**Storage Management System**

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## **Storage Model**

### **1.1 Implementation**

There are typically two types of storage devices, those that contain items for the users to collect such as chests and boxes and those that act as fully fledged storage facilities such as inventories and bank systems.

Collectable storage devices would typically only allow the storing and withdrawal of items that the user can collect.

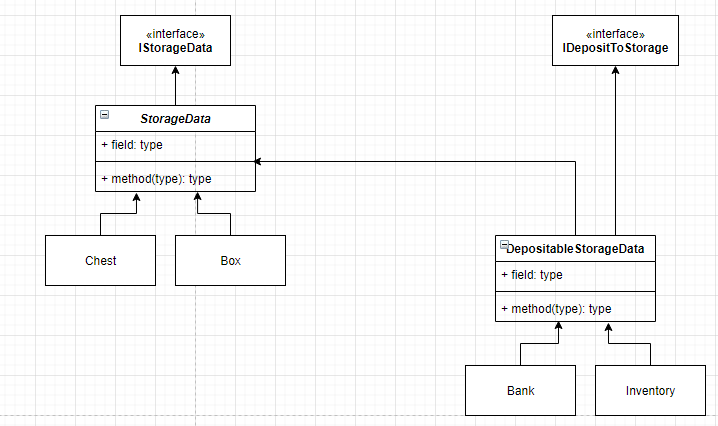
Depositable storage devices would allow storing as well as both withdrawal and depositing of items.

When interacting with a storage device, this differentiation would need to be made to understand what user interaction functionality should be allowed.

As multiple interfaces can be inherited by a class, using an IStorageData interface and an IDepositToStorage interface would allow decoupling between the storage models and the interaction system.

The interaction system can differentiate between the two types of storage devices and explicitly know the core methods that each has without being affected by the implementation.

This also allows the depositable storage devices to inherit the core functionality of all storage devices while having its own additional implementations.



### **1.2 Core Functionality**

#### **1.2.1 Storage Data Core Functionality**

* Storage data structure
* Initialise starting items
* Remove item

#### **1.2.2 Depositable Storage Data Core Functionality**

* Add item
* Move item
* Swap item
* Get item
* Add quantity
* Remove quantity
* Set quantity
* Remove all quantity
* Get quantity
* Slot empty check
* Slots available check
* Get incomplete slots
* Get maximum storage slots
* Set maximum storage slots

Add item

Two methods required to allow for specific slot selection and generic fill/find new slots.

Specific slot selection:

As user input is validated on the controller side, this method will only be called if the slot is empty or the existing item matches, otherwise a method such as SwapItem would be called so additional validation checks are not required.

IF slot empty:

Add item

Return 0

ELSE:

Update quantity up to maximum stack size

Return remaining quantity

Generic fill/find validation checks:

* Are there any partial stacks containing the same item or available slots
* Are there any remaining quantity after slots have been filled

Indexes 🡨 list of indexes with partial stacks  
existingSpaceInSlots 🡨 total space available inside partial stacks  
availableSlots 🡨 number of free slots in storage device  
remainingSpaceNeeded 🡨 calculation of quantity remaining after killing partial stacks  
slotsNeeded 🡨calculation of slots required after filling partial stacks

IF availableSlots equals 0 AND indexes equals 0:

Return remainingSpaceNeeded

ENDIF

IF indexes is greater than 0:

FOREACH index:

Fill the slot and update remaining quantity

IF quantity remaining equals 0:

Return 0

ENDIF

ENDIF

FOREACH slot in storage

IF slot is empty:

Fill slot up to maximum stack size

Update remaining quantity

ENDIF

IF quantity remaining equals 0:

Return 0

ENDIF

Return remaining quantity