
Software Requirements Specification

for

VideoCo Management System

Version 3.0 approved

**Prepared by Linwei Wang, Taariq McDonald, Randal Alexander, Haoran
Zhou, Lan Zhang, and Yucheng Zhou**

Lassonde School of Engineering, York University

2020-11-08

Table of Contents

Table of Contents	ii
Revision History	ii
1. Introduction	1
1.1 Purpose	1
1.2 Document Conventions	1
1.3 Intended Audience and Reading Suggestions	1
1.4 Product Scope	1
1.5 References	1
2. Overall Description	2
2.1 Product Perspective	2
2.2 Product Functions	2
2.3 User Classes and Characteristics	2
2.4 Operating Environment	2
2.5 Design and Implementation Constraints	2
2.6 User Documentation	2
2.7 Assumptions and Dependencies	3
3. External Interface Requirements	3
3.1 User Interfaces	3
3.2 Hardware Interfaces	3
3.3 Software Interfaces	3
3.4 Communications Interfaces	3
4. System Features	3
4.1 Video	3
4.2 Order	4
4.3 Member Registration	4
4.4 Member Login	4
4.5 Manager Registration	4
4.6 Manager Login	5
4.7 Inventory Search	6
4.8 Rent Video	6
4.9 Loyalty Program	7
4.10 Payment	7
4.11 Add/Remove Videos to System	8
4.12 To-be-shipped List	8
4.13 Order Status Update	9
4.14 Order Information Retrieval	9
4.15 Return videos	10
5. Other Nonfunctional Requirements	10
5.1 Performance Requirements	10
5.2 Safety Requirements	10
5.3 Security Requirements	10
5.4 Software Quality Attributes	10
5.5 Business Rules	11
6. Other Requirements	11
Appendix A: Glossary	11

Revision History

Name	Date	Reason For Changes	Version
Linwei Wang	2020-11-08	Introduction, Description and Functional Req draft	0.1
Haoran Zhou	2020-11-09	Initial draft	1.0
Taariq McDonald	2020-11-09	Completed Safety Requirements and Software Quality	1.1
Taariq McDonald	2020-11-09	Text Corrections	1.2
Yucheng Zhou	2020-11-10	System features added	2.0
Taariq McDonald	2020-11-10	Completed Business Rules	2.1
Randal Alexander	2020-11-10	Completed Other Requirements	2.2
Haoran Zhou	2020-11-11	Finish system features	2.3
Linwei Wang	2020-11-12	Delete useless content	2.4
Lan Zhang	2020-11-12	Final Check	3.0

1. Introduction

1.1 Purpose

The purpose of this document is to define the requirements for the VideoCo Management System. It will explain the purpose and features of the system, the interfaces of the system, the functionality of the system, and the constraints of the system. This document is intended for both the stakeholders , the project managers , the testers and the developers of the system.

The purpose of the VideoCo management system is to provide an easier solution for customers to book and rent the movies. With the VideoCo management system, the company will be able to better manage the rental record and shipment information.

1.2 Document Conventions

The headings are bold and highlighted. The important information is bold and highlighted. This document is typed in black Times New Roman font, with each section heading being of size 18, each subsection heading being of size 14, and the regular text being of size 12. This document is split into six sections:

- Introduction
- Overall Description
- External Interface Requirements
- System Features
- Other Nonfunctional Requirements
- Other Requirements

1.3 Intended Audience and Reading Suggestions

The intended audience of this document includes the stakeholders of VideoCo such as customers, company board and leadership team, the management team, the marketing and sales department, as well as the software designers, architects , developers, and testers of the VideoCo management system. The document also serves as record tracking for the requirements engineering team and a guidance for the business analysts along with other team members who make contributions to the development of this system.

1.4 Product Scope

VideoCo is a small video store with 2 stores in Toronto. VideoCo wants to expand its business and start renting videos worldwide through the Internet. They plan to establish a few warehouses scattered around the globe and a new computer system. The new VideoCo management system will allow customers to register, to become members, to search for videos, to rent videos, to edit member information and pay fees. The manager of the store should be able to add videos to the store's inventory or remove videos from the store's inventory and also to update video information.

VideoCo system presents video information such as : title, category(classic, drama, sci-fi), ratings, producers, release dates, rental status and so on.

1.5 References

1. https://eclass.yorku.ca/eclass/pluginfile.php/1622986/mod_resource/content/1/EECS4312-Project.pdf

2. Overall Description

2.1 Product Perspective

The new VideoCo management system is a web-based system. The system interacts with the database to retrieve product and customer information and keep record of all rental activities.

2.2 Product Functions

The new VideoCo management system allows customers to register into the system. Every client who wants to rent videos needs to register first. After becoming members and logging into the system, the clients are able to search for videos, rent videos, edit member information, and pay fees by using the system.

The manager of the store is able to add videos to the store's inventory, remove videos from the store's inventory, update video information, and is able to retrieve information by using the system.

2.3 User Classes and Characteristics

There are three main classes of the system. A customer, a member, and a store manager.

A **customer** is anyone who is not a member of the store. A customer can view the inventory but cannot rent videos.

A **member** is someone who has registered to the system. A member can search, rent and pay through the system.

A **store manager** is someone who works at the VideoCo store. A store manager can add videos to the store's inventory or remove videos from the store's inventory and also update video information and is able to retrieve information by using the system.

2.4 Operating Environment

The System can operate on both MacOS and Windows.

2.5 Design and Implementation Constraints

The clients and members should have access to the system. The interface should be user friendly for both members and also the manager. The payment and the storage of member information will be done in a secure environment. Storage for membership, rental and video inventory information will be maintained persistently.

The inventory should be updated on a regular basis, as a result the VideoCo system should integrate adaptability to its software and hardware environment to cope with the demands from the customers.

2.6 User Documentation

The users of this system will be provided with user manuals, outlining the functionalities of the system. Online help will also be available for further assistance.

2.7 Assumptions and Dependencies

No assumptions and dependencies affect this system at this time.

3. External Interface Requirements

3.1 User Interfaces

All users shall see a login section on the website. Users can interact with the website for the purpose of rent, return or search. The interface shall be simple and user friendly.

3.2 Hardware Interfaces

The system shall be able to function on any device with a working web browser that supports HTML5, CSS and JavaScript. No extra hardware interfaces are required.

3.3 Software Interfaces

The VideoCo management system shall be able to operate on the iOS, MacOS and Windows operating systems. The web application shall be able to run on any web browser, such as Firefox, Internet Explorer, Opera, and Chrome.

3.4 Communications Interfaces

The system will communicate with the database that stores all the video information, customer information and rental information. This system uses communication resources which includes HTTP protocol for communication with the web browser and web server and TCP/IP network protocol with HTTP protocol.

4. System Features

4.1 Video

4.1.1 Description and Priority

video is the basic item for the VideoCo system. The system primarily works on the distribution and allocation of the video items.

Priority : 9

4.1.2 Functional Requirements

REQ1: Videos must have unique video IDs

REQ2: Video information includes name, category, introduction, directors, ratings, release dates, rental status and stock availability.

4.2 Order

4.2.1 Description and Priority

Members shall rent videos through orders.

Priority : 9

4.2.2 Functional Requirements

REQ1: Orders must have unique order IDs.

REQ2: Order information includes order ID, payment information, order recipient, order status and list of videos.

REQ3: Order shall have status to be updated (see 4.13).

REQ4: Members shall be able to request “return videos” through order pages (see 4.15).

REQ5: Members shall be able to choose to return in person or by shipping through order pages.

REQ6: Members shall be able to enter tracking information in order pages after they request a return (see 4.15).

4.3 Member registration

4.3.1 Description and Priority

Customers shall register accounts to become members of VideoCo. Members will have their own unique member IDs.

Priority : 7

4.3.2 Stimulus/Response Sequences

- **Stimulus:** Customers use their email address as usernames and create passwords.
- **Response:** If usernames and passwords are valid, accounts are created and customers become members of VideoCo.

4.3.3 Functional Requirements

REQ1: Email address as username must be valid.

REQ2: The strength of password must be high, at least 8 characters, containing letters in both uppercase and lowercase.

REQ3: Member IDs must be unique.

4.4 Member Login

4.4.1 Description and Priority

Members shall be able to access the system through either entering their usernames or member IDs and passwords.

Priority : 7

4.4.2 Stimulus/Response Sequences

- **Stimulus:** Members will enter their usernames or member IDs and passwords.
- **Response:** If usernames or member IDs and passwords are matched, they will be directed to the main page of the website.

4.4.3 Functional Requirements

REQ1: Members must be registered before they can attempt to login.

REQ2: Usernames or member IDs and passwords must be matched to login.

4.5 Manager registration

4.5.1 Description and Priority

Managers shall register accounts to access the VideoCo management System. Managers will have their own unique manager IDs.

Priority : 7

4.5.2 Stimulus/Response Sequences

- **Stimulus:** Managers use their email address as usernames and create passwords.
- **Response:** If usernames and passwords are valid, manager accounts are created.

4.5.3 Functional Requirements

REQ1: Email address as username must be valid.

REQ2: The strength of password must be high, at least 8 characters, containing letters in both uppercase and lowercase.

REQ3: Manager IDs must be unique.

4.6 Manager Login

4.6.1 Description and Priority

Managers shall be able to access the system through either entering their usernames or member IDs and passwords.

Priority : 7

4.6.2 Stimulus/Response Sequences

- **Stimulus:** Managers will enter their usernames or manager IDs and passwords.
- **Response:** If usernames or manager IDs and passwords are matched, they will be directed to the main page of the website.

4.6.3 Functional Requirements

REQ1: Managers must register accounts before they can attempt to login.

REQ2: Usernames or manager IDs and passwords must be matched to login.

4.7 Inventory Search

4.7.1 Description and Priority

The system shall have a menu which groups videos into different subject categories (e.g. music, movie, comedy ...). All users shall be able to directly search a video by its name or search from the menu.

Priority : 7

4.7.2 Stimulus/Response Sequences

- **Stimulus:** Users type the desired videos in the search engine or navigate with the menu to find videos.
- **Response:** Return the relevant information (see 4.1) of the matched videos.
- **Stimulus:** Users navigate with the menu to find videos.
- **Response:** Return the relevant information (see 4.1) of the matched videos.

4.7.3 Functional Requirements

REQ1: The search result shall show relevant information (see 4.1) of the matched videos.

REQ2: Users shall be able to directly search a video by its name.

REQ3: Users shall be able to search videos from the menu which groups videos into different subject categories.

REQ4: The menu shall have different categories (e.g. music, movie, comedy ...).

4.8 Rent Video

4.8.1 Description and Priority

Members shall be able to select a video from the inventory of the VideoCo system and keep it for a certain time period. Members shall also be able to dial to make an order.

Priority : 7

4.8.2 Stimulus/Response Sequences

- **Stimulus:** Members will select a video from the inventory.
- **Response:** They will be prompted to add the video to their cart.

- **Stimulus:** Members will select the duration they want to keep the video.
- **Response:** System will determine the amount of money to pay based on the amount of time the user wants to rent.

4.8.3 Functional Requirements

REQ1: Members must be logged in to the system.

REQ2: Videos must be added into the cart.

REQ3: The maximum duration of keeping a video is 60 days.

REQ4: The amount of money to pay will be updated after a video being added to the cart.

REQ5: Duration from 1 - 10 days pays \$10.

REQ6: Duration from 11 - 30 days pays \$20.

REQ7: Duration from 31 - 60 days pays \$30.

4.9 Loyalty program

4.9.1 Description and Priority

Customers who registered as members shall be automatically opted in to the loyalty program. Loyalty points can be used for payment. Loyalty points can be collected through payment.

Priority : 3

4.9.2 Stimulus/Response Sequences

- **Stimulus:** Members rent videos.
- **Response:** Loyalty points are collected depending on the rental fee.
- **Stimulus:** Members use loyalty points to pay the video rental fee.
- **Response:** Loyalty points are used for payment.

4.9.3 Functional Requirements

REQ1: Earn 100 loyalty points for every \$1 paid.

REQ2: 1000 loyalty points is worth \$1 for payment.

4.10 Payment

4.10.1 Description and Priority

Members shall be able to pay through credit cards or loyalty points. Additional shipping fees will be applied depending on the location.

Priority : 7

4.10.2 Stimulus/Response Sequences

- **Stimulus:** Members will be prompted by the system to select payment methods.
- **Response:** Members will select payment methods.
- **Stimulus:** Members will be prompted to complete payment.
- **Response:** Members complete payment.

4.10.3 Functional Requirements

REQ1: The member must be logged in to the system.

REQ2: Videos must be added into the cart.

REQ3: Duration to rent video must be selected.

REQ4: Valid payment information includes phone number, address and card number.

REQ5: 1000 loyalty points is worth \$1 for payment.

REQ6: Members can select pick up or shipping.

REQ7: Shipping cost: 0-10 km \$5, or \$15 anywhere in Canada.

4.11 Add/Remove videos to system

4.11.1 Description and Priority

Managers shall be able to add or remove videos, and update video information(see 4.1).

Priority : 5

4.11.2 Stimulus/Response Sequences

- **Stimulus:** Managers add videos to the system.
- **Response:** Videos can be found in the system
- **Stimulus:** Managers update the video information (see 4.1).
- **Response:** Relevant information (see 4.1) will be updated.

4.11.3 Functional Requirements

REQ1: Managers must be logged in to operate the system.

REQ2: Videos to be removed must exist in the system.

REQ3: Adding existing videos into the system shall increment the stock.

4.12 To-be-shipped list

4.12.1 Description and Priority

Managers shall be able to retrieve a list of to-be-shipped videos on an hourly basis.

Priority : 1

4.12.2 Stimulus/Response Sequences

- **Stimulus:** One member makes an order at 1:30 pm, and another member makes an order 10 minutes later..
- **Response:** All the videos in both orders shall be added into to-be-shipped list..

4.12.3 Functional Requirements

REQ1: Manager must be logged in to retrieve the list.

REQ2: The list must be updated hourly.

REQ3: Only orders made within the same hour shall be added into the list .

4.13 Order status update

4.13.1 Description and Priority

Manager shall be able to update order status based on notifications.

Priority : 3

4.13.2 Stimulus/Response Sequences

- **Stimulus:** Managers send videos to shipping companies.
- **Response:** Managers will update the order status to “shipped”.

4.13.3 Functional Requirements

REQ1: After payment is received, order status shall be updated from “unpaid” to “paid”.

REQ2: After shipment, order status shall be updated to “shipped”.

REQ3: After members request to return videos, order status shall be updated to “return in progress”.

REQ4: After videos are returned, order status shall be updated from “return in progress” to “returned”.

4.14 Order information retrieval

4.14.1 Description and Priority

Members and managers shall be able to retrieve order information by order IDs or phone number.

Priority : 5

4.14.2 Stimulus/Response Sequences

- **Stimulus:** Members and managers enter order IDs or phone numbers to find orders.
- **Response:** Return the order information.

4.14.3 Functional Requirements

REQ1: Order IDs should be unique.

REQ2: Order information includes order ID, payment information, order status and list of videos.

REQ3: Either order IDs or phone numbers shall be used to retrieve information.

4.15 Return videos

4.15.1 Description and Priority

Members shall be able to return videos in person or through shipping. A late fee shall be charged if members do not return videos on time.

Priority : 7

4.15.2 Stimulus/Response Sequences

- **Stimulus:** Members return videos to store.
- **Response:** Store shall confirm the return.

4.15.3 Functional Requirements

REQ1: Members shall be able to request returns through order pages.

REQ2: Members shall be able to choose to return in person or by shipping through order pages.

REQ3: Members shall provide tracking numbers in order pages.

REQ4: Late fee: \$3 fine per day per video

REQ5: Late fee shall be directly applied based on payment information.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The average response time based on any user input must be limited to 2 seconds. The peak response time for every instruction conducted by the user must not exceed more than 5 seconds.

5.2 Safety Requirements

The use of this system will not cause any harm to the users or cause any harm to the user's device.

5.3 Security Requirements

The system shall have authentication measures at all entry points to avoid unauthorized access. Only authorized personnel of the company can gain access to the system ;and only users with valid username and password can login to the user's page. The system must ensure the database access is protected from database security threats by a firewall.

5.4 Software Quality Attributes

In order to ensure the systems correctness, maintainability, testability, and usability, the system shall go under multiple tests. These tests can be conducted by a Quality Assurance team, or a Quality Assurance Analyst.

5.5 Business Rules

Customers of the VideoCo management system are permitted to view videos within the systems inventory, but they cannot rent videos. Renting videos is only granted to customers who become members of VideoCo. Once a member, you are also opted into a loyalty program, which allows you to gain points that can be used as payment for renting videos. Managers of the VideoCo system are permitted to access the system and are able to add and remove videos from the systems inventory. Customers should be held accountable if they pirate the copyrighted videos.

6. Other Requirements

In order to use the VideoCo management system, it is required that the user's device has a stable Internet connection.

Appendix A: Glossary

ID - Identification

REQ - Requirement

- Priority - 1:** contributes equally
3: contributes slightly more
5: contributes strongly more
7: contributes very strongly more
9: contributes extremely more