Software Requirements Specification

for

VideoCo Management System

SRS Version 1.0

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Revision History

Name	Date	Reason For Changes	Version
VideoCo Management System	Nov 14, 2020	Initial Draft	1.0

1. Introduction

1.1 Purpose

The primary goal of this document is to provide a complete and accurate list of requirements needed by VideoCo Management System, version 1.0 to accomplish its task. The SRS will provide features that are required to build this software, functions of this product, its user classes and characteristics, operating environment in which this software will operate in, and its functional and non-functional requirements. This document provides tools VideoCo Management System will require in order to deploy its services online, management of a warehouse team that would create a list of to-be-shipped movies, and deliver it to the shipping team to ship movies Canada-wide.

1.2 Document Conventions

Each requirement in this document is assigned a heading number and priority. It will be followed by a description, which is a brief outline as to what function the software must perform. The priorities that are used in this document are as follows:

> **1** = Essential: These are items that must be in the release build of the software.
>
> **2** = Important: These are items that should be in the release build of the software but can be sacrificed if there is a constraint or deadline to be met.
>
> **3** = Desirable: These are items that can be considered in development; these are items that can be added in later releases of the software.

The following is an example of a requirement written to this document's standard:

> **1.2-R1:** This is where the description of the requirement is covered briefly.
> *Priority: 1*

1.3 Intended Audience and Reading Suggestions

The primary audience of this document is the developers of the system. However, this document may also be of interest to project managers, end users and testers. The remainder of this document contains more detailed description of system features required to build this software. The developers of this system should read through section 1 to 6, since those sections describe all the elements that are needed to or part of developing the right software. They contain both the functional requirements and non-functional requirements. The functional requirements define the functions that must be performed by the system. The non-functional requirements describe the manner in which the functions will be performed.

- Suggested reading for project managers: Sections 1.1, 1.2, 1.4, 1.5, 2, 3, 5, 6, 7
- Suggested reading for developers: Sections 1.1, 2.1, 3, 4, 5.1-5.4, 6, 7
- Suggested reading for users: Sections 1.1, 1.4, 2.2-2.4, 2.7, 6, 7

1.4 Product Scope

VideoCo Management System is a small store. Their mission is to expand their business in Canada and start renting videos, through the Internet. VideoCo's goal is to establish a new computer system as well as a few warehouses around the nation. They want to provide their customers a facility of renting videos online and shipping it to them. To encourage more users, they introduced a loyalty program. The loyalty program will provide customers with loyalty points that they can use to purchase movies. They are offering "dialing an operator" services for customers that are not internet savvy. This will allow customers to pick their favourite movies with the help of an operator. Their warehouse team creates a list of to-be-shipped movies that will be delivered to the shipping team. The shipping team will prepare the paperwork to ship the movies, shipment is limited to Canadian customers only.

1.5 Stakeholders

- **Customers:** The people that will be using the software to make purchases and enjoy movies from VideoCo.
- **Developers:** The people that are responsible for making sure that the software is functional and secure to use.
- **Managers:** The people that are in charge of editing entries in the database
- **Movie Actors:** Their movies are being watched and up for sale for VideoCo's customers to purchase
- **Movie Studios:** Movies produced by them are being rented by VideoCo's customers
- **Operators:** VideoCo's employees who help less tech savvy customers to use the new system's services.
- **Project Manager:** The person that is responsible to make sure deadlines are met so that the software release is not delayed.
- **VideoCo:** The client for whom the software is being developed.

1.6 References

- EVLA Array Operations Software Requirements, R. Moeser, P. Perley, 2.5, Jun-16-2006, https://pdfslide.net/documents/evla-array-operations-software-evla-array-operationssoftware-requirements-.html

2. Overall Description

2.1 Product Perspective

VideoCo is a video store, located in Toronto, that wants to expand its business to the online market to ship videos all around Canada. To do this, they are planning to establish a couple of warehouses distributed across Canada, to make shipping easier. To manage this, VideoCo wants to create a new computer management system. This system will manage many components of the business expansion, from the online video rentals to the shipping of the videos, as well as managing all the users of the system.

2.2 Product Functions

- **Loyalty Program:** The ability to maintain a loyalty program where loyalty points are added and deducted based on video rental services.

- **Operator:** The ability to provide a dial operator service. For dial-in customers, the operator has the ability to order videos for them and maintain their account.

- **Order Database:** The ability to maintain an order database that contains a list of all past and current orders. The database will be accessed by the warehouse team to complete current orders.

- **Order Videos:** The ability to add or remove videos to an order cart. The cart should display the selected videos, a subtotal price and a return date. When checking out a cart, the user should have the ability to pay via credit card or loyalty points. If the checked out videos are not returned by the specified return date, late fees are incurred based on the location that the videos were shipped to.

- **User Accounts:** The ability to access or create user accounts. Each user account is associated with loyalty points, and can view both active rentals and rental history, and any outstanding overdue charges.

- **User Database:** The ability to maintain a user database that keeps track of active accounts in the system. Since this database can contain potentially sensitive information. It can only be accessed by the system, manager accounts, and operator accounts.

- **Video Database:** The ability to maintain a video database that displays video title, genre, and a description. A manager will be able to add or remove videos to the database. The user interface will allow users to browse videos by title or genre, view their availability and price, and select videos to add to their order cart.

- **Warehouse Database:** The ability to maintain a warehouse database that maintains a list of warehouses that exist in the system. A manager will be able to add or remove warehouses to the database.

2.3 User Classes and Characteristics

2.3.1 VideoCo Staff

Managers: The managers have the ability of updating the video database and updating the warehouse database. They also have the ability to view the orders database of past and current orders.

Warehouse Team: The warehouse team maintains a record of the stock in the warehouse and assembles the list of videos to be shipped based on the orders coming to that specific warehouse. The warehouse is also responsible for processing rental returns.

Shipping Team: The shipping team is responsible for shipping the orders out to the customers nationwide.

Operators: The operators have the ability of creating and maintaining accounts and placing a rental order on behalf of a dial-in customer.

2.3.2 Non-VideoCo Staff

Registered Customers: These customers will have access to creating an account so they may rent videos offered by the system.

Non-registered Customers: These customers will only have the ability to view the videos in the catalog, but will not be able to rent.

2.4 Operating Environment

The software requires the following minimum hardware specifications:

- OS: Windows XP
- Processor: Single-core
- Memory: 256KB RAM
- Storage: 200MB available space
- Internet Connection: Yes
- Any system that contains a Java runtime environment

2.5 Design and Implementation Constraints

Implementation and design constraints of the VideoCo Management System are follows:

- Users that choose to do a dial-in order will be mailed a bill, as giving credit card details is not secure over the phone. The order will be set as unpaid, until the bill is paid.
- Databases for users, videos, warehouses, orders need to be maintained and secured.
- A payment authorization needs to be used when payments are made through credit card.

2.6 User Documentation

2.6-R1: The user should be able to access a quick help guide in the help section of the software, that shows the user how to use the software.
Priority: 3

2.6-R2: The software shall provide online documentation for all icons/tools in the system.
Priority: 3

2.7 Assumptions and Dependencies

The following are the assumptions and dependencies that have been made for the VideoCo Management System:

- Problem statement states the system should contain warehouses to which order/shipping lists are sent. The designed system assumes that the warehouses are only located in Canada.

- Problem statement states the system should be able to handle international purchases. After speaking with the client, the scope of the system has been changed to allow for nationwide shipping (i.e. only in Canada).

- Problem statement states the system should allow for dial-in customers. The designed system assumes that the dial-in customers are mailed monthly, a video catalog. This assumption allows for a dial-in customer to have access to a physical video catalog.

- The designed system assumes that no taxes are applied to purchases/orders.

- The designed system assumes that all legal issues/licensing will be dealt with client-side.

- The designed system assumes that fees are calculated based on a percentage cost of the order.

3. External Interface Requirements

3.1 User Interfaces

Rationale: This section covers any requirements related to the way users interact or experience the software's services. This is done so that all types of users can comfortably interact with the software within their constraints.

3.1-R1: The software shall use a graphical user interface to display information.
Priority: 1

3.1-R2: The software's graphical user interface should be intuitive to navigate.
Priority: 1

3.1-R3: The software's graphical user interface should be easily updatable.
Priority: 2

3.1-R4: The software shall be usable by users with visibility issues due to deficiencies or environment.
Priority: 2

3.1-R5: The software shall be able to be interacted with through the use of a touchscreen, mouse, and keyboard.
Priority: 1

3.1-R6: The software shall display any error messages that correspond to a type of user.
Priority: 1

3.2 Hardware Interfaces

Rationale: This section describes any requirements related to the hardware that the software will run on. These requirements are designed to describe the minimum requirements that the user's hardware will need to be able to run the product or software adequately.

3.2-R1: The hardware shall be required to be able to run any operating system that can run a Java virtual machine environment.
Priority: 3

3.2-R2: The hardware shall be required to have a 200MB of free disk space.
Priority: 3

3.3-R3: The hardware shall be required to have 256KB of RAM.
Priority: 3

3.3 Software Interfaces

Rationale: This section describes any requirements related to what the system is expected to be able to interact with. It describes what type of systems the product will work alongside in order to accomplish the product's functional requirements.

3.3-R1: The software shall be able to communicate with a warehouse's inventory database.
Priority: 1

3.3-R2: The software shall be able to communicate with the video database.
Priority: 1

3.3-R3: The software shall be able to communicate with the order database.
Priority: 1

3.3-R4: The software shall be able to communicate with banking services.
Priority: 1

3.3-R5: The software shall be able to communicate with the user database.
Priority: 1

3.4 Communications Interfaces

Rationale: This section covers requirements related to the communication of different users, systems, and databases. It defines what protocols or methods two specific parties will use when communicating with each other.

3.4-R1: The software shall be able to send emails to users regarding different subject matter.

3.4-R1.1: If the user's account type is customer, the contents of the message can be related to recent purchases, issues with account information, general promotions,.
Priority: 2

3.4-R2: The software shall use HTTPs to communicate with the users device.
Priority: 2

3.5-R3: The software shall use FTP to communicate with the required databases.
Priority: 3

4. System Features

4.1 Creation of User Accounts and Log In / Log Out

4.1.1 Description

The system should allow a user to create a new account or log into an existing account. If the user must create an account, they will be prompted to enter their information and create a password; this information will be stored in a user database. The system should allow account information to be changed/edited at a later time. The system should also allow a user to log out of a signed in account.

4.1.2 Stimulus and Response Sequences

Creating a New Account:

1. The user clicks on an option to create a new account.
2. The system prompts the user to enter their information.
3. The user selects the type of account they desire (TBD).
4. The user submits information to the system.
5. The system stores the user's information in the user database.

Logging into an Existing Account:

1. The user enters their account credentials.
2. The user clicks on the option to log in.
3. The system checks the user database to make sure the credentials exist and are correct; if not, then redo Step 1.
4. The system allows the user into the system.

Logging out of an Existing Account:

1. The user clicks on an option to logout.

4.1.3 Functional Requirements

4.1-R1: The software shall allow a user to create an account in the system. There are three types of accounts: a "customer account", a "manager account" and an "operator account".

> **4.1-R1.1:** A customer account shall contain the following information: the customer's first name, last name, email address, home address, phone number, credit card information, and loyalty point information.
>
> *Priority: 1*
>
> **4.1-R1.2:** A manager account shall contain the following information: the manager's first name, last name, email address, home address, and phone number.
>
> *Priority: 1*
>
> **4.1-R1.3:** An operator account shall contain the following information: the operator's first name, last name, email address, home address, and phone number.
>
> *Priority: 1*

4.1-R2: The software shall allow the user to create a password for their account.

4.1-R2.1: A password shall contain at least one uppercase letter.
Priority: 3

4.1-R2.2: A password shall contain at least one number.
Priority: 3

4.1-R2.3: A password shall contain at least one special character.
Priority: 3

4.1-R3: The software shall allow a user with an account to enter the system with their associated email address and password.

4.1-R3.1: The email address associated with a user shall be unique; no two user accounts can have the same email address.
Priority: 1

4.1-R4: The software shall allow a user with an account to edit their account details.

4.1-R4.1: A user with any account shall be able to change their first name.
Priority: 2

4.1-R4.2: A user with any account shall be able to change their last name.
Priority: 2

4.1-R4.3: A user with any account shall be able to change their email address.
Priority: 2

4.1-R4.4: A user with any account shall be able to change their home address.
Priority: 2

4.1-R4.5: A user with any account shall be able to change their phone number.
Priority: 2

4.1-R4.6: A user with any account shall be able to change their credit card information (if it exists).
Priority: 2

4.1-R5: The software shall allow a user to log out of their account.
Priority: 1

4.1-R6: A user creating a customer account shall not be required to submit credit card information; this can be added later on.
Priority: 3

4.2 Manager Account Information

4.2.1 Description

The system should allow for a user with a manager account to have the highest level of permissions and abilities. A user, with a manager account, can view information that is unavailable to those with operator accounts or customer accounts. A manager account is the only account that should be able to edit any information in the video database and warehouse database. A manager account also inherits any abilities of an operator account.

4.2.2 Stimulus and Response Sequences

Adding Videos to Video Database:

1. The user, with a manager account, selects the option to add a video in the system.
2. The system prompts the manager to enter video information.
3. The manager submits information to the system.
4. The system updates information in the video database.

Removing Videos from Video Database:

1. The user, with a manager account, selects the option to remove a video in the system.
2. The system presents a sorted list of videos that exist in the system.
3. The manager selects the video that should be removed.
4. The manager submits information to the system.
5. The system updates information in the video database.

Adding Warehouses to Warehouse Database:

1. The manager creates a warehouse profile with the warehouse's ID and location.
2. The manager submits information to the system to add a warehouse profile to the database of warehouses available to process orders.
3. The system checks the given warehouse profile, verifies it is not already in the warehouse database, then adds it to the database.

Removing Warehouses from Warehouse Database:

1. The manager searches for a warehouse profile based on ID and location.
2. The system provides a list of warehouse profiles whose description matches the one specified by the manager.
3. The manager selects the desired warehouses from selection given by system.
4. The manager confirms warehouse choices.
5. The system removes warehouses from the database.

4.2.3 Functional Requirements

4.2-R1: The software shall allow a user with a manager account to edit the database of videos.

> **4.2-R1.1:** The user, with a manager account, shall be able to add an entry to the video database.
>
> *Priority: 1*

4.2-R1.2: The user, with a manager account, shall be able to remove an entry from the video database.
Priority: 1

4.2-R2: The software shall allow a user, with a manager account, to edit the database of warehouses.

4.2-R2.1: The user, with a manager account, shall be able to add an entry to the warehouse database.
Priority: 1

4.2-R2.2: The user, with a manager account, shall be able to remove an entry from the warehouse database.
Priority: 1

4.2-R3: The software shall allow a user with a manager account to inherit any abilities of a user with an operator account.
Priority: 1

4.3 Operator Account Info and Dial-In Customers

4.3.1 Description

The system shall allow for a user with an operator account to have a medium level of permissions and abilities. A user with an operator account can create new accounts and maintain them for customers who are not tech savvy. Users with operator accounts should be able to help a customer search for videos and create orders; they should be able to mark orders as unpaid for the customers who intend to pay at time of delivery.

4.3.2 Stimulus and Response Sequences

In general, stimulus/response sequences are similar to that of a customer using the online service. In these cases, it's a customer requesting an operator to interact with the system.

Adding Dial-In Customer to User Database:

1. Users with operator accounts select an option to create a new account in the system.
2. The system prompts the operator to enter information about the customer.
3. The operator selects the type of account they would like to create for the new user.
4. The operator submits information to the system.
5. The system stores the new user’s information in the user database.

Placing an Order for Dial-In Customer:

1. Customer calls store and get transferred to an available operator.
2. Operator asks for customer account information.
3. Customers give the operator the account information.
4. Operator validates information by searching the database for a corresponding account; redo steps 2 if no account with corresponding information exists.
5. Customer requests items to be placed in cart.

6. Operator complies with the request if such items are available for ordering.
7. Customer verbally confirms to place an order.
8. Operator places order into the system; the order is marked as unpaid.

4.3.3 Functional Requirements

4.3-R1: The software shall allow a user with an operator account to create a new customer account in the system.

Priority: 1

4.3-R2: The software shall allow a user with an operator account to search for a customer account.

4.3-R2.1: A user with an operator account can search for a customer account by the email address associated with an account.

Priority: 1

4.3-R2.2: A user with an operator account can search for a customer account by name associated with an account.

Priority: 1

4.3.-R2.2: A user with an operator account can search for a customer account by phone number associated with the account.

Priority: 1

4.3-R3: The software shall allow a user with an operator account to update a customer's account information.

4.3-R3.1: A user with an operator account shall be able to change the first name on a customer's account.

Priority: 1

4.3-R3.2: A user with an operator account shall be able to change the last name on a customer's account.

Priority: 1

4.3-R3.3: A user with an operator account shall be able to change the email address on a customer's account.

Priority: 1

4.3-R3.4: A user with an operator account shall be able to change the home address on a customer's account.

Priority: 1

4.3-R3.5: A user with an operator account shall be able to change the phone number on a customer's account.

4.3-R3: The software shall allow a user with an operator account to manage a customer's order cart.

4.3-R3.1: The software shall allow a user with an operator account to add items to a customer's order cart.
Priority: 1

4.3-R3.2: The software shall allow a user with an operator account to remove items to a customer's order cart.
Priority: 1

4.3-R4: The software shall allow a user with an operator account to checkout a customer's order cart.

4.3-R4.1: Orders placed by an operator account are labeled as "unpaid" by the system. Unpaid orders require the customer to pay for the order upon its delivery.
Priority: 1

4.3-R5: The software shall allow a user with an operator account to cancel a customers order.

4.3-R5.1: Only orders originally placed by an operator account and orders who have a status of "preparing for delivery" can be cancelled by an operator account.
Priority: 3

4.4 Customer Account Information

4.4.1 Description

The system shall allow for a user with an customer account to have the ability to view their active rentals and rental history which shows order information of previous rentals. The user will also be able to view any loyalty program points associated with their account, as well as view any outstanding overdue charges that they have incurred.

4.4.2 Stimulus and Response Sequences

Viewing Account Details:

1. The user clicks on the option to view account details.
2. The system displays loyalty point information and outstanding balance information.
3. The user can select loyalty points/outstanding balance to view more detailed information.

Viewing Active Rentals and Previous Orders:

1. The user clicks on an option to view all orders associated with that account.
2. The system uses the order database to display any orders associated with that user.
3. The user can select an order to view more details about the rental (e.g. rental date, subtotals, etc.)

4.4.3 Functional Requirements

4.4-R1: The system shall allow a user with a customer account to view their account details.

4.4-R1.1: The system shall allow a user with a customer account to view their loyalty points.
Priority: 2

4.4-R1.2: The system shall allow a user with a customer account to view any outstanding overdue charges.
Priority: 2

4.4-R1.3: The system shall allow a user with a customer account to to pay their outstanding balance via credit card payment.
Priority: 2

4.4-R1.4: The system shall allow a user with a customer account to view their active rentals and the return date before overdue charges are incurred.
Priority: 1

4.4-R1.5: The system shall allow a user with a customer account to view their rental history; the user shall be able to click into the order to view the videos rented, the subtotal of the order, and the date that the rentals were returned to the store.
Priority: 3

4.5 Loyalty Program

4.5.1 Description

The loyalty program is a feature that rewards the user for using the system. The user will receive loyalty points per dollar (CAD) amount spent in order. The points then can be used to redeem videos based on the tier the videos are in. For example, to redeem a video in Tier 1, will require 75 points, Tier 2: 50 points and Tier 3: 25 points. Each Tier of videos will be based on a range of rental fees, with Tier 1 being the highest rental fee range and Tier 3 being the lowest rental fee range. The range is TBD. The user will not receive loyalty points on videos purchased using loyalty points. Only one video can be purchased using the loyalty points with each order, with at least one other video purchased via credit card.

4.5.2 Stimulus and Response Sequences

Updating user's cart:

1. The cart displays the loyalty points the user already has.
2. The user adds a video to their cart.
3. The cart displays the potential loyalty points the user can receive, based on the videos in their cart.
4. The user removes a video from their cart.
5. The cart updates the potential loyalty points the user can receive, based on the videos in their cart.

User completing an order:

1. The user uses their loyalty points to purchase a video
2. The user's loyalty points are deducted.
3. The user pays for the rest of the videos in the cart with the credit card.
4. The user receives loyalty points for the videos purchased on credit card once the payment is authorized.
5. The loyalty points are updated in the user's account.

User's late return:

1. The user is late on a return.
2. The user loses 2 loyalty points per day, after the due date.
3. The user's account will be updated every day.

4.5.3 Functional Requirements

4.5-R1: The user shall receive loyalty points for videos purchased with credit card: 1 point per dollar spent.

Priority: 1

4.5-R2: The user shall view the potential loyalty points they can receive based on the videos in the cart.

Priority: 3

4.5-R3: The user should view the loyalty points they currently have in the cart.

Priority: 3

4.5-R4: The user shall only choose one video to purchase using loyalty points in an order.

4.5.R4.1: The order shall have at least one other video purchased using credit card in that same order.

Priority: 1

4.5-R5: The user shall view their loyalty points through their account.

Priority: 1

4.5-R6: The user shall lose loyalty points for any late returns.

4.5.R6.1: The user shall lose 2 points per day, after the due date.

Priority: 3

4.6 Video Search and Selection

4.6.1 Description

The system should allow a user to search for videos through various categories (e.g. by title, by director, etc.). Once the user finds a video of their preference, the system should allow the user to select the video and add it into an order cart.

4.6.2 Stimulus and Response Sequences

Searching and Selecting a Video:

1. User navigates to the search bar.
2. User types in a video title/director.
3. The system checks the video database to see if there are any matches; if not, then redo Step 2.
4. System displays any matches and the availability status of the video(s).
5. If the video is available, the user clicks on an option to add the video to their cart.

Search by Title:

1. User clicks on an option to sort the listed videos by title.
2. The system sorts the videos in the database by title and displays them to the user.

Search by Price:

1. The user clicks on an option to sort the listed videos by price.
2. The system sorts the videos in the database by price and displays them to the user.

Filter by Genre:

1. The user clicks on an option to filter the listed videos by genre.
2. The system filters the videos in the database using the selected genre and displays them to the user.

Filter by Availability:

1. The user clicks on an option to filter the listed videos by availability.
2. The system filters the videos in the database using the selected option and displays them to the user.

Filter by Tier:

1. The user clicks on an option to sort the listed videos by tier.
2. The system sorts the videos in the database by tier and displays them to the user.

4.6.3 Functional Requirements

4.6-R1: The software shall provide a method for the user to search the database of videos.

4.6-R1.1: A user shall be able to search the list of videos by video title.
Priority: 1

4.6-R1.2: A user shall be able to search the list of videos by video director.
Priority: 1

4.6-R1.3: A user shall be able to search the list of videos by video price.
Priority: 1

4.6-R1.4: A user shall be able to filter the list of videos by video genre.
Priority: 2

4.6-R1.5: A user shall be able to filter the list of videos by availability status (e.g. available, sold out, coming soon).
Priority: 1

4.6-R1.6: A user shall be able to filter the list of videos by tier (i.e. tier 1, tier 2, tier 3).
Priority: 1

4.7 Order Cart and Purchases

4.7.1 Description

The system should allow customers to create a list of items that they would like to purchase; this list is called an order cart. A customer should be able to modify their carts. The user can add or remove videos from their cart. Once the user is done adding new videos, they will be able to see all the selected videos, a subtotal price, and a return date. If the checked-out videos are not returned by the specified return date, the system will charge users a late fee based on the location that the videos were shipped to. After the user is done selecting, they will proceed to check-out where they have the option to pay with their credit card or using their loyalty points.

4.7.2 Stimulus and Response Sequences

Adding to Cart:

1. User browses through the options.
2. User selects a video of their choice.
3. System prompts the user if they would like to “Add to Cart” or “Continue”.
4. If the user clicks “Add to Cart”, the video is successfully added to cart.
5. If the user clicks “Continue”, the user is taken to the browsing section.

Removing from Cart:

1. User clicks “View Cart”.
2. System shows the user all the videos they have selected with an option “Delete from Cart”.
3. If the user selects “Delete from Cart”, video is removed from their cart.

View Cart:

1. User clicks “View Cart”.
2. System displays all the selected videos, subtotal price, and a return date.
3. System also displays any videos that the user has not returned by the specified return date and displays late fees in the subtotal price.

Checking-Out a Cart:

1. User clicks “Check-out”.
2. System gives the user the option of paying via “Credit Card” or “Loyalty Points”.
3. If the user clicks “Credit Card”, the system prompts the user to enter card details and location (if they are new users, otherwise the system should already have user details) and proceeds to pay.
4. If the user selects “Loyalty Points”, the system verifies that the user has sufficient funds to pay for the order; otherwise, repeat step 2.
5. If the user has not returned checked-out videos by the specified return date, the system charges late fees based on the location that the videos were shipped to.

4.7.3 Functional Requirements

4.7-R1: The system shall allow a user to create and view an order cart.

4.7-R1.1: A user shall be able to select videos to add to the cart.
Priority: 1

4.7-R1.2: A user shall be able to select videos to remove from the cart.
Priority: 1

4.7-R1.3: A user shall be able to view the price of each item in the cart.
Priority: 1

4.7-R1.4: A user shall be able to view the subtotal of the cart.
Priority: 1

4.7-R1.5: A user shall be able to view the return date for each item in their cart.
Priority: 1

4.7-R2: The user shall have the ability to pay via credit card or loyalty points when checking out the cart.

4.7-R2.1: If the user selects to pay via credit card, the system shall allow a user to input their credit card details (if these details weren’t already entered when the user created their account).
Priority: 1

4.7-R2.2: If the user selects to pay via loyalty points, the system shall deduct loyalty points from their accounts if there are sufficient funds.
Priority: 1

4.7-R3: The system shall have the ability to add late fees to a users account.

4.3-R3.1: If the videos are not returned by the specified date to return, the system shall automatically add overdue fees based on users location.
Priority: 1

4.8 Order Handling and Cancellations

4.8.1 Description

The system shall keep a record of all orders that users have placed. Orders describe items requested by customers as well as contain information about their progress in the different stages of delivery.

4.8.2 Stimulus and Response Sequences

Placing an Order:

1. Customer selects a video and adds it to the cart.
2. Customer selects the option to proceed to checkout.
3. System prompts the user for payment method (i.e. credit card or loyalty points).
4. Customer selects payment method; system verifies successful payment.
5. The system stores the order information in its order database.
6. The customer is given a receipt for their order.

Order Cancellation

1. Customer logs into account:
    a. By dial operator
    b. By online website
2. Customer requests list of orders placed.
3. Customer selects which orders to cancel and submits a request to the system.
4. The system checks if the order is able to be canceled; i.e. if the order has not yet been assigned to the shipping team by the warehouse.
5. The system cancels the order if possible
6. The system then displays a message indicating whether the order was canceled or not to the customer.

4.8.3 Functional Requirements

4.8-R1: A user, with a customer account, shall be able to cancel their order before the shipping status of the order reaches “out for delivery” (see Section 6.3).
Priority: 2

4.8-R2: All orders shall be assigned an order ID and be stored as an entry in the order database.
Priority: 1

4.8-R3: All orders shall contain the list of videos purchased in the order.
Priority: 1

4.8-R4: All orders shall contain the subtotal of the order.
Priority: 1

4.8-R5: All orders shall contain the paid status of the order (i.e. paid or unpaid).
Priority: 1

4.8-R6: All orders shall contain the delivery status of the order (see Section 6.4).
Priority: 1

4.9 Application of Overdue Fees

4.9.1 Description

The system shall keep a record of all orders that are marked as late. In such cases, the customer that placed an order and failed to return it in time is charged a penalty.

4.9.2 Stimulus and Response Sequences

Late Rental Return:

1. The system checks if a rental has been returned by customers, on a daily basis.
2. If a rental is missing, the system identifies the order ID of the customer who purchased the video.
3. The system applies overdue fees to the customer's account.

4.9.3 Functional Requirements

4.9-R1: A user, with a customer account, shall be charged loyalty points (as described in section 4.5) and a fee worth 10% of the orders cost each day the items are not returned.
Priority: 1

4.9-R2: The customer shall be able to view any overdue fees in the details of their account.
Priority: 1

4.9-R3: The customer shall not be able to place any other orders until any outstanding fees are paid.
Priority: 1

4.10 Warehouse-System Communication Specifications

4.10.1 Description

This section specifies requirements for interaction between the system and company-owned warehouses. These requirements are designed to enable the system to have access to the specific information required to perform performance optimizations in the way it handles work distribution to warehouses.

4.10.2 Stimulus and Response Sequences

Requesting Warehouse Stock:

1. The system sends request to warehouse
2. Warehouse accesses its inventory database.
3. Warehouse sends information to the system.

Compiling Order Information Periodically

1. The system requests stock information from warehouses in the database.
2. For all warehouses in the system's warehouse database
    a. The system requests information regarding orders being currently serviced by the warehouse.
3. The system updates its order database so orders have the correct status.
4. The system archives all orders that were delivered.
5. For all orders that were recently placed and are not assigned to a warehouse:
    a. Find the closest warehouse that has the items in the order available.
    b. Create a list, if it does not already exist , for the closest warehouse and copy the order information onto it.
6. Send out lists to corresponding warehouses.

4.10.3 Functional Requirements

4.10-R1: The software shall allow for periodically sending a list of item orders for the warehouse to service.

Priority: 1

4.10-R2: The software shall allow for requesting inventory information from the warehouses.

Priority: 1

4.10-R3: The software shall allow for finding the closest warehouse to a given location.

Priority: 2

4.10-R4: The software shall allow for requesting information regarding ongoing orders in the warehouses order databases.

Priority: 1

5. Other Nonfunctional Requirements

5.1 Performance Requirements

5.1-R1: The system shall provide feedback to any user input/output commands with a maximum response time of 1 second.
Priority: 2

5.1-R2: The system should be able to browse a video database containing a large library of videos (TBD).
Priority: 2

5.1-R3: The system should be able to handle a workload of up to 10% of its user database using the system at the same time.
Priority: 2

5.2 Safety Requirements

5.2-R1: A history log is maintained, containing the rental transaction information of each user with rental titles, rental date, return date, subtotals, and payment method (see Section 6.3).
Priority: 1

5.2-R2: A verification process is implemented in the account creation process to ensure that users are a minimum of 18 years of age.
Priority: 3

5.2-R3: A call log is maintained by the operator, containing the date and time of the call, reason for the call, and indicate the person that made the call (registered customer, general public, etc.).
Priority: 3

5.3 Security Requirements

5.3-R1: Each account is associated with a unique identifier and password
Priority: 1

5.3-R2: After 5 unsuccessful login attempts, the system will suggest to the user that they send a password reset link to the email address associated with the account
Priority: 3

5.3-R3: User credit card and account information is securely protected while using the system such that hackers or other malicious users cannot access the secure information of the system's users
Priority: 1

5.4 Software Quality Attributes

5.4-R1: The system should be fully available to users at all hours of the day
Priority: 2

5.4-R2: As the video and user database grows, the system should be scalable such that the performance of the system does not significantly diminish as it expands
Priority: 1

5.4-R3: The user should be able to edit their order cart by browsing, adding and removing videos within a login session without the system crashing and losing their cart information.
Priority: 1

5.4-R4: The system should provide a method for the user to save their cart choices and end their session, and be able to reload the cart when they initiate another session with the system.
Priority: 2

5.4-R5: The system shall be able to provide estimates for the delivery time of an order at customer checkout.
Priority: 2

5.4-R6: The system should be easily navigable by everyday users such that they can search and access their desired videos, check out a cart order and have them correctly shipped to their address.
Priority: 2

5.5 Business Rules

5.5-R1: Only managers of the system should have the ability add or remove videos to the video database.
Priority: 1

5.5-R2: Only managers of the system should have the ability add or remove warehouses to the warehouse database.
Priority: 1

5.5-R3: The order database should not be modifiable by any users or external malicious actors.
Priority: 1

5.5-R4: Customers are automatically registered into the loyalty program when they create an account.
Priority: 2

5.5-R5: Customers in the Toronto area can rent and return videos in-store, others can have their videos shipped to them.

Priority: 1

5.5-R6: Customers will be charged overdue fees based on a percentage of the cost of the order (see section 4.9) and will lose loyalty points (see section 4.5).

Priority: 2

6. Other Requirements

6.1 Video Database

6.1.1 Description

The system should be able to refer to a database of videos that are offered by the company. Only a user with a manager account should be able to edit the entries in the database. Each entry contains basic information about a video (e.g. title, director, description, etc.).

6.1.2 Stimulus and Response Sequences

Adding/Removing Videos:

(See Stimulus and Response Sequences from Section 4.2.2)

Database Access:

(See Stimulus and Response Sequences from Section 4.6.2)

6.1.3 Function Requirements

6.1-R1: The database shall store information related to the videos offered by the company.

6.1-R1.1: Each entry shall contain the title of the video.
Priority: 1

6.1-R1.2: Each entry shall contain the director of the video.
Priority: 1

6.1-R1.3: Each entry shall contain the description of the video (max. 3 sentences).
Priority: 1

6.1-R1.4: Each entry shall contain the genre of the video.
Priority: 1

6.1-R1.5: Each entry shall contain the price of the video.
Priority: 1

6.1-R1.6: Each entry shall contain the availability of the video.
Priority: 1

6.1-R1.7: Each entry shall contain the tier number of the video.
Priority: 1

6.1-R1.8: Each entry shall contain the amount of days the video can be rented.
Priority: 1

6.1-R1.9: Each entry shall contain the number of copies of the video.
Priority: 1

6.2 User Database

6.2.1 Description

The software should be able to refer to a database of users that are in the system. This database is accessed when a user is logging into the system (i.e. to verify credentials). Only users with an operator account or higher should be able to edit the entries in the database. Each entry contains basic information about a user (e.g. first name, last name, email address, etc.).

6.2.2 Stimulus and Response Sequences

Adding Entries:

(See Stimulus and Response Sequences from Section 4.1.2)

Database Access:

(See Stimulus and Response Sequences from Section 4.1.2)
(See Stimulus and Response Sequences from Section 4.3.2)
(See Stimulus and Response Sequences from Section 4.4.2)
(See Stimulus and Response Sequences from Section 4.5.2)

6.2.3 Function Requirements

6.2-R1: The database shall store information related to the users that are in the system.

6.2-R1.1: Each entry shall contain the type of account user owns (i.e. manager, operator, or customer).
Priority: 1

6.2-R1.2: Each entry shall contain the first name of the user.
Priority: 1

6.2-R1.3: Each entry shall contain the last name of the user.
Priority: 1

6.2-R1.4: Each entry shall contain the email address of the user.
Priority: 1

6.2-R1.5: Each entry shall contain the home address of the user.
Priority: 1

6.2-R1.6: Each entry shall contain the phone number of the user.
Priority: 1

6.2-R1.7: If the user has a customer account, then its entry shall contain the credit card information of the user.
Priority: 1

6.2-R1.8: If the user has a customer account, then its entry shall contain the loyalty point information of the user.
Priority: 1

6.2-R1.9: If the user has a customer account, then its entry shall contain the overdue fees information of the user.
Priority: 1

6.2-R1.10: If the user has a customer account, then the entry shall contain the order ID number of any orders placed by the user.
Priority: 1

6.3 Order Database

6.3.1 Description

The software should be able to refer to a database of placed orders that are in the system. This database is accessed when an order is placed, or during list creation for warehouses. It is accessible only to users who have operator or manager accounts. Each entry contains basic information about a customer's order (e.g. purchased items, paid status, shipping status, etc.).

6.3.2 Stimulus and Response Sequences

Adding Entries:
(See Stimulus and Response Sequences from Section 4.3.2)
(See Stimulus and Response Sequences from Section 4.8.2)

Database Access:
(See Stimulus and Response Sequences from Section 4.1.2)
(See Stimulus and Response Sequences from Section 4.3.2)
(See Stimulus and Response Sequences from Section 4.7.2)
(See Stimulus and Response Sequences from Section 4.8.2)
(See Stimulus and Response Sequences from Section 4.9.2)

6.3.3 Function Requirements

6.3-R1: The database shall store information related to the orders placed in the system.

6.3-R1.1: Each entry shall contain the ID number of the order.
Priority: 1

6.3-R1.2: Each entry shall contain the list of videos purchased in the order.
Priority: 1

6.3-R1.3: Each entry shall contain the subtotal of the order.
Priority: 1

6.3-R1.4: Each entry shall contain the paid status of the order (i.e. paid or unpaid).
Priority: 1

6.3-R1.5: Each entry shall contain the shipping status of the order (i.e. preparing for delivery, out for delivery, delivered).
Priority: 1

6.4 Warehouse Database

6.4.1 Description

The software should be able to refer to a database of warehouses that exist in the company. The database is accessed when a warehouse is added/removed, or during list creation for warehouses. It is accessible only to users who have manager accounts. Each entry contains information about a warehouse (e.g. ID, location, stock, etc.)

6.4.2 Stimulus and Response Sequences

Adding/Removing Entries:

(See Stimulus and Response Sequences from Section 4.2.2)

Database Access:

(See Stimulus and Response Sequences from Section 4.10.2)

6.4.3 Function Requirements

6.4-R1: The database shall store information related to the warehouses associated with the company.

6.4-R1.1: Each entry shall contain the ID number of the warehouse.
Priority: 1

6.4-R1.2: Each entry shall contain the location/address of the warehouse.
Priority: 1

6.4-R1.3: Each entry shall contain a list of inventory in its warehouse.
Priority: 1

6.4-R1.3: Each entry shall contain a list of order IDs that are being processed by its warehouse.
Priority: 1

7. Appendix A: Glossary

- **Company-Owned Warehouses:** Warehouses that are owned by VideoCo; these warehouses store the videos that are rented out.
- **Customer:** A user that uses the system to search for videos, rent videos, make purchases, etc.
- **Items:** Videos the company allows to be rented.
- **Loyalty Points:** Points that are distributed (by the system) to a customer's account for making a purchase; the points are used to redeem videos.
- **Manager:** An admin-level user that takes care of maintaining the system (i.e. updating its content, editing entries in a database).
- **Operator:** An admin-level user that uses the system to assist customers who seek guidance in using the system's features and services.
- **Order Cart:** This is a feature which allows the user to create a list of items they would like to order/purchase.
- **Product:** A term used interchangeably with system.
- **Software:** A term used interchangeably with system.
- **System:** A term used interchangeably with software.
- **User:** This is either a customer, a manager, or an operator.