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# Detailed Design

for

# Brew Day!

Version 1.0 approved

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Babbage

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## Revision History

Name	Date	Reason For Changes	Version
Yidong CHEN, Shihan XU, Zeyu WANG, Ning DING	April 9 <sup>th</sup> 2019	Initial version	1.0

# **1. Overview**

## **1.1 Project description**

The purpose of this project is to develop a software which provides the brewers with recommended recipes based on the ingredients they have. This software also enable brewers to manage their own recipes with notes.

## **1.2 References**

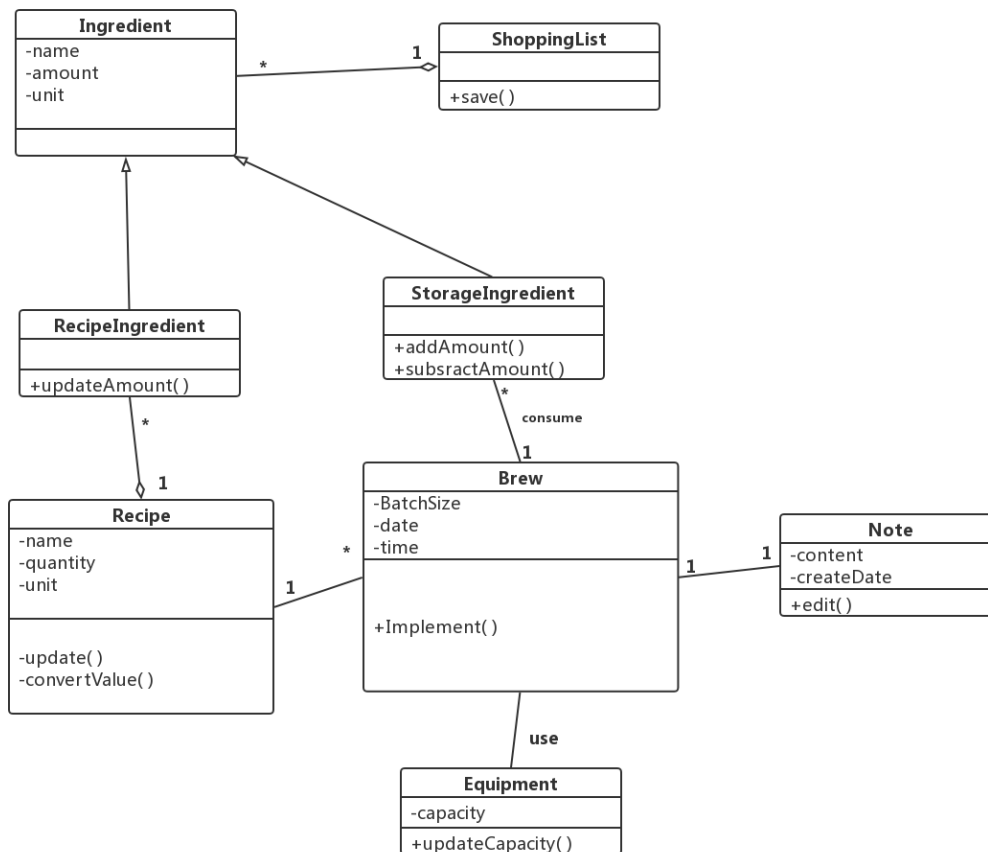
1. N. Ding et al, "SRS", version 1.4, Zhuhai: 2019.
2. N. Ding et al, "Architecture design", version 1.0, Zhuhai: 2019.

## **1.3 Design purpose**

The purpose of this detailed design is to give developers detailed descriptions during their process of implementation. The advantage of this document is having reconstructing the class diagram, the design becomes more concise and structural.

## 2. Overall description

### 2.1 Class diagram

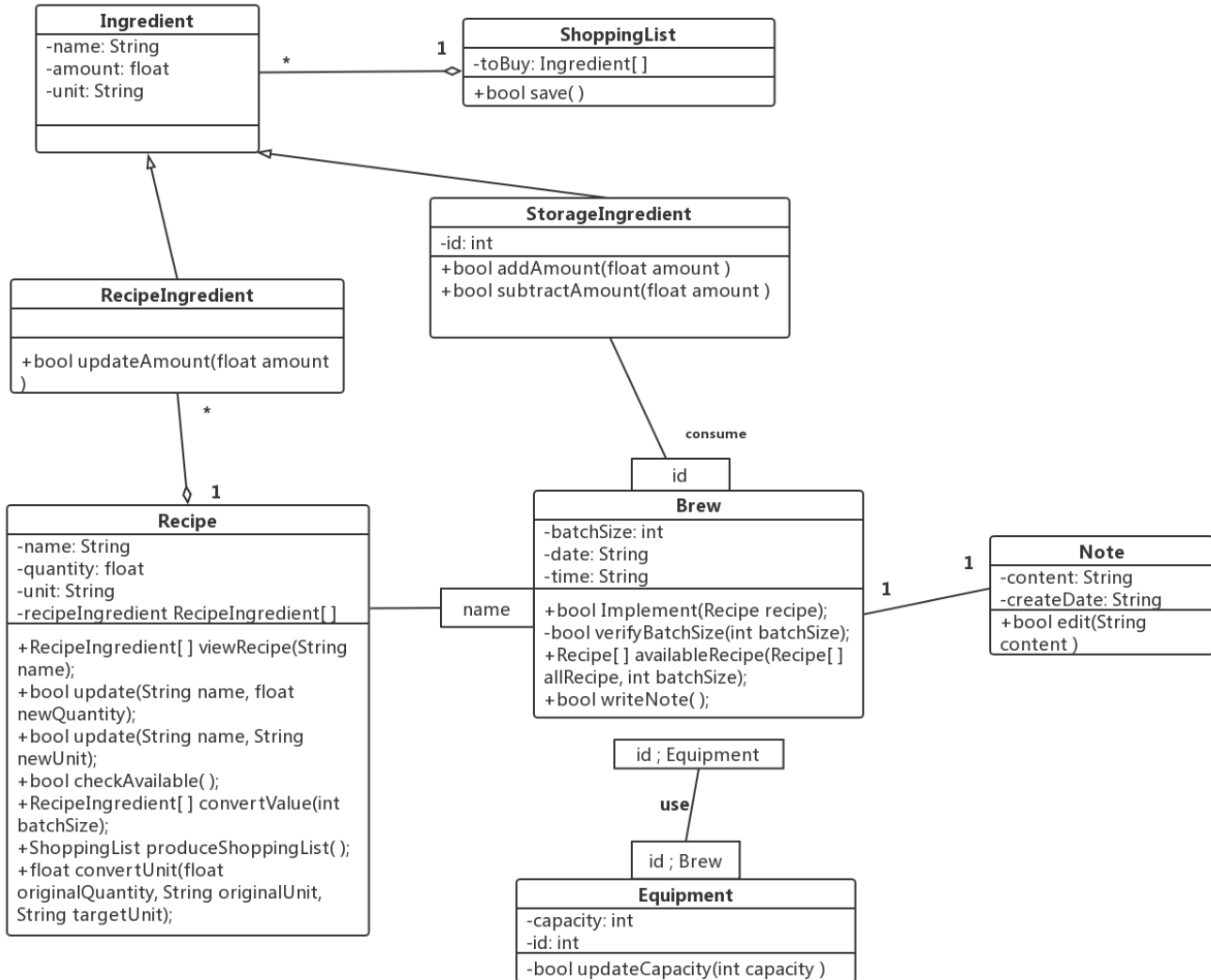


### 2.2 Refinements

We did class restructuring to reduce many-to-many or one-to-many relationship to one-to-one relationship, we also set the visibility of every operations and attributes, the necessary detailed operations are added as well.

### 3. Detailed design

#### 3.1 Class diagram



The association between Brew and StorageIngredient has become one to one, since the StorageIngredient hold the id of Brew can get the specific usage in one brew.

The association between Brew and Equipment has become one to one relationship, because if the Brew hold the id of Equipment, and the Equipment hold id of Brew, they can reach the same piece of record.

## 3.2 Classes

### 3.2.1 Ingredients

Ingredient
-name: String -amount: float -unit: String

#### Explanations

There is no attributes or operation updated.

### 3.2.2 ShoppingList

ShoppingList
-toBuy: Ingredient[ ]
+bool save( );

#### Explanations

Because the shopping list is composed of ingredients, then there is an ingredient list in every shopping list, put the ingredient list toBuy in ShoppingList class as an attribute.

### 3.2.3 RecipeIngredient

RecipeIngredient
+ bool updateAmount (float amount)

#### Explanations

There is no attributes or operation updated.

### 3.2.4 StorageIngredient

StorageIngredient
-id: int
+bool addAmount(float amount ) +bool subtractAmount(float amount )

#### Explanations

We add an attribute id which will be used further as a reference key in the association with brew.

### 3.2.5 Recipe

Recipe
<ul style="list-style-type: none"> <li>- name: String</li> <li>- quantity: float</li> <li>- unit: String</li> <li>- recipeIngredient: RecipeIngredient[]</li> </ul>
<ul style="list-style-type: none"> <li>+ RecipeIngredient[] viewRecipe(String name);</li> <li>+ bool update(String name, float newQuantity);</li> <li>+ bool update(String name, String newUnit);</li> <li>+ bool checkAvailable();</li> <li>+ RecipeIngredient[] convertValue(int batchSize);</li> <li>+ ShoppingList produceShoppingList();</li> <li>+ float converUnit(float originalQuantity, String originalUnit, String targetUnit);</li> </ul>

## Explanations

New variable:

recipeIngredient: an array contains all the ingredient of the recipe. This variable connects Recipe and RecipeIngredient together.

New function:

viewRecipe(String name): input recipe name as parameter, and return all the ingredients of this recipe.

convertValue(int batchSize): Brew will call this function and input batchSize, this function returns an array of all recipes with changed amount according to batchSize.

checkAvailable(): compare the array of ingredient returned by convertValue() with storageIngredient. if former one is more, return false; if latter one is more, return true.

produceShoppingList(): else, this function returns ingredient needed to finish one brew.

converUnit(float originalQuantity, String originalUnit, String targetUnit): this function changes the amount by convert from originalUnit into targetUnit.

### 3.2.6 Brew

Brew
-batchSize: float -date: String -time: String
+ bool implement(Recipe recipe); - bool verifyBatchSize(int batchSize); + Recipe[] availableRecipe(Recipe[] allRecipe, int batchSize); + bool writeNote();

## Explanations

verifyBatchSize(int batchSize): verify if the batchSize input is smaller or equal to the total capacity of equipment. If it is true, return true; else, return false.

availableRecipe(Recipe[] allRecipe, int batchSize): input an array containing all recipe and the batch size input by user, and check every recipe can be made with storage ingredient, then return all available recipe.

writeNote(): create new note. If create successfully, return true; else, return false.

## Constrains

verifyBatchSize = {INVALID\_INPUT, OVERSIZE, OK}

Pre-condition: the input batchSize is not null

Post-condition: the return value corresponds to the following errors

- 1.If the input is not an integer, then return INVALID\_INPUT;
- 2.If the input integer is larger than the capacity, then return OVERSIZE;
- 3.otherwise, return OK.



### 3.2.7 Equipment

Equipment
-capacity: int -id: int
-bool updateCapacity(int capacity)

#### Explanations

Added attribute: id. This works as the primary key of the equipment in the database.

### 3.2.8 Note

Note
-content: String -createDate: String
+bool edit(String content)

#### Explanations

There is no attributes or operation updated.

## 4. More considerations

N/A