# Software Requirements Specification: Post Office Parcel System

## 1 Introduction

This document provides the Software Requirements Specification (SRS) for a Post Office Parcel System. The system is a C++ application designed to be used by Postal Clerks at a counter to process, price, and manage parcels for shipment. It handles the entire lifecycle of a parcel from acceptance to tracking its delivery status.

### 1.1 Terminology

The following table defines the key terms used in this document:

| Term | Definition |
| --- | --- |
| Postal Clerk | The system user who operates the counter terminal. The clerk interacts with the system to process customer parcels. |
| Customer | The individual (either sender or recipient) who interacts with the Postal Clerk. The customer provides the parcel and payment, or calls to request tracking information. |
| Parcel | The item being shipped. It has associated attributes including weight, size, contents, destination post code, and service class. |
| Tracking Number | A unique 6-character alphanumeric code generated by the system. It is printed on the shipping label and receipt and is used to look up the parcel's status. |
| Receipt | A customer-facing document printed by the system that details the transaction, parcel attributes (weight, size, contents), service class, and estimated time of arrival (ETA). |
| Shipping Label | A label printed by the system to be manually affixed to the parcel. It contains the tracking number and content information. |
| System | The Post Office Parcel C++ application running on a shared counter terminal. |

## 2 Overall Description

The system is designed for a shared-use terminal at a post office counter, and it does not require an individual clerk login.

The process begins when a customer brings a parcel to a Postal Clerk. The clerk manually enters the parcel's destination post code, weight, size, contents description, and desired service class (e.g., first class, next day) into the system.

The system will then automatically:

• Validate the contents. It will display an error message ('This item is not 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 total price. This calculation is based on set prices, with additional fees automatically applied for items over 2kg or if the contents are described as 'corrosive,' 'flammable,' or 'fragile.'

The system is cash-only. The clerk handles all cash manually. Once the clerk confirms payment, the system will:

• Generate a unique 6-character alphanumeric tracking number.
• Print a receipt for the customer, which includes parcel details, class, and ETA.
• Print a shipping label with the tracking number and contents, which the clerk manually sticks to the parcel.

For tracking, a customer must call the office. The Postal Clerk can then look up the parcel by manually typing the 6-character tracking number into the system. The clerk is also responsible for manually updating the parcel's status in the system (e.g., from 'Processed' to 'Shipped,' 'In Transit,' or 'Delivered').

## 3 Proposed Architecture

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

Application Core (C++): This single executable contains all the business logic, including:

• User Interface (text-based or simple GUI)
• Pricing Engine (calculates cost based on weight, size, contents, class)
• Validation Module (checks for forbidden contents)
• Tracking Number Generator (creates the 6-character ID)
• Database/Storage Interface

Local Data Store: A local file (e.g., XML, JSON, or a simple database) used to store all parcel records and their current tracking status.

Hardware Interfaces: The application must be able to send commands to:
• A Receipt Printer (to print the customer receipt).
• A Label Printer (to print the shipping label).

# 4 Specific Requirements

## 4.1 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.
N3. The system must be able to interface with a designated receipt printer.
N4. The system must be able to interface with a designated label printer.

Performance Requirements

N5. Price calculations shall be displayed in less than 2 seconds after the clerk enters all parcel details.
N6. Parcel status lookups (using the 6-character tracking number) shall return a result in less than 3 seconds.

Security Requirements

N7. The system shall not require a customer-facing interface (e.g., no public website or app). All tracking lookups are performed by a Postal Clerk.
N8. The system will not process or store any credit card or digital payment information. All transactions are cash-only.

## 4.2 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 the words 'corrosive,' 'flammable,' or 'fragile.'
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 print 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 6-character tracking number
• The contents description
F10. The system shall provide a search function for Postal Clerks to look up a parcel.
F10.1. The clerk must search by manually typing in the 6-character 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.