# Software Requirements Specification

## For

# Video Rental Store Management System

**Version 2.0**

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# Risk Management

| Risk | Probability | Effects |
|---|---|---|
| Employee Illness | Moderate | Serious |
| Estimation and Scheduling | Moderate | Serious |
| Reduction of Group Members | Low | Serious |
| Weather Implications | High | Serious |
| Requirement Change | High | Moderate |
| Introduction of New Skill Sets | High | Moderate |
| Poor Productivity | High | Moderate |
| Inability to Communicate | Moderate | Catastrophic |
| Mismanagement of Files | Moderate | Catastrophic |

| Risk | Strategy |
|---|---|
| Employee Illness | Try to create overlap and increase teamwork to allow for the project to move along as planned. |
| Estimation and Scheduling | Networking and keeping connected with fellow team members can help with understanding one another's schedule and continue the working process for this project. |
| Reduction of Group Members | Reorganize the worksize and flow of work between members to make up for the loss of a team member. |
| Weather Implications | Continue communication between members who still have the ability to communicate. Reallocate tasks between eligible group members until the remainder are able to regain communication and functionality. |
| Requirement Change | Creating more independence to each of the requirements as early as possible to avoid a domino effect later on in changing details |
| Introduction of New Skill Sets | Allocate time to allow for all members to learn and begin mastering new skill sets. If there continues to be questions that require knowledge about the skill set, allow for group members to help whenever possible. |

| Poor Productivity | Team members will try to regroup during a group session to discuss tactics on how to produce progress while constrained to their new time window. |
|---|---|
| Inability to Communicate | Take time to regroup as frequently as possible to keep the work each team member has aligned with the end goals for each deliverable and milestone. |
| Mismanagement of Files | Use resources such as Github and Google Drive to maintain files consistent and synchronized between all group members in case of any unpredicted outcomes. |

<div align="center">**Software Requirement Specifications**</div>

## 1.   Introduction.

### 1.1.   Purpose.

The purpose of this document is to present a detailed description of the Video Rental Store Management System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. This document is intended for both the stakeholders and the developers of the system.

### 1.2.   Scope.

This software system will be a Video Rental Store Management System for a local business owner of a video rental store. This system will be designed to maximize the store's productivity by providing tools to assist in clerical and administrative duties such as keeping information about the employees and the customer, managing DVD inventory, alerting the store and the customer under certain scenarios, searching for DVDs and customers; all of which would otherwise be performed manually without the help of a computer. By maximizing the store's efficiency and production the system will meet the user needs while remaining easy to understand and use.

More specifically, this system will be designed to allow a small number of users to effectively manage and operate a video rental shop by streamlining clerical and administrative duties such that the operation of the store will be effortless and that

it will not get more complicated as the customer base and the DVD catalog grows.

The software will store and maintain a database of customer information,

employee information, and DVD inventory while allowing searches to be

performed on all three databases. Some automated alerts will be sent to the store

as well as the customer when certain events occur. The system will also

implement an inventory and rental management system. Finally, the system will

also contain timesheet management to record employee work hours as part of

administrative duties.

**1.3.    Definitions, Acronyms & Abbreviations.**

| Term | Definition |
|------|------------|
| Rental | A rental is a phase in the renting process where the customer has rented a DVD and has not returned the DVD. |
| Administrator | The owner of the store in a software user context. |
| Checkout | A process where the users itemize and total the cost of the transaction then receive payment for the DVDs that the customer will purchase or rent. |
| Customer | Any person over the age of 18 that buys or rents DVDs from the video rental store. |
| Database | An organized collection of data, generally stored and accessed from a computer system. |
| DVD | An abbreviation of Digital Video Disc. DVD is a digital storage medium predominantly used to store video and audio. |

| | |
|---|---|
| Overdue rental | An overdue rental is a phase in the renting process where the customer has not returned the rented DVDs that are due. |
| Renting | A process where the store grants the customer the possession and usage of DVDs in exchange for payment. Additionally, the customer is obligated to return the DVDs in a specified amount of time or else they will incur a fee for failing to return the DVDs. |
| Selling | A process where the store sells DVDs directly to the customer without going through a renting process. The customer permanently obtains DVDs in exchange for a one-time payment. |
| Stakeholder | Any person or entity with an interest in the project (i.e. the store owner, the employees, and the customers). |
| User | The owner and the employees of the video rental store in a software user context. |

## 1.4.    References.

- High level requirements document provided by store owner

- Interview with the store owner

## 1.5.    Overview.

The next chapter, the Overall Description section, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next chapter.

The third chapter, Requirements Specification section, of this document is written primarily for the developers of the project and describes in technical terms the details of the functionality of the product.

Both sections of the document describe the same software product in its entirety, but are intended for different audiences and thus use different language.

## 2. Overall Description.

### 2.1. Product Perspective.

The Video Rental Store Management System consists of either desktop or web application that interacts with a remote database containing the customer and employee information as well as the DVD inventory.

The software must work with a desktop computer containing the Windows 10 operating system with a reliable internet connection.

### 2.2. Product Functions.

- Store customer information, employee information, and inventory information.

- The administrator has exclusive access to and can add, modify, and delete entries in the employee information database.

- The users can add, modify, and delete entries in the customer information and DVD database.

- Comprehensive search functions across customer and inventory database.

- Automatically notifies the customer by email, following a queue, when a requested DVD comes in, credit card is expired, or credit card cannot be charged.

- Visually notifies the users if a customer reached the maximum number of rentals or if the customer credit card expires during the rental period.

- Perform transactional activities. More specifically, the system must be able to rent and sell DVDs to customers and process returned DVDs from customers.

- Keeping track of rentals. More specifically, keeping track of which DVDs have rentals by which customer as well as which customer have rentals for which DVDs.

- Keeping track of popular DVD titles.

## 2.3. User Characteristics.

The targeted users are the owner of the store and the employees. The users are not necessarily technologically literate. However, the users need to be able to carefully follow given directions as well as having a strong attention to detail in order to use the software effectively. The users, especially the administrator, will be required to take one training session in order to get familiarized with using the software.

## 2.4. Constraints.

The software must have great usability as the targeted users are not technologically literate. The software must be easy and intuitive to use as well as

being error-tolerant and allows easy error correction, all while supporting the users as much as possible.

The software may run as a web-based application and would require a computer running any modern operating system with a reliable internet connection and Google Chrome or Mozilla Firefox.

## 2.5.   Assumptions & Dependencies.

Assumptions:

- The user has a desktop computer on-site that can run Google Chrome or Mozilla Firefox web browser or a desktop computer that can run the software.

- The user has a reliable internet connection.

Dependencies:

- Remotely hosted database and web application.

## 2.6.    Priority of Requirements.

The customer and inventory information implementation (both database and search, and manage functionality) is given the highest priority. Search parameters must also be recorded to allow for easy retrieval of information from the database. The necessary search functionalities must also be implemented to enable the software to perform common clerical tasks such as the aforementioned search functionalities.

The second highest prioritized item would be the retail system to allow for easily

accessible selling, renting, and process returned DVDs functionality as well as

records of units sold and overall conversion between traffic and sales recorded.

3.    **Specific Requirements.**

    3.1.    **External Interface.**

This section will describe the interface requirements for the Video Rental Store

Management System. These interface requirements specify the way the user shall

interact with the system, as well as define the necessary hardware interfaces and

communication interfaces required by the software to store and retrieve data.

        3.1.1.    **User Interfaces.**

The interface will have a hierarchical structure with the main menu at the

top, followed by its respective labeled tabs within. Within this main menu,

there are two separate menus, of which one is labeled as "Owner" and the

other labeled as "Employee". The Employee menu is reserved strictly for

employees, as the "Owner" menu is reserved strictly for the owner. These

two menus are accessed through an initial login screen and their rights are

unlocked accordingly. The tab "Inventory Management" will display a

table of DVDs with all their information and allow the user to search for

DVDs. The "Customer Management" tab also serves as a standalone tab

which lists all customers, movies they are currently renting, and the

required information fields. The "Employee Management" tab displays a

table of employees and their information. During the process of checking

out a rental, returning a rental, or buying a DVD, an employee or owner will use the "Rent/Sell/Process Returned DVD" tab which consists of a Point-Of-Sale page that lists all respective customer info required along with the respective action they wish to pursue (Rent, Buy, or Return a DVD).

### 3.1.2. Hardware Interfaces.

Hardware interfaces that would be incorporated into this product would be ethernet cables to link the hardware systems together and for the systems to interact sufficiently with one another. It shall be linked up to personal computers (PC) which also includes monitors, keyboards and mice to navigate on the computer and more.

### 3.1.3. Software Interfaces.

The server host must be able to host a relational database along with the website that is also hosting the application. The client must be a desktop running any of these modern web browsers such as Mozilla Firefox, Microsoft Edge, and Chromium-based browsers.

### 3.1.4. Communication Interfaces.

All data transferred between the server and the individual computers will use the TCP/IP networking protocol over an ethernet or WiFi connection. This network is open and can be accessed from the internet but has restricted access to only employees and the owner.

## 3.2.    Functional Requirements.

| Requirements ID | Requirement | Dependencies | Source |
|---|---|---|---|
| FR1 | The system must be able to implement a database management system. | | High Level Requirements |
| FR2 | The system must be able to store the following customer information:<br>● Name<br>● Driver license<br>● Date of birth<br>● Credit card information<br>● Home address<br>● Phone number<br>● Email address<br>● Current rentals<br>● Requested DVDs | FR1 | High Level Requirements |
| FR3 | The system must be able to store the following employee information:<br>● Name<br>● Home address<br>● Phone number<br>● Full-time or part-time availability<br>● Number of hours worked by week | FR1 | High Level Requirements |
| FR4 | The system must be able to store the following DVD inventory information:<br>● Title<br>● Actor(s)<br>● Director(s)<br>● Genre(s)<br>● Price to rent<br>● Price to buy<br>● Amount in-stock<br>● Amount currently rented<br>● Amount bought<br>● Amount sold<br>● Currently rented by whom<br>● Requested by whom<br>● Popularity | FR1 | High Level Requirements Interview #1 |
| FR5 | The system must be able to add, modify, and delete entries in the customer information database. | FR2 | High Level Requirements |

| FR6 | The system must be able to add, modify, and delete entries in the employee information database. | FR3 | High Level Requirements |
|---|---|---|---|
| FR7 | The system must be able to add, modify, and delete entries in the DVD inventory database. | FR4 | High Level Requirements |
| FR8 | The system must be able to control access between the administrator who can access employee information and the user who cannot access employee information. | FR3 | High Level Requirements |
| FR9 | The system must be able to search for customers by:<br>● Name<br>● Driver license<br>● Date of birth<br>● Credit card information<br>● Home address<br>● Phone number<br>● Email address<br>● Current rentals<br>● Current overdue rentals | FR2 | High Level Requirements |
| FR10 | The system must be able to search for DVDs by:<br>● Title<br>● Actor(s)<br>● Director(s)<br>● Genre(s)<br>● Currently rented<br>● Currently rented by whom<br>● Currently requested<br>● Currently requested by whom<br>● Currently popular | FR4 | High Level Requirements |
| FR11 | The system must alert the customer by email notification when requested DVDs are in stock. The number of notifications is based on how many of the requested DVDs are in stock and the order of the notifications are based on the chronological order of the DVD requests. | FR2 | Interview #1 |
| FR12 | The system must alert the customer by email notification when the credit card on | FR2 | Interview #1 |

| | | file is expired or it cannot be charged outside of checkout. | | |
|---|---|---|---|---|
| FR13 | | The system must visually alert the users during checkout if the customer has reached the maximum number of rentals. | FR2 | Interview #1 |
| FR14 | | The system must visually alert the users during checkout if the customer's credit card on file has not expired at the time of checkout but it will expire at the due date for the rental. | FR2 | Interview #1 |

### 3.3.  Performance Requirements.

The performance of the system must run efficiently in a time and orderly manner in order for it to keep up with the business. With that being said, there are certain requirements that must be met in order for the system to be properly useful to the user. At minimum, at least three users shall be able to use the system simultaneously. With that range of users working simultaneously, 25 mbps for internet speed should be able to run all the software smoothly for the transactions to process sufficiently.

### 3.4.  Design Constraints.

The main constraint imposed on the design of the system falls under the ease of usability requested. Due to the employees lack of technical knowledge, the ease of usability will be necessary to allow high-end efficiency without the fear of human error causing the system to malfunction. For example, an employee's lack of knowledge with the system could accidentally modify transactions, inventory values, or potential software interactions. With the incorporation of a system that

is aesthetically pleasing yet highly functional, and with the collaboration of a set

training time to allow employees to learn the basic functions, the system will be

able to run at its highest performance possible. However, this may result in a loss

of higher-end functionality due to the necessity of keeping the system at an

accessible usage after only thirty minutes.

### 3.5. Software System Attributes.

| Requirements ID | Description | Attribute |
|---|---|---|
| NF1 | System must be able accept multiple users using the system at any given time. | Scalability |
| NF2 | System must only show given data to its respective user (Owner, Employee). | Security |
| NF3 | System shall provide constant storage for DVD, employee, customer, and owner data. | Capacity |
| NF4 | System shall provide an intuitive User-Interface that requires little training. | Usability |
| NF5 | System shall provide constant uptime during normal business hours. | Availability |
| NF6 | System shall provide notifications of any errors (incorrect login, DVD rental input, incorrect customer search, etc…). | Usability |
| NF7 | System shall make necessary backups to ensure the integrity of the stored information. | Reliability |
| NF8 | System must safeguard information, especially customer financial information, while transmitting them over the internet. | Security |

### 3.5.1. Reliability.

The software should have as minimal chances of failing or being

unavailable when being used by the users. Even when the max amount of

users are operating the system simultaneously, the aim is for there to be a low percentage of there being a possibility of the software crashing. The software shall also be easy to maintain so that way when maintenance is required, it should be a short process that shall not take a long period of time to complete and have the software back up and running for there to be any setbacks or issues.

**3.5.2.** **Availability.**

The software's availability will incorporate both how reliable and maintainable the software will be during it's uptime. The goal is to increase the reliability of the software to allow for more uptime, while also taking as little time as possible to perform maintenance on the software. The team will use this information as a guide to begin working on the maintainability in the prior stages of design to allow for as much modification as possible. When maintenance is needed on the software, which will ultimately be needed, maintenance time will be chosen outside of the hours of operation from the business. By doing so, this will allow for little to no interference when it comes to uptime during operational hours. Maintaining uptime during operational hours and functional downtime outside of hours and maintenance periods will allow for the most availability of the system.

### 3.5.3. Security.

To secure the software, the administrator and the users will have their own passwords so secure any information about the inventory of the store and any transactions that have occured. It will also secure customer information such as name, email, phone number and more. It will also secure information for the employees such as names, addresses, whether they are part time or full time and more. The administrator will have access to the employees information along with inventory and transactions being made. Employees other than the administrator will not be able to access other employees personal information. This makes each user having different passwords very important in keeping information secure. The information transported back and forth between the application and the server must be encrypted in order to protect the business

### 3.5.4. Maintainability.

When maintaining the software, it should be a quick and easy process to do, that way there are no setbacks to the user when the software is being maintained and or updated. Maintenance will also be performed outside of the normal business hours so there is minimal disruption to the store operation. The software will also be tested during the time maintenance is happening as well to ensure there will be no technical difficulties the next time the system is in use.

### 3.5.5. Portability.

This software is created specifically for this business and to be compatible with Windows 10. The portability may not be extremely high due to the point of this software being created mainly for this business. Alternatively, if the software is created as a web-based application, then the portability of the system is extremely flexible because it will be able to run on all platforms that have either Google Chrome or Mozilla Firefox.

### 3.5.6. Testability.

The software will be routinely tested during maintenance periods that will be scheduled outside the hours of operation. This diagnostic test will allow for the maintenance to analyze and determine if there are any runtime errors or irregular downtime within the system. This test will be used as a way to determine if the system's functionality within the hours of operation would be easily compromised by either runtime errors or human errors due to employee negligence.

## 3.6. Other Requirements.

This section was intentionally left blank.

# 4. Appendices.

- High level requirements document provided by the store owner

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# VIDEO SHOPPE

## Introduction

A local ethic grocery store owner, in a small town in South Carolina, has decided to open a small DVD rental shop. The owner of the video store has looked around for software that will enable her to manage her DVD rentals. She finds that larger chain video rental stores generally have their own proprietary DVD store management software. She has shopped around on the Internet, and the software that she has encountered has many more features that she currently needs. She does not want to pay for features that she will not be using. She is frustrated and turns to a group of computer science students, in their junior and senior years, in a local university to design and build her DVD Store Rental Software which she wants to call Video Shoppe. Your team is the group that has accepted the task of performing the requirements analysis and design of Video Shoppe. She has only 2 employees, each of which works part-time. Her needs are fairly simple.

## High Level Requirements

- Keep information about the customers
  - o Name
  - o Driver's License
  - o Birthdays
  - o Credit Card
  - o Address and Phone Number
  - o Email Address
  - o Outstanding rentals and due dates
- Employee Information
  - o Name
  - o Address phone number
  - o Full time/part time
  - o Number of worked per week
- Purchase DVDs

> > o Should a single DVD be requested by multiple customers , keep track of it and purchase

· Alerts

> > o Customer when DVD comes in
>
> > o Credit card on file has expired
>
> > o Has maximum number of DVDs out

· Handle inventory

· Allow for searches of DVD based on titles, actor(s) and directors

· Allow for searches on Customers

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> ● Interview with the store owner

### 5. Index.