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Diamond Valuation System

Software Requirement Specification

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# Introduction

The diamond valuation system will help customers value their diamonds quickly, conveniently and most accurately about the value of the diamond they own.

## Purpose

The purpose of this Software Requirements Specification (SRS) document is to provide a comprehensive overview of the Diamond Valuation System. This document aims to define the functional and non-functional requirements, design constraints, and interfaces for the system, ensuring that all stakeholders have a clear understanding of the system's capabilities and limitations. The Diamond Valuation System is intended to standardize and streamline the process of evaluating diamonds, offering accurate and consistent appraisals based on established industry criteria.

## Scope

The Diamond Valuation System is designed to serve gemologists, jewelers, appraisers, and other stakeholders in the diamond industry. The system will facilitate the assessment of diamonds by automating the valuation process, incorporating key factors such as the Four Cs (Carat, Cut, Color, and Clarity), market trends, and additional parameters that influence a diamond's worth. The system will support data entry, analysis, and reporting, providing users with detailed valuation reports that adhere to industry standards.

## Definitions, Acronyms, and Abbreviations

· **Four Cs**: The primary criteria used to evaluate diamonds—Carat, Cut, Color, and Clarity.

· **Carat**: A measure of a diamond's weight.

· **Cut**: The quality of a diamond's cut, affecting its brilliance.

· **Color**: The absence of color in a diamond.

· **Clarity**: The presence of internal or external flaws in a diamond

## References

**1.Diamond Grading System Documentation**

* **Title:** GIA Diamond Grading System
* **Date:** 2020
* **Publishing Organization:** Gemological Institute of America (GIA)
* **Source:** [GIA Official Website](https://www.gia.edu)

1. **Spring Framework Documentation**

* **Title:** Spring Framework Reference Documentation
* **Date:** 2021
* **Publishing Organization:** Pivotal Software, Inc.
* **Source:** [Spring Documentation](https://docs.spring.io/spring-framework/docs/current/reference/html/)

1. **API Design Guide**

* **Title:** Google API Design Guide
* **Date:** 2021
* **Publishing Organization:** Google
* **Source:** Google API Design Guide

## Overview

This SRS document is structured to provide a detailed description of the Diamond Valuation System. It includes the following sections:

* **Overall Description**: An overview of the system's context, objectives, and constraints.
* **System Features**: A detailed breakdown of the system's functional requirements.
* **External Interface Requirements**: Descriptions of user interfaces, hardware interfaces, software interfaces, and communication interfaces.
* **System Attributes**: Non-functional requirements, including performance, security, usability, and maintainability.

# Specific REQUIREMENTS

The Bank will have 2 roles

1. Customer
2. Admin

|  |  |
| --- | --- |
| Admin | Customer |
| New Customer | Choose Service |
| Edit Customer | Create Request |
| Delete Customer | Change Password |
| New Account | Login & Logout |
| Edit Account |  |
| Delete Account |  |
| New User |  |
| Add User |  |
| Edit User |  |
| Login & Logout |  |
| New Service |  |
| Edit Service |  |
| Delete |  |

# Overall Description

#### 3.1 Product Perspective

The diamond valuation management software is a comprehensive solution designed to assist a jewelry company in evaluating and managing the valuation of diamonds. It integrates various modules to handle customer requests, valuation processes, and administrative tasks. The system aims to streamline operations, enhance customer experience, and ensure accurate and efficient valuation of diamonds.

* **System Interfaces:** The software interacts with the company's existing database systems and integrates with third-party data sources for market prices.
* **User Interfaces:** The application features web-based interfaces accessible via browsers, providing an intuitive and user-friendly experience for both internal staff and external customers.
* **Hardware Interfaces:** The system supports printers for generating valuation certificates and other documents.
* **Software Interfaces:** It communicates with other internal software modules and external APIs for data synchronization and retrieval.

#### 3.2 Product Functions

The primary functions of the diamond valuation management software include:

* **Home Page:** Introduces the company, its services, diamond knowledge, and provides navigation to other sections.
* **Diamond Valuation:** Allows users to estimate diamond value based on various criteria or using a certificate number.
* **Valuation Management:** Manages the workflow from customer request submission to delivering the valuation results.
* **Document Generation:** Supports printing valuation certificates and creating sealing and commitment documents.
* **Service Management:** Manages pricing and execution time for different valuation services.
* **Parameter Declaration:** Allows defining the parameters used in the valuation process.
* **Data Synchronization:** Integrates price data from leading online jewelry platforms to ensure accurate estimations.
* **Dashboard:** Provides statistical summaries and performance metrics.

#### 3.3 User Characteristics

The software is designed for the following types of users:

* **Customers:** Individuals seeking to get their diamonds valued. They need a simple, guided interface to submit valuation requests and retrieve results.
* **Consultation Staff:** Company employees who handle customer interactions, receive diamond samples, and communicate valuation results. They require tools to manage requests and interact with customers efficiently.
* **Valuation Experts:** Professionals responsible for assessing the value of diamonds based on provided criteria. They need interfaces to enter and manage valuation data.
* **Managers:** Oversee the valuation process, approve documents, and manage escalations. They require dashboards and reporting tools to monitor operations.
* **Administrative Staff:** Handle backend operations such as service pricing, parameter updates, and data synchronization. They need robust tools for managing the system's configuration and integration points.

#### 3.4 Constraints

* **Regulatory Compliance:** The software must comply with relevant industry standards and regulations for diamond valuation and data protection.
* **Data Security:** Ensuring the confidentiality, integrity, and availability of customer and valuation data.
* **Performance:** The system must handle peak loads efficiently, especially during high-traffic periods.
* **Usability:** The interfaces should be user-friendly to accommodate users with varying technical expertise.
* **Integration:** The system should seamlessly integrate with existing company databases and third-party APIs.

#### 3.5 Assumptions and Dependencies

* **Accurate Data Sources:** The accuracy of valuation estimates depends on the reliability of data sources for diamond market prices.
* **Internet Connectivity:** The system requires stable internet access for data synchronization and accessing the web interfaces.
* **User Training:** It is assumed that all users will receive adequate training to use the system effectively.
* **Maintenance:** Regular maintenance and updates will be performed to ensure system reliability and incorporate new features or regulatory changes.
* **Hardware Availability:** Necessary hardware (e.g., printers) will be available and maintained to support system operations.

#### 3.6 Requirements Subsets

The requirements for the diamond valuation management software can be grouped into the following subsets:

* **Core Functionality:** Basic features required for diamond valuation and management (e.g., valuation forms, customer request handling).
* **Advanced Features:** Additional functionalities such as data synchronization, document generation, and dashboards.
* **User Interface Enhancements:** Improvements to the user interfaces for better usability and accessibility.
* **Security and Compliance:** Measures to ensure data security, regulatory compliance, and user authentication.
* **Performance Optimization:** Requirements focused on enhancing the system's performance and scalability.

# FUNCTIONAL Requirements

## <Use Cases Diagram>

[The main Use Case Diagrams of the system]

## < Use Case Description>

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Module Name | USECASE | ACTOR | DESCRIPTION |
| 1 | User Login/Logout | Login | Admin/Manager/Staff/Valuation Staff | User logs into the system using their credentials. |
| 2 | Logout | User logs out of the system. |
| 3 | Dashboard and Reporting | View Dashboard and Statistics | Admin/Manager | Views the dashboard for statistical analysis and reporting of valuation requests and other key metrics. |
| 4 | Manage User | View User | Admin/Manager/Staff/Valuation Staff | Views details of user accounts. |
| 5 | Create User | Admin | Admin creates a new user account. |
| 6 | Edit User | Admin edits details of an existing user account. |
| 7 | Delete User | Admin deletes an existing user account. |
| 8 | Manage Customer | View Customers | Admin/Manager/Staff/Valuation Staff | Views details of customer profiles. |
| 9 | Create Customer | Admin/Staff/Manager | Creates a new customer profile. |
| 10 | Edit Customer | Edits details of an existing customer profile. |
| 11 | Delete Customer | Deletes an existing customer profile |
| 12 | Manage Services | View Services | Admin/Manager/Staff/Valuation Staff | Views details of existing services. |
| 13 | Create Service | Admin | Admin creates a new valuation service. |
| 14 | Edit Service | Admin edits details of an existing service. |
| 15 | Delete Service | Admin deletes an existing service. |
| 16 | Manage Request Services | View Valuation Request | Admin/Manager/Staff/Valuation Staff | User views details of valuation requests. |
| 17 | Submit Valuation Request | Staff/Customer | User submits a valuation request for a diamond. |
| 18 | Process Valuation Request | Staff/Valuation Staff | User processes the valuation request and assigns it for valuation. |
| 19 | Update Valuation Request Status | User updates the status of the valuation request as it progresses through the valuation process. |
| 20 | Approve Sealing Report | Manager | Manager approves the sealing report for unclaimed valuation results. |
| 21 | Approve Commitment Form | Manager approves the commitment form for lost receipts. |
| 22 | Manage Diamond Certificate | View Diamond Certificate | Admin/Manager/Staff/Valuation Staff | User views details of diamond certificates. |
| 23 | Create Diamond Certificate | Valuation Staff | Valuator creates a diamond certificate based on the valuation results. |
| 24 | Edit Diamond Certificate | Valuator edits details of an existing diamond certificate. |
| 25 | Print Diamond Certificate | Prints the diamond certificate for the customer |
| 26 | Delete Diamond Certificate | Deletes an existing diamond certificate |
| 27 | View Home Page | View Home Page | Customer | Customer views the home page, which introduces the company, services offered, diamond knowledge resources, search and valuation functionalities, and blog. |
| 27 | Login/Logout | Login | Customer logs into the system using their credentials. |
| 28 | Logout | Customer logs out of the system. |
| 29 | Diamond Valuation Estimation | Estimate Diamond Value by Criteria | Customer inputs criteria such as diamond origin, shape & cut, measurements, carat weight, color, clarity, cut, proportions, polish, symmetry, and fluorescence to estimate the diamond's value. |
| 30 | Estimate Diamond Value by Certification Number | Customer inputs a certification number issued by the company to estimate the diamond's value. |
| 31 | Valuation Request Management | Submit Valuation Request | Customer submits a valuation request form. |
| 32 | View Valuation Request Status | Customer views the status of their submitted valuation request. |
| 33 | Handling Unclaimed Valuation Results | Request Commitment Form for Lost Receipt | Customer requests a commitment form to receive their diamond sample if they have lost the valuation receipt. |

# NON-FUNCTIONAL Requirements

[This section describes the non-functional requirements of the system. Some examples are listed as below]

## Usability

[This section includes all those requirements that affect usability. For example,

specify the required training time for a normal users and a power user to become productive at particular operations

specify measurable task times for typical tasks or base the new system’s usability requirements on other systems that the users know and like

specify requirement to conform to common usability standards, such as IBM’s CUA standards Microsoft’s GUI standards]

### <Usability Requirement One>

[The requirement description goes here.]

## Reliability

[Requirements for reliability of the system should be specified here. Some suggestions follow:

Availability—specify the percentage of time available ( xx.xx%), hours of use, maintenance access, degraded mode operations, and so on.

Mean Time Between Failures (MTBF) — this is usually specified in hours, but it could also be specified in terms of days, months or years.

Mean Time To Repair (MTTR)—how long is the system allowed to be out of operation after it has failed?

Accuracy—specifies precision (resolution) and accuracy (by some known standard) that is required in the system’s output.

Maximum Bugs or Defect Rate—usually expressed in terms of bugs per thousand lines of code (bugs/KLOC) or bugs per function-point( bugs/function-point).

Bugs or Defect Rate—categorized in terms of minor, significant, and critical bugs: the requirement(s) must define what is meant by a “critical” bug; for example, complete loss of data or a complete inability to use certain parts of the system’s functionality.]

### <Reliability Requirement One>

[The requirement description.]

## Performance

[The system’s performance characteristics are outlined in this section. Include specific response times. Where applicable, reference related Use Cases by name.

Response time for a transaction (average, maximum)

Throughput, for example, transactions per second

Capacity, for example, the number of customers or transactions the system can accommodate

Degradation modes (what is the acceptable mode of operation when the system has been degraded in some manner)

Resource utilization, such as memory, disk, communications, and so forth.

### <Performance Requirement One>

[The requirement description goes here.]

Interfaces

## Supportability

[This section indicates any requirements that will enhance the supportability or maintainability of the system being built, including coding standards, naming conventions, class libraries, maintenance access, and maintenance utilities.]

### <Supportability Requirement One>

[The requirement description goes here.]

## Design Constraints

[This section indicates any design constraints on the system being built. Design constraints represent design decisions that have been mandated and must be adhered to. Examples include software languages, software process requirements, prescribed use of developmental tools, architectural and design constraints, purchased components, class libraries, and so on.]

### <Design Constraint One>

[The requirement description goes here.]

## On-line User Documentation and Help System Requirements

[Describes the requirements, if any, for o-line user documentation, help systems, help about notices, and so forth.]

## Purchased Components

[This section describes any purchased components to be used with the system, any applicable licensing or usage restrictions, and any associated compatibility and interoperability or interface standards.]

## Interfaces

User Interfaces

1. **Home Page**

**Description:** Introduces the company, services offered, diamond knowledge, search functionality, valuation service, blog sharing, etc.

**Elements:**

* + 1. Company Introduction Section
    2. Service Description Section
    3. Diamond Knowledge Base
    4. Search Bar
    5. Valuation Service Form
    6. Blog Section

1. **Diamond Valuation Form**

**Description:** Allows users to estimate the value of a diamond based on specific criteria.

**Fields:**

* + 1. Diamond Origin (Dropdown)
    2. Shape & Cut (Dropdown)
    3. Measurements (Text Fields)
    4. Carat Weight (Text Field)
    5. Color (Dropdown)
    6. Clarity (Dropdown)
    7. Cut (Dropdown)
    8. Proportions (Text Fields)
    9. Polish (Dropdown)
    10. Symmetry (Dropdown)
    11. Fluorescence (Dropdown)

1. **Certificate-based Valuation Form**

**Description:** Allows users to estimate the value of a diamond using the certificate number issued by the company.

**Fields:**

* + 1. Certificate Number (Text Field)

1. **Valuation Management Interface**
   1. **Description:** Manages the entire valuation process.
   2. **Elements:**
      1. Request Submission Form
      2. Consultation Scheduling
      3. Sample Receipt Form
      4. Valuation Result Entry Form
      5. Result and Sample Return Form
2. **Print Valuation Certificate**

**Description:** Allows printing of valuation certificates based on company templates.

**Elements:**

* + 1. Select Valuation
    2. Print Preview
    3. Print Button

1. **Sealing and Commitment Document Interface**

**Description:** Manages document creation for sealing and commitments.

**Elements:**

* + 1. Create Sealing Document
    2. Create Commitment Document
    3. Approval Workflow for Manager

1. **Service Pricing and Time Declaration Interface**

**Description:** Manages pricing and time for each valuation service type.

**Elements:**

* + 1. Service Type (Dropdown)
    2. Pricing (Text Field)
    3. Estimated Time (Text Field)

1. **Valuation Parameter Declaration Interface**

**Description:** Manages declaration of valuation parameters.

**Elements:**

* + 1. Parameter Name (Text Field)
    2. Parameter Value (Text Field)

1. **Data Synchronization Interface**

**Description:** Manages synchronization of price data from leading online jewelry platforms.

**Elements:**

* + 1. Synchronize Button
    2. Data Source Configuration

1. **Dashboard**

**Description:** Provides statistics and summaries.

**Elements:**

* + 1. Valuation Requests Summary
    2. Valuation Results Summary
    3. Service Efficiency Metrics
    4. Customer Feedback Summary

#### Hardware Interfaces

* **Printers:**
  + **Description:** Support for printing valuation certificates and other documents.
  + **Logical Structure:** Network or USB connected printers.
  + **Physical Addresses:** IP addresses for network printers.
  + **Expected Behavior:** Ability to send print jobs and receive status feedback.

#### Software Interfaces

1. **Database Interface**
   * **Description:** Interface with the underlying database to store and retrieve data.
   * **Components:**
     + SQL Database (e.g., MySQL, PostgreSQL)
     + ORM Layer (e.g., Hibernate)
2. **Third-party Data Synchronization API**
   * **Description:** Interface with external APIs for synchronizing jewelry price data.
   * **Components:**
     + API Endpoints for Data Retrieval
     + Authentication Mechanism (e.g., OAuth)
3. **Internal Services Interface**
   * **Description:** Interface between various internal services/modules.
   * **Components:**
     + Service Endpoints for Module Interaction
     + Data Transfer Objects (DTOs)

#### Communications Interfaces

1. **Local Area Network (LAN) Interface**
   * **Description:** Interface for network communication within the company's infrastructure.
   * **Components:**
     + Ethernet or Wi-Fi Connectivity
     + Network Protocols (e.g., TCP/IP)
2. **Remote Access Interface**
   * **Description:** Interface for remote access to the system for management and support.
   * **Components:**
     + VPN Connectivity
     + Remote Desktop Protocol (RDP)

**3.Email Service Interface**

* + **Description:** Interface for sending email notifications and reports.
  + **Components:**
    - SMTP Server Configuration
    - Email Templates

## Licensing Requirements

[Defines any licensing enforcement requirements or other usage restriction requirements that are to be exhibited by the software.]

## Legal, Copyright, and Other Notices

[This section describes any necessary legal disclaimers, warranties, copyright notices, patent notices, wordmark, trademark, or logo compliance issues for the software.]

## Applicable Standards

[This section describes by reference any applicable standard and the specific sections of any such standards which apply to the system being described. For example, this could include legal, quality and regulatory standards, industry standards for usability, interoperability, internationalization, operating system compliance, and so forth.]

# Supporting Information

[The supporting information makes the SRS easier to use. It includes:

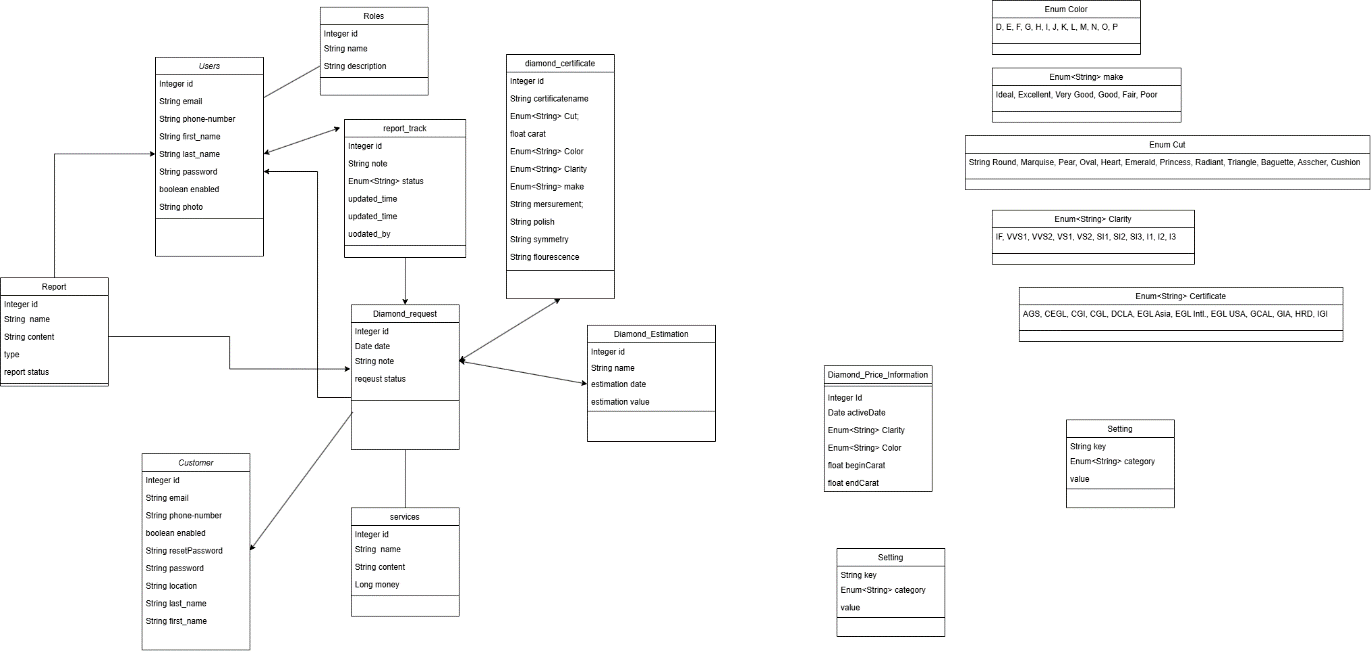
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Appendices

These may include use-case storyboards or user-interface prototypes. When appendices are included, the SRS should explicitly state whether or not the appendices are to be considered part of the requirements.]

**ERD/DB Diagram**



### Function Requirements

#### 1. User Management

* **Function Requirement 1.1: User Authentication**
  + The system shall authenticate users based on their username and password.
  + It shall enforce secure password policies (e.g., minimum length, complexity).
* **Function Requirement 1.2: User Roles and Permissions**
  + The system shall support multiple user roles (Admin, Manager, Staff, Valuation Staff, Customer).
  + Each role shall have specific permissions (e.g., read, write, execute) based on functional needs.

#### 2. Customer Management

* **Function Requirement 2.1: Customer Profile Management**
  + The system shall allow customers to create and manage their profiles.
  + Customers shall be able to update personal information and preferences.

#### 3. Service Management

* **Function Requirement 3.1: Service Listing and Details**
  + The system shall display a list of services offered (e.g., diamond valuation, consultation).
  + Each service shall have detailed descriptions and pricing information.

#### 4. Valuation Request Management

* **Function Requirement 4.1: Submission of Valuation Request**
  + Customers shall be able to submit a valuation request form online.
  + The form shall capture necessary details such as diamond specifications and customer information.
* **Function Requirement 4.2: Status Tracking**
  + The system shall track the status of each valuation request (e.g., pending, in progress, completed).
  + Customers shall be able to view the current status of their requests.

#### 5. Diamond Valuation Estimation

* **Function Requirement 5.1: Criteria-Based Estimation**
  + The system shall provide a form for customers to input diamond criteria (origin, shape & cut, measurements, etc.).
  + It shall calculate and display an estimated value based on the input criteria.
* **Function Requirement 5.2: Certification Number Estimation**
  + Customers shall have the option to input a certification number to retrieve a valuation estimation.

#### 6. Results and Sample Management

* **Function Requirement 6.1: Access to Valuation Results**
  + Customers shall be able to access and download finalized valuation reports.
  + Reports shall include detailed information about the diamond’s valuation and characteristics.
* **Function Requirement 6.2: Sample Handling**
  + The system shall manage the handling of physical diamond samples associated with valuation requests.
  + Customers shall be able to request the return or handling of samples.

#### 7. Dashboard and Statistics

* **Function Requirement 7.1: Dashboard Display**
  + The system shall provide a dashboard for customers to view statistics related to their valuation requests.
  + Dashboard shall include graphs, charts, and tables depicting request statuses, historical data, and trends.

#### 8. Help and Support

* **Function Requirement 8.1: Access to Help Resources**
  + The system shall provide access to user guides, FAQs, and support contact information.
  + Help resources shall assist customers in using the system and understanding valuation processes.

#### 9. Security and Compliance

* **Function Requirement 9.1: Secure Access**
  + The system shall enforce secure login/logout processes using encryption techniques.
  + It shall manage session timeouts and prevent unauthorized access.

#### 10. Integration

* **Function Requirement 10.1: Backend Integration**
  + The system shall integrate with backend databases and services for diamond data and valuation calculations.
  + Integration shall ensure seamless data flow and accuracy in valuation estimations.

### Non-Functional Requirements

* **Performance:** The system shall handle concurrent user sessions efficiently without performance degradation.
* **Scalability:** It shall accommodate a growing number of users and valuation requests over time.
* **Usability:** The UI shall be intuitive, with clear navigation and minimal learning curve for customers.

**Technical Requirements**

* + - 1. **Login User**

LU1 – Succesfully Login

LU2 – Fail Login

* 1. Create User

C