Warehouse Inventory System

Object Model

A green and yellow circle with a leaf in the center

Description automatically generated

Release Version: v1.1

Date: 12/05/23

Responsible Analyst: Micah Gordon

Email: [micah.gordon@oit.edu](mailto:micah.gordon@oit.edu)

# Signatory Page

This document accepted by

X\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature(Calvin Caldwell) Date

X\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature(Micah Gordon) Date

# Revision History

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Author | Company | Version | Date | Comments |
| Micah Gordon | Quackedsoft | 1.0 | 11/27/2023 | Initial Draft |
| Micah Gordon | Quackedsoft | 1.1 | 12/05/2023 | Added verify function to operator manipulated objects. Small errors in UML |

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# Executive UML Diagram

A diagram of service relationships

Description automatically generated

A diagram of a service relationship

Description automatically generated

A diagram of a company

Description automatically generated

# Detailed UML Diagram

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

# Class Specifications

## Bin

|  |
| --- |
| Class Information |
| Class Name: Bin  Abstract Type: N/A Persistence: Yes |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 20 | Reports | 7 |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Void AddLoad(load weight) | weight > 0 and Load commodity type matches bin’s commodity type | netIntake += weight |
|  |  |  |
|  |  |  |
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|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Int | N | Instance | Private | Unique id for the bin |
| Name | String | N | Instance | Private | Human readable name for bin |
| Commodity | Commodity | Y | Instance | Private | What commodity type is stored in the bin |
| netIntake | Long | N | Instance | Private | How much commodity in pounds has been added to the bin. |

## CommodityService

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| MixExeception | Load and bin’s commodity types don’t match | Exit function inform operator |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| 1 | N/A | N/A | N/A |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | Primary a Model object not a lot of behavior. |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: CommodityService  Abstract Type: N/A Persistence: N/A |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10b | New inbound weight sheet | 3 |
| 10c | New Lot | 5 |
| 80 | Move inbound weight sheet | 9 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Commodity(HttpClient http) | N/A | New Commodity |
| Commodity GetData(int pageIndex, int pageSize, string sortColumn, string sortOrder, string filter column, string filterQuery) | Backend Running | Creates Commodity(s) from JSON return |
| Commodity Get(int id) | Backend Running | Creates a Commodity from JSON return |
| Commodity Put(Commodity item) | Backend Running | Modifies database |
| Commodity Post(Commodity item) | Backend Running | Modifies database |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| http | HttpClient | Y | Instance | protected | Network interfacing |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A |  |
|  |  |

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| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
|  |  |  |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: CommodityType  Abstract Type: N/A Persistence: Yes |

## CommodityType

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10a | New Transfer Weight Sheet | 3 |
| 10b | New Inbound Weight Sheet | 3 |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Getters |  |  |
| Setters |  |  |
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| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Int | N | Instance | Private | Unique id number for commodity |
| Name | String | N | Instance | Private | Name of commodity |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  |  |
|  |  |  |  |

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| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
|  |  |  |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: CommodityVerity  Abstract Type: N/A Persistence: Yes |

## CommodityVerity

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10a | New Transfer Weight Sheet | 3 |
| 10b | New Inbound Weight Sheet | 3 |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Getters |  |  |
| Setters |  |  |
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| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
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|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Int | N | Instance | Private | Unique id number fore variety |
| Name | String | N | Instance | Private | Name of verity |
| parentId | Int | N | Instance | Private | Id number of commodity type |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
|  |  |  |
|  |  |  |

## District

|  |
| --- |
| Class Information |
| Class Name: District  Abstract Type: N/A Persistence: Yes |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| N/A | N/A | N/A |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Setters |  |  |
| Getters |  |  |
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| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Int | N | Instance | Private | Identification number for district |
| Name | String | N | Instance | private | Human useable identification |
| Warehouses | List<warehouse> | Y | Instance | Private | Contains all the warehouses which belong to the district. |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | Data base object. Useful for reports. Little behavior. Just setters and Getters |
|  |  |  |

## DistrictService

|  |
| --- |
| Class Information |
| Class Name: District  Abstract Type: N/A Persistence: Yes |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| N/A | N/A | N/A |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Setters |  |  |
| Getters |  |  |
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|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Int | N | Instance | Private | Identification number for district |
| Name | String | N | Instance | private | Human useable identification |
| Warehouses | List<warehouse> | Y | Instance | Private | Contains all the warehouses which belong to the district. |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | Data base object. Useful for reports. Little behavior. Just setters and Getters |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: IApiResult  Abstract Type: Yes Persistence: N/A |

## IApiResult

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| N/A | N?A | N/A |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Getters |  |  |
| Setters |  |  |
|  |  |  |
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|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods (If I told you I would have to kill you 😊) | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Data | T | Y | Instance | Private | Data section of JSON return from backend API |
| pageIndex | Int | N | Instance | Private | Index into total number of pages |
| pageSize | Int | N | Instance | Private | Number of items returned in data pre-page |
| totalCount | Int | N | Instance | Private | Total number of items returned in data |
| totalPage | Int | N | Instance | Private | Total number of possible pages |
| sortColumn | String | N | Instance | Private | Nullable. Gives option to sort return |
| sortOrder | String | N | Instance | Private | Nullable. Gives option for ASC or DSC sorting of data return |
| filterColumn | String | N | Instance | Private | Self doc |
| filterQuery | String | N | Instance | Private | Self doc |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/23 | sleepy |
|  |  |  |

## InboundWeightSheet

|  |
| --- |
| Class Information |
| Class Name: InboundWieghtSheet  Abstract Type: N/A Persistence: Yes |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Void AddLoad(Load load) = 0 | N/A | N/A |
| Void RemoveLoad(Load load) = 0 | N/A | N/A |
| Void Move(Warehouse dest) = 0 | N/A | N/A |
| Void Move(Lot dest) = 0 | N/A | N/A |
| Bool Verify() |  | Returns true if all mandatory fields have valid values. |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Long | N | Instance | Private | Unique id number |
| Weigher | String | N | Instance | Private | Name of scale Operator |
| Hauler | String | N | Instance | Private | Nullable. Name of hauler for weight sheet |
| Commodity | Commodity | Y | Instance | Private | What commodity is being hauled |
| Loads | List<Load> | Y | Instance | Private | Contains the loads brought in on the weight sheet |
| Miles | Int | N | Instance | Private | 1 way trip for hauler |
| Bill | Int | N | Instance | Private | For Hauler |
| Notes | String | N | Instance | Private | For Operator to leave notes |
| Lot | Lot | Y | Instance | Private | Lot (field) loads are coming from |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A | N/A | N/A | N/A |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | Lots are not 1:1 with fields. A single field can have many lots; although this is uncommon. |
|  |  |  |

## InboundWeightSheetService

|  |
| --- |
| Class Information |
| Class Name: InboundWeightSheetService  Abstract Type: N/A Persistence: N/A |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10b | New inbound weight sheet | 3 |
| 10c | New Lot | 5 |
| 80 | Move inbound weight sheet | 9 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| InboundWeightSheet(HttpClient http) | N/A | New InboundWeightSheet |
| ApiResult InboundWeightSheet GetData  (int pageIndex, int pageSize, string sortColumn,  string sortOrder, string filterColumn,  string filterQuery) | Backend Running | Creates InboundWeightSheet(s) from JSON return |
| InboundWeightSheet Get(int id) | Backend Running | Creates a InboundWeightSheet from JSON return |
| InboundWeightSheet Put(InboundWeightSheet item) | Backend Running | Modifies database |
| InboundWeightSheet Post(InboundWeightSheet item) | Backend Running | Modifies database |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| http | HttpClient | Y | Instance | protected | Network interfacing |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A | N/A | N/A | N/A |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| N/A | N/A | N/A |
|  |  |  |

## IService

|  |
| --- |
| Class Information |
| Class Name: IService  Abstract Type: Yes Persistence: N/A |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| N/A | N/A | N/A |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| IService(HttpClient http) = 0 | N/A | N/A |
| ApiResult GetData(int pageIndex, int pageSize, string sortColumn, string sortOrder, string filter column, string filterQuery) = 0 | N/A | N/A |
| T Get(int id) | N/A | N/A |
| T Put(T item) | N/A | N/A |
| T post(T item) | N/A | N/A |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| http | HttpClient | Y | Instance | Protected | Http object for interacting with RestAPI |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A | N/A | N/A | N/A |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | Abstract class that all services are built around. Does the data base interactions. |
|  |  |  |

## IWeightSheet

|  |
| --- |
| Class Information |
| Class Name: IWeightSheet  Abstract Type: yes Persistence: N/A |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| N/A | N/A | N/A |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Void AddLoad(Load load) = 0 | N/A | N/A |
| Void RemoveLoad(Load load) = 0 | N/A | N/A |
| Void Move(Warehouse dest) = 0 | N/A | N/A |
| Void Move(Lot dest) = 0 | N/A | N/A |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Long | N | Instance | Private | Unique id number |
| Weigher | String | N | Instance | Private | Name of scale Operator |
| Hauler | String | N | Instance | Private | Nullable. Name of hauler for weight sheet |
| Commodity | Commodity | Y | Instance | Private | What commodity is being hauled |
| Loads | List<Load> | Y | Instance | Private | Contains the loads brought in on the weight sheet |
| Miles | Int | N | Instance | Private | 1 way trip for hauler |
| Bill | Int | N | Instance | Private | For Hauler |
| Notes | String | N | Instance | Private | For Operator to leave notes |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A | N/A | N/A | 0 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | I know abstracts don’t get instance, but easier for me to think about them. May refactor either to no instance vars or to just a parent class. Hauler exists for extendibility. |
|  |  |  |

## Load

|  |
| --- |
| Class Information |
| Class Name: Load  Abstract Type: No Persistence: Yes |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10 | Incoming Truck | 4, 8 |
| 20 | Reports | 5, 7 |
| 30 | Load Data Interactions | 2 |
| 30a | Edit Load Data | 2 |
| 90 | Move Load | 4, 8 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Void SetMoistureLevel(float value) | Value > 0 or Value < 100 | mositureLevel is equal to value |
| Void SetProtien(float value) | Value > 0 or Value < 100 | protienLevel is equal to value |
| Void SetTestWeight(float value) | Value > 0 | testWeight is equal to value |
| Bool Verify() |  | Returns true if all mandatory data has valid data set. |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| Int CalcNetWeight() | Tar and Gross Wight > 0 | netWeight = Gross - Tare |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| id | Long | N | Instance | Private | Identification number of the load |
| grossWeight | Int | N | Instance | Private | Gross weight of the load |
| tareWeight | Int | N | Instance | Private | Tare weight of the load |
| netWeight | Int | N | Instance | Private | Net weight of the load. |
| truckId | String | N | Instance | Private | Truck number or driver name. Truck numbers can have letters in it. |
| timeIn | Time Date | Y | Instance | Private | Time the truck was weight in |
| timeOut | Time Date | Y | Instance | Private | Time the truck was weight out |
| bolNumber | Long | N | Instance | Private | Nullable. Hauler would have a BoL if hauler for a source/producer |
| destBin | Bin | Y | Instance | Private | Destination bin for the load. |
| moistureLevel | Float | N | Instance | Private | Nullable. Moisture percent level for the load |
| protienLevel | Float | N | Instance | Private | Nullable. Protein percent level. (12% moisture basis) |
| testWeight | Float | N | Instance | Private | Nullable. Pounds per Bushel (lbs/bu) |
| billOfLadingId | Int | N | Instance | Private | Nullable. BoL id number |
| notes | String | N | Instance | Private | Nullable. Notes for recording comments. |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| Calculation Exception | Calling CalcNetWeight if tareWeight or grossWeight is 0 < | Inform operator. Cancel exit function |
| MoistureOutofBound | Moisture level is < 0 or > 100 | Inform operator. Cancel exit function |
| ProtienOutofBounds | Protein level is < 0 or > 100 | Inform operator. Cancel exit function |
| TestWeightOutofBounds | Test weight level is < 0 | Inform operator. Cancel exit function |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| 0 | Approaches countably infinite | 50 | N/A |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/15/23 | Primarily a data model object. Most behavior is getter and setters. Exceptions are for when setter is used and the data is out of reasonable range. |
|  |  |  |

## Lot

|  |
| --- |
| Class Information |
| Class Name: Lot  Abstract Type: N/A Persistence: Yes |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10c | New Lot | 3 |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Setters |  |  |
| Getters |  |  |
| Bool verify() | N/A | Returns true if objects mandatory data is set to valid values. |
| Void addWeightSheet(InboundWeightSheet ws) | N/A | List of InboundWeightsheet is incremented by one. |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Long | N | Instance | Private | Unique id for lot |
| producerId | Long | N | Instance | Private | Producer unique id for lot |
| stateId | String | N | Instance | Private | 2 char code for the state of origin. |
| startDate | DateTime | Y | Instance | Private | Date the lot was opened |
| endDate | DateTime | Y | Instance | Private | Date the lot was closed |
| weightSheets | HashTable <InboundWeightSh> | Y | Instance | Private | Table of lots weight sheets |
| farmNum | String | N | Instance | Private | Alpha numeric string to id FSA number |
| Notes | String | N | Instance | Private | For any comments/notes |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | Data Transfer Object setters and getters |
|  |  |  |

## LotService

|  |
| --- |
| Class Information |
| Class Name: LotService  Abstract Type: N/A Persistence: N/A |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10b | New inbound weight sheet | 3 |
| 10c | New Lot | 5 |
| 80 | Move inbound weight sheet | 9 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Lot(HttpClient http) | N/A | New Lot |
| Lot GetData(int pageIndex, int pageSize, string sortColumn, string sortOrder, string filter column, string filterQuery) | Backend Running | Creates Lot(s) from JSON return |
| Lot Get(int id) | Backend Running | Creates a Lot from JSON return |
| Lot Put(Lot item) | Backend Running | Modifies database |
| Lot Post(Lot item) | Backend Running | Modifies database |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| http | HttpClient | Y | Instance | protected | Network interfacing |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  | 1 |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | I need to do more research into if these services are static it makes sense if they were. |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: Producer  Abstract Type: N/A Persistence: Yes |

## Producer

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10c | New Lot | 3 |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Getters |  |  |
| Setters |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Int | N | Instance | Private | Unique id of the producer |
| Name | String | N | Instance | Private | Name of the producer |
| Lots | HashTable <Lots> | Y | Instance | Private | Table of all the lots the producer has. |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A | N/A | 1 | N/A |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | Data Base object. Primary function to have the information needed in data base. |
|  |  |  |

## TransferWeightSheet

|  |
| --- |
| Class Information |
| Class Name: TransferWeightSheet  Abstract Type: N/A Persistence: Yes |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10a | New Transfer Weight Sheet | 3 |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Void AddLoad(Load load) | N/A | Load is added to list of loads |
| Void RemoveLoad(Load load) | Load of matching id must exist in the list of loads | Load is removed from list |
| Void Move(Warehouse dest) = 0 | N/A | N/A |
| Void Move(Lot dest) = 0 | N/A | N/A |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Long | N | Instance | Private | Unique id number |
| Weigher | String | N | Instance | Private | Name of scale Operator |
| Hauler | String | N | Instance | Private | Nullable. Name of hauler for weight sheet |
| Commodity | Commodity | Y | Instance | Private | What commodity is being hauled |
| Loads | List<Load> | Y | Instance | Private | Contains the loads brought in on the weight sheet |
| Miles | Int | N | Instance | Private | 1 way trip for hauler |
| Bill | Int | N | Instance | Private | For Hauler |
| Notes | String | N | Instance | Private | For Operator to leave notes |
| Source | Warehouse | Y | Instance | Private | Where the loads for sheet come from |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A | N/A | 25 | N/A |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
|  |  |  |

## TransferWeightSheetSerivce

|  |
| --- |
| Class Information |
| Class Name: TransferWeightSheetService  Abstract Type: N/A Persistence: N/A |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10b | New inbound weight sheet | 3 |
| 10c | New Lot | 5 |
| 80 | Move inbound weight sheet | 9 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| TransferWeightSheet(HttpClient http) | N/A | New TransferWeightSheet |
| TransferWeightSheet GetData(int pageIndex, int pageSize, string sortColumn, string sortOrder, string filter column, string filterQuery) | Backend Running | Creates TransferWeightSheet(s) from JSON return |
| TransferWeightSheet Get(int id) | Backend Running | Creates a TransferWeightSheet from JSON return |
| TransferWeightSheet Put(TransferWeightSheet item) | Backend Running | Modifies database |
| TransferWeightSheet Post(TransferWeightSheet item) | Backend Running | Modifies database |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| http | HttpClient | Y | Instance | protected | Network interfacing |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
|  |  |  |
|  |  |  |

## Warehouse

|  |
| --- |
| Class Information |
| Class Name: Warehouse  Abstract Type: N/A Persistence: Yes |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10a | New Transfer Weight Sheet | 4 |
| 10b | New Inbound Weight Sheet | 4 |
| 20 | Reports | 1-8 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Void AddLoadToBin(Load load, Bin bin) | Bin and load’s commodity types match | Bin increases amount stored by net weight of load |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A | N/A | N/A |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| Id | Int | N | Instance | Private | Identification number for warehouse |
| Name | String | N | Instance | Private | Human readable name for warehouse |
| District | Int | N | Instance | Private | What district warehouse is in |
| Bins | List<Bins> | Y | Instance | Private | Bins/containers that hold stuff in the warehouse |
| weightSheets | HashTable<long, IWeightSheet> | Y | Instance | Private | Weight sheets associated with the warehouse. |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A | N/A |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| MixException | Bin Commodity and load Commodity types don’t match | Inform the operator. |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| 1 | N/A | N/A | N/A |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
| Micah Gordon | 11/17/2023 | Warehouse is a container class which exist to allow for extendibility for the future. |
| Micah Gordon | 11/17/2023 | For updating bins and weight sheets: lambda functions exist through getters |

|  |
| --- |
| Class Information |
| Class Name: WarehouseService  Abstract Type: N/A Persistence: N/A |

## WarehouseService

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| Use Case ID | Use Case Name | Steps |
| 10b | New inbound weight sheet | 3 |
| 10c | New Lot | 5 |
| 80 | Move inbound weight sheet | 9 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| Signature | Preconditions | Post Conditions |
| Warehouse(HttpClient http) | N/A | New Warehouse |
| Warehouse GetData(int pageIndex, int pageSize, string sortColumn, string sortOrder, string filter column, string filterQuery) | Backend Running | Creates Warehouse(s) from JSON return |
| Warehouse Get(int id) | Backend Running | Creates a Warehouse from JSON return |
| Warehouse Put(Warehouse item) | Backend Running | Modifies database |
| Warehouse Post(Warehouse item) | Backend Running | Modifies database |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| Signature | Preconditions | Post Conditions |
| N/A |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| Name | Type | Object (Y/N) | Instance/Static | Visibility | Description |
| http | HttpClient | Y | Instance | protected | Network interfacing |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| Concurrency | |
| Threading Issue | Description |
| N/A |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| Name | Trigger | Action |
| N/A |  |  |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| Minimum | Maximum | Mean | Fixed |
| N/A |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| Author | Date | Comment |
|  |  |  |
|  |  |  |