## Use Case Diagrams for Existing System

The use case diagram for the existing system illustrates the business operations involved in the ordering process at Viviki Rubber Products. Key actors interacting with the system include:

* **Admin/Owner**
* **Inventory Manager**
* **Worker**
* **Customer**

Each actor engages in various stages of the order fulfillment process, providing a clear overview of their roles and interactions within the existing system.

## Use Case Descriptions for Existing System

A diagram of a customer

Description automatically generated

Figure 1-use case diagram for current system

Use case description for the Customer request handling is explained in table that elaborates how the process of handling customer inquiries has functioned in the existing system.

|  |  |
| --- | --- |
| Use Case Name | Customer request handling |
| Actors | A1-Worker, A2-Customer |
| Description | This use case describes the process of handling customer inquiries. |
| Pre-Conditions | The Sales Desk must be read the updated details. |
| Normal Flow | 1. Attend the customer phone call  2. Answer the customer inquiries |
| Alternate Flow |  |
| Post Conditions |  |

Table 1-Use Case Descriptions for Customer Request Handling

Use case description for the orders making is explained in the that elaborates how the process of making orders has functioned in the existing system.

|  |  |
| --- | --- |
| Use Case Name | Make Orders |
| Actors | A1-Worker, A2-Customer |
| Description | This Use case describes the process of making orders. |
| Pre-Conditions | Delivery and Stock availability details must be updated. |
| Normal Flow | 1. Discuss with the customer.  2. Get more details about the purchase.  3. Check delivery and stock availability.  4. Make the order. |
| Alternate Flow | Inform customers unable to make the order. |
| Post Conditions | Send the order details to the cashier. |

Table 2-Use Case Descriptions for Make Orders

Use case description for the View Updated stock details is explained in the that elaborates how the process of view updated stock details has functioned in the existing system.

|  |  |
| --- | --- |
| Use Case Name | View Updated stock details |
| Actors | A3-Inventory Manager, A4-Owner |
| Description | This Use case describes the process of viewing stock details. |
| Pre-Conditions | Details must be updated. |
| Normal Flow | 1. Managers give the updated stock details.  2. Worker refers to the details.  3. Check the feasibility of making the order. |
| Alternate Flow |  |
| Post Conditions |  |

Table 3-Use Case Descriptions for View Updated stock details

Use case description for the Generate Delivery overview report is explained in the table that elaborates how the process of generate delivery overview report has functioned in the existing system.

|  |  |
| --- | --- |
| Use Case Name | Generate Delivery overview report |
| Actors | A3-Inventory Manager, A4-owner |
| Description | This use case describes the process of generating delivery overview report |
| Pre-Conditions | Delivered orders payments must be accepted. |
| Normal Flow | 1. Receive the delivered orders details.  2. Group the delivered order details.  3. Update the delivered order details with customer payment.  4. Generate the delivery overview report. |
| Alternate Flow |  |
| Post Conditions | The report should be generated correctly. |

Table 4-Use Case Descriptions for Generate Delivery overview report.

Use case description for the Generate Bills is explained in the that elaborates how the process of generating bills has functioned in the existing system.

|  |  |
| --- | --- |
| Use Case Name | Generate Invoices |
| Actors | A3-Inventory Manager, A4-owner |
| Description | This Use case describes the process of generating bills. |
| Pre-Conditions | An updated packing list must be received. |
| Normal Flow | 1. Receive the updated packing list after the packing.  2. Calculate bills.  3. Send bills to delivery person. |
| Alternate Flow | Inform customer about out of stock ordered goods. |
| Post Conditions | Bills should be calculated correctly. |

Table 5-Use Case Descriptions for Generate Invoices

Use case description for the Prepare Inventory overview report is explained in the table that elaborates how the process of preparing inventory overview report has functioned in the existing system.

|  |  |
| --- | --- |
| Use Case Name | Prepare Inventory overview report |
| Actors | A3-Inventory Manager, A4-owner |
| Description | This use case describes the process of generating inventory overview report. |
| Pre-Conditions | An updated packing list must be received. |
| Normal Flow | 1. Receive the updated packing list after the packing.  2. Compare the packing list count with the order count.  3. Prepare sold goods count.  4. Generate the inventory overview report. |
| Alternate Flow | Inform customer about out of stock ordered goods. |
| Post Conditions | The stock count should be calculated correctly. |

Table 6-Use Case Descriptions for Prepare Inventory overview report.

## Activity Diagrams to describe the functionality of the Use-Cases

The functionalities of the use cases which were explained above are further described using the activity diagrams. It shows how actors of the existing business process interact with each other to be completed the business functions and their decision-making points regarding the role they perform in the business.

### Activity Diagram for the Handle Customer request

Activity diagram to explain how the Worker and the customer interact when managing the

Customer request is displayed in the diagram below.A diagram of a customer request

Description automatically generated

Figure 2-Activity Diagram for the Handle Customer request

### Activity Diagram for the Make Orders

Activity diagram to explain how the worker and the customer interact when making orders is displayed in the diagram below.

A diagram of a customer

Description automatically generated

Figure 3-Activity Diagram for the Make Orders

### Activity Diagram for Prepare Invoice

The activity diagram below explains how the Sales Desk and the Cashier interact with the customer in the process of preparing an invoice for an order.

A diagram of a bill

Description automatically generated

Figure 4-Activity Diagram for Prepare Invoice

### Activity Diagram for Deliver Product

A diagram of a customer order

Description automatically generatedThe activity diagram below illustrates the interactions between the Delivery Person, the Customer, and the Sales Desk during the product delivery process.

Figure 5-Activity Diagram for Deliver Product

### Activity Diagram for Update Products

A diagram of a product manager

AI-generated content may be incorrect.The activity diagram below shows how the Manager and Sales Desk interact with the system to update product details, including stock levels, pricing, and descriptions.

Figure 6- Activity Diagram for Update Products

### Activity Diagram for Update Materials

A diagram of inventory manager

AI-generated content may be incorrect.The activity diagram below describes how the Manager and Staff interact with the system to update material inventories, ensuring accurate stock levels and triggering alerts if needed.

Figure 7-Activity Diagram for Update Materials

**Use case Diagrams for Proposed System**

**Use case Descriptions for Proposed System**

**Activity Diagrams for Proposed System**

**Class Diagram**

**ER Diagram**

**Normalized Database Design**

## Use case Diagrams for Proposed System

### Overall Use Case Diagrams for the Proposed System

The overall online shopping case diagram for the proposed system is displayed below. Online Customer actors use websites to make online purchases.

A diagram of a diagram

Description automatically generated

Figure 8-Overall Use Case Diagrams for the Proposed System

## Use case Descriptions for Proposed System

### A diagram of a login Description automatically generated Use Case 1 – Login

Figure 9-Use Case 1 – Login

The Use case description for the UC1 is explained below and elaborates how the process of login is functioned in the proposed system.

|  |  |
| --- | --- |
| Use Case Name | Login |
| Actors | Customer, Admin, Inventory Manager, Worker |
| Description | This case describes the process of login to the system |
| Pre-Conditions | Users must be an authorized person to use the system by having login email and password. |
| Normal Flow | 1. Users provide login email and password  2. System checks the validity of the login email and password  3. System allows users to login to the system |
| Alternate Flow | Login email or password or both are incorrect and show an error message Error message direct user to reattempt or cancel. |
| Post Conditions | User login to the system successfully |

Table 12-Use case description for the Login

### Use Case 2 – View Items

A diagram of a product

Description automatically generatedThe case diagram for view items is displayed below. The View Items use case is extended by several optional use cases. All these use cases are extending use cases because they provide some optional functions allowing customers to find items.

Figure 10-Use Case 2 – View Items

Use case description for the UC2 is explained in below that elaborates how the process of view items is functioned in the customer website of the proposed system.

|  |  |
| --- | --- |
| Use Case Name | View Items |
| Actors | Customer |
| Description | This case describes the process of viewing items on the customer website. |
| Pre-Conditions | Customers must be registered to provide reviews and ratings. |
| Normal Flow | 1. Search and browse items  2. Add items to shopping cart |
| Alternate Flow |  |
| Post Conditions | Items must be successfully added to the shopping cart. |

Table 13-Use case description for the View Items

### Use Case 3 – Checkout

A diagram of a checkout process

Description automatically generatedThe Use case diagram for checkout is displayed in Figure 3.4. Checkout use cases include several required use cases. Checkout use case also includes Payment use case which could be done either by using credit card, offline and external credit payment service or with Stripe.

Figure 11-Use Case 3 – Checkout

Use case description for the UC4 is explained below that elaborates how the process of checkout is functioned in the customer website of the proposed system.

|  |  |
| --- | --- |
| Use Case Name | Checkout |
| Actors | Customer |
| Description | This Use case describes the process of checking out on the customer website. |
| Pre-Conditions | Customers must be registered to make purchases. |
| Normal Flow | 1. Login to system  2. View shopping cart  3. Update delivery details  4. Make online payment |
| Alternate Flow | Update offline payment details |
| Post Conditions | Order must be successfully added to the system. |

Table 14-Use case description for Checkout

### Use Case 4 – Manage Products

Use case description for the UC6 is explained in below that elaborates how the process of managing products is functioned in the proposed system.

A diagram of a product

Description automatically generated

Figure 12-Use Case 4 – Manage Products

|  |  |
| --- | --- |
| Use Case Name | Manage Products |
| Actors | Inventory manager |
| Description | This case describes the process of managing products. |
| Pre-Conditions | User must be logged into the system |
| Normal Flow | 1. Users add product to the system  2. System shows the added products |
| Sub Flow | 1.1. Product will be updated.  1.1.1. Updated products will be viewed. |
| Alternate Flow | Users fill in the form incorrectly and delete the product. |
| Post Conditions | Products must be effectively managed in the system. |

Table 15-Use case description for Manage Products

### Use Case 5 – Manage Materials

A diagram of a diagram

Description automatically generatedUse case description for the UC6 is explained in below that elaborates how the process of managing materials is functioned in the proposed system

Figure 13-Use Case 5 – Manage Materials

|  |  |
| --- | --- |
| Use Case Name | Manage Materials |
| Actors | Inventory manager |
| Description | This Use case describes the process of managing materials. |
| Pre-Conditions | User must be logged into the system |
| Normal Flow | 1. Users add material to the system  2. System shows the added materials |
| Sub Flow | 1.1. material will be updated.  1.1.1. Updated material will be viewed. |
| Alternate Flow | Users fill in the form incorrectly and delete the material. |
| Post Conditions | Material must be effectively managed in the system. |

Table 16-Use case description for Manage Materials

### Use Case 6 – Manage Orders

A diagram of a diagram

Description automatically generated

Figure 14-Use Case 6 – Manage Orders

Use case description for the UC8 is explained below that elaborates how the process of managing orders is functioned in the proposed system.

|  |  |
| --- | --- |
| Use Case Name | Manage Orders |
| Actors | Inventory Manager, Worker |
| Description | This Use case describes the process of managing orders. |
| Pre-Conditions | User must be logged into the system |
| Normal Flow | 1. Login to system  2. View orders  3. Generate packing list  4. Generate cash on delivery payment bills |
| Alternate Flow | Update order status. |
| Post Conditions | Orders must be effectively managed in the system |

Table 17-Use case description for Manage Orders

### A diagram of a delivery process Description automatically generatedUse Case 7 – Manage Delivery

Figure 15-Use Case 7 – Manage Delivery

The Use case description for the UC9 is explained below that elaborates how the process of managing delivery is functioned in the proposed system.

|  |  |
| --- | --- |
| Use Case Name | Manage Delivery |
| Actors | Worker |
| Description | This Use case describes the process of managing delivery. |
| Pre-Conditions | User must be logged into the system |
| Normal Flow | 1. Login to system  2. Generate delivery process information |
| Alternate Flow |  |
| Post Conditions | Delivery must be effectively managed in the system. |

Table 18-Use case description for Manage Delivery

### Use Case 8 – Manage Staffs

A diagram of a process

Description automatically generated

Figure 16-Use Case 8 – Manage Staffs

Use case description for the UC10 is explained below that elaborates how the process of managing staff is functioned in the proposed system.

|  |  |
| --- | --- |
| Use Case Name | Manage Staff |
| Actors | Admin |
| Description | This Use case describes the process of managing staff. |
| Pre-Conditions | User must be logged into the system |
| Normal Flow | 1. Users add staff to the system  2. System shows the added staff |
| Alternate Flow | 1.1. Staff will be updated.  1.1.1. Updated staff will be viewed. |
| Post Conditions | Staff must be effectively managed in the system |

Table 19-Use case description for Manage Staff

## Activity Diagrams to describe the functionality of the Use-Cases

### Activity Diagram for the UC1-Login

Activity diagram to explain how the customer or the web administrator or the Inventory manager, or the staff interact with the system when login to the system is displayed below. By logging in, unauthorized access to the system is eliminated.

A diagram of a software system

Description automatically generated

Figure 17-Activity Diagram for the UC1-Login

### Activity Diagram for the UC2-View Items

An activity diagram to explain how the customer interacts with the system when viewing items on the customer website is displayed in below.

A diagram of a product

Description automatically generated

Figure 18-Activity Diagram for the UC2-View Items

### A diagram of a product Description automatically generatedActivity Diagram for the UC3-Checkout

Figure 19-Activity Diagram for the UC3-Checkout

Activity diagram to explain how the customer interacts with the system when checking out in the customer website is displayed below.

### Activity Diagram for the UC4-Manage Products

**Activity Diagram for the UC4.1-Add** **Product**

An activity diagram to explain how web administrator and the system interact when adding products to the system is displayed in below.

A diagram of a product

Description automatically generated

Figure 20- Activity Diagram for the UC4.1-Add Product

**Activity Diagram for the UC4.2-Update Product**

An activity diagram to explain how web administrator or the manager and the system interact when updating product details is displayed below.

A diagram of a product

Description automatically generated

Figure 21-Activity Diagram for the UC4.2-Update Product

**Activity Diagram for the UC4.3-Delete Product**

An activity diagram to explain how web administrator and the system interact when deleting products is displayed below.

A diagram of a product

Description automatically generated

Figure 22-Activity Diagram for the UC4.3-Delete Product

### Activity Diagram for the UC5-Manage Materials

**Activity Diagram for the UC5.1-Add** **Material**

Activity diagram to explain how web administrator and the system interact when adding materials to the system is displayed below.

A diagram of a activity

Description automatically generated

Figure 23-Activity Diagram for the UC5.1-Add Material

**Activity Diagram for the UC5.2-Update Material**

Activity diagram to explain how web administrator or the manager and the system interact when updating material details is displayed below.

A diagram of a process

Description automatically generated

Figure 24-Activity Diagram for the UC5.2-Update Material

**Activity Diagram for the UC5.3-Delete Materials**

Activity diagram to explain how web administrator and the system interact when deleting material is displayed below.

A diagram of a material

Description automatically generated

Figure 25-Activity Diagram for the UC5.3-Delete Materials

**Activity Diagrams Generate Inventory Reports**

Activity diagram to explain how web administrator or the manager and the system interact when generating inventory overview report is displayed below.

A diagram of a product

Description automatically generated **Activity Diagram for the UC5.4 Product Details report**

Figure 26-Activity Diagram for the UC5.4-Generate Inventory Report

**Activity Diagram for the UC5.5 Material Details Report**

A diagram of a material details report

Description automatically generated

Figure 27-Activity Diagram for the UC5.5 Material Details Report

**Activity Diagram for the UC5.6 Order Details Report**

A diagram of a workflow

Description automatically generated

Figure 28-Activity Diagram for the UC5.6 Order Details Report

### Activity Diagram for the UC9-Manage Delivery

Activity diagram to explain how web administrator and the system interact when managing delivery is displayed below.

A diagram of a delivery process

Description automatically generated

Figure 29-Activity Diagram for the UC9-Manage Delivery

### Activity Diagram for the UC10-Manage Staff

**Activity Diagram for the UC10.1-Add Staff**

A diagram of a workflow

Description automatically generated

Figure 30-Activity Diagram for the UC10.1-Add Staff

**Activity Diagram for the UC10.2-Update Staff profile**

A diagram of a system

Description automatically generated

Figure 31-Activity Diagram for the UC10.2-Update Staff profile

**Activity Diagram for the UC10.3-Delete Staff**

A screenshot of a diagram

Description automatically generated

Figure 32-Activity Diagram for the UC10.3-Delete Staff

## **A diagram of a company Description automatically generated**Class Diagram

Figure 33-Class Diagram

Figure 34-Class Diagram

## Sequence Diagram

### Sequence Diagram for User Login

A diagram of a computer program

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Figure 35-Sequence Diagram for User Login

### A diagram of a product Description automatically generatedSequence Diagram for View Items

Figure 36-Sequence Diagram for View Items

### A diagram of a process Description automatically generatedSequence Diagram for Checkout

Figure 37-Sequence Diagram for Checkout

### Sequence Diagrams for Manage Products

A diagram of a product

Description automatically generated**Sequence Diagram for Add Products**

Figure 38-Sequence Diagram for Add Products

A diagram of a product

Description automatically generated**Sequence Diagram for View Products**

Figure 39-Sequence Diagram for View Products

A diagram of a product

Description automatically generated**Sequence Diagram for Delete Products**

Figure 40-Sequence Diagram for Delete Products

### Sequence Diagrams for Manage Materials

A diagram of a process

Description automatically generated**Sequence Diagram for Add Materials**

Figure 41-Sequence Diagram for Add Materials

A diagram of a diagram

Description automatically generated**Sequence Diagram for View Materials**

Figure 42-Sequence Diagram for View Materials

**Sequence Diagram for Delete Materials**

A diagram of a software project

Description automatically generated

Figure 43-Sequence Diagram for Delete Materials

### Sequence Diagrams for View Orders

Figure 44-Sequence Diagrams for View Orders

A diagram of a process

Description automatically generated

## Entity-Relational Model

A diagram of a flowchart

AI-generated content may be incorrect.

Figure 45- Entity-Relational Model

## Database Design

Entities to Tables: Each entity (e.g., User, Product, Order) becomes a table. Attributes become columns, and primary keys are added.

Relationships:

For 1:1 - relationships, add the primary key of one entity as a foreign key in the other.

For 1 - relationships, add the primary key of the "one" side as a foreign key on the "many" sides.

## Normalized Database Design

A screenshot of a computer

AI-generated content may be incorrect.

Figure 46-Normalized Database Design