Recipe Moderniser

# Scenario

You and your friends love to bake. Many of your favourite use cups, teaspoons and tablespoons to measure ingredients. From time to time, you also need to double (or even triple) the amounts being used.

You have access to a modern kitchen and an accurate electronic scale. You have realised that weighing most\* ingredients is both quick and accurate. You regularly find yourself converting ‘old’ recipes and want to automate that process.

*\*Some ingredients (for example spices) still need to be measured in mL’s as they are too light to register on most electronic scales.*

Design and create a program which will help to make this process quick and easy. Your program should...

* Ask users how many servings the original recipe makes
* Ask how many servings are required
* Find the scale factor that will allow you to change the number of servings that a recipe makes. If the scale factor is more than three, your program should advise the user to make smaller batches as if a batch is too large the ingredients won’t fit in the mixing bowl / oven. If the scale factor is less than ¼ (0.25), the program should warn the user and suggest making a larger batch and freezing the left overs.
* Automatically output a ‘modernised’ version of the ingredients list where all amounts are correctly scaled (either increased or decreased to get the desired number of servings) and are either in grams or mLs

## Task

1. Decompose the problem.
2. Plan how you will tackle the problem (using a Kanban board for this is one option)
3. Write a test plan for your first component. Then create the code and test it using your plan.
4. Where necessary, refine your component and retest.
5. Explain which implications are relevant to your component and discuss how your component addresses the relevant implications
6. Repeat the above steps until you have a series of working components
7. Combine your components to create a working program
8. Test and debug your program to ensure that it works for expected, boundary and unexpected values
9. Ask a friend / parent to use your recipe moderniser. Watch them as they do this and make note of any changes that could be made to make the program easier to use
10. Make the changes identified in the previous step
11. Retest your program to ensure that it still works correctly

## Resources

* It is common for recipes to call for 250 mL (1 cup) of an ingredient. You have been provided with a list of common ingredients showing how much 1 cup of each ingredient weighs (01\_ingredients\_ml\_to\_g.xlsx). You can use this list to accurately convert ‘cup’ measurements into grams.
* If a key ingredient is missing from the list, you can look it up here: <https://www.howmany.wiki/vw/>

*Source:* [*https://www.spar.co.za/Assets/Tips/View/Food-Tips/Converting-Grams-to-Mililitres*](https://www.spar.co.za/Assets/Tips/View/Food-Tips/Converting-Grams-to-Mililitres)

Below are the volumes of some common baking utensils mentioned in recipes. When upsizing, you might choose to convert these into grams or to use a more sensible measuring tool. For example, if you triple a recipe that needs 1 tsp of baking powder, the ‘upsized’ version will need 1 tbs of baking powder (rather than 3 tsps).

*A note on ‘cups’. Some older / American recipes assume that a cup is 240 ml. In other places, a cup is assumed to be 250 ml. Some internet sources state that a cup is 237 ml. For your convertor, you can make a basic version which assumes that a cup is 250 ml. A more useful alternative would be to ask users if the recipe is American. If it is, then 240 ml (or 237 ml) could be used. Otherwise 250 ml should be used.*

|  |  |
| --- | --- |
| **Measurement** | **Unit** |
| Teaspoon (tsp) | 5 mL |
| Tablespoon (tbs) | 15 mL |
| Cup | 240 mL (US) or 250 mL (NZ) |
| 1 ounce | 28.35 g |
| 1 pint | 473 mL |
| Quart | 946 mL |
| Pound | 454 g |
| Stick\* | 113 g |

*In American recipes, sometimes they call for ‘sticks’ of butter!*

Here are some common abbreviations for the above measurements. In this case, capitals / lowercase can matter!

*Source:* [*https://en.wikibooks.org/wiki/Cookbook:Units\_of\_measurement*](https://en.wikibooks.org/wiki/Cookbook:Units_of_measurement)

* teaspoon (also t or tsp)
* tablespoon (also T, tbl, tbs, or tbsp)
* ounce (oz, fluid ounce or fl oz)
* cup (also c)
* pint (also p, pt, or fl pt)
* quart (also q, qt, or fl qt)
* ml, also milliliter, millilitre, cc (and mL only in the US, Canada and Australia).
* l, also liter, litre, (and L only in the US, Canada and Australia).
* dl, also deciliter, decilitre (and dL only in the US, Canada and Australia).
* pound (also lb, lbs, or #)

## Recipes!

*You are welcome to use recipes from books / the Internet to help you develop your outcome. Note that your program should give users an easy way to attribute the material and honours copyright.*

Here are two recipe sites to get you started. For testing purposes, you should use one **simple** recipe from each site.

* <https://www.allrecipes.com>
* <https://edmondscooking.co.nz/recipes/>

If you like, you can use the recipes below…

* [Fluffy pancakes](https://www.allrecipes.com/recipe/162760/fluffy-pancakes/?internalSource=hub%20recipe&referringContentType=Search)
* [ANZAC biscuits](https://edmondscooking.co.nz/recipes/biscuits/anzac-biscuits/)