

OOP group assignment

You are designing a coffee machine according to these rules:

- A coffee machine's brand can be one of the following (Cantrell, DeTech, Innova).
- A coffee machine may be chargeable or not. (if chargeable then the coffee machine has the power state from 0% to 100% . The default power state is 100% for the brand new machine).
- A coffee machine is able to produce coffee:
 - + Coffee is made with sugar (tsp), water (liter), milk (liter) and seeds (which can only be Liberica, Robusta or Arabica). Furthermore coffee can be either alcoholic or not
 - + Coffee ingredients must follow the following conditions:
 - The amount of sugar less than 15 tsps.
 - The amount of water less than 1 liter.
 - The amount of milk less than 0.6 liter .
 - Ingredient inputs must be valid (Ex: non-negative quantity).
 - + Coffee has a nutrient value (# unit).

Important note: You only want the coffee machine to know its internal Coffee Producing blueprint. Other machines except coffee machine don't know how to do the Coffee Producing process.

For the users:

- User can recharge the machine if the machine is chargeable.
 - + Every time the coffee is produced. The power reduces 35%.
 - + Every time the nutrient value is calculated. The power reduces 27%.
 - + If the power reaches 0% then users may need to recharge (otherwise the machine won't work). Everytime the machine is recharged the power increases by 42% for each time the machine is recharged.
 - + If the current power state is X but the power need to be used larger than X then the machine won't perform the work and the current power state stays remain. When the user recharge but the power may exceed 100% then the power stay 100%
- User can ask the machine to produce their coffee based on inputted data.
- After the coffee is produced. User is granted access to these operations:
 - + User can get the information of the coffee. (All information of inputted fields are shown at the same time).
 - + User can ask the machine how delicious the coffee would be.
 - If the coffee is made with Liberica seed and the amount of sugar is from 4 to 6 tsps then the coffee is "Decent".
 - If the coffee is made with Robusta seed and the amount of milk is from 0.2 to 0.5 liter then the coffee is "Musty".
 - If the coffee is made with Arabica and is alcoholic then the coffee is "Alkaline"
 - Other types of coffee is "Flavorsome" by default.
 - + User can ask the machine to calculate the nutrient value of the coffee.
 - Each tsp of sugar is 5#, 125ml of water is 7#, 125ml of milk is 6#
 - Nutrient value is -4# if alcoholic is allowed.

- Liberica, Robusta, Arabica each has the nutrient value of 15#, 9#, -8# respectively.