Software Design Specification

Garden Vision AR

Project Code:

CMPC-401

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Definition of Terms, Acronyms and Abbreviations

Term	Description
RBAC	Role-Based Access Control
AR	Augmented Reality
SSL/TLS	Secure Sockets Layer / Transport Layer Security
SDK	Software Development Kit
GDPR	General Data Protection Regulation
DBMS	Database Management System
FAQ	Frequently Asked Questions
API	Application Programming Interface
UAT	User Acceptance Testing

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~~Section 1~~

1. Introduction

1.1 Purpose of Document

This document presents the design requirements of the project “Garden vision AR”. It gives a detailed explanation on how the system is supposed to work, its limitations and how it is expected to perform. Audience covers the project stakeholders, developers, testers and the project managers. The document is used to maintain a clear understanding of the project needs that will help in the developmental as well as the testing phase. It is also used to confirm that the characteristic of the final product is sufficient to fulfill the needs of the users, the capacities of the system and the legal requirements. This SRS will be updated from time to time according to the scope or the required changes during its life cycle of the project.

1.2 Project Overview

The “Garden vision AR” is an AR project implemented on a web page that can help the buyer select plants and offer care instructions for them. It has augmented reality (AR) elements for visualizing the plants into user spaces and has expert gardening services. The goal of the project is to improve gardening differently by having a simple and easy to use front-end, garden experts and engaging tools. The app offers the users plant variety, individualized guide to plant caring and the community support in case of new garden users. The platform includes safe payment methods and instant customer care service to provide the buyer with a meaningful and simple purchasing. Also, the AR capability enables people to visualize plants in their environments and makes better purchasing choices while enhancing environmentally friendly spaces.

1.3 Scope

Users can peruse vegetation items through the platform, make purchases, and get tips on how to maintain the plants. It will also offer AR visualizations, get advice from experts, and share on social networking websites and platforms. Also, users

can ask some questions concerning gardening to practitioners and even share their experiences with other users. It performs a useful function as a platform that is excited about innovations in garden and plant care from a sustainable perspective. It does not provide same-day order delivery tracking or in-app customer-to-customer messaging, but it concentrates on a perfect shopping experience and realistic plant visualization.

2. Design Considerations

2.1 Assumptions and Dependencies

Users will have internet access and compatible devices for AR features.

The system depends on third-party APIs for payment gateways (Easypaisa, Jazz Cash) and AR functionality.

Reliable hosting services will be used to ensure system availability.

2.2 Risks and Volatile Areas

Compatibility issues with older devices and limited internet bandwidth.

Changes in AR technology or third-party APIs could impact functionality.

Security vulnerabilities in handling user data and payment information.

3. System Architecture

3.1 System Level Architecture

The Green World platform is based on a client-server architecture with the following components:

- **Frontend**: HTML, CSS, JavaScript for web interfaces.
- **Backend**: PHP and MySQL for data management and processing.
- **AR Integration**: Unity engine for developing AR features.
- **External APIs**: Payment gateways and AR SDKs.

Key features include:

- **User Management**: Registration, login, and profile customization.
- **Product Catalog**: Categorized plant and seed listings.
- **AR Visualization**: Real-time display of plants in user environments.
- **Order Management**: Cart, checkout, and order tracking.

3.2 Sub-System / Component / Module Level Architecture

Modules:

1. **User Management**
    - Features: Signup, login, profile updates.
    - Diagram: Use case and sequence diagrams.
2. **AR Module**
    - Features: Real-time plant visualization.
    - Diagram: Component and state transition diagrams.
3. **Product Management**
    - Features: Product categorization, search functionality.
    - Diagram: Data flow and class diagrams.
4. **Order Processing**
    - Features: Add to cart, checkout, payment, and shipping.
    - Diagram: Sequence and ER diagrams.

3.3 Sub-Component / Sub-Module Level Architecture (1…n)

Detailed diagrams for sub-modules like "Add to Cart" and "Order Status" include:

- Activity diagrams for user actions.
- State transition diagrams for order lifecycle.

4. Design Strategies

4.1 Strategy 1: Future System Extension

- Use modular architecture to allow for the addition of new features like gardening workshops or advanced analytics.

4.2 Strategy 2: User Interface Paradigm

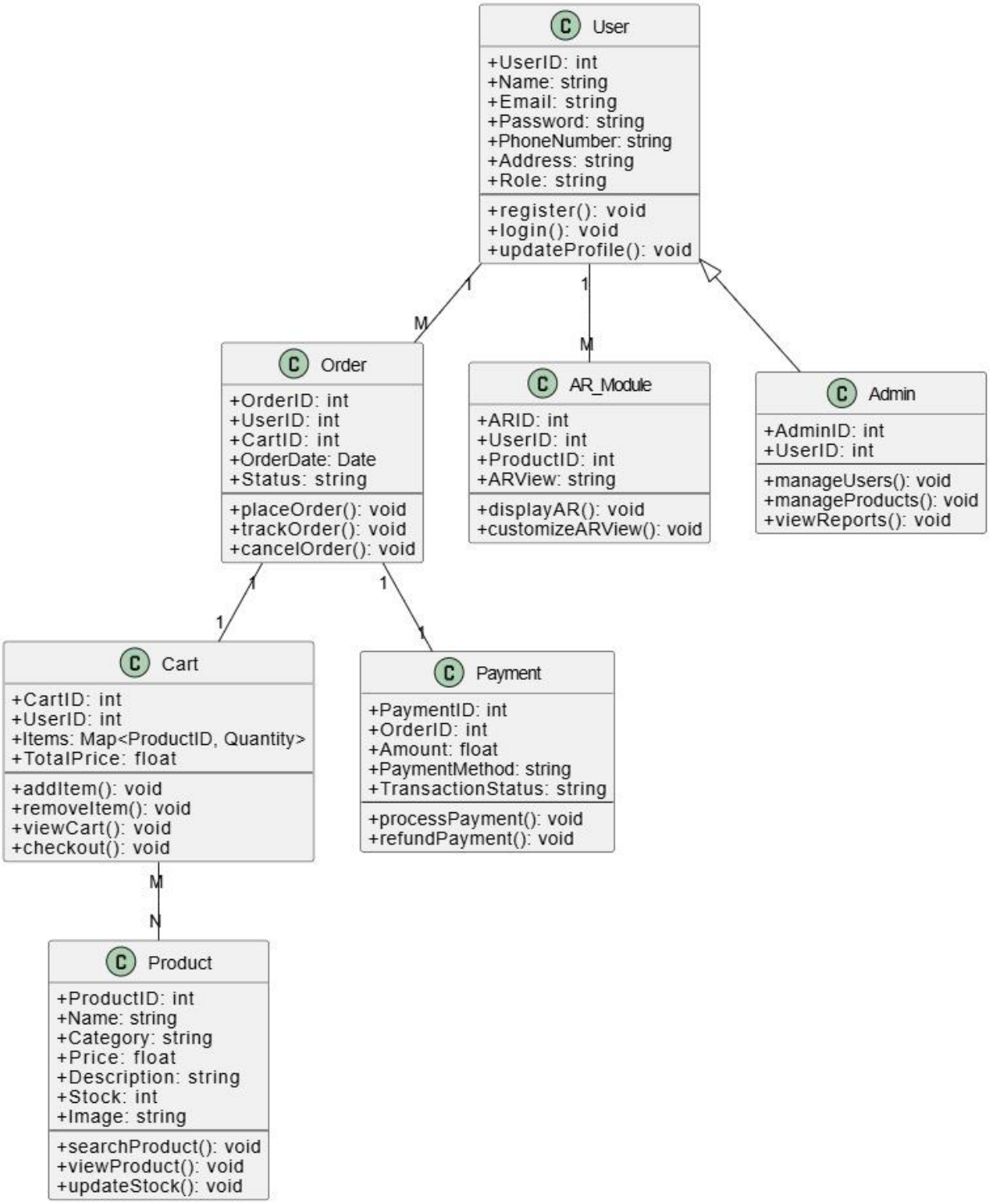
- Employ a responsive design to support various devices and screen sizes.

4.3 Strategy 3: Data Management

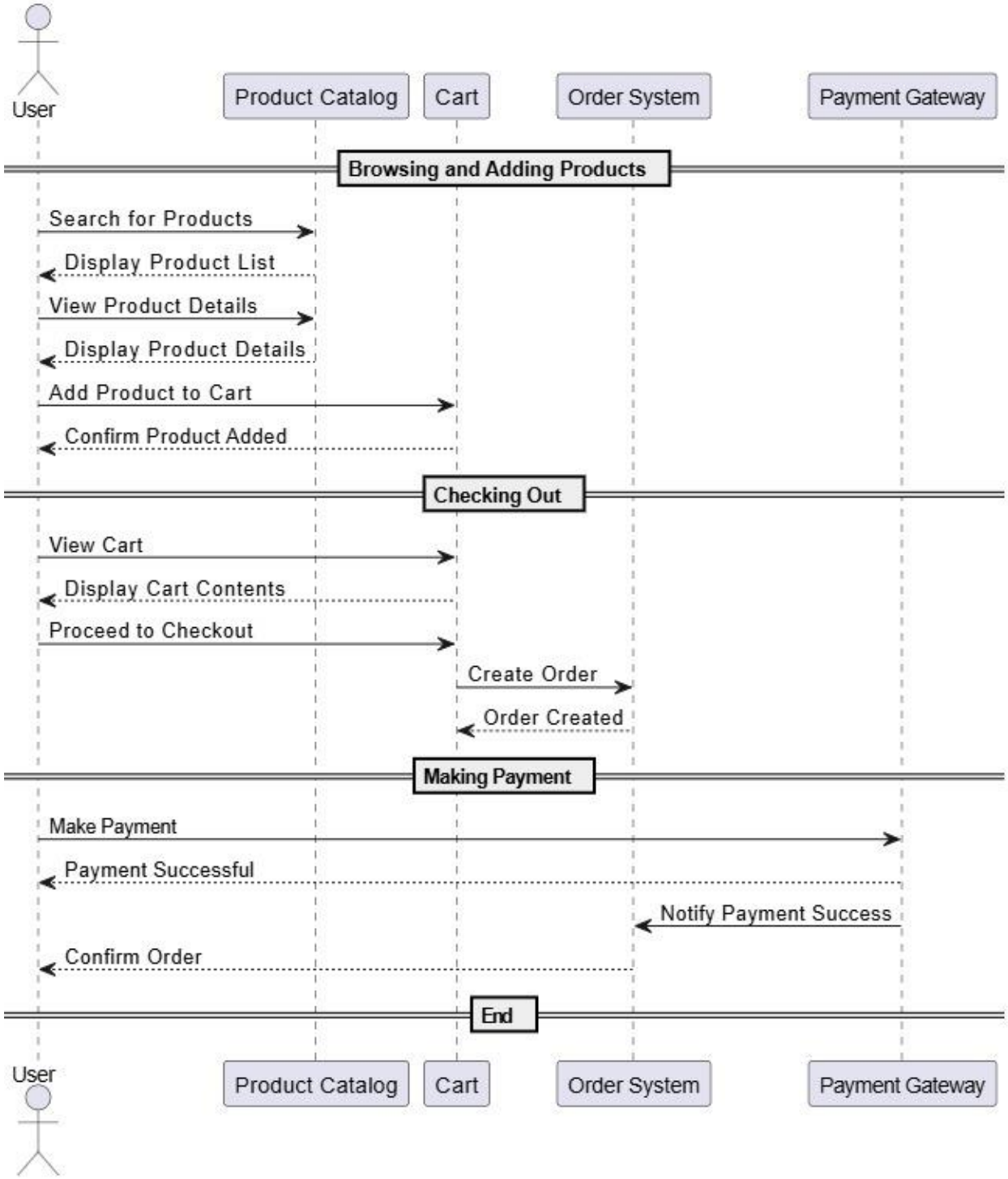
- Secure user data with encryption and implement efficient database indexing for faster queries.

5. Detailed System Design

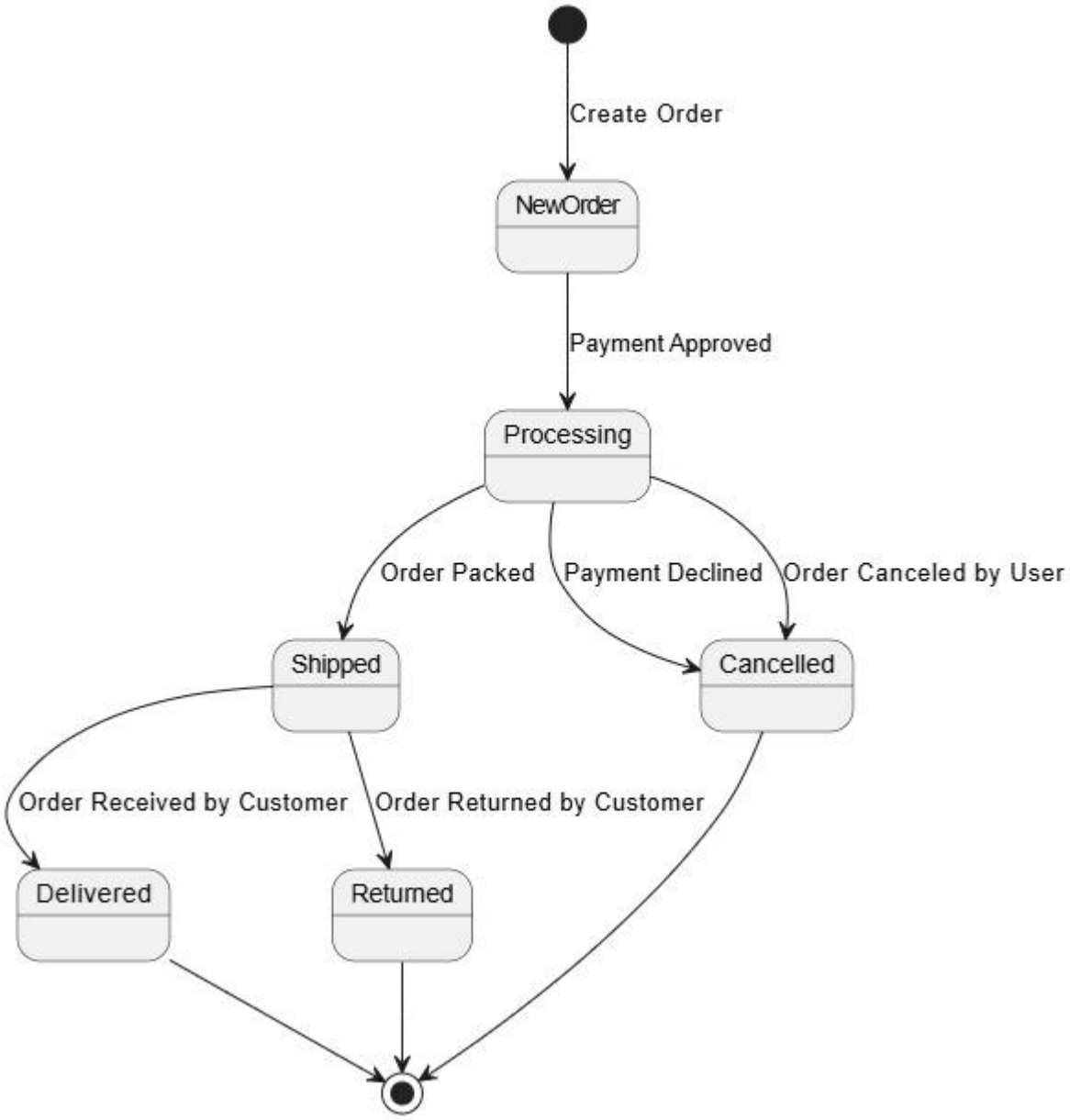
5.1 Class Diagram



5.2 Sequence Diagram



5.3 State Transition Diagram



6. References

Ref. No.	Document Title	Date of Release/ Publication	Document Source
7.1	EEE Std 830-1998: Recommended Practice for Software Requirements Specifications	1998	IEEE Standards Association
7.2	MySQL 8.0 Reference Manual	Current Version	MySQL Documentation https://dev.mysql.com/doc/
7.3	Vuforia SDK Developer Guide	Current Version	Vuforia Developer Library https://library.vuforia.com/
7.4	GDPR Compliance Guide	May 2018	European Union GDPR Portal https://gdpr-info.eu/

7. Appendices

Appendix A: Glossary of Terms

Defines key terms, acronyms, and abbreviations used within the SRS document to ensure consistent understanding among stakeholders.

- **AR**: Augmented Reality - Technology enabling real-world visualizations of virtual objects.
- **RBAC**: Role-Based Access Control - A method for managing user permissions based on roles.
- **SSL/TLS**: Secure Sockets Layer / Transport Layer Security - Protocols for securing internet communication.

Appendix B: User Interface Mockups

Provides visual representations of the main screens of the Green World platform, such as:

- **Home Screen**: Initial user interface, highlighting search, categories, and main navigation.
- **Product Detail Screen:** Sharing information about each plant or product, including how to take care of it, and where to buy it.
- **AR Model Screen:** Likewise, shows how users can tell where specific plants can go in spaces with the help of the AR app.

Appendix C: Testing Protocols and Test Cases

- **Unit Testing:** Checking specific functionalities, like the ability to log in, to search and to add a product to the cart.
- **Integration Testing:** They help to insulate other components of functionality – for instance, payment, and AR visualization, so they flow cohesively.

- **User Acceptance Testing (UAT):** They guarantee that the platform allows users to have achievable expectations in terms of easy use, quick access and effective performance.

Appendix D: Hardware and Software Requirements

Specifies the minimum hardware and software requirements necessary for users to effectively utilize the platform:

- **Hardware:** The minimum requirements of a mobile device required for augmented reality, in terms of camera and operational performance.
- **Software:** Minimum necessary iOS version is 13 and Android version is 8+ required browsers for Web interface.

Appendix E: Risk Assessment and Mitigation Strategies

Details potential risks, their impacts, and mitigation strategies, such as:

- **Risk:** User data breaches – Control: To reduce the risk, user data should be encrypted using Secure Socket Layer/Secure Transport Layer Security and a security audit done regularly.
- **Risk:** Reliance on third-party payment platforms – Control: Adapt and plan for emergencies to have other forms of payment.