St Edward's College Malta

Year 12 February Assessment 2024

IB Computer Science: Programming in Java

Full Name	

- This work is graded and contributes toward your February Assessment.
- The maximum mark awarded for this work is **35 marks**.

For teacher's use only: **Ms Camilleri**

Criteria *	**1**	**2**	**3**	**4**	**Total**
Obtained					
Allotted	**15**	**9**	**4**	**7**	**35**

Assessment Rubric		
1. Recipe Calc App Implementation		
Display recipes in a pagination format.	**6**	
User recipe selection.	**3**	
User adjustment of recipe servings.	**3**	
Appropriate messaging and a user-friendly program flow.	**3**	
2. Recipe Class Implementation		
Proper implementation of the `containsAnyIngredient` method.	**3**	
Accurate displays in `displayExcerpt` and `displayRecipe` methods.	**3**	
Calculation of ingredient quantities in `adjustQtyForServings` method.	**3**	
3. Programming Practices		
Well-organized code with proper indentation and formatting.	**2**	
Effective communication with the teacher to achieve a high-quality product.	**2**	
4. Bonus		
Additional features beyond the basic requirements that would help Alex.	**4**	
Innovative and creative approaches to problem-solving.	**3**	
Total	**35**	

General Comments:

Marking Guidelines

Most criteria have a marking scheme, but where applicable the following is applied:

0 – Not Attempted

1 – Basic

2 – Limited

3 – Proficient

4 – Excellent

Recipe Calculator for Alex

Problem Definition

Your client is Alex, a busy professional who loves cooking at home. However, his schedule is often unpredictable and finds it challenging to plan meals efficiently. Alex often cooks in batches to save time during the week, but he generally finds that “traditional recipes don't always scale well”. He is looking for a solution that allows him to adjust ingredient quantities easily. He would like a tool that can adjust recipes based on the number of servings he needs to prepare to save him time and control food waste.

Solution Rationale

Alex believes that a “recipe calculator with a user-friendly interface” would enable him to plan his meals better. He envisions a “mobile-friendly solution” that allows him to pick a recipe from a list that makes use of food items he consumes regularly and adjust the number of servings. Since the calculator would automatically adjust the ingredient amounts, he can “shop for groceries efficiently” and “reduce the amount of food waste”. This aspect is important to Alex since he is environmentally conscientious.

Java is a good choice for the Recipe Calculator project due to its platform independence, robust standard libraries, and object-oriented features. Java has been the default choice for Android mobile applications for many years. Learning a mobile application framework is not within the scope of this task, however, you have enough skills to implement a robust back end that you can test on a rudimentary menu textual interface.

Success Criteria

You will build a rudimentary Java application using the techniques you learned. The program will only address the most basic success criteria:

- Alex would like to select a recipe from a variety of recipes that are pre-loaded into the application so that he can choose to follow a recipe with ingredients he is comfortable with.
- Alex would like a paginated view of recipe summaries so that selection is more intuitive.
- Alex would like to specify servings of the selected recipe and automatically receive adjusted quantities of ingredients so that he can plan a shopping list efficiently.

Technical Design Specifications

You should use the sample code to complete the assignment. We have used a Comma Separated Value (CSV) file to store twenty recipe records.

Here is one record for a recipe called “Spaghetti”:

```
1,Spaghetti,[Pasta;Tomato Sauce;Meatballs],[200;500;300],4,[Boil pasta.;Cook meatballs.;Mix with tomato sauce.]
```

Each record defines a recipe id, name, list of ingredients, corresponding quantities, number of servings, and list of method instructions. Each line is parsed in the `init()` method which is defined in the `RecipeCalcApp` main class to create `Recipe` objects like the one below.

Recipe	
Id	1
Name	“Spaghetti”
Ingredients	{“Pasta”, “Tomato Sauce”, “Meatballs”}
Qty	{200, 500, 300}
Servings	4
Method	{“Boil pasta.”, “Cook meatballs.”, “Mix with tomato sauce.”}

The `Recipe` objects created by the program are stored in an array.

```
public static Recipe[] recipes = new Recipe[20];
```

Both the RecipeCalcApp and the Recipe classes have `TODO` instructions for you to implement. Here is an example:

```
// TODO: declare a boolean variable for nextPage and set it to true
```

These are technical instructions and implementing them should help you achieve all the success criteria specified in the rubric.

Delivery

A zipped folder that contains a Visual Studio Code Java Project which obeys the following structure:

- `RecipeCalcApp.java` which contains the `main()`
- `Recipe.java`
- `recipes.csv`