Department of Information and Communication Technology

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# Jewelry Shop Management System

## Software Requirement Specification

Group Project (ICT3183)

Project ID: 18

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# Revision History

| Name | Date | Reason For Changes | Version |
|------|------|--------------------|---------|
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|      |      |                    |         |

# 1.  Introduction

## 1.1  Purpose

Italy Silver Choice's present physical activities will be expanded and upgraded using e-commerce and the overall system concept. This document outlines the software requirements for the selected product, which is a complete software solution designed to help Italy Silver Choice expand and change its operations digitally.

This SRS covers all aspects of Italy Silver Choice's E-commerce and overall system concept project. It involves building on the physical works that are already established as well as installing an electronic platform for system control and e-commerce. Inventory monitoring, order processing, customer support, sales analytics, and interaction with current databases or systems are some of the key features included in this area.

Since the software section of the project is the main emphasis of this paper, it also recognizes how Italy Silver Choice's infrastructure interacts with other subsystems and components. This SRS's primary objective is to outline the software requirements needed to implement the E-commerce and system concepts efficiently. This will ensure a smooth integration with Italy's operational framework and support the company's modernization and expansion.

## 1.2  Document Conventions

For similarity and clarity, this Software Requirements Specification (SRS) document adheres to established typographic guidelines and follows the IEEE standard for software requirements specifications. The document adheres to the following conventions throughout.

1. Font Styles

- Headings and requirement statements are written in standard typeface.
- Critical information is highlighted or labelled with bold or italic kind to call attention to important points or limitations.

2. Priority Assignment

   ● Unless mentioned in various ways, detailed requirements are assumed to inherit the priorities of larger requirements. To make it evident how significant every demand statement has to be within the context of the project, each one is given its own priority level.

3. Format

   ● The requirements are organized in a standard format with headings and sections arranged logically to reflect the logical flow of information and guarantee readability.
   ● The structure consists of a requirement identifier, an overview of the requirement, a priority level, and any connected notes or dependencies.

4. References

   ● For simple cross-referencing and validation, external references—such as industry standards or legal requirements—are referenced using the proper citation formats.

## 1.3  Intended Audience and Reading Suggestions

The target audience for this Software Requirements Specification (SRS) document is the different parties engaged in the creation, execution, and administration of Italy Silver Choice's E-commerce and inventory system Concept project. The following reader kinds' demands are taken into consideration when creating this document,

1. Developer
   the system design descriptions, interface specifications, and comprehensive technical requirements are important to the tasks at hand for the developers who are in charge of developing, producing, and evaluating the software solution.

2. Project Supervisor
   The scope, objectives, timetable, resource needs, and risk factors of the project

described in the document will be valuable to the project supervisor supervising its implementation. They will also discover details regarding dependencies, deliverables, and project milestones.

3. Users

Employees of Italy Silver Choice, for example, who utilize the E-commerce and Inventory System Concept, will discover that the operational methods, system capabilities, and user needs are pertinent to their employment. This contains guidelines on how to access and use the software solution efficiently.

4. Testers

The document contains test cases, acceptance criteria, and validation processes that must be found by testers who are in charge of confirming the accuracy, dependability, and functionality of the program. It also gives guidelines on how to perform several kinds of testing, such as user acceptability, functional testing, and integration testing.

5. Composers of documents

the document contains system documentation, reference resources, and terminology definitions that documentation writers charged with generating user manuals, technical guides, and training materials may find useful.

## 1.4  Product Scope

The program under specification is a concept for a management system and e-commerce system created specifically for Italy Silver Choice. This software's main goal is to make it easier for Italy Silver Choice to modernize and expand its physical operations into a computerized platform, giving clients smooth online shopping experiences and helping the company manage its inventory, employees, customers, suppliers and finance effectively.

Key Features and Objectives

1. **E-commerce Functionality**

   - A navigation bar with options like Home, Jewelry, Promotion, Contact us, and about us allows users to easily browse the website.

- Users may locate certain jewelry pieces using a search box.
- Information regarding promotions and deals is provided in the promotion area.
- Customers are able to add products to their basket, change the quantity, take items out, and apply discounts.
- When users try to add products to the basket without logging in, alerts are displayed.
- Forms for requests, compliance, recommendations, and return requests can be submitted by users.
- The chat box feature allows customers to get in touch with the store and provide reviews.
- Registering, logging in, and managing accounts—including profile information—are all available to users.
- The website's items are managed by the system, which also provides alternatives for simple selection through classification and filtering.
- Order requests, desire lists, and organized lists may all be viewed by users. If the item is out of stock, it will be shown by the website near the item.
- Before confirmation, users can read order summaries, choose a payment option, go to checkout, and enter billing information.
- Upon completion of payment, order IDs and confirmation messages are sent.

2. **System functionalities:**
   - Centralized data management
   - CRUD procedures for and employee profiles, customers, inventory, and suppliers.
   - Managing attendance for payroll computation, leave administration, and employee performance monitoring.
   - Generate reports of salary payments with employee performance and send emails through the system.
   - Track inventory levels and set alerts for low stock.
   - Movement tracking such as purchases, sales, returns, and product classification.
   - Generate inventory reports weekly including stock valuation and slow-moving items.
   - Purchase history viewing, recording of preferences, and manage customers
   - Getting notifications for the customer orders.

- Email order confirmation, creation of invoices, and recording of payment receipts.
- Recording of incomes, expenses and managing accounts receivable and payable.
- Creation of financial reports, and graphical representation for profits by using revenue and expenses.
- Manage supplier information, and maintenance of purchase orders. As well as record payments.

## 1.5    References

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[6 ]F. i. h. t. m. t. i. designers, "Flaticon logo," Freepik Company., 24 november 2013. [Online]. Available: https://www.flaticon.com/free-icons/profile. [Accessed 1, 2013].

## 2.    Overall Description

## 2.1    Product Perspective

This Software Requirements Specification (SRS) document outlines the E-commerce and System Concept, a new standalone product intended to digitize and expand Italy's traditional business model into the fields of online commerce and contemporary system (intranet) management.

Context and Origin

This product is an innovative endeavor to move Italy Silver Choice from a fully brick-and-mortar business to a hybrid online and physical retail presence, rather than a logical next step in a product family.

It replaces several of Italy Silver Choice's current systems, especially the manual system management procedures and the few consumer interaction avenues.

Connection to the Broader System

Despite being a stand-alone program, this software interacts with other parts of the Italy Silver Choice infrastructure and subsystems.
Some of the main parts of the entire system is,

1. E-commerce platform
    - Which is the central unit in charge of online sales, client communications, and order processing.
2. Employee Management
    - Managing employee profiles and their payrolls (plus EPF) and attendance
3. Inventory Management System
    - This tool makes it easier to track, manage, and optimize product classification, inventory levels, and movement tracking.
4. Customer Relationship Management (CRM) System
    - Manages purchase history, customer profiles, preferences, and tailored interactions.
5. Financial Management System
    - Oversees spending, supplier information, financial reporting, and accounts receivable and payable.
6. Supplier Management
    - Record each and every person's information & liabilities, Manage supplier details, purchase orders and Generate invoices, payment receipts

Italy Silver Choice's subsystems are interconnected to facilitate smooth data flow and operational synergy across various company functions.

External interfaces include,

1. User Interfaces
   - Interacts with clients through online forms, chat assistance, and e-commerce platforms.
2. Payment Gateways
   - Interfaces for safe transaction processing with outside payment processors.
3. Supplier Interfaces
   - Purchase orders, and inventory changes.
4. Regulatory Interfaces
   - Interface with the rules and compliance requirements that control banking and e-commerce transactions.
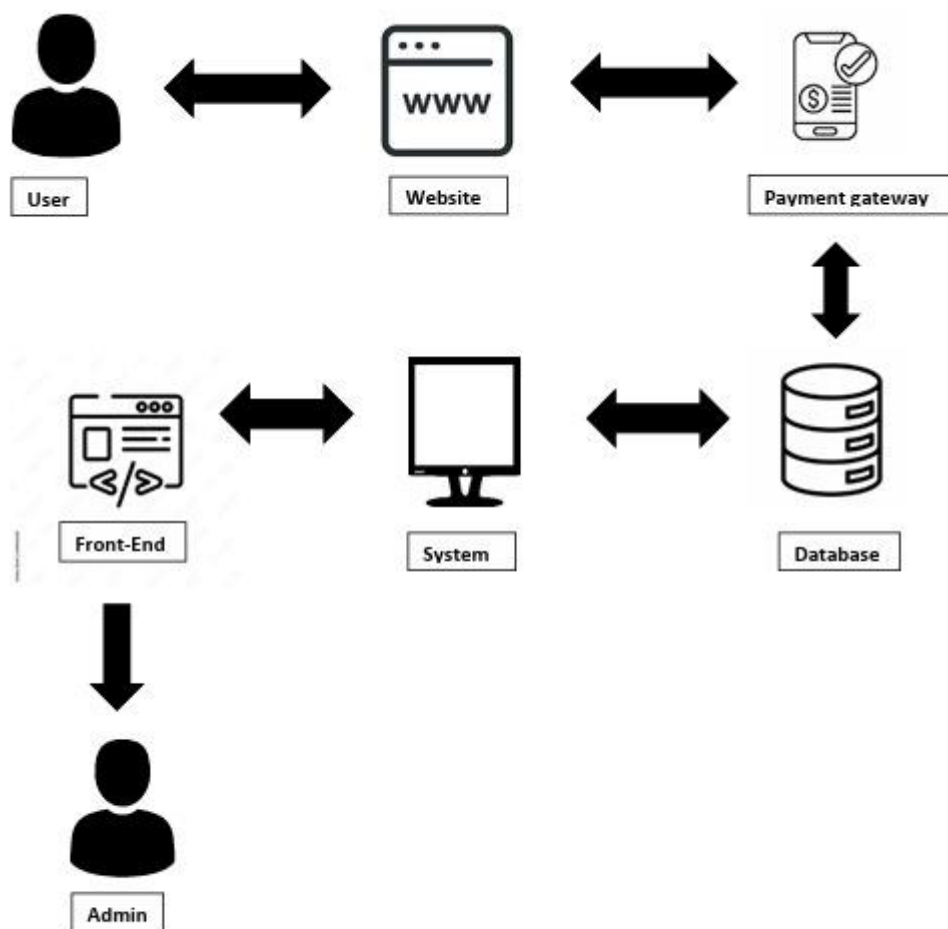


*Figure 1: Architecture Diagram*

## 2.2 Product Functions

1. User Registration and Authentication
- Allow users to register and create accounts.
- Provide authentication mechanisms for secure access to the system.

2. E-commerce Functionality
- Browse and search for jewelry items.
- View product details, including images, descriptions, and prices.
- Add items to a shopping cart and modify quantities.
- Proceed to checkout and complete purchases securely.
- Receive order confirmation.

3. Inventory Management
- Receive alerts for low stock levels.
- Categorize products by type, metal, and price.
- Manage product movements, including purchases, sales, and returns.

4. Customer Relationship Management (CRM)
- Record and manage customer profiles.
- Capture and store customer preferences and purchase history.
- Send personalized offers, promotions, and order confirmations.
- Handle customer inquiries and support requests through chat and forms.

5. Administrative Functions
- Add, update, and delete jewelry items from the inventory.
- Monitor and analyze sales performance and inventory turnover.
- Manage employee profiles, attendance, and leave.
- Generate reports on financial performance, and inventory status

6. Financial Management
- Record expenses, accounts receivable, and accounts payable.
- Process payments securely through various payment methods.
- Generate invoices, payment receipts, and financial reports.

7. Supplier Management
   - Record each and every person's information & liabilities
   - Manage supplier details and purchase orders.
   - Generate invoices, payment receipts

8. Employee Management
   - Managing employee profiles
   - Managing employee payrolls
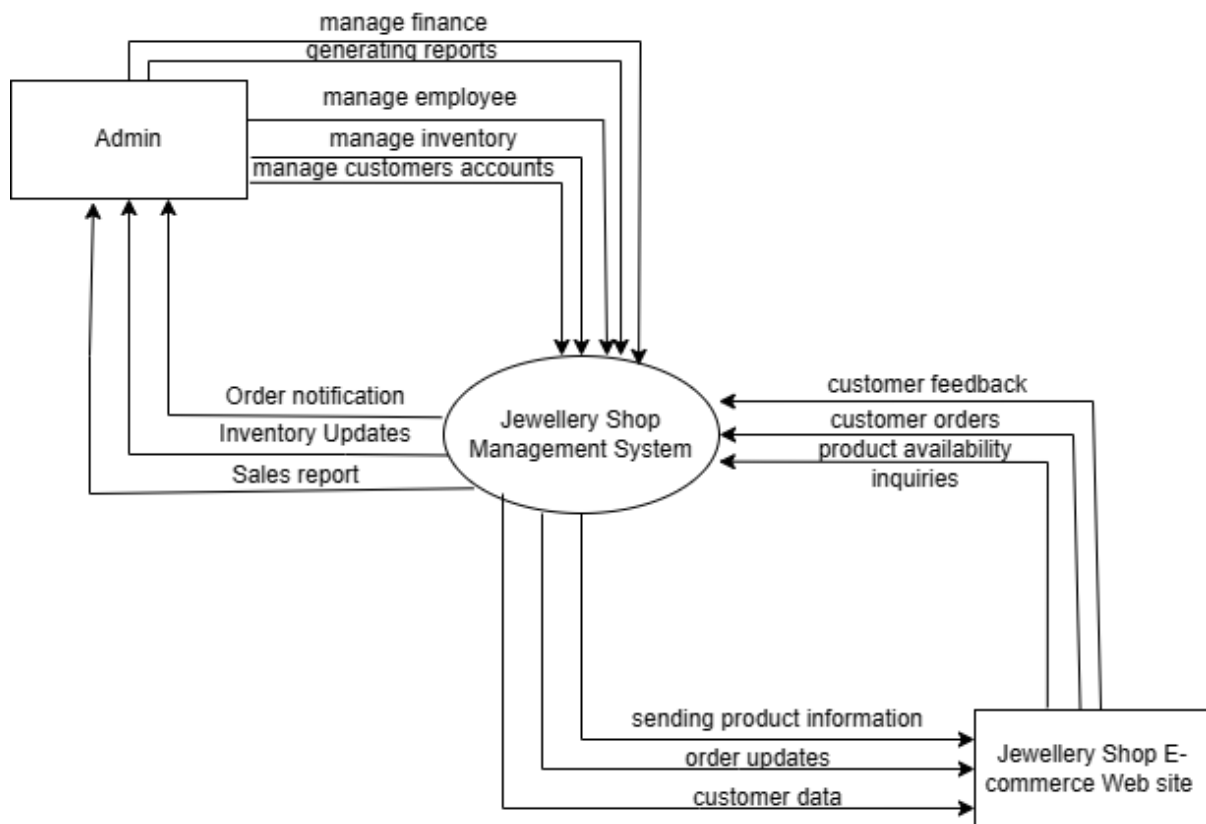   - Managing employee attendance



*Figure 2: Data Flow Diagram*

## 2.3 User Classes and Characteristics

The designed system's users include the administrator who maintains the system and customers who utilize the website. Both user classes interact with separate interfaces and have various functions geared to their roles through the jewelry management system.

**1. Admins:** Characteristics: Admins are the system administrators who manage the website and the system's backend operations. They have a deep understanding of the system's internal modules and can troubleshoot complex issues.

Frequency of Use: Admins use the system frequently to manage inventory, process orders, and maintain the website.

Technical Expertise: Technical expertise is required, including knowledge of database management, website maintenance, and troubleshooting.

Security or Privilege Levels: Admins have full access to all system functions and sensitive data.

Educational Level or Experience: They typically have a background in information technology.

Importance: Admins are crucial for the smooth operation of the system, as they handle critical functions and ensure data integrity.

**2. Customers:**

Characteristics: Customers are individuals who use the website to browse and purchase jewelry items.

Frequency of Use: Customers may use the system periodically to browse new collections, place orders, and track shipments.

Technical Expertise: Customers require basic technical skills to navigate the website, browse products, and place orders.

Security or Privilege Levels: Customers have limited access to the system and only to functions related to browsing and purchasing.

Educational Level or Experience: They may have varying levels of education and technical experience.

Importance: Customers are important for the success of the business, as they generate revenue through purchases.

## 2.4    Operating Environment

1. Hardware Platform: The system is designed to operate on standard hardware configurations, including desktop computers and laptops. It is compatible with both Windows and Linux operating systems.

2. Operating System: The system is compatible with a range of operating systems, including Windows 10 and later versions and Linux. It is designed to be responsive and work seamlessly across different devices and operating systems.

3. Web Server: The system requires a web server to host the website and manage web traffic. It is compatible with popular web servers such as Apache and Microsoft IIS.

4. Database: The system uses a database to store and manage product information, customer data, and other relevant information. It is compatible with relational databases such as MySQL and Spring Boot.

5. Web Browser: The system is accessed through a web browser, and it is compatible with major web browsers such as Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge.

6. Other Software Components: The system may interact with other software components or applications, such as payment gateways and third-party integrations. It is designed to seamlessly integrate with these components to provide a complete e-commerce solution.

Overall, the website and system are designed to operate in a standard web-based environment, with compatibility across different hardware platforms, operating systems, web servers, databases, and web browsers.

## 2.5    Design and Implementation Constraints

1. Corporate or Regulatory Policies: The system must comply with any relevant corporate or regulatory policies regarding data privacy, security, and handling of sensitive information.

2. Hardware Limitations: The system should be designed to run efficiently on typical hardware configurations, considering factors like timing requirements and memory constraints.

3. Interfaces to Other Applications: The system may need to integrate with other applications or systems, requiring standardized interfaces or APIs for seamless data exchange.

4. Specific Technologies, Tools, and Databases: The system is designed to work with specific technologies, tools, and databases, such as MySQL or PostgreSQL for the database management system, and IntelliJ IDEA as the primary IDE.

5. Parallel Operations: The system should support parallel operations to handle multiple user interactions simultaneously, ensuring a smooth user experience.

6. Language Requirements: The system is developed using Java as the primary programming language, which may impose certain language-specific constraints and conventions.

7. Communications Protocols: The system should adhere to standard communications protocols for data transmission, ensuring compatibility with other systems and networks.

8. Security Considerations: The system must incorporate robust security measures to protect against unauthorized access, data breaches, and other security threats.

9. Design Conventions or Programming Standards: The system should follow design conventions and programming standards, ensuring maintainability and ease of future enhancements.

## 2.6   Project Documentation

1. Introduction

   - Overview of the Jewelry Management System

   - Purpose and Scope of the Document

   - Intended Audience

2. System Overview

   - Description of the Jewelry Management System

   - Key Features and Functionality

   - System Architecture

3. Installation Guide

## 2.7    User Documentation

1. User Manual: A comprehensive guide explaining how to use the jewelry management system. It should include step-by-step instructions for performing common tasks, such as adding new products, managing inventory, processing orders, and generating reports.

2. Online Help: Context-sensitive help that provides assistance within the system interface. Users should be able to access relevant help topics based on the task they are performing.

3. Tutorials: Interactive tutorials that walk users through key features and functionalities of the system. Tutorials can help users quickly get up to speed with using the system effectively.

4. FAQs (Frequently Asked Questions): A list of common questions and their answers related to the jewelry management system. FAQs can help users troubleshoot issues and find answers to common queries.

## 2.8    Assumptions and Dependencies

1. Third-Party Components: The project assumes the use of third-party components for certain functionalities, such as payment processing, image processing, or inventory management. The project's success depends on the availability and compatibility of these components.

2. Commercial Components: If commercial components are used, the project assumes that the necessary licenses are obtained and that the components meet the project's requirements.

3. Development Environment: The project assumes a stable development environment with access to necessary development tools, libraries, and frameworks. Any changes to this environment could affect the development process and timeline.

4. Operating System and Database Compatibility: The project assumes compatibility with the chosen operating systems (Linux and Windows) and database management systems (MySQL and PostgreSQL). Any issues with compatibility could affect the project's functionality.

5. External Services and APIs: The project may depend on external services or APIs for certain functionalities, such as shipping services or online payment gateways. The project assumes the availability and proper functioning of these services.

6. Data Security and Privacy: The project assumes compliance with data security and privacy regulations, such as GDPR or CCPA. Any changes to these regulations could affect the project's implementation and requirements.

7. User Acceptance and Feedback: The project assumes user acceptance and feedback for iterative development. Changes in user requirements or feedback could affect the project's scope and timeline.

# 3. External Interface Requirements

## 3.1 User Interfaces

### Website

**Homepage of website**
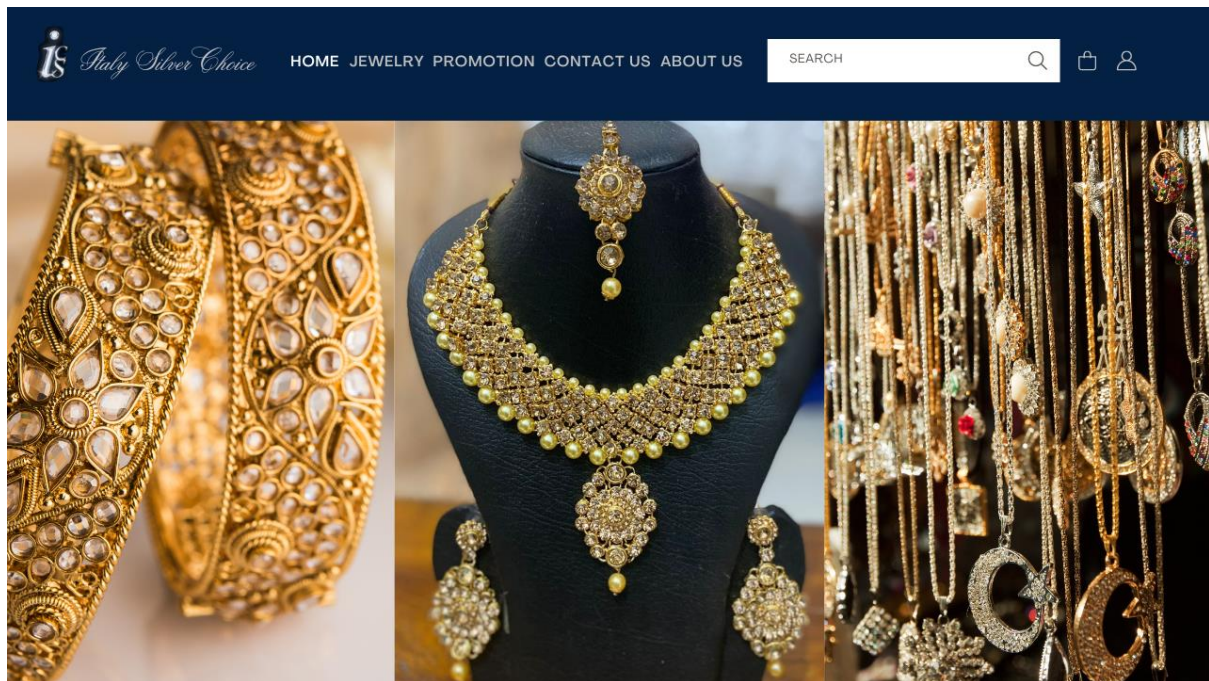


*Figure 3: Home page*

This is our website home page. Navigation bar has the following options: Home, Jewelry, Promotion, Contact us, About us, Search bar, User and Add to cart.
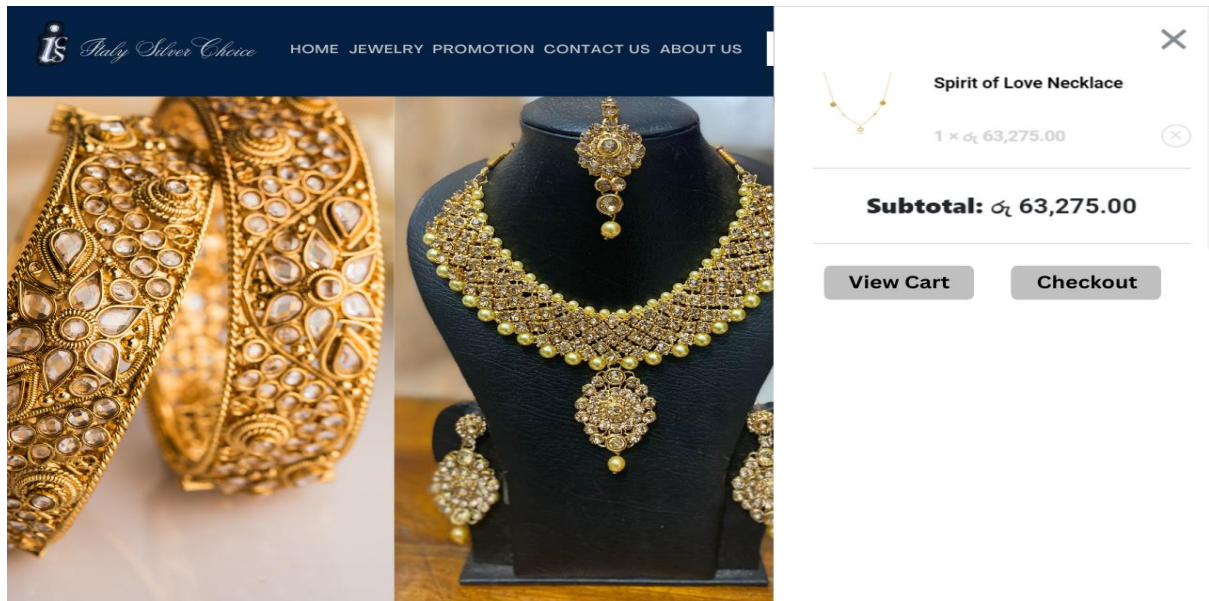
**Add to cart**



*Figure 4: Add to cart*

If the user clicks add to cart, the user can show this interface through the click add to cart symbol. Users can go to the payment gateway to order through the checkout button.

**Contact Us**



*Figure 5: Contact us*

Users can send their comments via the contact us page. User wants to fill all details before submit.

1-F3750

Bangles - (Plain)

Celebrate love and unity with our intertwined bangle, a symbolic piece that represents eternal connections.

WEIGHT :12.760 g

METAL : Pure Silver 925(s)

Add to Cart

*Figure 6: Product view*

This is the page for the final stage the user who is going to order a product by using add to cart at the same time the user can chat with organization. And here we can see some texts mouse click (About- Us, Home, Contact Us) you can jump to other pages



CATEGORIES
- Necklaces
- Bangles
- Rings
- Pendants
- Bracelets
- Chains
- Earrings

SUB CATEGORIES
- Plain
- Stones
- Antique
- CNC
- TC

METAL
All Metal
Yellow Gold 22K
White Gold 18K

1-F3750        12.760 G
Bangles (Plain)

1-R394        18.420 G
Bangles (Plain)

1-F2078        12.620 G
Bangles (Stones)
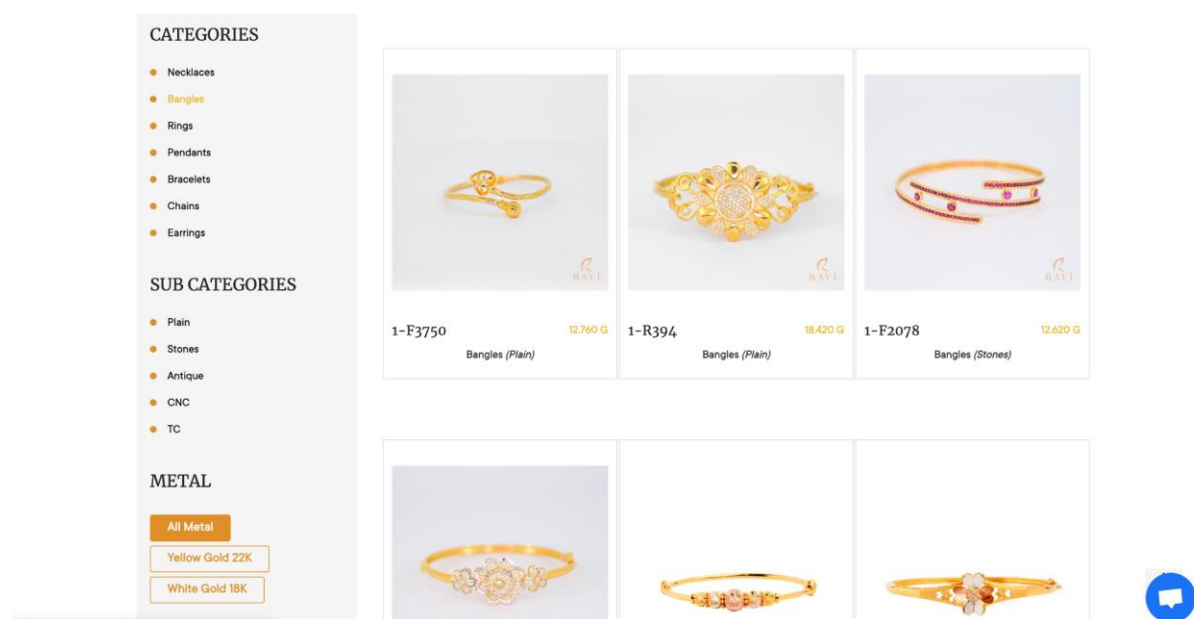
*Figure 7: Collection*

Here we can sort what we are going to select by using filtering options and here we can see some texts mouse click (About- Us, Home, Contact Us) you can jump to other pages

## Overview of the System

In the Italy Silver Choice Jewelry Management System, there are five main parts in the dashboard such as employee, customer, inventory, finance, supplier and more.

**Employee Management Interface**

- According to the system functionalities, the employee section is handling the employee details, attendance of the employee and salary calculation of the employees.
- Admin can view employee details as a table by clicking the employee button and also each and every employee details can be shown as a 4to view as well. Admin can add, update, and delete the employees from the system.
- Admin can mark the attendance of the employee through the system by getting the check in and check out time of the employee.
- According to the attendance, salary will be calculated.



*Figure 8: Employee management*

**Customer Management Interface**



*Figure 9: Customer management*

The customer management section of our main jewelry shop management system provides the following functionalities for managing customer information:

View and Edit Customer Details

   - This section allows the admin to view and update customer information, including name, contact details, address, and purchase history.

Search for Customers

   -  Admin can search for specific customers by name, ID, or other criteria using this functionality.

Add New Customers

   - This feature enables Admin to create new customer profiles for in-store shopping customers in the system.

These functionalities are designed to facilitate efficient customer management within the jewelry shop management system.

## 3.2 Hardware Interfaces

Point of Sale (POS) Terminals - these terminals are used for transactions, inventory management, and customer information. Such as card readers, receipt printers.

Computers and Servers - Backend servers and computers are necessary for hosting the management software, storing data, and running administrative tasks.

Printers - Used for printing invoices, receipts, and other documents related to sales and inventory management.

Security Cameras: Installed for surveillance and security purposes to monitor the shop and prevent theft.

Networking Equipment-Routers, switches, and internet access to facilitate communication between various components of the system, including POS terminals, computers, and backend servers.

Backup Systems- External hard drives or cloud storage solutions for data backup and recovery purposes to prevent loss of important information.

## 3.3 Software Interfaces

Database Interface- The system interacts with its underlying database through a dedicated interface, allowing it to manage essential information like product inventory, customer records, and sales data. This interface enables the system to perform operations such as data retrieval, insertion, updating, and deletion.

Payment Gateway Interfaces-Similar to rental systems, jewelry shop management systems require interfaces with payment gateways to facilitate secure transactions. These interfaces allow customers to make purchases using different payment methods, both in-store and online, while ensuring the authorization and settlement of transactions.

Messaging Interfaces-Communication between the jewelry shop system and customers is facilitated through messaging interfaces, including SMS, email, and push notifications. These interfaces enable the system to send various notifications and updates to customers regarding their orders, promotions, or upcoming events.

Reporting and Analytics Interfaces- The system incorporates interfaces for generating detailed reports and conducting analytics on business operations. These interfaces enable users to extract and analyze data from the system's database, providing insights into sales performance, inventory management, and customer behavior.

Inventory Management Interfaces-Interfaces dedicated to inventory management support functions such as adding new products, updating stock levels, and categorizing items. These interfaces streamline the process of tracking and managing jewelry inventory effectively.

Customer Relationship Management (CRM) Interfaces-CRM interfaces enable the management of customer information and interactions. They allow users to maintain customer profiles, track inquiries, and personalize marketing efforts to enhance customer satisfaction and loyalty.

## 3.4    Communications Interfaces

Network Server Communications Protocols- The jewelry shop management system necessitates robust communication protocols for interactions with network servers. These protocols enable seamless data exchange between the system components, including the e-commerce website and internal management system, and backend servers to ensure efficient operations.

Web Browser Compatibility-Both the e-commerce website and the internal management system must be compatible with various web browsers. This compatibility ensures that users can access and interact with the systems' interfaces regardless of their preferred browser, enhancing accessibility and usability.

Email Integration-Email integration is essential for both the e-commerce website and the internal system to send notifications, alerts, and communications to users and stakeholders. This feature facilitates timely communication regarding orders, updates, promotions, inventory management, and other relevant information.

Electronic Forms- Electronic forms play a crucial role in both the e-commerce website and the internal system's functionality. Users utilize electronic forms for tasks such as order placement, inventory updates, customer inquiries, and internal processes. The systems should support the creation, submission, and processing of electronic forms to streamline operations.

Message Formatting: Clear and standardized message formatting is necessary for effective communication within both the e-commerce website and the internal system. Consistent formatting ensures that messages are easily understandable and actionable by users and stakeholders, contributing to an enhanced user experience and operational efficiency.

Communication Standards-Both the e-commerce website and the internal system adhere to established communication standards such as HTTPS for web-based interactions. Compliance with these standards ensures interoperability and compatibility with existing systems and technologies, facilitating seamless communication between system components.

Communication Security and Encryption: Both the e-commerce website and the internal system implement security measures such as encryption mechanisms and adherence to industry-standard security protocols (SSL) to protect sensitive data during transmission. Encryption helps prevent unauthorized access and ensures data integrity, safeguarding both customer information and internal data

# 4. System Features

**Use cases scenarios for Jewelry Management System**
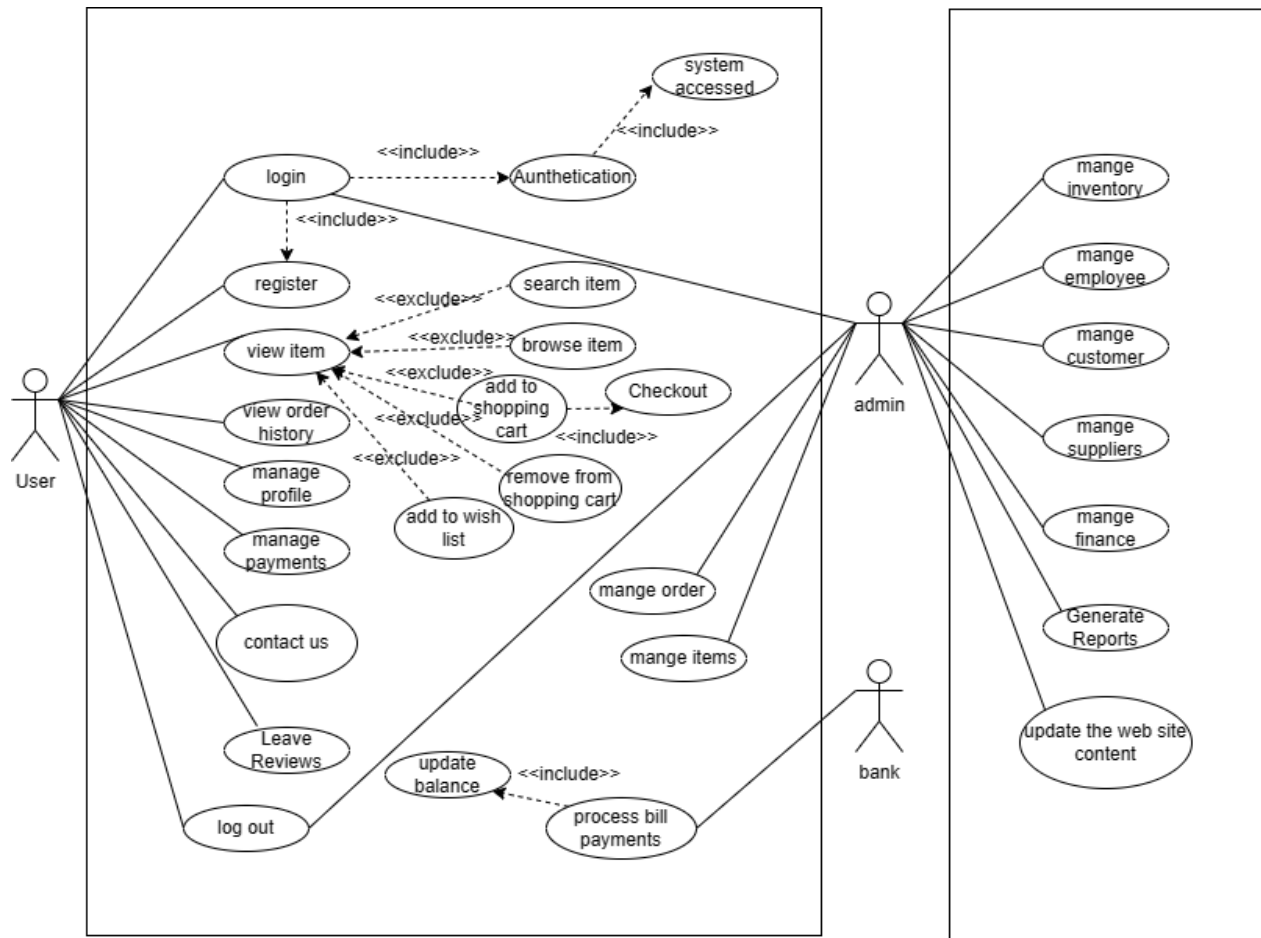


*Figure 10: Use case diagram*

**Use cases scenarios for E-commerce website**

Use Case: User Registration

Actor: New User

Description:

1. The new user accesses the registration page of the jewelry e-commerce website.

2. The system prompts the user to input the required information such as username, email address, and password.

3. The user fills in the necessary information and submits the registration form.

4. The system validates the input data, ensuring all fields are filled correctly and the username and email are unique.

5. If the input data is valid, the system creates a new user account.

6. Once the account is activated, the user can log in to the system using their registered username and password.

Alternate Flow:

If the user attempts to register with a username or email that is already in use, the system displays an error message prompting the user to choose a different username or email.

Exceptional Flow:

If there are technical issues during the registration process, such as server errors or database connection problems, the system displays a generic error message and advises the user to try again later or contact customer support for assistance.

Use Case: Add Item to Wish list

Actor: Registered User

Description:

1. The registered user views an item they wish to save for later.

2. The user clicks on the "Add to Wish list" button next to the item.

3. The system adds the selected item to the user's wish list, allowing them to access it later from their account dashboard.

Alternate Flow

User can directly add items to the wish list from the browse items section without viewing the details.

Exceptional Flow

If the item is already on the user's wish list, the system notifies the user and does not add the item again.

Use Case: Request Customer Support

Actor: Registered User

Description:

1. The registered user encounters an issue or has a question while using the website.

2. The user selects the option to request customer support.

3. The system provides contact options such as email, phone number, or live chat.

4. The user can reach out to customer support for assistance with their inquiry.

9 Requesting Customer Support**

Alternate Flow

Users can access a Chabot for immediate assistance with common inquiries before being connected to a support representative.

Exceptional Flow

If the user's issue requires escalation, the system notifies a supervisor or specialist for further assistance.

Use Case: Process Bill Payment

Actor: Bank

Description:

1. The bank receives payment requests from the jewelry management system website.

2. The bank processes the payment transactions using secure payment gateways.

3. Upon successful payment processing, the bank updates the user's account balance accordingly.

4. The system receives confirmation of the payment status and updates the order information accordingly.

Alternate Flow

User can choose to pay via multiple methods supported by the bank, such as credit/debit cards, bank transfers, or digital wallets.

Exceptional Flow

If the bank's payment gateway experiences downtime, the system notifies the user and suggests alternative payment methods.

User Authentication

Standard Flow

1. The user accesses the website and selects the "Login" option.

2. The system prompts the user to enter their credentials.

3. The user provides their username and password.

4. The system verifies the credentials and grants access to the user.

Alternate Flow

If the provided credentials are incorrect, the system displays an error message and prompts the user to re-enter the credentials.

Exceptional Flow

If the user exceeds the maximum number of login attempts, the account is temporarily locked, and the user is directed to reset their password.

Use Case: Search for the Item

Actor: Registered User

Description

1. The registered user accesses the website and navigates to the search bar.

2. The user enters keywords related to the desired jewelry item.

3. The system retrieves relevant items matching the search query from the database.

4. The user browses through the search results and selects a specific item for more details.

Alternate Flow

The user directly searches for specific items using the search bar.

Exceptional Flow

If there are no items available in the selected category, the system notifies the user and suggests alternative categories.

Use Case: Add Item to Shopping Cart

Actor: Registered User

Description:

1. The registered user selects an item they wish to purchase and clicks on the "Add to Cart" button.

2. The system adds the selected item to the user's shopping cart.

3. The user can continue shopping or proceed to checkout.

Alternate Flow

User can directly add items to the shopping cart from the browse items section without viewing the details.

Exceptional Flow

If the item is out of stock, the system notifies the user and does not add the item to the cart.

Use Case: Manage Profile

Actor: Registered User

Description:

1. The registered user accesses their account dashboard.

2. The user selects the option to manage their profile.

3. The system displays the user's profile information, including username, email, and shipping address.

4. The user can edit or update their profile details as needed.

Alternate Flow

User can access their profile directly from the homepage for quick access to account information.

Exceptional Flow

If the user tries to update sensitive information such as email or password, the system verifies the changes through additional authentication steps.

Use Case: Checkout

Actor: Registered User

Description:

1. The registered user accesses their shopping cart and reviews the items added.

2. The user selects the option to proceed to checkout.

3. The system prompts the user to provide shipping and payment information.

4. The user fills in the required details and confirms the order.

5. The system processes the payment and updates the order status.

6. The user receives a confirmation email with the order details.

Alternate Flow

User can choose to save their payment details for future purchases to expedite the checkout process.

Exceptional Flow

If there is an error during payment processing, the system notifies the user and provides instructions to resolve the issue.

Use Case: Manage Payment

Actor: Registered User

Description:

1. The registered user accesses their account dashboard.

2. The user selects the option to manage payment methods.

3. The system displays the user's payment methods, such as credit cards or PayPal.

4. The user can add, edit, or remove payment methods as needed.

Use Case: Manage Orders

Actor: Admin

Description:

1. The admin accesses the admin panel of the website.

2. The admin selects the option to manage orders.

3. The system displays a list of orders placed by users.

4. The admin can view order details, update order status, and process refunds or cancellations.

Use Case: Manage Items

Actor: Admin

 Description:

1. The admin accesses the admin panel of the website.

2. The admin selects the option to manage items in the inventory.

3. The system displays a list of jewelry items available for sale.

4. The admin can add new items, edit existing items, or remove items from the inventory.

**Use cases scenarios for Jewelry Management System**

| | |
|---|---|
| **Use case ID** | 01 |
| **Name** | Manage employee |
| **Participating actor** | Admin |
| **Description** | Admin can add, update, delete and view employee, managing attendance and salary calculation |
| **Entry condition** | Admin logging into the system. |
| **Basic course** | <ul><li>Admin navigates to the "Employee Management" section of the system.</li><li>System presents options for managing employee records, attendance, and salary.</li><li>Admin add, update, delete and view employee details by go to the inside of the employee.</li><li>System displays attendance records for all employees, including options to add, update, or view attendance</li><li>System provides options to calculate and manage employee salaries, including viewing salary details and generating salary reports.</li><li>Admin selects the "Calculate Salary" option.</li><li>System calculates salaries based on predefined parameters such as working hours, overtime, and deductions.</li></ul> |

| | N/A |
|---|---|
| **Alternative course** | |

*Table 1: Use case 01*

| **Use case ID** | 02 |
|---|---|
| **Name** | Inventory management |
| **Participating actor** | Admin |
| **Description** | Admin can manage inventory by adding, updating, deleting and viewing, and getting low stock alerts. |
| **Entry condition** | Admin logging into the system. |
| **Basic course** | <ul><li>Admin navigates to the inventory section.</li><li>System presents options for managing inventory, including adding, updating, deleting, viewing items.</li><li>Admin can manage inventory by using these options.</li><li>Monitor the stock level of the inventory.</li></ul> |
| **Alternative course** | <ul><li>System monitors inventory levels and identifies items that have fallen below the predefined threshold.</li><li>System sends low stock alerts to the Admin, notifying them of the items that require replenishment or attention.</li></ul> |

*Table 2: Use case 02*

| **Use case ID** | 03 |
|---|---|
| **Name** | Generate Reports |
| **Participating actor** | Admin |

| Description | Admin can generate various reports related to sales, inventory, and customer data. |
|---|---|
| Entry condition | Admin logging into the system. |
| Basic course | <ul><li>Admin navigates to the report generation section.</li><li>Admin selects the type of report to generate (e.g.-sales report, inventory report).</li><li>The system generates the selected report based on the available data.</li><li>Admin can customize the report parameters (e.g., date range, specific products).</li><li>Admin downloads, views or print the generated report.</li></ul> |
| Alternative course | If the selected report type has no data available:<ul><li>The system notifies the admin that there is no data to generate the report.</li><li>Admin may choose to adjust the report parameters or proceed without generating the report.</li></ul> |

*Table 3: Use case 03*

| Use case ID | 04 |
|---|---|
| Name | Manage Suppliers |
| Participating actor | Admin |
| Description | Admin can add, update, or delete supplier information and manage purchase orders. |
| Entry condition | Admin logging into the system |
| Basic course | Admin navigates to the supplier management section. Admin selects the action to perform (add, update, delete). If adding a new supplier:<ul><li>Admin fills out the supplier information form.</li></ul> |

| | |
|---|---|
| | • Admin submits the form. |
| | If updating supplier information: |
| | • Admin selects the supplier to update. |
| | • The system displays the current supplier details. |
| | • Admin makes the necessary changes. |
| | • Admin submits the updated details. |
| | If deleting a supplier: |
| | • Admin selects the supplier to delete. |
| | • The system prompts for confirmation. |
| | • Admin confirms deletion. |
| **Alternative course** | N/A |

*Table 4: Use case 04*

| | |
|---|---|
| **Use case ID** | 05 |
| **Name** | Manage Customers |
| **Participating actor** | Admin |
| **Description** | Admin can view, add, update, or delete customer profiles, preferences, and purchase history. |
| **Entry condition** | Admin logging into the system |
| **Basic course** | Admin navigates to the customer management section.<br><br>Admin views the list of existing customers.<br>If adding a new customer:<br>• Admin fills out the customer information form.<br>• Admin submits the form. |

If updating customer information:

- Admin selects the customer to update.
- The system displays the current customer details.
- Admin makes the necessary changes.
- Admin submits the updated details.

If deleting a customer:

- Admin selects the customer to delete.
- The system prompts for confirmation.
- Admin confirms deletion.

If handling return orders:

- Customer initiates a return order by contacting the admin.
- Admin accesses the customer's order history and verifies the return request.
- Admin approves the return and generates a return authorization number.
- Admin communicates the return authorization number to the customer.
- Customer must return item back to the physical shop.
- Upon receiving the returned item, Admin inspects it for damages or discrepancies.

If the returned item meets the return policy criteria:

- Admin approves the return and evaluates the returned item's value.
- Admin issues a store credit or voucher equivalent to the returned item's value

If handling payments:

- Customer places an order through the website.
- Admin receives the order notification and reviews the payment details.

| | |
|---|---|
| | • Admin verifies the payment status and confirms the order. |
| | • Upon successful order fulfilment, Admin updates the order status to "completed." |
| | If there are any payment issues or discrepancies: |
| | • Admin communicates with the customer to resolve the payment-related issues. |
| | • - Admin updates the order status accordingly. |
| **Alternative course** | If there are system errors or payment processing issues: |
| | • The system alerts the admin and provides instructions for resolving the issue. |
| | • Admin takes necessary actions to address the problem, such as contacting relevant bank or the payment processor. |

*Table 5: Use case 05*

| | |
|---|---|
| **Use case ID** | 06 |
| **Name** | Manage finance |
| **Participating actor** | Admin |
| **Description** | Admin can manage finance by getting incomes, expenses. Get profit or loss |
| **Entry condition** | Admin logging into the system. |
| **Basic course** | • Admin navigates to the finance section. |
| | • System presents options for managing finance, including accessing income and expense records, and calculating profit or loss. |
| | • Admin can view incomes and expenses. |

| | • Make related calculations and get profit or loss. |
| | • Showing it as a graphical representation |
| | • Generate reports |
| **Alternative course** | N?A |

| Use case ID | 07 |
|---|---|
| Name | Manage Website Content |
| Participating actor | Admin |
| Description | Admin can update the content of the website. |
| Entry condition | Admin logging into the web site |
| Basic course | • Admin navigates to the content management section.<br>• Admin selects the page or section of the website to update.<br>• The system displays the current content of the selected page/section.<br>• Admin makes the necessary changes to the content.<br>• Admin submits the updated content.<br>• The system saves the changes and updates the website accordingly. |
| Alternative course | If the admin encounters an error while saving the updated content:<br>• The system displays an error message indicating the issue.<br>• Admin can choose to retry saving the content or cancel the operation. |

*Table 7: Use case 07*

# 5. Other Nonfunctional Requirements

## 5.1   Performance Requirements

Website Response Time - The website should load each page, including product listings, search results, and checkout, within 3 seconds to ensure a smooth user experience.

Search Functionality Performance - Search queries should return relevant results within 1 second, even with large product catalogs, to quickly assist users in finding desired items.

Add to Cart Functionality - Adding products to the cart, updating quantities, and applying discounts should occur instantly, with no perceptible delay, to encourage seamless shopping.

User Registration and Login - Registration and login processes should complete within 5 seconds, allowing users quick access to their accounts without frustration.

Order Processing Time -  Order processing, including reviewing order summaries, choosing payment options, and entering billing information, should take no longer than 1 minute to ensure efficient checkout.

Alerts and Notifications - Inventory alerts for low stock levels should be sent immediately to relevant personnel to prevent stock outs and ensure timely replenishment.

Reporting and Analytics - Generation of reports, such as inventory valuation, purchase history, and financial reports, should be completed within 5 seconds to provide timely insights for decision-making.

Email Communications - Sending order confirmations, invoices, and payment receipts via email should occur within 1 minute of the transaction to keep customers informed and satisfied.

Data Management and CRUD Operations - CRUD operations for employee profiles, customer records, inventory items, and supplier information should execute within 3 seconds to facilitate efficient data management.

System Performance Monitoring - The system should continuously monitor its performance metrics, such as response times and server resource utilization, to identify and address any performance bottlenecks promptly.

# 5.2 Safety Requirements

The project aims to mitigate potential risks and ensure a secure, reliable, and user-friendly experience for customers, employees, and stakeholders interacting with the e-commerce platform and system functionalities.

Data Security and Privacy:
- Safeguard user information, including personal details, payment information, and order history, from unauthorized access, data breaches, and identity theft.
- Protect sensitive data during transmission and storage through encryption protocols and secure data handling practices.

Transaction Security:
- Implement secure payment gateways and encryption mechanisms to protect financial transactions and prevent fraud or unauthorized access to payment information.
- Verify the authenticity of users and transactions through robust authentication and authorization processes to prevent identity theft and fraudulent activities.

Product Availability and Stock Management:
- Minimize the risk of customer dissatisfaction and revenue loss by ensuring accurate stock levels, timely updates on product availability, and efficient order processing.
- Implement inventory tracking and alert mechanisms to prevent stock outs, backorders, and missed sales opportunities.

System Reliability and Performance:
- Maintain system uptime and responsiveness to prevent loss of customer trust, and negative impact on sales and revenue.
- Implement redundancy measures, load balancing strategies, and performance optimization techniques to mitigate risks associated with system failures, downtime, and slow response times.

Data Integrity and Accuracy:

- Ensure the integrity and accuracy of data stored and processed by the system to prevent errors, inconsistencies, and misinformation that could lead to customer dissatisfaction and loss of credibility.
- Implement data validation mechanisms, error handling procedures, and audit trails to detect and correct data integrity issues in a timely manner.

Customer Communication and Support:

- Provide clear and transparent communication with customers regarding order status, product availability to manage expectations and prevent misunderstandings or disputes.
- Offer responsive customer support channels, such as live chat, email, and phone support, to address customer inquiries, complaints, and concerns promptly and effectively.

# 5.3 Security Requirements

The e-commerce website and system functionalities can enhance the protection of user data, prevent unauthorized access and misuse, and maintain user trust and confidence in the platform.

Secure Communication Channels:

- Provide secure channels for communication between users and the website, such as encrypted chat functionalities and secure email communication.
- Use SSL/TLS certificates to secure communication channels and prevent man-in-the-middle attacks.

Data Encryption and Transmission:

- Encrypt sensitive data both at rest and in transit to protect against interception and unauthorized access by malicious actors.
- Implement secure communication protocols, such as HTTPS, to encrypt data transmitted between the user's browser and the server.

Secure Authentication and Authorization:

- Implement secure authentication mechanisms, such as multi-factor authentication, to verify the identity of users and prevent unauthorized access to accounts.
- Enforce strict authorization controls to limit access to sensitive functionalities and data based on user roles and permissions.

Security Auditing and Monitoring:
- Implement logging and monitoring mechanisms to track user activities, system events, and potential security incidents.
- Conduct regular security audits and vulnerability assessments to identify and mitigate security vulnerabilities and weaknesses in the system.

# 5.4 Software Quality Attributes

Usability:
- Ensure that the user interface is intuitive and easy to navigate, allowing users to accomplish tasks efficiently and effectively.
- Measure usability through user feedback surveys, task completion times, and error rates during user testing sessions.

Reliability:
- Strive for high system reliability to minimize downtime and ensure continuous availability of services to users.
- Define reliability objectives, such as achieving a system uptime of 99.9% over a rolling 12-month period.
- Monitor system reliability using uptime monitoring tools and track any unplanned outages or service disruptions.

Maintainability:
- Design the system with modular, well-structured code to facilitate ease of maintenance and future enhancements.
- Establish code quality metrics, such as code complexity and code coverage, and set targets for improvement over time.

Security:

- Prioritize system security to protect user data and prevent unauthorized access or data breaches.
- Conduct regular security audits and penetration tests to identify and mitigate potential security vulnerabilities.

Testability:
- Design the system with testability in mind, enabling comprehensive test coverage and efficient test execution.
- Develop test suites for unit testing, integration testing, and end-to-end testing to validate system functionality.

Adaptability:
- Ensure that the system can adapt to changing business requirements, technological advancements, and user needs over time.
- Design system architecture and components with flexibility and scalability to accommodate future growth and expansion.

Interoperability:
- Define interoperability standards and protocols to facilitate data exchange and communication between different systems.
- Conduct interoperability testing to verify compatibility and interoperability with external systems and platforms.

## 5.5  Business Rules

User Roles and Permissions:
- Administrators have full access to all system functionalities, including CRUD operations for employee profiles, customers, inventory, and suppliers.
- Regular employees have restricted access

Authentication and Authorization:
- Users must authenticate themselves through a secure login process before accessing any system functionalities.

- Role-based access control (RBAC) is implemented to enforce access restrictions based on user roles and permissions.
- Only authorized personnel can perform critical functions such as adding new products, modifying inventory levels, and processing financial transactions.

System Monitoring and Audit Trails:
- System administrators have access to monitoring tools and audit trails to track user activities, system events, and security incidents.
- Any suspicious or unauthorized activities detected during monitoring are promptly investigated and addressed to maintain system integrity and security.

Change Management
- Changes to system configurations, codebase, or database schema must be documented and approved through a formal change management process.
- Testing and validation procedures are conducted before deploying any changes to production environments to minimize the risk of disruptions or errors.

# 6. Other Requirements

Database Requirements:
- The system shall utilize a relational database management system (RDBMS) to store and manage data efficiently.
- Database schema design shall adhere to normalization principles to minimize data redundancy and ensure data integrity.
- Data encryption mechanisms shall be implemented to protect sensitive information stored in the database.
- Regular database backups and disaster recovery procedures shall be established to prevent data loss and ensure system availability.

Performance Requirements:
- The system shall be designed and optimized for high performance to ensure responsiveness and scalability under varying load conditions.
- Response times for critical system functions, such as page loading, transaction processing, and data retrieval, shall meet predefined performance objectives.

- Load testing and performance profiling shall be conducted to identify performance bottlenecks and optimize system resources for maximum efficiency.

User Training and Support:
- User training materials, tutorials, and documentation shall be provided to facilitate user onboarding and proficiency with system features.
- Training sessions and workshops shall be organized to educate users on new features, updates, and best practices for utilizing the system effectively.

# Appendix A: Glossary

SRS: Software Requirements Specification - A document that describes the intended behavior of a software system from a user's perspective.

CRUD: Create, Read, Update, and Delete - Basic operations used to manage data in a system.

E-commerce: Electronic Commerce - The buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet.

ER Diagram: Entity-Relationship Diagram - A visual representation of the relationships between entities in a database.

SQL: Structured Query Language - A domain-specific language used in programming and designed for managing data held in a relational database management system.

# Appendix B: Analysis Models

In the Italy Silver Choice Jewelry Management System and the website, we have used an Entity Relationship Diagram for pertinent analysis.
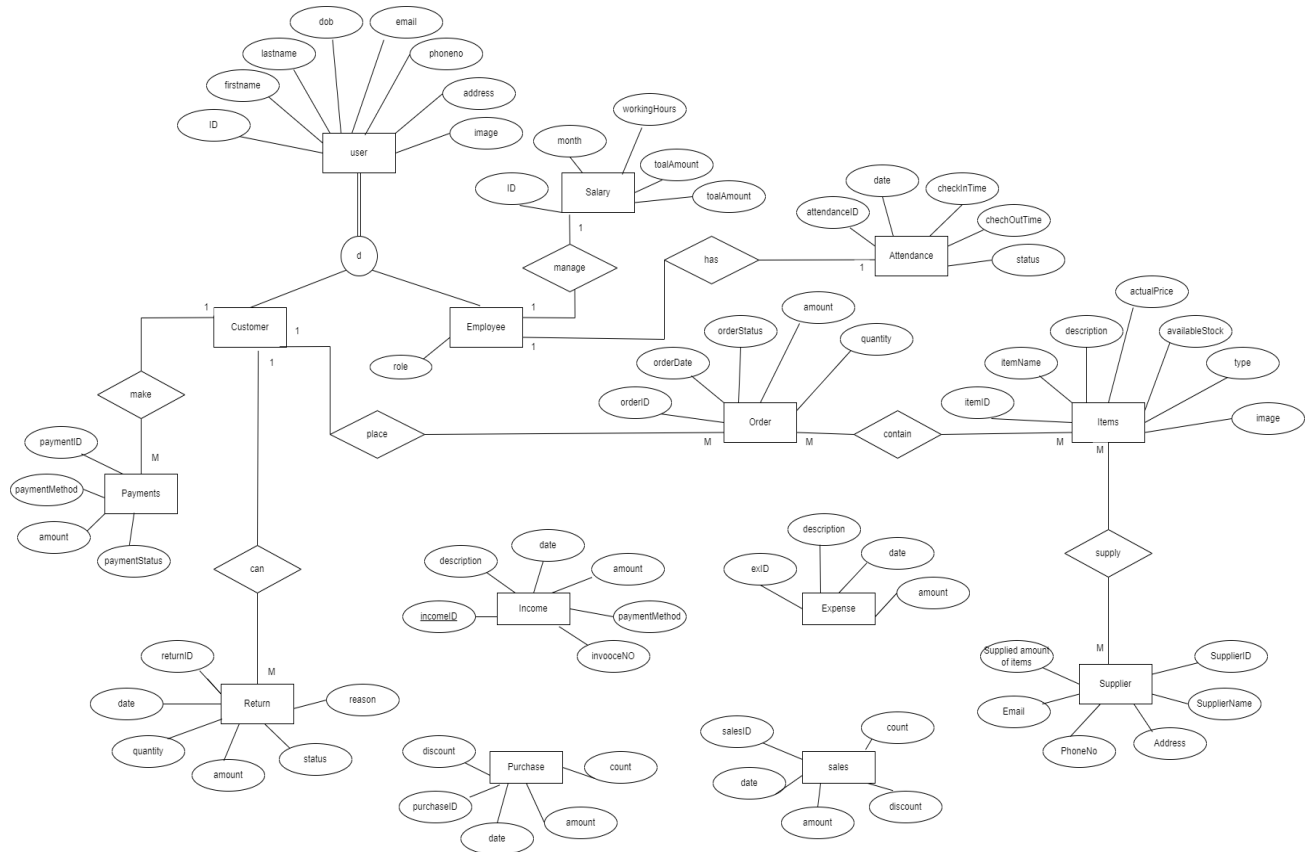


*Figure 11: ER diagram*

# Appendix C: To Be Determined List

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