially young adults of gambling age) who utilise web and mobile technology and are desirous of participating in lottery systems. With E-Scratch Card, users will be able to make payments for their electronic scratch cards which allows them to participate more quickly, conveniently and rapidly in lottery system and guaranty safe and secure winnings for eventual winners of lottery draws.

The application will also be particularly useful to people who engage in multiple lottery events as it will help them organise and prioritise their lottery events in terms of winnable amounts, costs and other customisable settings.

4.0 Functional & Non-Functional Requirements

The proposed application will be a developed, deployed and managed centrally as a single application with single database but with multiple APIs to support interconnectivity and use across native mobile and web interfaces.

Functional requirements

1. Customer Registration/ Signup & Login – I will implement modules/ APIs to allow for customer registration using the web or native mobile app. Irrespective of mobile/web interface used, users will be able to use same usernames and passwords to access the application. Customers will be expected to undergo email and SMS verification before their account creation will be finalised.
2. Ticket generation – My Ticket generation will mimic what is obtainable in the UK National Lottery system. Using this approach, I will implement a ticket generation module that allows users to pick their six set of numbers (from 1-59) or generate random set of numbers for the entry (lucky dip). Each generated ticket will have a unique and distinct serial number to forestall forging and will be tied to the user for whom it was generated for.
3. Payments for tickets - I will implement a payment module that consumes popular payment processors like 2checkout and PayPal for the purchase of cards. Only on payment for tickets will be the ticket become valid for use for lotto.
4. Generation of Winning Numbers – I will implement a secure randomisation algorithm that will be used to generate winning numbers for the lotto session. On generation of winning numbers, only entries of tickets purchased for that lotto session will be considered. Winning tickets will be verified by the system to ensure they were genuinely created and paid for before settlements will be performed.
5. Settlement of Winnings – Settlements for winning will be done only after the system has verified that authenticity and payment for the winning ticket entries. Payments will be made using payment processors (2checkout and PayPal) to customer specified and verified bank/ account details.

Non-functional requirements

1. Being an online system that is prone to snooping attacks, a Secure Sockets Layer certificate that encrypts communication between users and the system will be implemented
2. Secure Authentication will be implemented across the platforms (web & mobile). User passwords will be encrypted/salted and stored in a secure relational database system to prevent theft & misuse.
3. User access controls (UAC) will also be implemented to address issues of permissions (who is authorised to do what in the system).

5.0 FURPS+

5.1 Functionality

The following will be used to measure the metric of functionality for the application.

a) Being an internet-based system, users must be connected to the internet to properly use the system.
b) Only users who are duly registered and have signed in can use the platform including the purchase e-scratch cards, submission of lottery entries, claim winnings.

5.2 Usability

The following will be used to measure the metric of usability for the application.

a) The web component of the application should provide for a responsive design which makes it display uniformly and properly across varying screen sizes and platforms
b) The design components of the application (web & mobile) should utilise realistic User Interface designs including buttons, text-boxes, etc. to facilitate intuitive use.

5.3 Reliability

The following will be used to measure the metric of reliability & security for the application.

a) The system should utilise possible encryption and other security standards to secure user and system data.
b) Algorithms and strategies for generating scratch cards and winnings must be free from reproducibility and possible security breakage.

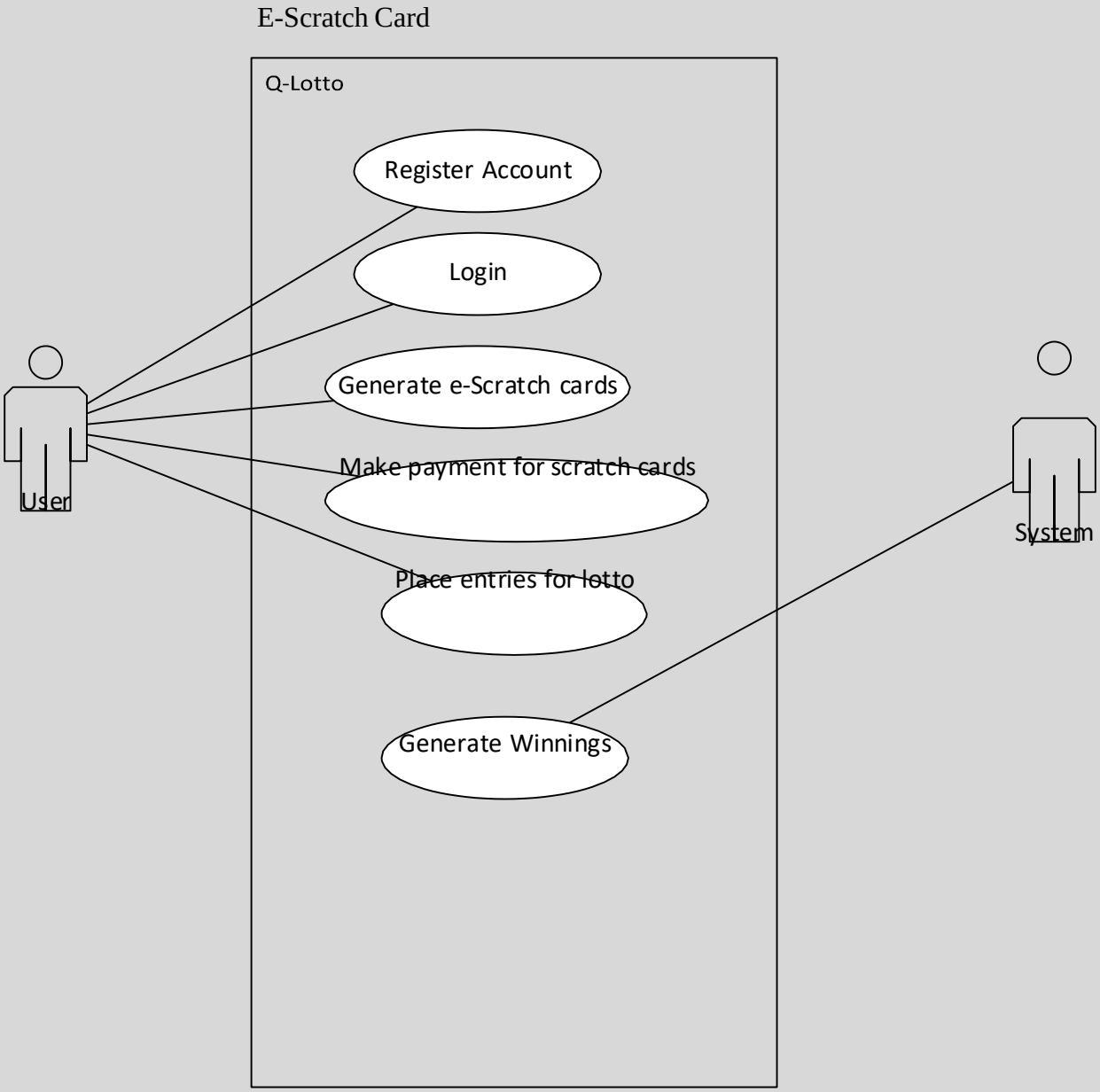
5.4 Performance

a) System operations including web and database calls should take no more than 10 seconds to complete.
b) The web and database component of the system should have a 99.5% availability to respond to user service/calls.

5.5 Supportability

a) The web application component should support availability for access and use across 95% of browsers.
b) The mobile application component should support availability and use on Android ecosystem and devices.

6.0 Use Case Context Diagram



7.0 Use Cases

7.1 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 finalise the registration process, users are expected to verify their accounts via email verification strategies.

7.2 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.

7.3 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.

7.4 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.

7.5 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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