



# ESPE

**UNIVERSIDAD DE LAS FUERZAS ARMADAS**  
**INNOVACIÓN PARA LA EXCELENCIA**

**Computer's Science**

**Career: Information Technology Engineering**

**Modality: Online**

**requirements**

**System Requirements Specification according to the IEEE-830 Standard**

**Team3 DevSolutions**

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**Subject :**

**Web Applications Development**

**NRC: 8516**

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## **1.Introduction**

This implementation project is presented based on the IEEE-830 standard, corresponding to the Software Requirements Specification, for which each of the main components is documented sequentially following the standardized process.

## **2. Purpose**

The main purpose of this IEEE-830 standard document is to list the system requirements for the analysis, design and implementation of the web application for the company iSoftware.ec dedicated to the trade of technological equipment. This document also helps to collect and analyze the ideas collected in the project, in addition, it will be subject to change, if more requirements are added to the project.

For this, a client-server model web application will be implemented to optimize the sales and marketing processes of the company's products. In the first stage of this project, Java is used as the programming language , through the NetBeans 12.5 development IDLE, MySQL relational database and Payara Server and PHP web server.

## **3. Project Scope**

Our implementation project seeks to improve the current conditions of the iSoftware.ec company to maximize product sales, improving sales processes and giving users the ability to graphically appreciate the products and in the same way be able to make their purchases. orders and requirements quickly through the web application.

In principle our application consists of the following modules that are: Add products, List Inventory , Update products, Delete products. Since the sales service is given in the physical facilities of the company, we will detail in the document the main characteristics of the project and detailing the functional and non-functional requirements that the project will use.

#### 4. Definitions, Acronyms and Abbreviations

**Table 1. Definitions**

| FINISHED                 | DEFINITION   |
|--------------------------|--|
| Management system        | It allows to achieve the objectives and fulfill the vision and business goals, taking into account different processes of optimization of resources to obtain efficient results. |
| Software                 | It is the system in which the software product is made viable through the different stages of software development, which allows a quality product to be delivered to users.     |
| Processes                | They are behavior mechanisms that require a sequence of steps and methodologies depending on the application context.  |
| Manage                   | Direct and manage resources efficiently in the area where their use is required.   |
| Automate                 | Generate a programmed sequence of actions that allows, improves and optimizes processes at the business level.   |
| Process control          | Process control allows optimizing and monitoring activities to achieve improvements in a given time.   |
| Operator                 | Person who applies an activity or task assigned by a superior boss or department   |
| Quotation                | Document that presents detailed information based on a list of requirements requested by customers.  |
| Organizational structure | It is a system used to define a hierarchy within an organization.  |
| Sustainability           | It is understood to guarantee that a project or software lasts over time with the highest standards that allow us to cover the needs of users.                                   |
| Requirement              | It is a necessary condition to carry out an action. .  |
| Database                 | It is a program that allows you to store a collection of data, related and structured, with its own characteristics according to the user's needs.                               |

|                           |  |
|---------------------------|--|
| <b>Query / Query</b>      | A database query is a search or request for data stored in a database. In a generic way, query can also refer to an insertion, update, search and/or deletion in a database. |
| <b>Information system</b> | It is a set of integrated resources with the objective of managing and distributing data in an organized way.  |
| <b>MYSQL</b>              | It is a relational database management system.   |
| <b>development IDE</b>    | It is a computer application that provides comprehensive services to facilitate software development processes.  |
| <b>netbeans</b>           | Free integrated development environment, made primarily for the Java programming language.   |
| <b>Java – Web Java</b>    | Computing environment or platform, capable of running applications developed using the Java programming language   |
| <b>Commercialization</b>  | Sequences or activities that allow the generation of sales processes for a product   |
| <b>Stock</b>              | Products available for subsequent sales management   |
| <b>Visual Studio Code</b> | It is a standalone source code editor that runs on Windows, Linux, and MacOS.  |

**Table 2 Acronyms and Abbreviations**

| <b>Acronym/Abbreviation</b> | <b>Meaning</b>                             |
|-----------------------------|--|
| <b>ERS OR SRS</b>           | Software Requirements Specification        |
| <b>RF</b>                   | Functional requirement                     |
| <b>RNF</b>                  | Non-functional requirement                 |
| <b>TIC</b>                  | Information and communication technologies |
| <b>SuperCias</b>            | Superintendency of Companies               |

|               |   |
|---------------|---|
| <b>CRUD</b>   | Database operations ( Create , Read , Update , Delete – Create, Read, Modify, Delete) |
| <b>VAT</b>    | value added tax   |
| <b>ecud</b>   | Detailed Use Case Specification   |
| <b>ROI</b>    | Return of investment  |
| <b>GitHub</b> | Repository for sharing and working remotely on the web                                |

**Table 3 References**

| Reference | Qualification                               | Route   | Date       | Author |
|-----------|---|---|------------|--------|
| 1.        | Standard<br>IEEE 830                        | From the document format template<br>© & Coloriuris<br><a href="http://www.qualitatis.org">http://www.qualitatis.org</a>  | 1988       | IEEE   |
| 2.        | Inventory<br>control<br>procedure<br>manual | <a href="https://www.unidadvictimas.gov.co/sites/default/files/documentosbiblioteca/13-manual-de-procedimiento-para-el-control-de-inventario-v1.pdf">https://www.unidadvictimas.gov.co/sites/default/files/documentosbiblioteca/13-manual-de-procedimiento-para-el-control-de-inventario-v1.pdf</a> | 12/22/2014 |        |

## 5. Overview of the Document

This document is made up of three modules. The first module contains the introduction of the project that provides an overview of the ERS. In the second module, it describes the system in general, in order to know the main needs and functionalities that the web application will carry out,

In the third module, the requirements that the system will cover with the Client-Server architecture are defined in detail. The content of this document is supported by the entire Requirements Engineering process carried out by the authors of the system, with different support mechanisms that will allow adaptations, uses, restrictions and controls to be made to each section according to the user's needs.

### **5.1. Product Perspective**

The web application must be autonomous and manageable by the administrator users, which allows efficient scalability in all its processes, as well as the correct execution of the modules according to the functionality or request required by the users.

### **5.2. Software Product Features**

The software product will allow access to the different modules that are: Add products, List Inventory , Update products, Delete products. The business rules of calculating VAT per product, calculating unit profit percentage and total profit. And calculate the value of the discount if you are a customer.

**Illustration 1 System Use Case Diagram**

## 6. External Interfaces

The web application makes a connection to the database, where products and orders will be consulted and added efficiently in the different CRUD processes.

### 6.1 Restrictions

- Hardware: Core I5 Desktop Computer. 16GB of RAM
- Software: Windows 10 Operating System, GitHub, Netbeans 12.5, MySQL, Xampp, Visual Studio Code.
- Programming language: JAVA, PHP
- Database: MySQL
- The graphical user interface should be intuitive and easy to use.
- You must have stable connectivity and broadband for the compilation of the project.

## 7. Specification of Requirements

### 7.1 User Interfaces

The web application will be developed with the MVC model with the Client-Server architecture, in the Java programming language, using the NetBeans 12.5 development IDE, where each of the necessary modules will be included so that the application meets each requirement according to the planning. of the project.

### 7.2 Hardware Interfaces

**Table 4 hardware interfaces**

| Name    | Detail   | Brand | Characteristic   | Description  | Price |
|---------|--|-------|--|--|-------|
| Display | Main output device (interface), which displays data or information | Dell  | - 21" Resolution: Full HD (1920 x 1080)<br>- Aspect Ratio: 16:9<br>Response Time: 5 ms<br>- Refresh rate: 60 Hz. | The software shall display information to the user through the screen. | \$160 |

|                 |   |         |  |   |       |
|-----------------|---|---------|--|---|-------|
| <b>Mouse</b>    | Pointing device used to facilitate management of a graphical environment on a computer. | genius  | Optical mouse with 1000dpi sensor.   | The software must interact with the movement of the mouse and its buttons.                                    | \$20  |
| <b>Keyboard</b> | Input device or peripheral  | genius  | 104/105/106 keys standard<br><br>USB Port: Yes Support Windows 10/Windows 11/Windows®7 System<br><br>Support USB interface | The software will need to interact with keystrokes. With the keyboard the user will type the requests         | \$16  |
| <b>CPU</b>      | The central processing unit is the hardware inside a computer or other devices.         | Ryzen 5 | Processor : AMD Ryzen 5 3400G with Radeon Vega Graphics 3.70GHz  | In good condition, which will have all the controllers to be able to handle each input and output peripheral. | \$480 |

### 7.3 Software Interfaces

**Table 5 Software Interfaces**

|                 | Details  | Definition   | Purpose  |
|-----------------|--|--|--|
| <b>Database</b> | Name: MongoDB Atlas<br><br>Source: <a href="http://www.mongodb.com">www.mongodb.com</a><br><br>Distribution: Atlas | It is an open source document-oriented NoSQL database system written in C++. | It is the database on which the tables will be generated to record the information |



|                         |   |   |   |
|-------------------------|---|---|---|
| <b>Server</b>           | Name: Payara Server<br>Version number: 5.2022<br>Source: <a href="http://www.payara.fish">www.payara.fish</a>   | An innovative and compatible application server, to facilitate and enhance your Jakarta EE and MicroProfile projects .  | It is the tool with which we will manage the infrastructure of the project                                  |
| <b>Operating system</b> | Name: windows<br>Specification number: 10 and up<br>Version number: 7<br>Source: <a href="http://windows.microsoft.com/">http://windows.microsoft.com/</a><br>Distribution: Paid<br>Price: \$200 and up | Windows is the name of a family of software distributions for PCs, smartphones, servers, and embedded systems, developed and sold by Microsoft and available for multiple architectures, such as x86 and ARM. | It is the platform on which the application and the database will be executed, which has support until 2020 |
| <b>Development tool</b> | Name: NetBeans<br>Specification number: 12.5<br>Version number: 12.5<br>Source: <a href="https://www.netbeanside.com/">https://www.netbeanside.com/</a><br>Distribution: free                           | Design and generate interfaces and the operation of the program using the Java programming language.  | Tool used to develop Web, Mobile and Desktop applications for different programming languages               |

## 8. Functional Requirements

### 8.1 General Objective

- Provide a Client-Server model web application that allows efficient management of the sales and marketing processes of the company iSoftware.ec

### 8.1.2 Specific Objectives

- Implement a Client-Server model web application that covers the requirements and needs of the iSoftware company
- Create a friendly interface for users to carry out the process of purchasing technological products and equipment.
- Obtain an application that complies with each of the modules planned for each of the different product sales processes.

The following objectives corresponding to each of the modules of the web application are detailed

**Table 6 Add Products**

| OBJ-001     | Add Products   |
|-------------|--|
| Description | It will allow the process of entering products into the system |
| Importance  | high   |

**Table 7 List Inventory**

| OBJ-002     | List the Inventory                               |
|-------------|--|
| Description | Allows you to see products that are in inventory |
| Importance  | high   |

**Table 8 Update Products**

| OBJ-003     | Update Products                                |
|-------------|--|
| Description | Allows you to update products to the inventory |
| Importance  | high   |

**Table 9 Delete Products**

|                    |  |
|--------------------|--|
| <b>OBJ-004</b>     | <b>Delete Products</b>                         |
| <b>Description</b> | Allows you to delete products to the inventory |
| <b>Importance</b>  | high   |

**8.1. 3 Actors****Table 11 Administrator**

|                    |  |
|--------------------|--|
| <b>ACT-001</b>     | <b>Administrator</b>   |
| <b>Description</b> | Administrative staff that will manage the company's processes in the application |

**Table 12 Users**

|                    |   |
|--------------------|---|
| <b>ACT-002</b>     | <b>Users</b>  |
| <b>Description</b> | Person who enters a request in the application according to their need at a certain time. |

**Table 13 Clients**

|                    |   |
|--------------------|---|
| <b>ACT-002</b>     | <b>Customers</b>  |
| <b>Description</b> | Person who enters a request in the application according to their need at a certain time. |

**8.2 List of Functional Requirements****Table 14 List of Functional Requirements**

| Web Application for the Company iSoftware.ec |         |             |       |
|--|---------|-------------|-------|
| Functional Requirements List                 |         |             |       |
| Code   | Request | Case of use | Actor |

|                |  |                 |               |
|----------------|--|-----------------|---------------|
| <b>RF – 01</b> | The system allows you to manage the system information, the information you want to save is name, brand, model, stock, distributor price, discount, unit profit and total profit | Add Products    | Administrator |
| <b>RF – 02</b> | The system must allow viewing the products stored in the database  | List Inventory  | Administrator |
| <b>RF – 03</b> | The system allows you to update inventory products   | Update Products | Administrator |
| <b>RF – 04</b> | The system allows you to remove products from inventory  | Delete Products | Administrator |

## 8.3 Non-functional Requirements

### 8.3.1 General Objective

To meet the project requirements, the following non-functional requirements have been reviewed and analyzed.

**Table 15 Non-functional Requirement Use of Colors**

| <b>RNF-001</b>     | <b>Use of Colors</b>  |
|--------------------|---|
| <b>Description</b> | The system must present an interface with color patterns of 4 combinations. |
| <b>Importance</b>  | high  |
| <b>Condition</b>   | Passed  |

**Table 16 Requirement Non-functional access method**

| RNF-002     | access method  |
|-------------|--|
| Description | The system allows the registration and verification of users |
| Importance  | high   |
| Condition   | Passed   |

**Table 17 Non-functional accessibility requirement**

| RNF-003     | Accessibility   |
|-------------|---|
| Description | The interface should present on a single screen all the functionality necessary to maintain the data. |
| Importance  | high  |
| Condition   | Passed  |

### Recommendations

- It is recommended to carry out a structured interview that covers all the needs that the client requires to satisfy around the web application that as a team of programmers we wish to propose,
- It is important to define the roles and responsibilities that each member of the team will have to fulfill to ensure compliance with the objectives and goals of the project.

### Conclusions

- The development of web applications implies a deep knowledge in various languages and programming frameworks to deliver an efficient software product that meets the needs of the client or company that acquires our services.
- The developers worked jointly and in an organized way in their different stages, which led each branch of the project to work in a planned and structured way to complete the goals proposed by the team.