**COFFEE MACHINE TEST DOCUMENT**

**Project details:**

* Programming language: Java
* Can run on: VS Code, Eclipse etc
* System requirements: Latest JDK and JRE installed
* Main Class: CoffeeMachine.java
* To run: Ctrl+ F5
* Input format: Comma separated for multiple values (1,2,3)
* Design Pattern: State Pattern
* Concurrent processing: Semaphore
* Inventory initialized with test json provided in the assignment
* A delay of few milliseconds is added before dispensing coffee to show/test parallel execution

**Integration Test Cases**

* Does the user see the Beverage menu?

Expected behavior: Yes

* Does the user receive correct, selected beverages?

Expected behavior: If the items are sufficient in inventory all the beverages will be prepared. A “beverage\_name prepared” message should appear

* Does the user receive an error message saying “insufficient ingredient” when the item quantity is insufficient in quantity?

Expected behavior: Yes. If an ingredient required to prepare the beverage runs low the beverage will not be prepared and a insufficient message will be shown.

* What happens when all outlets are in use and user inputs a selection?

Expected behavior: User receives a message saying all outlets are busy and to try later

* Can the user place a parallel request when a beverage is dispensing?

Expected behavior: Yes. User can place a new request is outlets are not busy dispensing beverage

* Does the user see an error message for incorrect selection of beverages?

Expected behavior: Yes. User will be prompted to input selection only from the given range.

* Does the user receive beverages for inventory has sufficient items?

Expected behavior: Yes. If the inventory is sufficient, all the selected beverages will be prepared and message will be shown.

* If the user selects 3 beverages, out which one cannot be served to unavailable ingredient, but the other 2 can be served. Does the user receive the 2 available beverages?

Expected Behavior: Yes. The machine will try to serve all the beverages than can be prepared if their ingredients are available. However, order of selection of beverages to be served is random.

* Is the user restricted to select only beverages up to number of outlets per requests?

Expected: Yes. If number of outlets is **N** then user can select up to **N** beverages

* Is the user allowed to select items while refilling ingredients?

Expected behavior: No. The state of the machine is set as Refill. Only after refill the user can select beverages.

* Can the user see an alert when inventory is low?

Expected behavior: Yes. A message saying low supply appears with an option to refill the inventory.

* Is the user able to refill ingredients when inventory is running low?

Expected behavior: The user can either choose a beverage or select to refill the inventory by pressing 0 from the menu

* Can the user place request even when inventory is low?

Expected behavior: Yes, as it is a warning that items are depleting. As the inventory might be below minimum value but few beverages may still have sufficient ingredients to be prepared.

* After refilling, does the return to selection menu?

Expected behavior: Yes

* After valid selection, does the machine show Beverages served?

Expected behavior: Yes. A message is show for each beverage that is dispensed.

* Does the machine show recommended quantity to be added for an item while refilling?

Expected behavior: Yes

* Can the machine accept negative quantities?

Expected behavior: No

* Can the machine accept a quantity below what is recommended?

Yes

* Does the machine show low inventory, even after refill?

Expected behavior: If the refill of each item that was below minimum quantity is now greater than or equal to the minimum quantity, then NO. Or else YES.

**Functional Test Scenarios:**

* Can the user select multiple beverages?

EB: Yes. Up to N beverages (N=number of outlets)

* Can a user select more beverages while multiple beverages are being dispensed?

EB: Yes. If outlets are idle then new beverages can be selected for dispense

* Are multiple beverages dispensed in parallel?

EB: Yes.

* Can the user fill the items running low in inventory?

EB: Yes

* Is a beverage prepared if all but one ingredient is unavailable?

EB: No. All items need to be available in required quantities to prepare a beverage.

* Does the machine show an alert when items are declining below a minimum level?

EB: Yes

* What happens if I select 2 correct options and 1 incorrect option from the beverage menu?

EB: The correct options will be processed while the incorrect option will be declined with an alert

* If the order orders 4 beverages and number of outlets is 3 will 3 beverages be prepared and other one queued?

EB: No. Since there are only 3 outlets the input will be declined add user will be prompted to select up to 3 beverages.

* Can I add a beverage that does not exist in inventory?

EB: No

* When will the user not receive a beverage?

EB: Either when an ingredient required in the beverage is unavailable or the quantity is insufficient.