

---

# **Software Requirements Specification**

**for**

## **Transport Company Computerization (TCC) Software**

**Version 1.0 approved**

**Prepared by Aurghya Maiti**

**Department of Computer Science and Engineering,**

**IIT Kharagpur**

**19 January 2018**

# Table of Contents

<b>Table of Contents .....</b>	<b>ii</b>
<b>Revision History .....</b>	<b>ii</b>
<b>1. Introduction.....</b>	<b>1</b>
1.1 Purpose .....	1
1.2 Product Scope .....	1
1.3 References.....	1
<b>2. Overall Description.....</b>	<b>2</b>
2.1 Product Functions .....	2
2.2 Operating Environment.....	2
2.3 Design and Implementation Constraints.....	2
2.4 Assumptions and Dependencies .....	2
<b>3. External Interface Requirements .....</b>	<b>3</b>
3.1 User Interfaces .....	3
3.2 Hardware Interfaces .....	3
3.3 Software Interfaces .....	4
3.4 Communications Interfaces .....	4
<b>4. System Features.....</b>	<b>4</b>
4.1 User Registration and Login .....	4
4.2 Truck Status Checking.....	4
4.3 Consignment Details .....	4
4.4 Account Details .....	5
<b>5. Other Nonfunctional Requirements .....</b>	<b>5</b>
5.1 Performance Requirements .....	5
5.2 Software Quality Attributes.....	5
<b>6. Other Requirements .....</b>	<b>5</b>

## Revision History

Name	Date	Reason For Changes	Version
Aurghya Maiti	Jan 19, 2018	SRS document for Transport Company Computerization Software	Version 1.0

# **1. Introduction**

## **1.1 Purpose**

The purpose of this System Requirements Specification document is to give a detailed description of the requirements, specifications and features of the Transport Company Computerization (TCC) software, which would help to manage the administrative works of a Transport Company. This document is used to convey information about the functional and non-functional requirement proposed by the client. It also explains system constraints, and its interaction with various other external entities. The document is intended to get an approval by the client so that the developers can get a reference for the development of version 1.0 of the application software.

## **1.2 Product Scope**

The purpose of the software is to computerize the major processes of a Transport Company, so that the administrative works can be done in a more efficient, faster and elegant manner. The software would be installed in computers at various branches of the transport company. It helps to keep all data related to consignments, trucks and employees under a single shade and also assists to allot trucks and calculate waiting time of consignments among other functionalities. The purpose of this document is to list the requirements that this software must meet.

The product will be a java application as a Java program has lots of advantage in terms of performance, reusability, reliability, cost, portability and ease in implement, maintenance and development process.

## **1.3 References**

[1] Rajib Mall “Fundamentals of Software Engineering”

[2] IEEE Software Engineering Standards Committee “IEEE Recommended Practice For Software Requirements Specifications”

[3] [www.geeksforgeeks.org/how-to-write-a-good-srs-for-your-project/](http://www.geeksforgeeks.org/how-to-write-a-good-srs-for-your-project/)

[4] [www.wikipedia.org/wiki/SRS](http://www.wikipedia.org/wiki/SRS)

[5] Ian Sommerville “Software Engineering”

## **2. Overall Description**

This section describes the functions of the software, its operating environment, some basic but valid assumptions and dependencies. It also tries to bring out the design and implementation constraints in development of the software.

### **2.1 Product Functions**

This software will help to make the management and administrative processes of a Transport company faster and efficient. The functionalities of the software are as follows:

- The software will be able to store the details of consignment, compute the transport charge and issue bill for the consignment.
- It will be able to automatically allot the next available truck as the consignment for a particular destination exceeds a certain limit.
- It will be able to store the truck details and show the status of trucks as well as consignments at a given time.
- It will also be able to compute the average waiting time for consignments and the idle time of a truck.
- Passwords and user ID will be used to protect the accounts of employees and manager.

### **2.2 Operating Environment**

The software is a Java application that also makes use of a database. It must be designed to work flawlessly and without issues on a Linux (Ubuntu or CentOS) and Windows computer having support for Java applications (like, JDK installed) and the database (like Oracle DBMS, MySQL etc.) to be used.

### **2.3 Design and Implementation Constraints**

The major constraints in the development of the software:

- Computers at various centers must be able to communicate in real time. For that internet connection is required.
- Good form of integration between the database and the java application.
- Limited amount of memory can cause issues if the database is too large.
- The software will use password for login. Security of the software depends on the password protection and also on the network communication.
- The algorithm followed will not be an optimized one, as an optimized algorithm will be too much computationally heavy. However, it will give fairly good results in most cases.

### **2.4 Assumptions and Dependencies**

The software will be made with the following assumptions:

- The users have computers with Linux installed.
- Internet connection is well available in all the branches and the computers there can communicate with each other in real time.
- Each user must remember his password and login ID, failing which, he cannot login into the system. The manager will be the only one to have the right to reset password.

- User should not tamper/experiment with the source code/executable file of the software.
- The user should have a good knowledge about the basic attributes of an object and fill in the details of the objects and employee properly.
- The centers of the Transport Company are well distributed in the map and each center performs well in terms of consignment handling (that is there is no center which only receives goods, but does not send any or vice versa).

The main dependencies of the working and performance of the software are:

- The internet connection should be good enough for the computers to communicate with each other and send data to the central machine of the manager.
- The Java VM and all other platforms should be functioning properly.
- All the tools on which the software is dependent must be working properly.
- The software will also depend on the database and the interaction of Java application with the database.

### **3. External Interface Requirements**

#### **3.1 User Interfaces**

The user interface of the software will be easy to use and interactive. Each person will have to login using his own login id and password. Only after that, he will be able to make any changes to the database or have his/her queries answered.

1. Employees: They will be given the access to do the following jobs:
  - a) Enter details of a consignment like type, volume, details of sender and receiver, like name, address and a Government ID.
  - b) They will be able to see the truck details present at their center.
  - c) They would be able to view the allotment of the truck and take a printout of the details of consignment number, volume, sender's name and address and receiver's name and address to be forwarded along with the truck.
2. Manager: Manager will be given the admin rights. He:
  - a) Can do all the tasks that an employee can do
  - b) Can view status of all consignments and truck status at a given time.
  - c) Can view the corresponding revenue generated in a particular center as well as over all centers.
  - d) Can see the waiting time of a consignment.
  - e) Can appoint new employees and add them to employees database or remove any employee from the company as well as from the database.
  - f) He will give an employee an username and a password and he can also reset the password of an employee.

#### **3.2 Hardware Interfaces**

The storage of the data on the physical drive will depend on the tools used for the development of software. The software will run properly on a computer having support for Java applications and also the database to be used. The computer should have a minimum of 2GB RAM (preferably 4GB or more) and 20GB free space (preferably 50GB or more). More memory may be required if the database is too large.

### **3.3 Software Interfaces**

Java will be used in the development of the software. A database will also be required to store the employee information, consignment details and truck information in a logical manner. Java applications must be able to communicate with the database properly. All major internal dependencies should be taken into account. Internet connection is required for the communication of computers at different branches.

### **3.4 Communications Interfaces**

Communication plays a major role in the software performance. All information regarding the trucks and consignments are sent through networks. So the computers at different and the central machine must be able to communicate securely and quickly over the network. The software must take care of the communication protocol to be used or the encryption to be followed to ensure secure communication among different branches.

## **4. System Features**

This section describes the major functionalities of the software.

### **4.1 User Registration and login**

Functional Requirements:

1. User must be employed by the manager who will provide them an user ID and password.
2. Employees must be able to login only with that user ID and password.
3. In case they forget their password, the manager himself must reset it.
4. A manager will be able to add new employees or remove employees.

### **4.2 Truck status checking**

Functional Requirements:

1. Addition of new trucks and rejection of old trucks can be done only by manager.
2. The details of the truck will be entered by the employees at different branches.
3. The administrator must be able to get the real time status of a truck as well as a list of all the trucks.
4. The employees must be able to see the truck status at their branch.
5. The truck is identified by its unique number.
6. Besides location, it has attributes like source, destination, driver, details of consignment and working and idle time.

### **4.3 Consignment details**

Functional requirements:

1. The details of the consignment will be entered by employees at different branches.
2. The software must have/store all details of consignment: volume, sender and sender's address receiver and receiver's address and the truck it is being carried.
3. It must be able to allot a new truck as the amount of consignments for a certain destination increases a certain amount.

4. The software must be able to check the real time status of the assignment.
5. It must be able to calculate the waiting time of a consignment, so that the manager is able to take useful decisions from it.

#### **4.4 Account Details**

Functional Requirements:

1. Manager must be able to see the profit/revenue collected from each branch.
2. The manager must be able to calculate the waiting time of consignments and idle time of trucks to determine his business strategy.
3. It must also be able to calculate the revenue left after buying a certain number of trucks, so that the manager is able to decide whether to buy trucks or not.

### **5. Other Nonfunctional Requirements**

#### **5.1 Performance Requirements**

Software must perform smoothly and efficiently. Performance of the software will greatly depend on the speed of the internet, ease and speed of accessing data from the database and the speed of communication among different computers. The software uses a few computations that are not computationally heavy but are very much dependent on the database and processing and data handling power of the computer.

#### **5.2 Software Quality Attributes**

The software must be easy to use and should run without issues in Linux (Ubuntu or CentOS). It should be correct and easily maintainable. The system developed by the software should be flexible, that is there must be provisions for different changes (like expansion) in the Transport Company. The software should also be reliable and reusable for additional purposes. The software must also ensure the security and privacy of the Transport Company.

### **6. Other Requirements**

The use of the software will be guided by the rights an user is provided. No legal issues must be there with the use of the software. However, the tools used here have some specific licenses. The license terms must be followed to avoid any legal issues in the future. A user manual will also assist the software so that users can get the best out of this software.