Transport Company Computerization Software

Software Requirement Specifications

B419039 Pawan Kumar Mishra
B419052 Satyam Pandey
B419013 Akshit Gangawar
B419063 Sumeru Das

Problem Statement

A transport company wishes to computerize various book keeping activities associated with its operations.

- A transport company owns a number of trucks.
- The transport company has its head office located at the capital and has branch offices at several other cities.
- The transport company receives consignments of various sizes at (measured in cubic meters) its different offices to be forwarded to different branch offices across the country.
- Once the consignment arrives at the office of the transport company, the details of the volume, destination address, sender address, etc. are entered into the computer. The computer would compute the transport charge depending upon the volume of the consignment and its destination and would issue a bill for the consignment.
- Once the volume of any particular destination becomes 500 cubic meters, the computerization system should automatically allot the next available truck.
- A truck stays with the branch office until the branch office has enough cargo to load the truck fully.
- The manager should be able to view the status of different trucks at any time.
- The manager should be able to view truck usage over a given period of time.
- When a truck is available and the required consignment is available for dispatch, the computer system should print the details of the consignment number, volume, sender's name and address, and the receiver's name and address to be forwarded along with the truck.
- The manager of the transport company can query the status of any particular consignment and the details of volume of consignments handled to any particular destination and the corresponding revenue generated.
- The manager should also be able to view the average waiting period for different consignments. This statistic is important for him since he normally orders new trucks when the average waiting period for consignments becomes high due to non-availability of trucks. Also, the manager would like to see the average idle time of the truck in the branch for a given period for future planning.

1. Introduction

The introduction of the software requirement specification (SRS) provides an overview of the entire SRS which follows. The subsections in introduction are purpose, scope, definitions, acronyms, abbreviations, references and overview of the SRS. The aim of this document is to gather and analyse and give in-depth insight of transport company computerization software by defining the problem statement in detail. Not only has that it also concentrated on the capabilities that the managers of the company must possess in order to achieve new heights of success. The detailed requirements of this software are provided in this document.

1.1 Purpose

The purpose of this document is to present a detailed description of the transport computerization system. It will explain the purpose and features of the software in the best possible way. While developing the SRS document we as developers have taken utmost care to make it precise, unambiguous, consistent and understandable to the best of our knowledge. The document will also help us to predict and sort out how to use the product in a better way. It will also promote better understanding of the project, outline the important concepts that may be developed later, and document the core ideas that are being considered in the development process, but nonetheless these ideas may be discarded as the product develops in due course of time.

In a nut-shell, the purpose of this SRS document is to provide a detailed overview of our software product, the goals that are targeted and the parameters which lead to its development. The SRS document also describes the project's target audience and its user interface, hardware and software requirements. It defines how the client, team and audience see the product and its functionality.

Last but not the least, it helps any designer and developer and developer to assist in software delivery lifecycle (SDLC) processes.

1.2 Scope

Primarily, the scope pertains to the computerizing the book keeping activities of the transport company. It focuses on the company, the customers and applications which allow for the computerized control of the various ordered consignment transportation. This SRS is also aimed at specifying requirements of software to be developed but it can also be applied to assist in the selection of in-house and commercial software products. The standard can be used to create software requirements specifications directly or can be used as a model for defining an organization or project specific standard. It does not identify any specific method, nomenclature or tool for preparing an SRS.

1.3 Overview

The remaining sections of this document provide a general description, including characteristics of the users of this project, the product's hardware, and the functional and data requirements of the product. General description of the project is discussed in section 2 of this document. Section 3 gives the functional requirements, data requirements and constraints and assumptions made while designing the E-Store. It also gives the user viewpoint of product.
Section 3 also gives the specific requirements of the product. Section 3 also discusses the external interface requirements and gives detailed description of functional requirements. Section 4 is for supporting information.

1.4 References

The document has been prepared according to IEEE STD 830-1998- Recommended Practices for Software Requirements Specifications.

1.5 Definition, Acronyms and Abbreviations

GUI	Graphical User Interface
TCCS	Transport Company Computerization Software
SRS	Software Requirement Specification
Consignment	The customer orders a consignment (or parcel) to be sent
Database	It refers to the data stored in an organized manner. Four databases are maintained, one for consignment, one for truck, one for employees and the last one for branch offices.
Manager	A single person who has the ability to order trucks, add employee, change rate etc.
Customer	Refers the person who gives the order of the consignment to be sent.
Employee	The person at the office who enter the details of a consignment whenever it arrives the office.

1.6 Environmental Characteristics

1.6.1 Hardware requirements

The software requires a PC running windows or Linux and must have JAVA IDE installed. There are no hardware or software requirements beyond these including, but not limited to, memory or specific software packages that need to be utilized nor software packages that need not be utilized.

1.6.2 People

This software can be used by any user having basic skills in operating a computer since the user interface is very simple.

2. Overview Description

2.1 Functional Description

Functional Requirements are those that refer to the functionality of the system, i.e., what services it will provide to the user.
Non-functional requirements pertain to the other information needed to produce the correct system and are detailed separately.

2.2 Use Cases

In software and systems engineering, a use case is a list of steps, typically defining interactions between a role (known in Unified Modelling Language (UML) as an "actor") and a system, to achieve a goal. The actor can be a human or an external system. In systems engineering, use cases are used at a higher level than within software engineering, often representing missions or stakeholder goals.
Actors:

a) User: It is a human actor who is the end user of the company's services. It is a primary actor and is responsible for placing orders with the company.
b) Branch Employee: It is a human actor and a primary one.
c) Manager: It is also a human actor, a primary one and there is only one such actor possible in the system at any point of time.
d) Printer: It is a non-human actor. It is a secondary actor and helps in verifying the functionality of the TCCS system.

2.2.1 Use Case: Log in

Actors: Managers and Employees
Type: Primary and Essential
Description: Using the login panel, Manager and Employees log into their account. In this panel they are first asked to give their username and password.

Includes: Enter password
Use-Cases: None

2.2.2 Use case: Place Order

Actors: Senders
Type: Primary and essential
Description: In this use case, the sender places the consignment to be sent to the office.
Includes: Enter details of the consignment
Use-Cases: None

2.2.3 Use case: Enter details

Actors: Employees and Managers
Type: Primary and essential
Description: In this use case, Employees enter the details of the consignment received at the office, such as volume, destination address, and sender address into the computer.
Includes: Compute Charge, Update database
Use-Cases: Place order

2.2.4 Use case: Compute Charge

Actors: None
Type: Primary and essential
Description: In this use case, the computer would compute the transport charge depending upon the volume of the consignment and its destination and would issue a bill for the consignment.
Includes: Issue Bill
Use-Cases: Enter details

2.2.5 Use Case: Issue Bill

Actors: Printer
Type: primary and essential
Description: In this use case, the computer would compute the transport charge depending upon the volume of the consignment and its destination and would issue a bill for the consignment.

Includes: Allot truck
Use-Cases: Compute Charge

2.2.6 Use Case: Allot truck

Actors: None
Type: Primary and Essential
Description: In this use case, once the volume of any particular destination becomes 500 cubic meters, the computerization system should automatically allot the next available truck.
Includes: Update Database
Extends: Dispatch Consignment
Use-Cases: Issue Bill

2.2.7 Use Case: Update Database

Actors: None
Type: Primary and Essential
Description: In this use case, the computer updates the database every time it allots truck or gets any details or manager adds any employee or whenever the corresponding database gets updated through the user input.
Includes: None
Use-Cases: Allot truck, Dispatch Consignment, Change rate, Order new trucks, Add Employee

2.2.8 Use Case: Dispatch Consignment

Actors: None
Type: Secondary and Non-Essential
Description: In this use case, when the consignment is ready for dispatch and the truck is fully loaded, the computer prints the details and the consignment is dispatched.
Extension Point: When the Consignment is ready for dispatch and the truck is fully loaded.
Includes: Print, Update Database
Use-Cases: Allot truck

2.2.9 Use Case: Print

Actors: Printer
Type: Secondary

Description: The computer system should print the details of the consignment number, volume, sender's name and address, and the receiver's name and address to be forwarded along with the truck.
Includes: Forward Acknowledgement
Use-Cases: Dispatch Consignment

2.3.0 Use Case: Forward Acknowledgement

Actors: None
Type: Primary and essential
Description: When a truck is available and the required consignment is available for dispatch, the computer system should print the details of the consignment number, volume, sender's name and address, and the receiver's name and address to be forwarded along with the truck.
Includes: None
Use-Cases: Print

2.3.1 Use Case: Enter Password

Actors: Employees and manager
Type: Primary and Essential
Description: In this case, employees and manager enter password. If the password is valid, then only they can log into their account.
Includes: None
Use-Cases: Log In

2.3.2 Use Case: Log Out

Actors: Employees and Manager
Type: Primary and Essential
Description: In this case, Employees or managers log out from their account.
Includes: None
Use-Cases: Log In

2.3.3 Use Case: Query Status of Consignments

Actors: Managers
Type: Primary

Description: Manager queries the status of consignments
Includes: Query Volume of Consignments
Use-Cases: None

2.3.4 Use Case: Query Volume of Consignments handled

Actors: Managers
Type: Primary
Description: Manager queries the volume of consignments handled at a particular destination branch.
Includes: Query Revenue
Use-Cases: Query status of consignments

2.3.5 Use Case: Query Revenue generated

Actors: Manager
Type: Primary
Description: Manager Queries the revenue generated for the consignments handled at a particular destination branch.
Includes: None

2.3.6 Use Case: Change Rate

Actor: Manager
Type: Primary
Description: Manager can change the rate of sending consignments between any two branches.
Includes: Update Database

2.3.7 Use Case: View Status Of trucks

Actor: Manager
Type: Primary
Description: Manager can view the status of trucks at any time
Includes: None

2.3.8 Use Case: View Idle waiting time

Actor: Manager
Type: Primary
Description: Manager can see the average idle time of the truck in the branch for a given period for future planning.

Includes: None

2.3.9 Use Case: Add Employee

Actor: Manager
Type: Primary
Description: Manager can add employee to the branch and the database get updated
Includes: Update Database

2.4.0: Use Case: Order New Trucks

Actor: Manager
Type: Primary
Description: Manager can order new trucks for better transportation system.
Includes: Update Database

2.4.1: Use Case: View Waiting period of a truck

Actor: Manager
Type: Primary
Description: Manager can view the average waiting period for different consignments. This statistic is important for him since he normally orders new trucks when the average waiting period for consignments becomes high due to non-availability of trucks.
Includes: None

2.5 Non-Functional Requirement

There are requirements that are not functional in nature. Specifically, these are the constraints the system must work within.

3. Requirements Specifications

3.1 External Interface Requirements

3.1.1 User Interfaces

Only mouse and keyboard are required for interacting with the system.

3.1.2. Hardware Interfaces

Hardware: Personal Computer or laptop
Operation System: Windows XP or higher, Linux
Internet Connection: Either LAN connection or Wi-Fi connection

3.1.3. Software Interfaces

The software will be coded in JAVA IDE using ECLIPSE (or NetBeans).
No other software interface required.

3.2 Functional Requirements

The set of functionalities that are supported by the system are documented below-

3.2.1 Compute Charge

Description:
Once the consignment arrives at the office of the transport company, the details of the volume, destination address, sender address, etc. are entered into the computer. The computer would compute the transport charge depending upon the volume of the consignment and its destination and would issue a bill for the consignment.

3.2.2 Update Database

Description:
Whenever a truck is successfully loaded or manager adds a new employee, orders new trucks or a consignment is dispatched the computer updates the database based on that.

3.2.3 Allot Truck

Description:
Whenever the consignment volume for a particular destination crosses 500 cubic m. the computer automatically allots the next available truck.

3.2.4 Issue Bill

Description:
Once the consignment arrives at the office of the transport company, the details of the volume, destination address, sender address, etc. are entered into the computer. The computer would compute the transport charge depending upon the volume of the consignment and its destination and would issue a bill for the consignment.

3.2.5 Dispatch Consignment

Description:
Whenever a truck is fully loaded for a particular destination, the consignment is dispatched.

3.3 Detailed Non-functional Requirements

3.3.1 Bill Format

1.) The Bill should contain the details of the consignment number, volume, sender's name and address, and the receiver's name and address to be forwarded along with the truck.

3.3.2. Sales-statistics Report Format

1) The sales statistics report should indicate the quantity of an item sold, the price realized, and the profit.

3.3.3. Data must be saved properly
3.3.4. Correct data must be given
3.3.5. The software should be protected from customers and nonemployees of the Company.

3.3.6. The latest version of java IDE is installed in the computer in which it is going to be run.

4. Constraints

Security is not a concern for this system. The database may store passwords in “serializable” file and there doesn't need to be a password recovery feature nor lockout after numerous invalid login attempts. As such, the system may not work correctly in cases when security is a concern. We are not forcing users to have “strong password”. A strong password is a password that meets a number of conditions that are set in place so that user's passwords cannot be easily guessed by an attacker. Generally, these rules include ensuring that the password contains a sufficient number of characters and contains not only lowercase letters but also capitals, numbers, and in some cases, symbols.

5. Assumptions

1) Whenever a truck is dispatched, the receiver receives the consignment.
2) There will be no clubbing of trucks, means if a truck is available and one gives the order of less than 500 cubic m. then that truck
3) The trucks of the company will never face any kind of accident.

6. Limitation of Project

As stated, security is not a concern of this project. As such, it is beyond the scope of this system to encrypt personal user data and information, prevent unauthorized login attempts, or any other concern of this nature. Additionally, the system is not responsible for the following:

(1) Verifying if the information given is correct.
(2) Storing data about the customers.
(3) Does not consider unhappy events in case of transportation of consignment from one branch to another.
(4) Also, it cannot provide real time position of the trucks during movement from one branch to another.