Software Requirements Specification
Post Office Parcel System

Introduction

This document provides the software requirement specification for a post office parcel system. The system is a C++ application designed to be used by a postal clerk at a counter to process price management and ship parcels. It handles the entire life cycle of a parcel from acceptance to tracking to its delivery status.

Terminology

The following defines the key terms used in this specification.

Postal clerk:	The system user who operates the counter terminal this user interacts with the system and processes the customer's parcel.
Customer:	The individual who interacts with the postal clerk to ship a parcel, the customer will provide the parcel sizing and contents, along with payment. This customer may also be on the receiving end and will be able to track that parcel.
Parcel:	The item being shipped this item has attributes such as weight, size, contents, destination and service class.
Tracking number:	A unique alphanumeric code generated by the system. It is printed on the label and receipt and can be used to try and look up the parcel's status.
Receipt:	A document that is given to the customer that holds details of the transaction, parcel attributes, service class and estimated time of arrival.
Shipping label:	A label printed by the system to be manually attached to the parcel. It contains the tracking number and content information.
System:	The post office parcel C++ application is running on the terminal.

Overall Description

The system is designed for a shared-use terminal at a post office and does not require an individual clerk login; however, it does require a recipient to create an account and log in to access tracking information.

The process begins when a customer would like to send a parcel. The clerk at the parcel counter enters the parcel's destination postcode, weight, contents and desired service class.

The system will then automatically:

- ■ Validate contents. It will display an error message (this item cannot able to be shipped due to unsafe contents) and instruct the clerk to cancel the process if flammable liquids or corrosive liquids are entered.

- ■ Calculate the price. This calculation is based on prices with additional fees automatically applied for items over 2 kg or if the contents are described as corrosive, flammable, or fragile. Note that corrosive liquids are not allowed to be sent; however, corrosive items such as batteries or anything that is solid may be sent. This case is the same for flammability, meaning that flammable liquids cannot able to be sent, but flammable solids such as wood are able to be sent.

This system is a cash-only system where the clerk handles all of the cash manually. Once the clerk confirms payment, the system will:

- ■ Generate the tracking number
- ■ Generate a receipt
- ■ And generate a shipping label

For tracking, the customer must log in to the system, enter their tracking number and then they will be given all of the information. The clerk will manually adjust shipping status, such as processed, shipped, in transit, or delivered.

Proposed Architecture
The system is a standalone C++ application. It does not interface with external web services.

Application core. This single executive file contains all of the business logic, including:

- ■ User interface
- ■ Pricing engine
- ■ Validation module
- ■ Tracking number generation
- ■ Database/storage interface

Database/storage interface:
A local file (XML, JSON, et cetera) used to store all parcel records and their current tracking status.

Specific Requirements
Non-functional Requirements.
Operational Requirements:

N1.   The system shall run on a shared terminal at the post office counter.
N2.   The system shall not require a unique user login for Postal Clerks but will for customers.

Performance Requirements
N3.   Price calculations shall be displayed in a reasonable time from the moment after the clerk enters all parcel details.
N4.   Parcel status lookups (using the 6-character tracking number) shall return a result in less than 1 Minute.

Security Requirements:

N5.   The system shall not require a separate customer-facing interface. It shall be done in the same executable.
N6.   The system will not process or store any credit card or digital payment information. All transactions are cash-only.

Functional Requirements.

F1.   The system shall allow a Postal Clerk to manually enter the following parcel details:
• Destination Post Code
• Weight
• Size
• Contents description (text field)
• Service Class (e.g., first class, next day)

F2.   The system shall automatically calculate the total postage cost based on a set of pre-defined prices and rules.

F3.   The system shall automatically add a surcharge if a parcel is over 2kg.

F4.   The system shall automatically add a surcharge if the 'Contents' description includes 'corrosive,' 'flammable,' or 'fragile' items.

F5.   The system shall validate the 'Contents' description.
F5.1. If the description contains 'flammable liquids' or 'corrosive liquids,' the system shall display the error: 'This item is not able to be shipped due to unsafe contents.'
F5.2. Following a forbidden item error, the system shall instruct the clerk to cancel the process and must not proceed to payment or label generation.

F6.   The system shall only accept cash as a payment method. All cash handling is external to the system (manual).

F7.   Upon payment confirmation by the clerk, the system shall generate a unique 6-character alphanumeric tracking number.

F8.   The system shall provide a receipt that includes:
• Parcel Size
• Parcel Weight
• Contents
• Service Class
• Estimated Time of Arrival (ETA)

F9.   The system shall print a shipping label that includes:
• The unique tracking number
• The contents description

F10.   The system shall provide a search function to look up a parcel.
F10.1. The clerk must search by manually typing in the alphanumeric tracking number.

F11.   The system shall store and display a parcel's status. The status must be one of the
        following:
        • Processed
        • Shipped
        • In Transit
        • Delivered

F12.   The system shall allow a Postal Clerk to manually update a parcel's status at any time
        after lookup.