

Documentation

# Executive Summary

The automated warehouse system features robots that move around the warehouse to stock and deliver products between the shelves and delivery trucks.

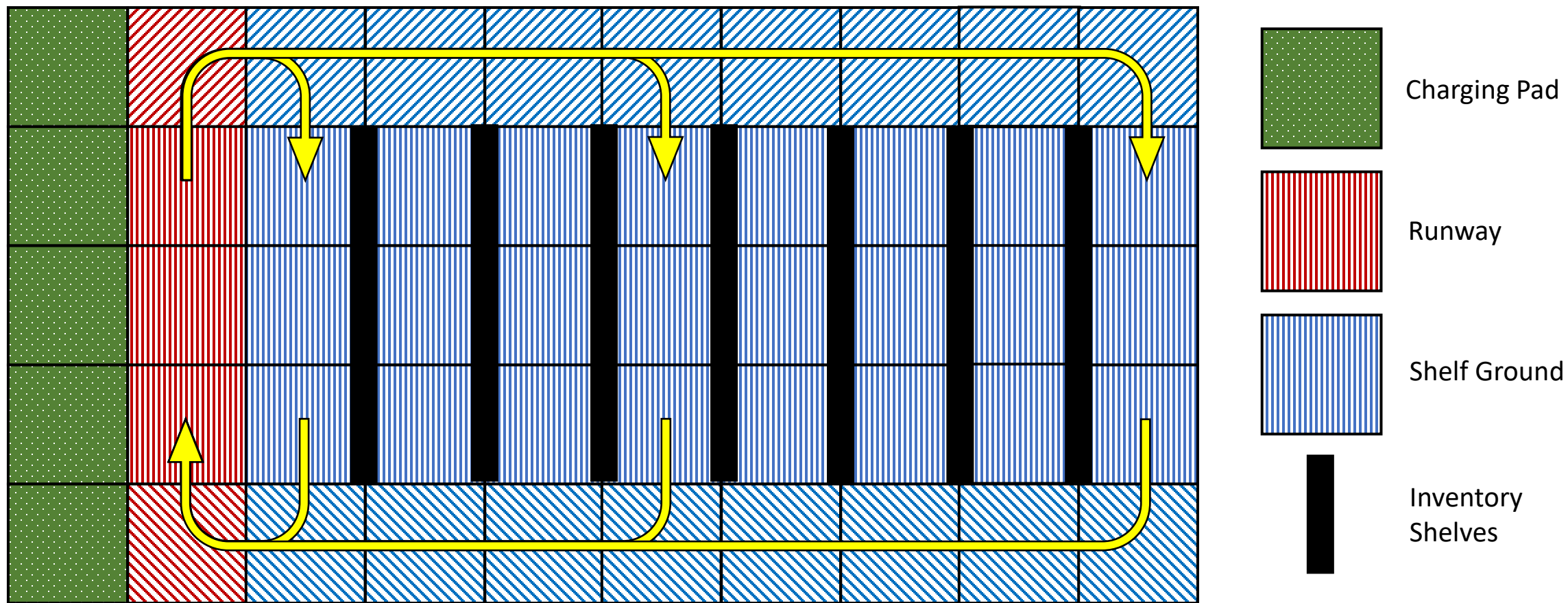
This particular showcase divides the four robots into two groups: one group of two dedicated to fulfilling warehouse orders and another group dedicated to re-stocking the warehouse with goods. All robots move in a clock-wise circular flow-path in order to negate the possibility of any deadlock between the robots.

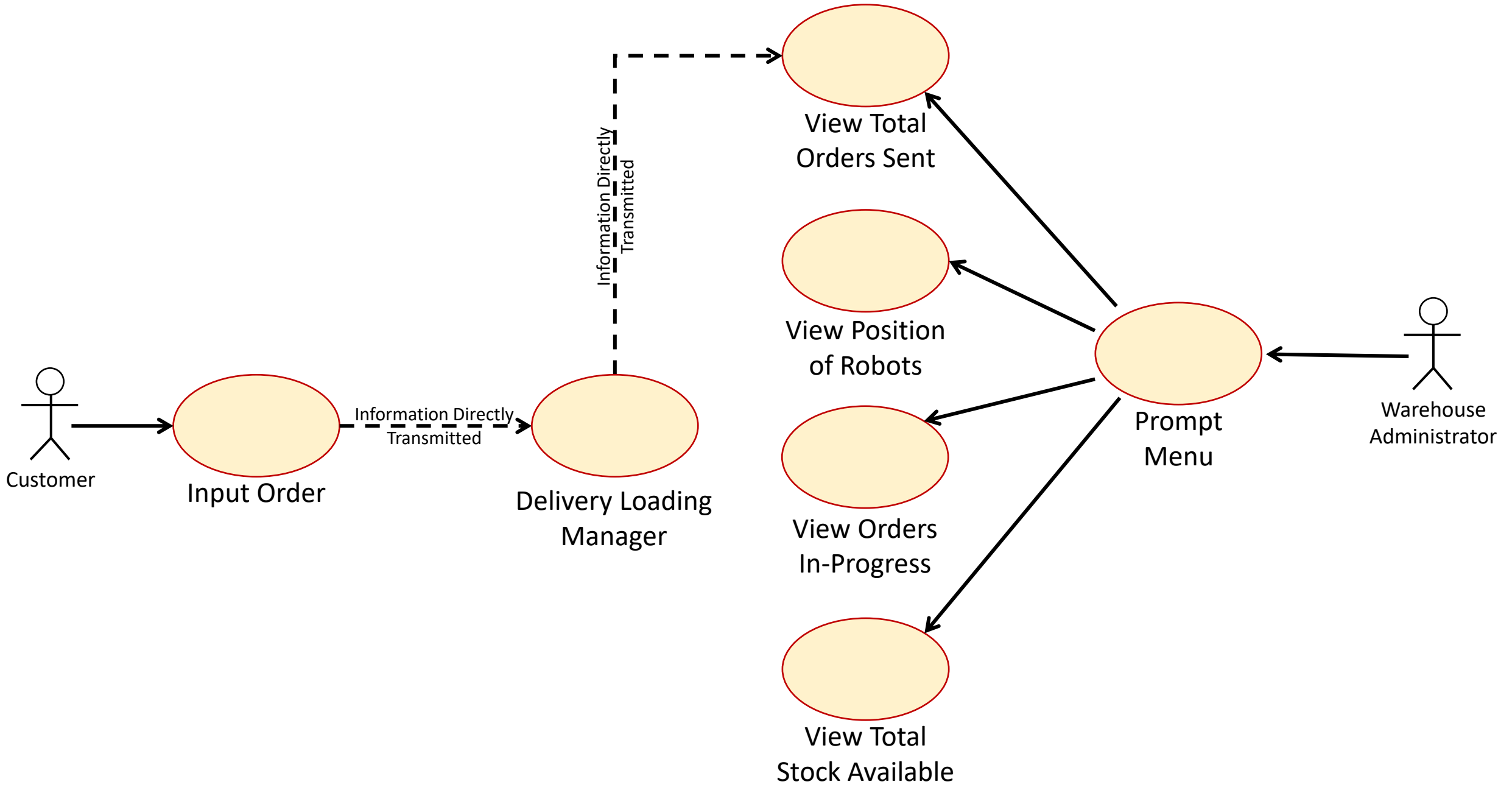
For this demonstration, there exist five types of items available for order, names items 1 to 5.

A central computer dedicates itself to deciding where the robots need to move and when in order to precisely fulfil each order correctly. The central computer, itself, is divided into two threads: one handling the partition of instructions for stocking the warehouse, another handling the steps necessary to fulfil each warehouse order.

Due to time constraints and technical limitations, this showcase will utilize the console's command window to demonstrate the features and capabilities of the program/system.

# Warehouse Layout





## Use-Case: Prompt Menu

**Actor(s):** Warehouse Administrator

**Effects/Benefits:**

Returns the program menu for various choices to be made.

1. Administrator opens program.
2. Administrator is prompted with menu of various functions.
3. If administrator wants to view the all the orders that have been fulfilled, then <<Scenario 1>>
4. If administrator wants to view all the orders that are in progress, then <<Scenario 2>>
5. If Administrator wants to view the layout of the warehouse and all the positions of the robots, then <<Scenario 3>>
6. If administrator wants to view the total stock of a specific item, then <<Scenario 4>>
7. Return to menu.
8. If administrator ends program: **end of Transaction**

**Scenario 1: View Total Orders Sent**

**Scenario 2: View Orders In-Progress**

**Scenario 3: View Layout of Warehouse**

**Scenario 4: Total Stock of Warehouse**

## Use-Case: View Total Orders Sent

**Actor(s):** Warehouse Administrator

**Effects/Benefits:**

Returns the orders that have been sent out, the time-stamp of the completion, quantity of goods, time required to fulfil delivery.

1. Administrator is prompted with program menu.
2. Administrator enters command to view the orders that have been fulfilled at the warehouse.
3. Program returns information to administrator.
4. Administrator returns to main menu.

## Use-Case: Input Order

**Actor(s):** Customer(s)

**Effects/Benefits:**

Customer inputs request for goods to be gathered and delivered from the warehouse.

1. Customer requests to input order.
2. Program returns query for customer to input quantity for each product.
3. Customer inputs quantity for each item.
4. Program returns a summary of the order, including the time required to deliver order and the total weight quantity of the order.
5. Order is relayed to the main queue or orders that need to be fulfilled.
6. Program returns to main menu.

## Use-Case: View Orders In-Progress

**Actor(s):** Warehouse Administrator

**Effects/Benefits:**

Returns the orders that need to be fulfilled, the time needed to deliver goods, and their total quantity.

1. Administrator is prompted with program menu.
2. Administrator enters command to view the orders that need to be fulfilled at the warehouse.
3. Program returns information to administrator
4. Administrator returns to main menu.

## Use-Case: View Layout of Warehouse

**Actor(s):** Warehouse Administrator

**Effects/Benefits:**

Generates an instantaneous view of the position of robots in warehouse

1. Administrator is prompted with program menu.
2. Administrator enters command to view the layout of the warehouse as well as the position of all the robots.
3. Program returns information to administrator
4. Administrator returns to main menu.

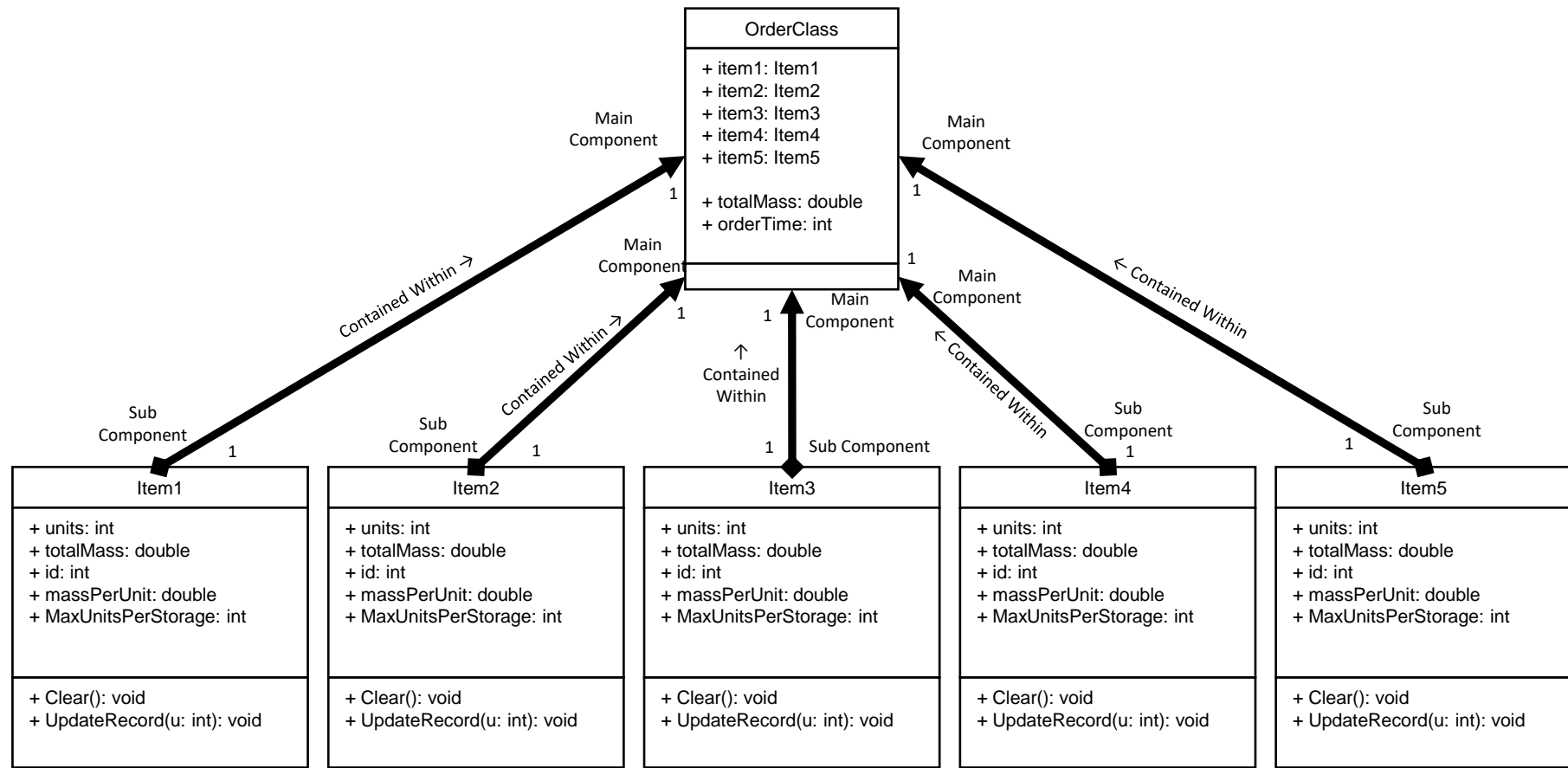
## Use-Case: View Total Stock Available

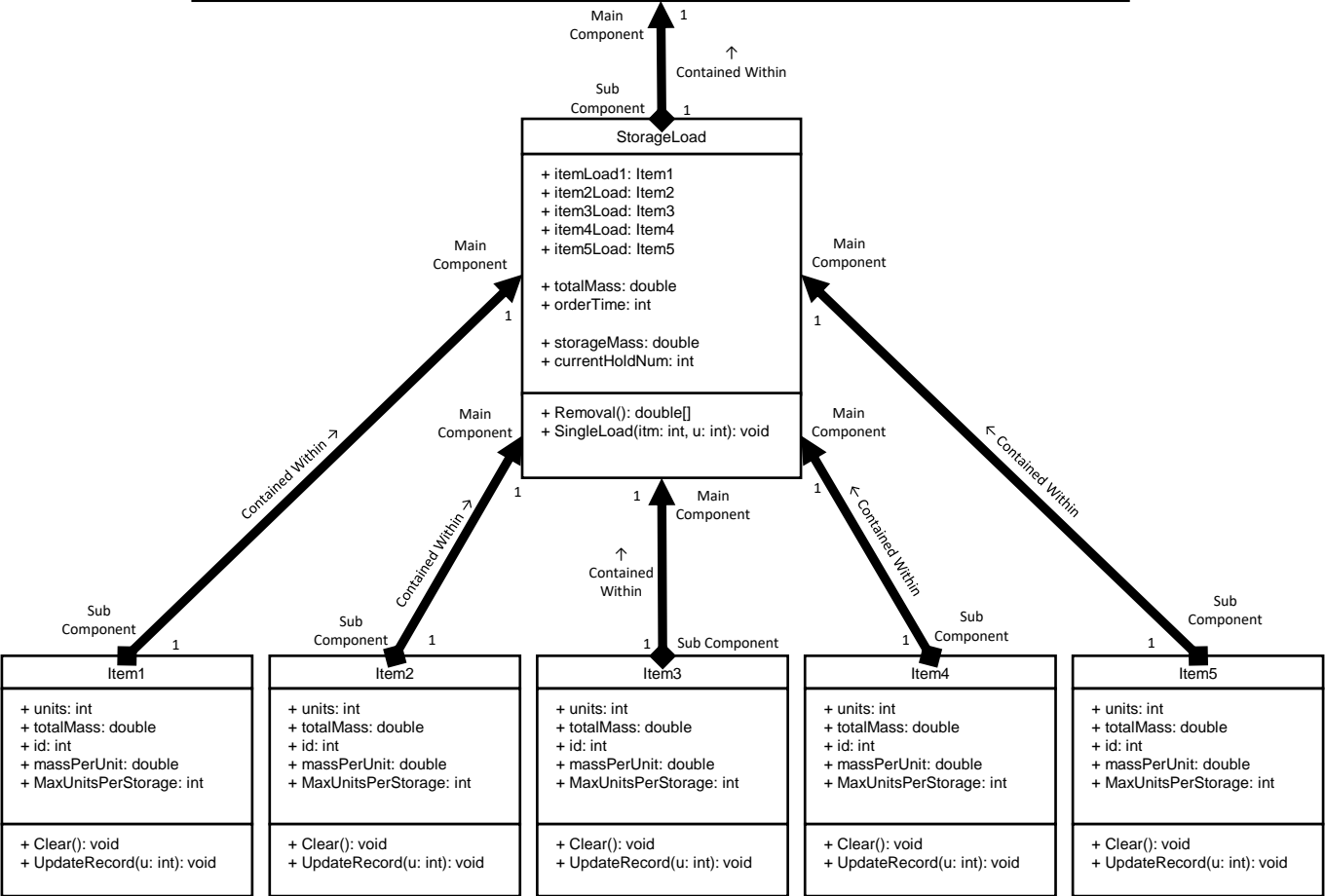
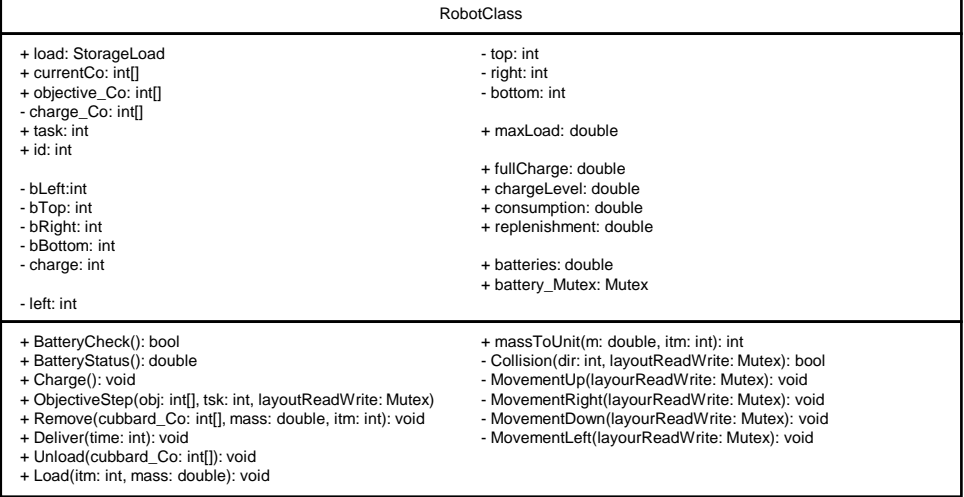
**Actor(s):** Warehouse Administrator

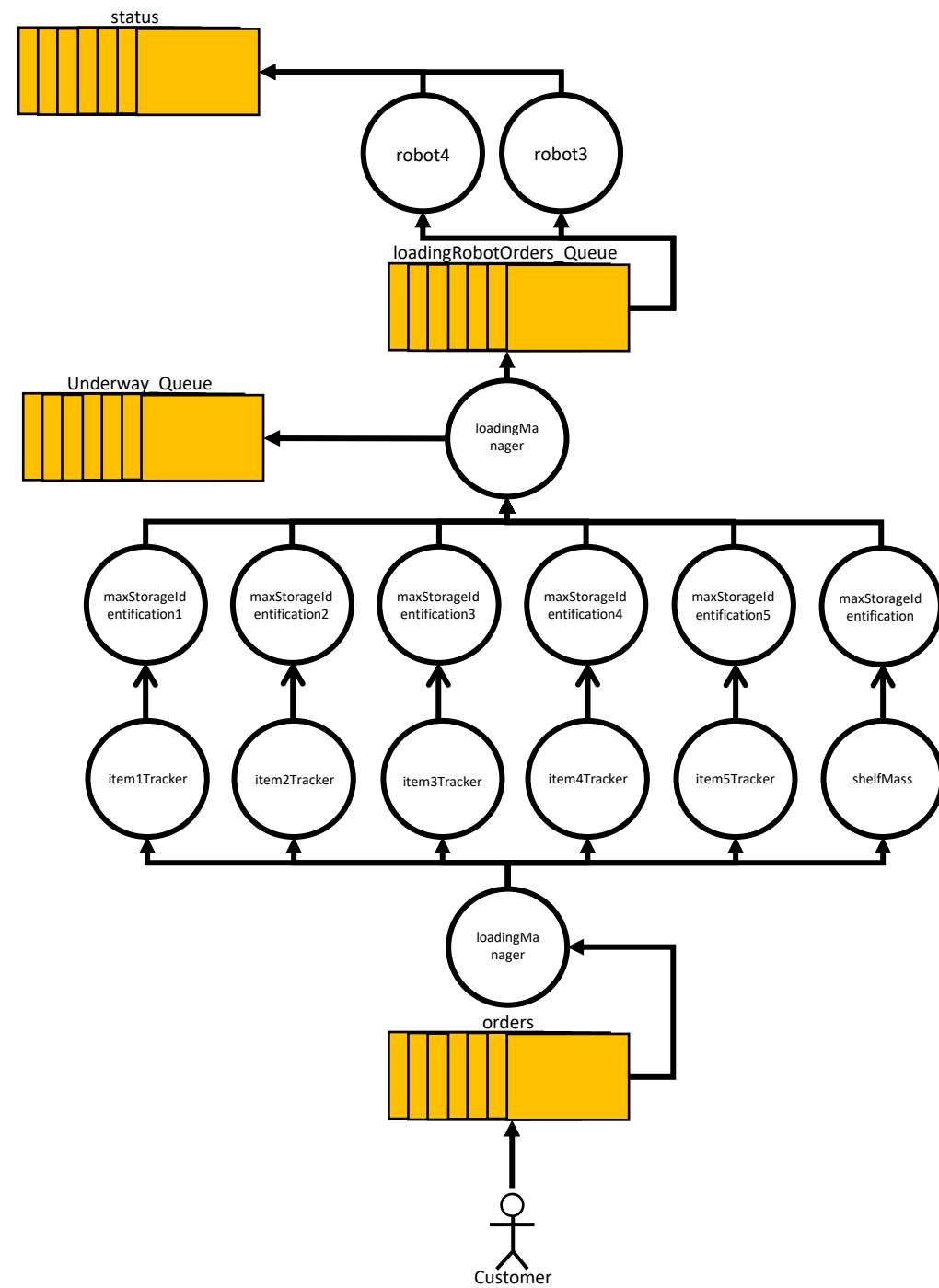
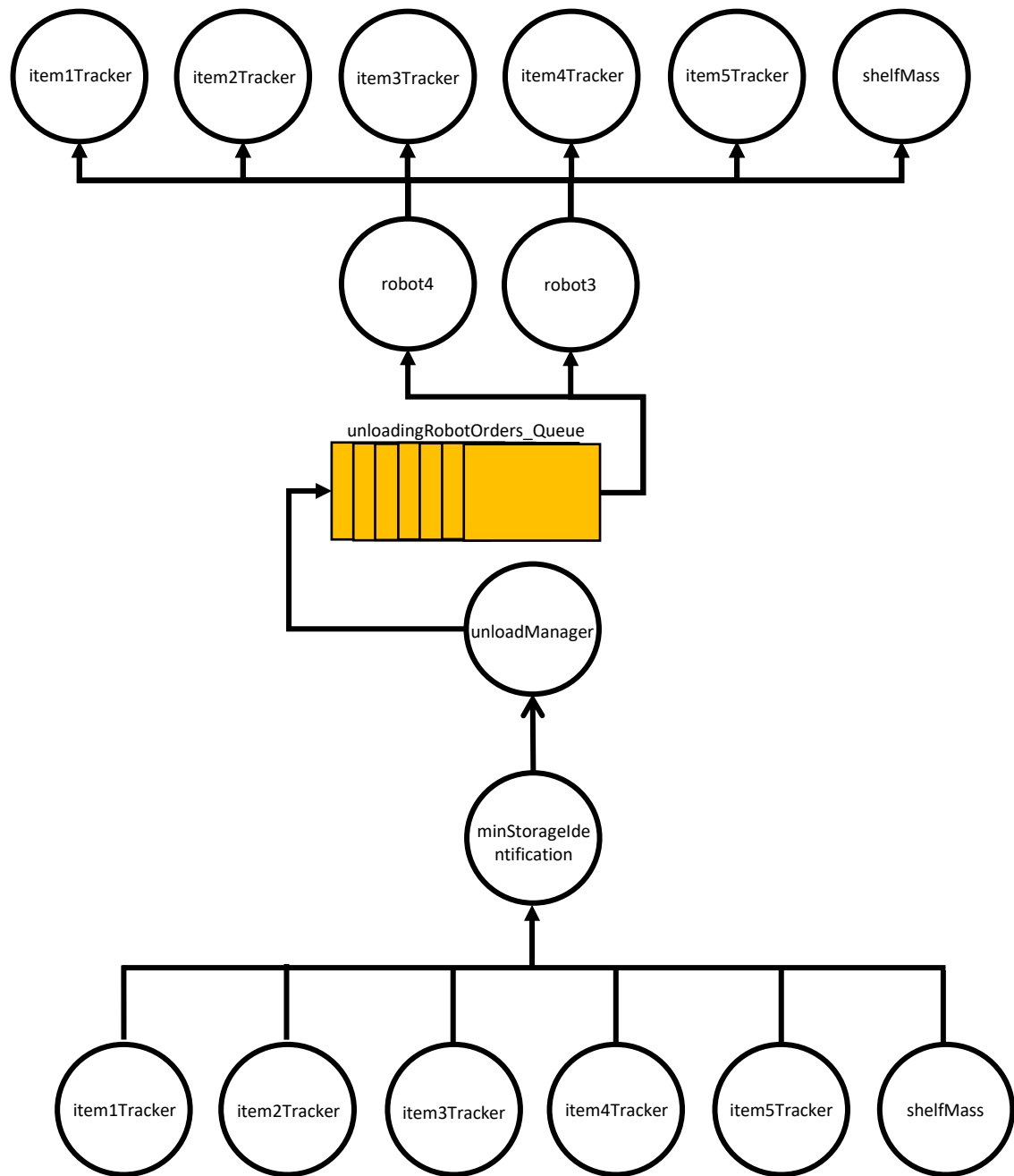
**Effects/Benefits:**

Returns the total quantity of a specific stock on any shelf that contains the item.

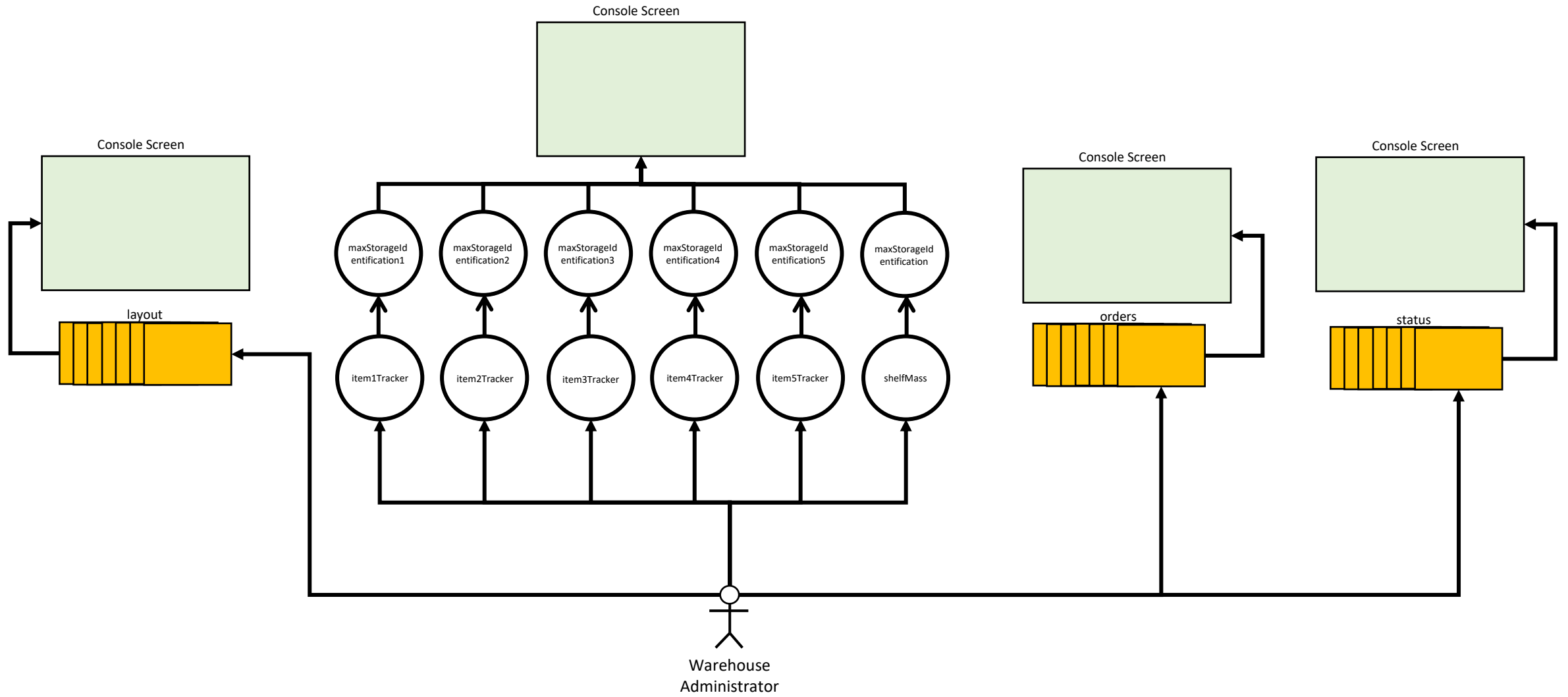
1. Administrator is prompted with program menu.
2. Administrator enters command specifying the quantity of each stock that they need to see.
3. Program returns information to administrator.
4. Administrator returns to main menu.













Customer

