

**Project Plan for Vinkay Market**

**CMU-SE 214 ACIS**

**Version 1.0**

Prepared by:  
**Group Name:** Vinkay Development Team

*Date: 08/09/2024*

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**Course:** Requirements Engineering  
**Lab Section:** CMU-SE 214 ACIS

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| **PROJECT INFORMATION** | | | |
| **Project Title** | PRODUCT BACKLOG DOCUMENT | | |
| **Start Date** | 08/09/2024 | **End Date** | 12/12/2024 |
| **Lead Institution** | International School, Duy Tan University | | |
| **Project Mentor** | Nguyen Trung Thuan, Msc. | | |
| **Partner Organization** | Duy Tan University | | |
| **Project Web URL** | https://bit.ly/trello\_cmu\_vinkay | | |
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**SIGNATURE PAGE**

SIGNATURE PAGE

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| **AUTHOR:** | Vinh, Nguyen Quoc  Scrum master | 8 Sept, 2024 |
| **REVIEWERS**: | Cong, Ho Truong  Member | 12 Oct, 2024 |
| Duy, Van Bui  Member | 13 Oct, 2024 |
| Chau Y Kazan  Member | 14 Oct, 2024 |
| **MENTOR**: | MSc. Thuan, Nguyen Trung  Mentor | 12 Nov, 2024 |

**RECORD OF CHANGE**

\*A - Added M - Modified D – Deleted

|  |  |  |  |
| --- | --- | --- | --- |
| **Effective Date** | **Changed Item** | **A\* M, D** | **Change Description** |
| 08/09/2024 | Project plan | A | Create Project plan |
| 20/09/2024 | Agile/ Scrum Process | A | Add detail Scrum Process |
| 05/10/2024 | Detail Schedule | M | Update task mission and schedule of sprint |
| 20/10/2024 | Project Milestone & Deliverables | M | Modified target sprint |
| 05/11/2024 | WBS | A | Add WBS |
| 20/11/2024 | WBS | M | Modified WBS |

## 1. PROJECT OVERVIEW

### 1.1. Project Description

The Vinkay Mart app is a mobile application designed to revolutionize the grocery shopping experience for customers of Vinkay Mart stores. This app will provide a seamless interface for users to browse products, create shopping lists, place orders for delivery or pickup, and manage their loyalty points.

### 1.2. Scope and Purpose

#### 1.2.1. Purpose

The purpose of the Vinkay Mart app is to:

Enhance customer engagement and loyalty

Streamline the shopping process for customers

Increase sales through personalized offers and easy ordering

Provide valuable data insights on customer behavior and preferences

#### 1.2.2. Scope

The Vinkay Mart app will include the following features:

User registration and authentication

Product catalog with search and filter capabilities

Shopping cart and checkout process

Order tracking and history

Loyalty program integration

Push notifications for offers and order updates

Store locator with operating hours

User profile management

Out of scope:

Integration with third-party delivery services

In-app payment processing (will use external payment gateways)

Inventory management system (will integrate with existing systems)

### 1.3. Project Objectives

#### 1.3.1. Standard Objectives

Develop a user-friendly, responsive mobile application for iOS and Android platforms

Ensure high performance and scalability to handle a large user base

Implement robust security measures to protect user data and transactions

Achieve a 99.9% uptime for the application

#### 1.3.2. Specific Objectives

Launch the app in the App Store and Google Play Store by December 12, 2024

Achieve 100,000 downloads within the first month of launch

Increase customer retention rate by 20% within six months of launch

Reduce in-store checkout times by 30% through the use of mobile ordering

### 1.4. Project Risk

| **Risk** | **Probability** | **Impact** | **Mitigation Strategy** |
| --- | --- | --- | --- |
| Delay in API integration with existing systems | Medium | High | Start integration early, conduct thorough testing |
| User adoption lower than expected | Low | High | Implement strong marketing strategy, offer incentives for app usage |
| Performance issues with high user load | Medium | High | Conduct thorough load testing, implement caching and optimization strategies |
| Data security breach | Low | Very High | Implement robust security measures, conduct regular security audits |
| Compatibility issues with certain devices | Medium | Medium | Extensive testing on various devices, prioritize fixes for most common devices |

## 2. PROJECT DEVELOPMENT APPROACH

### 2.1. Technical Process

#### 2.1.1. Reasons for selecting

We have chosen to use the Agile methodology, specifically the Scrum framework, for the development of the Vinkay Mart app. This approach allows for flexibility, rapid iteration, and continuous feedback, which are crucial for developing a user-centric mobile application.

#### 2.1.2. Agile Methodology

The Agile methodology will allow us to:

Adapt quickly to changing requirements

Deliver working software in short iterations

Maintain close collaboration with stakeholders

Continuously improve the product based on user feedback

#### 2.1.3. Scrum Process

We will follow the Scrum process with:

2-week sprints

Daily stand-up meetings

Sprint planning, review, and retrospective meetings

Product backlog grooming sessions

### 2.2. Quality Management

#### 2.2.1. Estimates of Defects to be detected

We estimate the following defects to be detected and resolved during the development process:

| **Phase** | **Estimated Defects** |
| --- | --- |
| Requirements | 20-30 |
| Design | 30-40 |
| Coding | 100-150 |
| Unit Testing | 80-100 |
| Integration Testing | 50-70 |
| System Testing | 30-50 |
| User Acceptance Testing | 20-30 |

#### 2.2.2. Measurements Program

We will track the following metrics throughout the development process:

Defect density (defects per 1000 lines of code)

Defect removal efficiency

Sprint velocity

Code coverage

Customer satisfaction score

### 2.3. Unit Testing Strategy

Use Jest for JavaScript/React Native unit testing

Aim for 80% code coverage

Implement Test-Driven Development (TDD) where applicable

Automate unit tests as part of the CI/CD pipeline

### 2.4. Integration Testing Strategy

Use Detox for end-to-end testing of React Native apps

Implement API integration tests using tools like Postman or Supertest

Conduct regular integration testing sprints

Automate integration tests and run them nightly

### 2.5. System Testing Strategy

Perform manual and automated system testing

Use real devices and emulators for testing

Conduct performance testing using tools like Apache JMeter

Implement user flow testing to ensure smooth navigation and functionality

## 3. ESTIMATION

### 3.1. Effort

Total estimated effort: 2,000 person-hours

Breakdown by phase:

Planning and Requirements: 200 hours

Design: 300 hours

Development: 1,000 hours

Testing: 400 hours

Deployment and Launch: 100 hours

### 3.2. Schedule

#### 3.2.1. Project Milestone & Deliverables

| **Milestone** | **Deliverable** | **Date** |
| --- | --- | --- |
| Project Kickoff | Project Charter | September 8, 2024 |
| Requirements Finalized | Requirements Document | September 20, 2024 |
| Design Completed | UI/UX Design Mockups | October 5, 2024 |
| Alpha Release | Internal Testing Build | November 1, 2024 |
| Beta Release | External Testing Build | November 15, 2024 |
| App Store Submission | Final Build | December 1, 2024 |
| Public Launch | Published App | December 12, 2024 |

#### 3.2.2. Detailed Schedule

| **No** | **Task name** | **Duration (day(s))** | **Start** | **Finish** | **Resource names** |
| --- | --- | --- | --- | --- | --- |
| 1 | Vinkay Mart Mobile Application | 96 | 08/09/2024 | 12/12/2024 | All members |
| 1.1 | Initial Phase | 13 | 08/09/2024 | 20/09/2024 | Nguyen Quoc Vinh |
| 1.1.1 | Project kick-off meeting | 1 | 08/09/2024 | 08/09/2024 | Nguyen Quoc Vinh |
| 1.1.2 | Discuss project ideas and requirements | 3 | 09/09/2024 | 11/09/2024 | Nguyen Quoc Vinh |
| 1.1.3 | Create Project Charter | 1 | 12/09/2024 | 12/09/2024 | Project Manager |
| 1.1.4 | Create User Stories | 2 | 13/09/2024 | 14/09/2024 | Nguyen Quoc Vinh |
| 1.1.5 | Create UI/UX Design Document | 2 | 15/09/2024 | 16/09/2024 | Nguyen Quoc Vinh |
| 1.1.6 | Create Database Schema Document | 1 | 15/09/2024 | 15/09/2024 | Backend Developer |
| 1.1.7 | Create Product Backlog | 1 | 17/09/2024 | 17/09/2024 | Product Owner, Project Manager |
| 1.1.8 | Finalize Project Plan | 2 | 18/09/2024 | 19/09/2024 | Project Manager |
| 1.1.9 | Create Architecture Document | 1 | 20/09/2024 | 20/09/2024 | Backend Developer, DevOps Engineer |
| 1.2 | Development Phase | 83 | 21/09/2024 | 12/12/2024 | All members |
| 1.2.1 | Sprint 1 - Core Features | 14 | 21/09/2024 | 04/10/2024 | All members |
| 1.2.1.1 | Sprint planning meeting | 1 | 21/09/2024 | 21/09/2024 | Nguyen Quoc Vinh |
| 1.2.1.2 | Create Sprint 1 Backlog | 1 | 21/09/2024 | 21/09/2024 | Product Owner, Project Manager |
| 1.2.1.3 | Design UI for user registration and login | 2 | 22/09/2024 | 23/09/2024 | Nguyen Quoc Vinh |
| 1.2.1.4 | Implement user registration and login (Frontend) | 3 | 24/09/2024 | 26/09/2024 | Frontend Developers |
| 1.2.1.5 | Implement user authentication (Backend) | 3 | 24/09/2024 | 26/09/2024 | Backend Developer |
| 1.2.1.6 | Design and implement main app navigation | 2 | 27/09/2024 | 28/09/2024 | Nguyen Quoc Vinh |
| 1.2.1.7 | Implement basic product listing | 2 | 29/09/2024 | 30/09/2024 | Frontend Developers, Backend Developer |
| 1.2.1.8 | Unit testing for Sprint 1 features | 2 | 01/10/2024 | 02/10/2024 | QA Tester, Developers |
| 1.2.1.9 | Bug fixes and refinements | 1 | 03/10/2024 | 03/10/2024 | Nguyen Quoc Vinh |
| 1.2.1.10 | Sprint 1 review and retrospective | 1 | 04/10/2024 | 04/10/2024 | Nguyen Quoc Vinh |
| 1.2.2 | Sprint 2 - User Profile and Product Details | 14 | 05/10/2024 | 18/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.1 | Sprint planning meeting | 1 | 05/10/2024 | 05/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.2 | Create Sprint 2 Backlog | 1 | 05/10/2024 | 05/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.3 | Design UI for user profile and product details | 2 | 06/10/2024 | 07/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.4 | Implement user profile management (Frontend) | 3 | 08/10/2024 | 10/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.5 | Implement user profile management (Backend) | 3 | 08/10/2024 | 10/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.6 | Implement product details view | 2 | 11/10/2024 | 12/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.7 | Implement product search and filtering | 2 | 13/10/2024 | 14/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.8 | Unit testing for Sprint 2 features | 2 | 15/10/2024 | 16/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.9 | Bug fixes and refinements | 1 | 17/10/2024 | 17/10/2024 | Nguyen Quoc Vinh |
| 1.2.2.10 | Sprint 2 review and retrospective | 1 | 18/10/2024 | 18/10/2024 | Nguyen Quoc Vinh |
| 1.2.3 | Sprint 3 - Shopping Cart and Checkout | 14 | 19/10/2024 | 01/11/2024 | Nguyen Quoc Vinh |
| 1.2.3.1 | Sprint planning meeting | 1 | 19/10/2024 | 19/10/2024 | Nguyen Quoc Vinh |
| 1.2.3.2 | Create Sprint 3 Backlog | 1 | 19/10/2024 | 19/10/2024 | Nguyen Quoc Vinh |
| 1.2.3.3 | Design UI for shopping cart and checkout | 2 | 20/10/2024 | 21/10/2024 | Nguyen Quoc Vinh |
| 1.2.3.4 | Implement shopping cart functionality (Frontend) | 3 | 22/10/2024 | 24/10/2024 | Nguyen Quoc Vinh |
| 1.2.3.5 | Implement shopping cart functionality (Backend) | 3 | 22/10/2024 | 24/10/2024 | Nguyen Quoc Vinh |
| 1.2.3.6 | Implement checkout process | 3 | 25/10/2024 | 27/10/2024 | Nguyen Quoc Vinh |
| 1.2.3.7 | Integrate payment gateway | 2 | 28/10/2024 | 29/10/2024 | Nguyen Quoc Vinh |
| 1.2.3.8 | Unit testing for Sprint 3 features | 2 | 30/10/2024 | 31/10/2024 | Nguyen Quoc Vinh |
| 1.2.3.9 | Bug fixes and refinements | 1 | 01/11/2024 | 01/11/2024 | Nguyen Quoc Vinh |
| 1.2.3.10 | Sprint 3 review and retrospective | 1 | 01/11/2024 | 01/11/2024 | Nguyen Quoc Vinh |
| 1.2.4 | Sprint 4 - Order History and Notifications | 14 | 02/11/2024 | 15/11/2024 | Nguyen Quoc Vinh |
| 1.2.4.1 | Sprint planning meeting | 1 | 02/11/2024 | 02/11/2024 | Nguyen Quoc Vinh |
| 1.2.4.2 | Create Sprint 4 Backlog | 1 | 02/11/2024 | 02/11/2024 | Product Owner, Project Manager |
| 1.2.4.3 | Design UI for order history and notifications | 2 | 03/11/2024 | 04/11/2024 | Nguyen Quoc Vinh |
| 1.2.4.4 | Implement order history functionality | 3 | 05/11/2024 | 07/11/2024 | Nguyen Quoc Vinh |
| 1.2.4.5 | Implement push notifications | 3 | 08/11/2024 | 10/11/2024 | Nguyen Quoc Vinh |
| 1.2.4.6 | Implement loyalty program integration | 2 | 11/11/2024 | 12/11/2024 | Nguyen Quoc Vinh |
| 1.2.4.7 | Unit testing for Sprint 4 features | 2 | 13/11/2024 | 14/11/2024 | Nguyen Quoc Vinh |
| 1.2.4.8 | Bug fixes and refinements | 1 | 15/11/2024 | 15/11/2024 | Nguyen Quoc Vinh |
| 1.2.4.9 | Sprint 4 review and retrospective | 1 | 15/11/2024 | 15/11/2024 | Nguyen Quoc Vinh |
| 1.2.5 | Final Testing and Deployment | 27 | 16/11/2024 | 12/12/2024 | Nguyen Quoc Vinh |
| 1.2.5.1 | Comprehensive system testing | 5 | 16/11/2024 | 20/11/2024 | Nguyen Quoc Vinh |
| 1.2.5.2 | User Acceptance Testing (UAT) | 5 | 21/11/2024 | 25/11/2024 | Nguyen Quoc Vinh |
| 1.2.5.3 | Final bug fixes and optimizations | 3 | 26/11/2024 | 28/11/2024 | Nguyen Quoc Vinh |
| 1.2.5.4 | Prepare app store listings | 2 | 29/11/2024 | 30/11/2024 | Nguyen Quoc Vinh |
| 1.2.5.5 | Submit app to App Store and Google Play | 1 | 01/12/2024 | 01/12/2024 | Nguyen Quoc Vinh |
| 1.2.5.6 | Address any app store feedback | 3 | 02/12/2024 | 04/12/2024 | Nguyen Quoc Vinh |
| 1.2.5.7 | Finalize server infrastructure | 2 | 05/12/2024 | 06/12/2024 | Nguyen Quoc Vinh |
| 1.2.5.8 | Conduct final security audit | 2 | 07/12/2024 | 08/12/2024 | Nguyen Quoc Vinh |
| 1.2.5.9 | Prepare launch marketing materials | 3 | 09/12/2024 | 11/12/2024 | Project Manager, UI/UX Designer |
| 1.2.5.10 | App launch | 1 | 12/12/2024 | 12/12/2024 | All members |

### 3.3 Resource

| **Role** | **Number of Resources** | **Allocation** |
| --- | --- | --- |
| Project Manager | 1 | 100% |
| UI/UX Designer | 1 | 50% |
| Frontend Developer | 2 | 100% |
| Backend Developer | 1 | 100% |
| QA Tester | 1 | 100% |
| DevOps Engineer | 1 | 50% |

### 3.4 Infrastructure

* Development Environment:
* MacBook Pro laptops for iOS development
* Windows workstations for Android development
* Visual Studio Code as the primary IDE
* Version Control: Git with GitHub for repository hosting
* CI/CD: Jenkins for continuous integration and deployment
* Cloud Services: AWS for backend hosting and services
* Testing Devices: Various iOS and Android devices for real-world testing

### 3.5 Training Plan

| Training | Participants | Duration | Date |-----|-----|----- | React Native Fundamentals | Frontend Developers | 3 days | August 25-27, 2024 | AWS Services Workshop | Backend Developer, DevOps | 2 days | August 28-29, 2024 | Agile and Scrum Methodology | All team members | 1 day | September 5, 2024 | Mobile App Security Best Practices | All developers | 1 day | September 6, 2024

### 3.6 Finance

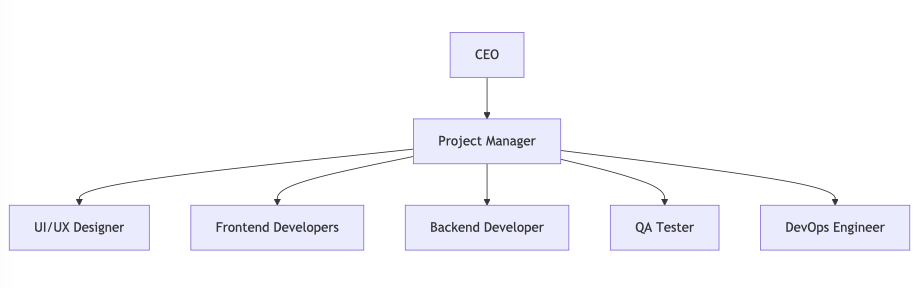
Total Budget: $500,000

Breakdown:

* Personnel: $400,000
* Infrastructure and Tools: $50,000
* Marketing and Launch: $40,000
* Contingency: $10,000

## 4. Project Organization

### 4.1 Organization Structure



### 4.2 Project Team

| **Role** | **Responsibilities** |
| --- | --- |
| Project Manager | Overall project coordination, stakeholder communication, risk management |
| UI/UX Designer | User interface design, user experience optimization, design system creation |
| Frontend Developers | Mobile app development using React Native, integration with backend APIs |
| Backend Developer | API development, database management, server-side logic implementation |
| QA Tester | Test planning, execution, and reporting, defect tracking and management |
| DevOps Engineer | CI/CD pipeline setup and maintenance, infrastructure management |

## 5. Configuration Management

* Use Git for version control
* Implement GitFlow branching strategy
* Require pull requests and code reviews before merging into the main branch
* Use semantic versioning for release management
* Implement automated builds and deployments through CI/CD pipeline

## 6. Security Aspects

* Implement secure authentication using OAuth 2.0 and JWT
* Use HTTPS for all API communications
* Encrypt sensitive data at rest and in transit
* Implement input validation and sanitization to prevent injection attacks
* Regular security audits and penetration testing
* Compliance with GDPR and local data protection regulations

## 7. References

* React Native Documentation: <https://reactnative.dev/docs/getting-started>
* Swift: https://developer.apple.com/swift/
* AWS Mobile SDK: <https://aws.amazon.com/mobile/sdk/>
* Github: <https://github.com/>
* Agile Manifesto: <https://agilemanifesto.org/>
* OWASP Mobile Security Project: <https://owasp.org/www-project-mobile-security/>

## 8. Definitions and Acronyms

* API: Application Programming Interface
* AWS: Amazon Web Services
* CI/CD: Continuous Integration/Continuous Deployment
* GDPR: General Data Protection Regulation
* JWT: JSON Web Token
* OAuth: Open Authorization
* UI/UX: User Interface/User Experience
* UAT: User Acceptance Testing