Coffee machine

[Total Duration for the assignment: 5 Hours]

Write the working code to create a working coffee machine. Here are the desired features

1. It will be serving some beverages.
2. Each beverage will be made using some ingredients.
3. Assume time to prepare a beverage is the same for all cases.
4. The quantity of ingredients used for each beverage can vary. Also the same ingredient (ex: water) can be used for multiple beverages.
5. There would be **N (N is an integer)** outlet from which beverages can be served.
6. Maximum **N** beverages can be served in **parallel**.
7. Any beverage can be served only if all the ingredients are available in terms of quantity.
8. There would be an indicator which would show which all ingredients are running low. We need some methods to refill them.
9. Please provide functional integration test cases for maximum coverage.

Example:

Consider **Chai Point** machine which serves these drinks:
1. ginger tea
2. elaichi tea
3. coffee
4. hot milk
5. hot water

the machine has **N** outlets for serving these drinks

Here is the composition for each drink:
1. ginger tea:
    - hot water 50 ml
    - hot milk 10 ml
    - tea leaves syrup 10 ml
    - ginger syrup 5 ml
    - sugar syrup 10 ml
2. elaichi tea:

- hot water 50 ml
- hot milk 10 ml
- tea leaves syrup 10 ml
- elaichi syrup 5 ml
- sugar syrup 10 ml

3. coffee:
   - hot water 50 ml
   - hot milk 10 ml
   - coffee syrup 10 ml
   - sugar syrup 10 ml
4. hot milk:
   - milk 50 ml
5. hot water
   - water 50 ml

Note: Since there are **N** outlets, **N** people can take beverages at the same time.

Scoring Criteria :

- To simplify the problem – we will exclude the following issues from the scope:
  - Solution does not have to scale out. We only need to design a solution to run on a single machine.
    - This machine can be assumed to have access to a large high performance and reliable file system to store the objects in.
    - This machine can be assumed to have multiple CPUs
  - Solution does not have to solve storage reliability issues (assume that the underlying file system is reliable).
- **50**% on working code. Rest **50**% on maximum coverage of functional integration test cases. We will be evaluating the problem by running test cases.

Bonus :

1. You can assume that all the ingredients are liquid in nature, but we want to extend this machine to support solid and gaseous (steam) ingredients as well.
2. Bonus points for storing in memory data in the file system when the server / machine restarts.

Submission :

1) Please submit the working code. We will be running test cases provided by you. As mentioned earlier, scoring will be as follows
    a) **50**% on working code.
    b) **50**% on maximum coverage of functional integration test cases. We will be evaluating the problem by running test cases.

2) Express the design/algorithm as part of comment blocks around the code. Please take care of the readability part of it.
3) We are looking for the following:
    a) Good design (an efficient, correct and simple way to solve this problem).
    b) Correct implementation of the design.
4) You can choose any languages you are comfortable in.
5) Total Duration for the assignment is 5 Hours.
6) Please submit your solution to shreya@dunzo.in

Good Luck