
SOFTWARE REQUIREMENTS SPECIFICATION

for

Online Postage Ordering System

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Revision History

1. Team Moon Moon Needs No Revisions.
2. Team Moon Moon Never Makes No Mistakes.
3. Correction. Team Moon Moon “fails fast.” Isn’t that the new buzzword or buzzphrase?
4. The skeleton has been updated to reflect the actual requirements provided by Dr. Seaman.
5. It’s all really coming together now.
6. Final Revision for Turn-In

1 Introduction

1.1 Purpose

The purpose of this document is to present a detailed description of the specifications and the requirements for a postage printing website. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate, and how the system will react to interactions. This document is intended for both the stakeholders and the developers of the system.

1.2 Project Scope and Product Features

The objective of this project is to create and implement a website for printing mailing labels containing USPS postage. The website will be used primarily by registered users. The website will allow users to:

- Create and maintain individual secured accounts
- Buy/print postage labels
- List postage purchase history
- Check account balance
- Calculate postage rates
- Track packages
- Request refunds
- Check if an address is valid

1.3 Definitions, Acronyms, and Abbreviations

At this time, there are no specialized terms in need of definition.

1.4 References

IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.

1.5 Overview

The second section, the Overall Description, of this document gives an overview of the products functionality. It describes the informal requirements and is used to establish a context for the requirements specification in the third section.

The third section, Requirements Specification, of this document is written primarily for the developers. It describes details of product functionality.

2 Overall Description

This chapter provides an overview of the software product from the perspective of the functions that the user is expected to have available to him.

2.1 Product Perspective

The overall idea is that the user may print pre-labelled postage from a website. The website provides an address verification service, and is licensed by the relevant governments to sell postage that the relevant governments postal services will honor. This makes obtaining and labelling postage much quicker than by traditional means, wherein one had to drive to the post office to obtain stamps, and had no way to verify the existence of any particular address. As well, the user can either add credit to the website or purchase postage on a one-off basis, and can access a record of all transactions made with the website.



2.2 Product Functions

The following subsections detail the various functions that the user of the software must be able to utilize.

2.2.1 Create An Account

The Create Account function shall allow a user to create a secure account. The account will track the users full name, mailing address, email address, credit card information, username and password, and the purchase history for up to two years.

2.2.2 Print Postage

The Print Postage function shall allow the user to print postage that has been purchased, *directly to a printer and NOT to a file*. The postage label will be provided upon successfully calling the UPS API, which will return an image suitable for printing.

2.2.3 Buy Postage

The Buy Postage function shall allow the user to purchase postage, using available credit on their account. Upon a successful print, the user's account balance is appropriately debited.

2.2.4 List Postage Transactions

The List Postage Transactions function shall allow the user to view a list of all of the postage labels that they have printed, including the information printed on the label, over the past two years.

2.2.5 Get Postage Balance

The Get Postage Balance function shall allow the user to obtain their current amount in their postage buying account.

2.2.6 Calculate Postage

The Calculate Postage function shall allow the user to enter a name, address, package type, mail class, and weight. The user shall then be able to see a calculated postage amount to ship their package.

2.2.7 Track/Confirm Package

The track/confirm package function shall allow users to enter in a tracking number to see the status of their package. The status of the package will be received from USPS and displayed to the user.

2.2.8 Login/Password Reset

The login function shall allow account members to enter their username and password. When verified with the system database, users will be able to access restricted functions. The login function shall provide users an option to reset their password.

2.2.9 Refund Request

The Refund Request function shall allow the user to enter a date and to select from a list any postage purchase made on that date that they wish to refund as long as it is not older than ten days old.

2.2.10 Validate Address

The Validate Address function shall allow the user to enter an address to verify its validity.

2.2.11 Logout

The logout function shall allow the account user to exit out of their account for security.

2.3 User Characteristics

Users are expected to be Internet literate and be able to navigate in a website.

2.4 Constraints

While the system does not have any restricting hardware or software constraints, the system does have some constraints on the user which are described in the 2.3 User Characteristics part of this document.

2.5 Assumptions and Dependencies

It is assumed that the end user:

- Has an Internet connection.
- Has a web browser able to display the website.
- Has a printer.

3 Specific Requirements

3.1 External Interface Requirements

This section details any significant interfaces that the Online Postage Printing Website will encounter.

3.1.1 System Interfaces

There are two main system interfaces:

1. The online credit card processing system. The website will access this system via an API to charge cards.
2. The UPS postage label API. The website will make several queries to the UPS' APIs in order to calculate shipping cost and retrieve labels.

3.1.2 User Interfaces

The system shall provide users access to the USPS postage printing website via the Internet. There will be two different user interfaces that will accompany the website: Registered users, and Non-Registered users.

Non-Registered Users: The user will be allowed to register for an account. The user shall be allowed access only to the follow functions:

1. Create an Account
2. Track/Confirm Package
3. Validate Address

Registered Users: The user must be logged in at all times. The user shall be allowed access to any of the following functions:

1. Login
2. Print Postage
3. Buy Postage
4. List Postage Transactions
5. Get Postage Balance

6. Refund Request
7. Track/Confirm Package
8. Validate Address
9. Log out

3.1.3 Hardware Interfaces

All hardware shall be required to connect to the internet.

3.1.4 Software Interfaces

There are no special software interface requirements outside of the APIs mentioned in the System Interfaces subsection.

3.1.5 Communication Interfaces

There are no special communications interfaces requirements.

3.2 Functional Requirements

The following subsections describe, in detail, the requirements for the system in order to provide each function described in section 2.2.

3.2.1 Create an Account

1. The user is prompted by the system to provide the following:
 - Full Name
 - Mailing Address
 - Email Address
 - Credit Card Information (Refer to Section 3.4)
 - Unique Username
 - Password
2. Once the user has entered the required information, the system verifies that the required attributes are present, that the email address has a valid form, that the login name does not exist in the database, and that the password meets the following criteria:
 - Must be at least 10 characters long
 - Must contain at least one letter
 - Must contain at least one digit

- Must contain at least one special character (@, #, \$, %)
3. If the system detects invalid registration information (Required fields are empty, email address does not have a valid format, the login name is already in use, or the passwords do not match) then the system shall prompt the user to reenter the information.
 - All provided information, entered by the user, should be stored in the system (Refer to section 3.4).

3.2.2 Print Postage

The system shall...

1. First, ensure
 - 1.1. that there is a valid, logged-in user requesting to buy postage. Otherwise, redirect to the Log In function.
2. Then, provide the user with options of what sort of postage to print for. Specifically, provide specific options for class and type, and permit the user to enter a number for weight.
3. Then, upon the user selecting a package class, type, and weight, request sender and recipient addresses. Proceed to the verify address function for each of these addresses to ensure they are valid.
4. Then, upon confirming address validity, ask user whether s/he wishes to add tracking numbers to the postage label.
5. Then, upon confirmation of tracking number selection (yes or no), submit all of the obtained data thus far to the UPS API in order to obtain a total cost and a shipping label and tracking number if necessary.
6. If the API call fails, the program must investigate the reason and intelligently inform the user as to the source of the error and its correction.
7. If the API call succeeds, present the user with the cost of the label. If there is sufficient credit in the user's account as indicated by the Get Postage Balance function, continue. Otherwise, jump to the Buy Postage function and return.
8. Upon confirmation from the user that s/he wishes to print the label, enter the transaction into the transaction ledger, permit the user to print the label, and decrement the user's account balance.

3.2.3 Buy Postage

The system shall...

1. First, ensure...
 - 1.1. that there is a valid, logged-in user.
2. Then, the system shall ask the user to select a card to pay for account credit with. If the card exists, utilize it. Otherwise, obtain the following details for the card and add it to the user's account.
 - Type of Card
 - Name on Card
 - Card number
 - Expiration Date
 - Security Code
3. Then, the system shall attempt to debit the card for the requested amount of postage as selected from the list.
4. Then, if the charge is successful, increment the user's account balance.
5. If the charge is unsuccessful, inform the user as to why and as to how to address the problem.

3.2.4 List Postage Transactions

The system shall...

1. First, ensure that there is a valid, logged-in user requesting to view the Postage Transactions.
2. Then, provide a method for the user to select a start date and then an end date for which they would like to view the postage transactions.
3. Then, query the database, using the selected dates as the requirements, and will list any and all Postage Transactions that fall between the specified dates in descending order.

3.2.5 Get Postage Balance

The system shall...

1. First, ensure...
 - 1.1. that there is a valid, logged-in user requesting the postage balance.
2. Then, find user account, and display postage balance in order for the user to see.

3.2.6 Calculate Postage

The system shall...

1. First, ensure that there is a valid, logged-in user requesting the postage balance.
2. Then, provide a method for the user to enter a Name,Address,Packaging type, mail class, and weight.
3. Then, the system shall send this information provided by the user to a built in function, located at USPS.com, to determine the cost.
4. Finally, the system shall, upon completion of calculation, display the estimated shipping costs determined by USPS.com.

3.2.7 Track/Confirm Package

The system shall...

1. allow the user to enter in a tracking number.
2. check the tracking number with the system database.
 - 2.1. if valid, display the current tracking information for the user to access from USPS.
 - i. The system shall output to the user:
 - Date shipped
 - Destination address
 - Crojected delivery date
 - Current location in transit
 - The status of the package: not yet received by the post office, in transit, or delivered
 - 2.2. if invalid, inform the user that the tracking number is not in the system database. The user may enter a tracking number or the user may cancel.

3.2.8 Login/Password Reset

The system shall...

1. require a username and password from the user.
2. verify the username and password with the system database.
 - 2.1. If valid, the user will be granted access to the following functions:
 - Print Postage
 - Buy Postage

- List Postage Transactions
 - Get Postage Balance
 - Refund Request
 - Log Out
- 2.2. If the username or password is invalid, the system shall inform the user. The user may enter a username and password or the user may cancel
 3. The system shall allow the user to request a new password from the system to be emailed to the user registered in the system database.
 - 3.1. The user can request a password from the system, provided the user gives the system a valid username from the system database.
 - If the username is not within the database, the system shall inform the user that their username is invalid. The user may enter a different username or the user may cancel.
 - 3.2. The system shall randomize a password and send to the email of the users account from the system database.

3.2.9 Refund Request

The system shall...

1. First, ensure that there is a valid, logged-in user requesting to access the Refund Request function
2. Then, provide a method for the user to enter a date.
3. Then, query the database for any postage transactions made on that date.
4. Then, display a list of any and all postage transactions made on that date in descending order.
 - 4.1. The system shall mark those transactions that are eligible for refund by determining which transactions fall within the ten day window.
5. Then, provide a method for the user to select an eligible transaction to be invalidated and refunded.
6. Then, provide a method for the user to confirm the selection.
 - 6.1. mark the selected transaction as invalid.
 - 6.2. adjust the users Postage Balance to reflect the refunded amount.

3.2.10 Validate Address

The system shall...

1. First, provide a method for the user to enter an address to validate.
2. Then, query a database of addresses in an attempt to validate the entered address.
 - 2.1. If the address is not found in the database, attempt to find an address that is similar to the entered address.
 - 2.2. If a similar address is found, notify the user that the entered address is not found and display the similar address and ask the user to confirm the new address.
 - 2.3. If no similar address is found, notify the user that the entered address is invalid and prompt them to enter a new address.

3.2.11 Logout

The system shall...

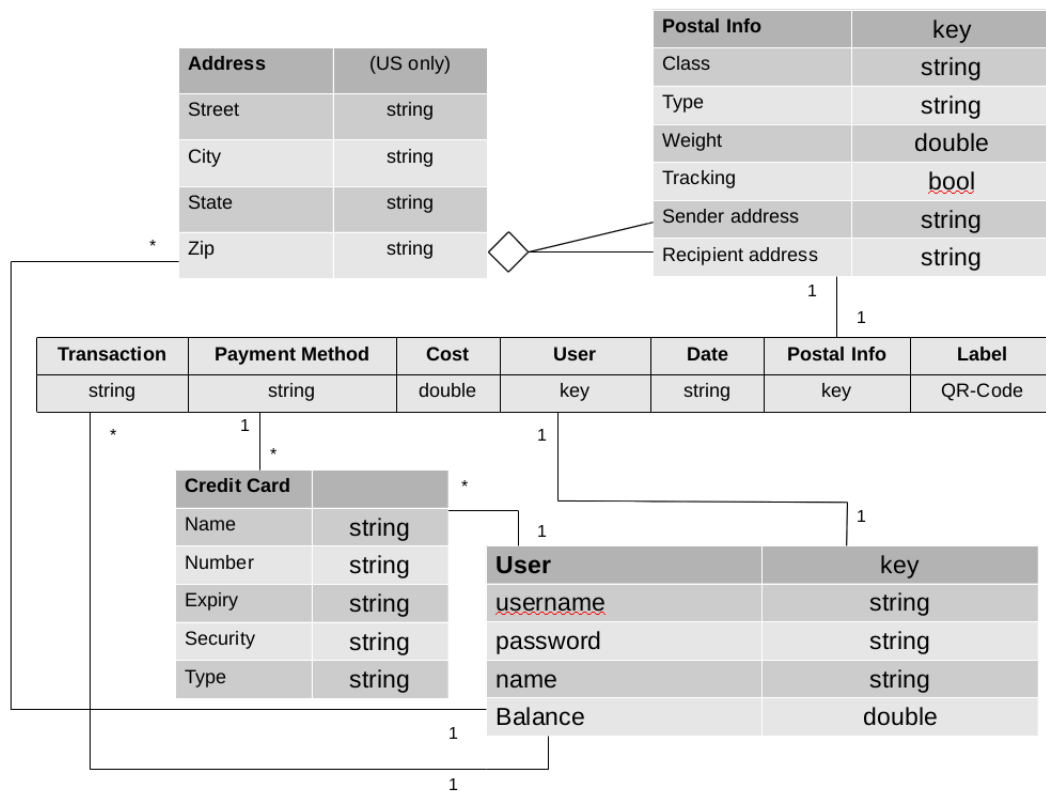
1. immediately disable access to functions that require a registered user.

3.3 Performance Requirements

2000 people should be able to use web application simultaneously. System login/logout shall take less than five seconds. Requests to Print Postage should be processed within 10 seconds. All other requests should be processed within 5 seconds.

3.4 Logical Structure of the Data

The logical structure of the data is detailed below.



3.5 Design Constraints

Constraints for the postage printing website include

- Able to support PC, Mac platforms.
- System logs out user after ten minutes of inactivity.
- System supports all web browsers.

3.6 Software System Attributes

The requirements in this section specify the required reliability, availability, security and maintainability of the software system.

3.6.1 Reliability

For the system to be reliable it will require a stable Internet connection. If service goes down, it will be restored within 30 minutes. The average failure rate should be less than 5% of all transactions.

3.6.2 Availability

The system should not be unavailable for more than 30 minutes within a 24 hour period, on average.

3.6.3 Security

Users access should be limited to their personal information only. Purchases should be handled through a secure server to ensure the protection of the users credit card and personal information.

3.6.4 Maintainability

Any updates or xes shall be able to be made on server-side only, without any requirements of the user.

3.6.5 Portability

Nothing required.