Software Requirements Specification

Project: EDICOMPU Cyber Management System

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1. Introduction

1.1. Purpose

This document aims to define the functional and non-functional specifications for the development of a management system that will allow controlling the different administrative, operational, financial and customer service processes that will be used by the owner of the EDICOMPU cyber.

1.2. System Scope

The main objective of the EDICOMPU cyber management system is to provide a program that facilitates the administration of the daily activities of the premises. The functionalities included in this system are:

- Customer registration
- Computer rental
- Computer reservation
- Payment system

The system does not include human resources management, equipment repair and maintenance.

This is expected to improve customer service and operational efficiency of EDICOMPU cyber.

1.3. Definitions, Acronyms and Abbreviations

User: person who will use the system

ECMS: EDICOMPU cyber management system

FR: functional requirement

NFR: non-functional requirement

SRS: Software Requirements Specification

1.4. References

Document title: Standard IEEE 830 - 1998

1.5. Vision General of the Document

This SRS document describes in detail the requirements for the development of a management system for a cyber. Descriptions of the main functionalities such as automation and optimization of reservation and computer use, payment management and customer registration are included, as well as the benefits, objectives and goals of the project. The purpose is to provide clear guidance for successful system

development, ensuring that user expectations and needs are met.

2. Description General

2.1. Product Perspective

The ECMS system will be a stand-alone product designed to run on the user's personal computer, also ensuring that all operations and data remain local and secure.

2.2. Product Features

The user expects that your product can perform the following functions:

- Register the rental of a computer: the user must know to which client a computer was rented
- Control the time of use of a computer: record of the rental time of a computer, from its beginning to its end
- Calculate computer rental rates: the user will be able to know the price for the time of use of a computer automatically
- Register the computer reservation: the user will be able to enter the client's data and will save their reservation according to the date indicated
- Confirm availability of computers: the system will indicate to the user if the computer the client wants is available for use on the date required.
- Manage payments received for the use of computers: the user will record the payments received and obtain a summary of the same

2.3. User Characteristics

Type of user	Owner
Educational level	Technician
Activities	Control and management of the system in general
Experience	Cyber management

2.4. Restrictions

- The system must be compatible with the operating system of the user's personal computer.
- The executable file must work autonomously.
- The program will not need external networks, that is, without an internet connection.
- Programming language in use: Java.
- The system must have a simple design and implementation.

2.5. Assumptions and Dependencies

- It is assumed that the user's personal computer will be available and in good working order.
- It is assumed that the user has the necessary skills and knowledge to operate the ECMS system.
- It is based on the premise that the user has the necessary skills to manage the ECMS system, prior to an explanation from the supplier.
- The requirements described here are stable.

2.6. Future Requirements

- Changes and updates will be evaluated prior to implementation.
- Future user needs may be considered, as long as it is notified in advance and the impacts on the development of the system are evaluated.

3. Specific Requirements

Functional Requirements

Identification of the requirement	**FR-001**
Requirement Name	Customer registration
Characteristics	● Allow the entry of basic customer data: name, last name, address, telephone number and email. ● Include a field for the client's identification document. ● Design an intuitive and easy-to-use interface for data entry. ● Implement data validation, such as email format and phone number length. ● Allow modification and deletion of existing customer records. ● Save a history of changes made to customer data. ● Facilitate the search and display of registered clients using filters (name, ID, etc.).
Description of the requirement	The system must allow the creation, modification, deletion and consultation of customer records. The information must be accurate and validated, with an interface that facilitates quick data entry. The ability to search and filter records is essential for efficient customer management. Additionally, you must maintain a history of changes to ensure traceability of information.
NON-functional requirement	Security of personal data and compliance with data protection regulations. Optimal response time: customer registration in less than 5 seconds.
Priority of the requirement	high

Identification of the requirement	**FR-002**

Requirement Name	Computer rental
Characteristics	● Record the start and end of a computer rental. ● Associate each rental with a registered customer. ● Automatically calculate total usage time and corresponding rate. ● Notify the user when a computer is near the end of its rental period. ● Allow extension of rental time. ● Generate a summary of the rental at the end, including the total cost and time of use. ● Record the status of each computer to manage its availability in real time.
Description of the requirement	The system must manage computer rentals, recording start and end times, automatically calculating costs, and allowing rental time extensions. Additionally, you must provide detailed summaries and manage availability in real time to avoid conflicts and ensure efficient operation.
NON-functional requirement	Ability to handle multiple rentals simultaneously without performance degradation. Optimal response time: rental management in less than 3 seconds per operation.
Priority of the requirement	high

Identification of the requirement	**FR-003**
Requirement Name	Computer reservation

Characteristics	• Allow customers to reserve a computer for a specific date and time. • Show the availability of computers in real time. • Allow modification and cancellation of existing reservations. • Send reservation reminders to customers. • Implement pop-up notifications to inform the user about computer availability, reservation confirmations, and usage time alerts. • Record and manage a complete history of all reservations made. • Design an intuitive and easy-to-use interface for the reservation process.
Description of the requirement	The functionality should allow the reservation of computers for specific dates and times, showing real-time availability. It should allow modification or cancellation of reservations, send reminders to customers, and maintain a history of all reservations. The interface must be intuitive to facilitate the booking process.
NON-functional requirement	Ensure the availability and consistency of reservation data in real time. Optimal response time: reservation process completed in less than 5 seconds.
Priority of the requirement	Media

Identification of the requirement	**FR-004**
Requirement Name	Payment system
Characteristics	Record payments made by clients (cash or card). Calculate and display the total to pay, including discounts or promotions. Generate detailed payment receipts. Record all payments in a history. Offer financial reports: income by day, week and month. Integration with the rental module to reflect the corresponding payments.

Description of the requirement	The system must allow you to record and manage payments, process cash and card payments, calculate the total payable and generate detailed receipts. You must maintain a payment history and provide detailed financial reports. Integration with the rental module is crucial to ensure the correct administration of payments.
NON-functional requirement	Security and protection of financial information. Optimal response time: transaction handling in less than 3 seconds.
Priority of the requirement	high

Identification of the requirement	**FR-005**
Requirement Name	Notifications

Characteristics	● Implement pop ups to notify users about:
	  ● *Computer availability:* Inform when a computer is available.
	  ● *Reservation confirmations:* Send confirmation notifications when making, modifying or canceling a reservation.
	  ● *Usage time alerts:* Notify you when a computer's usage time is about to end.
	● Customize notifications in terms of frequency and content.
	● Include the option for users to set their notification preferences.

Description of the requirement	The system should provide pop-ups to notify users about various important events, such as computer availability, reservation confirmations, and usage time alerts. Notifications must be customizable and manageable through the user interface.
NON-functional requirement	Notifications should be discreet and not interfere with the main operation of the system. They should be easily manageable from the settings menu.

Priority of the requirement	high

Non-Functional Requirements

Identification of the requirement	**NFR-001**
Requirement Name	Data security
Characteristics	● Implementation of security measures to safeguard personal and financial data. ● Ensure compliance with relevant data protection regulations. ● Apply encryption of sensitive data both in transit and at rest. ● Establish role-based access control to restrict data access based on user level.
Description of the requirement	The system must implement robust security measures to protect customers' personal and financial information. This includes data encryption, role-based access control, and compliance with data protection regulations. Security is essential to gaining and maintaining user trust and avoiding potential data breaches.
Priority of the requirement	high

Identification of the requirement	**NFR-002**
Requirement Name	System performance

Identification of the requirement	**NFR-003**
Requirement Name	Usability
Characteristics	● Ensure an intuitive and easy-to-use user interface. ● Maintain a consistent and coherent interface design throughout the system. ● Provide user manuals and tutorials to facilitate learning the system. ● Ensure accessibility for users with varying levels of technical skill.
Description of the requirement	The system should be easy to use for users with different levels of technical skill. The interface must be intuitive and consistent, facilitating rapid and effective adoption of the system. User manuals and tutorials should be available to help users become familiar with the system. Accessibility must also be considered, ensuring that the system is usable by people with disabilities. The interface should follow user-centered design principles to maximize efficiency and satisfaction. Notifications should be discreet and not interfere with the main operation of the system. They should be easily manageable from the settings menu.
Priority of the requirement	Media

3.1. Functional requirements

- **Customer Registration**

  Description: The system will allow the creation, modification, deletion and consultation of customer records. The basic data that will be recorded includes name, surname, address, telephone number, email and identification document. The interface must be intuitive, allowing fast and accurate data entry, with real-time validations to guarantee the integrity of the information.

  - *Data validation:* The system must verify the email format, phone number length and other relevant fields to ensure the accuracy of the data entered.
  - *Search and filtering:* The user will be able to search and filter customer records by various criteria such as name and identification document.

- **Computer Rental**

  Description: The system will manage computer rentals, recording the start and end times of each rental, and associating each transaction with a registered customer. The total time of use and the corresponding rate will be automatically calculated.

  - *Completion notification:* The system will notify the user when a computer is near the end of its rental time.
  - *Rental Summary:* At the end of the rental, a detailed summary will be generated including the total cost and usage time.

- **Computer Reservation**

  Description: The system will allow customers to reserve computers for specific dates and times, showing availability in real time. Users will be able to modify or cancel existing reservations and receive reminders of their reservations.

  - *Availability management:* The system must manage and display the availability of computers in real time to avoid conflicts.
  - *Reservation history:* A history of all reservations made must be maintained for future reference.

- **Payment system**

  Description: The system will allow you to register and manage payments,

whether in cash or card. It will calculate and display the total payable, including any applicable discounts or promotions. It will generate detailed payment receipts and record all transactions in a history.

- ❖ *Financial reports:* Detailed reports will be offered showing income by day, week and month.
- ❖ *Integration with rental:* The payment system will be integrated with the rental module to correctly reflect the corresponding payments.

3.2. Non-functional requirements

- **Data Security**

  The system must implement robust security measures to protect customers' personal and financial information. This includes encryption of sensitive data both in transit and at rest, and role-based access control to limit data accessibility at the user level. Compliance with applicable data protection regulations is crucial to ensure user trust and prevent potential data breaches. In addition, periodic audits must be carried out to ensure the integrity and security of the stored data.

- **System Performance**

  The system must respond quickly to user requests, handling multiple operations simultaneously without performance degradation. Critical operations such as customer registration, rentals and payments must be optimized to ensure minimum response times. The system must be able to handle spikes in usage without affecting the user experience. This involves a robust architecture and regular load testing to ensure efficiency under different usage conditions.

- **Usability**

  The system should be easy to use for users with different levels of technical skill. The interface must be intuitive and consistent, facilitating rapid and efficient adoption of the system. User manuals and tutorials should be available to help users become familiar with the system. Additionally, accessibility must be considered, ensuring that the system is usable by people with disabilities. The interface should follow user-centered design principles to maximize efficiency and

satisfaction.

3.3. Common interface requirements

3.3.1 User Interface: Graphical Interface (GUI)

Starting screen

- It should show clear options for customer registration, computer rental and reservation, and payment management.
- It should include a menu bar with configuration options and help.

Notifications Screen:

- Add a dedicated section for notification management.
- Include an intuitive layout to activate/deactivate specific notifications.
- Provide examples of pop-ups with clear and concise messages.

Customer Registration:

- Form to enter personal data of the client (name, identification, etc.).
- "Save" button to store the data in the local database.

Computer Rental:

- Table that sample available computers with status information and usage time.
- "Rent" button that allows you to start recording the time of use.

Computer Reservation:

- Interactive calendar to select the date and time of the reservation.
- Drop-down list of computers available for the selected date.
- "Book" button to confirm the reservation.

Payment Management:

- Form to enter the amount paid and the payment method.
- Summary of payments received and totals.

Notifications:

- Pop-ups to notify the user of computer availability, reservation confirmations, and usage time alerts.

3.3.2 Hardware Interface

Hardware Compatibility:

- The system must be compatible with common peripherals (keyboard, mouse, printer).
- Must run on personal computers with minimum specifications (Intel i3 processor or equivalent, 4GB RAM, 500GB hard drive).
- Support for external storage devices for making backup copies.

3.3.3 Software Interface

Operating System Compatibility:

- The system must be compatible with Windows 10 or higher.
- Ensure compatibility with other popular operating systems (Linux, macOS) in future versions.

Interoperability:

- The system must allow the export of data to common formats (CSV, PDF).
- Must allow integration with spreadsheet applications (for example, Microsoft Excel).

3.3.4 Communication Interface

Internal Communications:

- It must ensure efficient communication between the different modules of the system (record, rental, reservation, payments).
- Use standard communication protocols within the system to ensure data integrity and security.

Network Connection:

- Although the system is self-contained and does not require an internet connection, it must be able to update itself through a temporary network connection to receive software updates.

3.4. System Attributes

3.4.1 Reliability

Goals:

- The system must guarantee 99.9% availability.
- It must be able to correctly handle failures, such as power outages, with automatic recovery or clear procedures for manual restoration.

3.4.2 Maintainability

- The system must allow updates and fixes without affecting its core functionality.
- Clear and detailed documentation of the code and system.

Measurements:

- Use of comments in the source code.
- Implement a version control system (Git) to track changes and facilitate collaboration.
- Conduct periodic code reviews and software quality assessments.

3.4.3 Portability

- The system must be compatible with multiple operating systems, including Windows, Linux, and macOS.
- System installation and configuration should be simple, with clear instructions and automated procedures where possible.

Measurements:

- Compatibility testing on different platforms before launch.
- Use of development technologies that facilitate portability, such as Java, which is platform independent.

3.4.4 Security

- Implement user authentication using login and password.
- Ensure that only the authorized user can access critical system functions.
- Protect sensitive data using encryption and other security techniques.

Measurements:

- **Authentication and Authorization:**
  Use of a login system with a secure password for all users.
  Different access levels for different types of users (administrator, operator).

- **Registration and Monitoring:**
  Continuous monitoring to detect and respond to potential security threats.

- **Training and Awareness:**
  Training users on good security practices and awareness of possible risks.

Types of Users and Authorization

- **Single User (Cyber Owner):**

  Full access to all system functions.

4. Appendices

At the time of writing this version of the software requirements specification document, there are no optional appendices to expand the information presented. However, when presenting the project approach and reaching more potential clients, the corresponding documentation will be attached that will allow you to view the formats established between the development team and the client.