Job Application Code Challenge

Requirements for StarBox for Ruby/Rails or Groovy/Grails applicants

Your assignment is to build a small Web application in either Ruby On Rails or Groovy / Grails. This application will be the "brains" and user interface for StarBox, a vending machine for dispensing high-end coffee and espresso beverages. The remainder of this document contains specific requirements for the application.

Overview

The StarBox application, at a high level, will need to:

- Maintain a list of ingredients (espresso, coffee, milk, etc.), and keep track of unit prices and inventory levels of each ingredient contained in the StarBox.

- Maintain a list of beverages that can be served by the StarBox.

- Retain, for each beverage to be dispensed, instructions for creating that beverage. These instructions consist of the list of ingredients to dispense, along with the number of units of each ingredient to be dispensed.

- Allow customers to purchase any available beverage.

- Prevent customers from purchasing any beverage that is not available because of insufficient ingredients on hand in internal inventory

- Allow a StarBox maintenance worker to restock the machine (resetting inventory levels for all ingredients to 'full')

- Provide a default (initial) set of ingredients and beverages at startup

- Allow a StarBox maintenance worker to alter the list of beverages and ingredients on the fly

The list of stories below provide additional detail. Stories with High priority are mandatory (your solution must include these features). Stories with Low priority are optional; you may include them if you wish to.

Non-Technical Requirements

In addition to meeting the functional requirements described in the stories on the following pages, you are also asked to meet the following non-functional requirements:

- Unit tests should be provided, wherever appropriate, to ensure that requirements are met, and to protect features should the code be refactored in the future.

- The application should **not** include authentication or authorization plugins or features. For purposes of this prototype, you should assume that there is no login facility, no identified users or roles, and that all features (including restocking the machine) are available at all times.

Story 1: As a licensee, I would like to open my unit for business.

Priority: High (Mandatory)

When the StarBox is powered up, the StarBox web app server will start up as well. The inventory level for each ingredient will default to the maximum stock level of twenty-five (25) units. Upon successful initialization, the StarBox built-in web browser will point to a URL that shows the StarBox beverage menu.

The beverage menu page will display a "Welcome to StarBox" message, and will display the following elements for each available beverage:

- Beverage name
- Beverage price, calculated as the sum of unit prices of all ingredients
- A 'Make Selection' button that allows the customer to select the beverage for dispensing

See Appendix A for a list of all ingredients and their unit prices.
See Appendix B for a list of all beverages and their recipes.
See Appendix C for a rough mockup of the beverage menu.

Story 2: As a customer, I would like to purchase a beverage

Priority: High (Mandatory)

From the StarBox beverage menu, I click on the 'Make Selection' button next to a beverage.

- If StarBox ingredient inventory is sufficient for the selected beverage to be dispensed, the beverage will be dispensed:
  - Ingredient inventory levels will be reduced according to the number of units of each ingredient in the selected beverage

  - A message area on the beverage menu page will display the message: "Thank you! Please enjoy your <beverage name>!"

  - The decrease in inventory levels should be persistent – that is, if a remote user were to view the StarBox's Inventory page after the beverage is dispensed, that user should see the resulting reduction in inventory.

- If the inventory level of *any ingredient* in the selected beverage is lower than the required number of units for that beverage:

  - A message area on the beverage menu page will display the message: "Sorry – we are temporarily unable to dispense <beverage name>. Please make another selection."

  - The beverage will not be dispensed – all ingredient inventory levels will remain unchanged.

Story 3: As a technician, I would like to restock the ingredients in a StarBox

Priority: High (Mandatory)

- A technician enters a specific URL in the StarBox web browser to view the Inventory page. The Inventory page will display the following elements:
  - A 'StarBox Ingredient Inventory" banner

  - for each Ingredient contained in the StarBox:
    Ingredient name
    Current inventory level (quantity on hand)

o A 'Restock' button that, when pressed, will reset the inventory level (quantity on hand) for all ingredients to the maximum value of 25, and refresh the Inventory page so the technician can visually verify that the inventory levels have been reset.

See Appendix C for a rough mockup of the inventory page.

Story 4: As a technician, I would like to modify Ingredients and Beverages

Priority: Low (Optional)

Using the power and feature set of the dynamic language and web framework you have chosen, please provide bare-bones "administrative" web pages that allow a user to perform the following tasks. User interface specifics are up to you; the goal here is to meet the requirements with as little development effort as possible.

- View a list of Ingredients

- Select an Ingredient to modify

- Allow user to modify ingredient name or unit price

- View a list of Beverages

- Select a Beverage to modify

- Allow user to change the name of a Beverage

- Allow user to change the recipe of a Beverage (add/remove ingredients or change the number of units of an ingredient

Appendix A: Standard Ingredients and Unit Pricing

Following is the list of ingredients that should be included in your StarBox at startup time:

Ingredient Name	Unit Price
Cocoa	$0.90
Coffee	$0.75
Cream	$0.25
Decaf Coffee	$0.75
Espresso	$1.10
Foamed Milk	$0.35
Steamed Milk	$0.35
Sugar	$0.25
Whipped Cream	$1.00

Appendix B: Standard Beverages and "Recipes"

Following is the list of beverages that should appear on the Beverage Menu page of the StarBox, along with the recipe (ingredients and number of units of each ingredient) for each beverage.

Beverage Name	Recipe
Café Americano	3 units Espresso
Café Latte	2 units Espresso 1 unit Steamed Milk
Café Mocha	1 unit Espresso 1 unit Cocoa 1 unit Steamed Milk 1 unit Whipped Cream
Cappuccino	2 units Espresso 1 unit Steamed Milk 1 unit Foamed Milk
Coffee	3 units Coffee 1 unit Sugar 1 unit Cream
Decaf Coffee	3 units Decaf Coffee 1 unit Sugar 1 unit Cream

Appendix C: User Interface Mockups

Beverage Menu page (main customer interface)

BEVERAGE MENU

WELCOME TO STARBOX!

PLEASE MAKE SELECTION:

COFFEE	$2.75	[Make Selection]
DECAF COFFEE	$2.75	[Make Selection]
⋮	⋮	
CAPPUCCINO	$2.90	[Make Selection]

(messages will display here)

Inventory page (view inventory levels and restock machine)

INVENTORY

Current StarBox Inventory

Ingredient	Quantity On Hand
Cocoa	25
Coffee	14
⋮	⋮
Whipped Cream	21

Restock