**Dalhousie University**

**ENGM 4620 - Python for Engineers**

**Winter 2024**

# Project 1 - RecipeBook

**Student Name:**

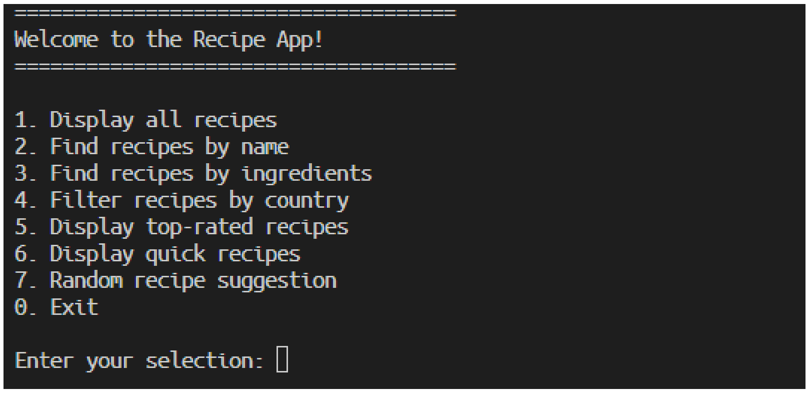
**Dorsa Azimi (B00857860)**

## Project Concept

For our first Python project for this course, I decided to create an app that allows users to browse and view food recipes from various countries. Through a console application, users can perform the following actions:

- Display all recipes:
  - Prints all of the recipes in the application database
- Find recipes by name
  - Search for a specific recipe by name
- Find recipes by ingredients
  - Find recipes when provided a list of ingredients. This suggests users recipes they can make with the ingredients they have at home.
- Filter recipes by country
  - Filter the recipes based on their country of origin. This allows users to explore cuisines from different parts of the world.
- Display top-rated recipes
  - Sort and show the recipes that are the highest rated.
- Display quick recipes
  - Show recipes that can be made in under 20 minutes. This is ideal for users who have limited time and need to make something quick.
- Random recipe suggestion
  - Suggest a random recipe to the user who is willing to try something new.

A screenshot of the welcome screen of the app is provided below:



```
=====================================
Welcome to the Recipe App!
=====================================

1. Display all recipes
2. Find recipes by name
3. Find recipes by ingredients
4. Filter recipes by country
5. Display top-rated recipes
6. Display quick recipes
7. Random recipe suggestion
0. Exit

Enter your selection: 
```

## Development Journey and Decision-Making Process

The first step that I had to take to create this application was to find a list of recipes. The information that I needed to gather for each recipe was the name of the recipe, ingredients, step by step instructions, country, rating, and preparation time. I was able to find all of this information with a wide selection of different recipes on the www.allrecipes.com website.

The next step was to find a way to store all of the recipe data in a way that would allow me to programmatically and easily import the data into my Python application. For this I decided to use JavaScript Object Notation (JSON) which I was familiar with from previous projects. JSON allowed me to store the recipe data as a list of objects in a single file. Python also provides a number of built-in libraries for working with JSON data, and importing them into my Python program as a Python dictionary easily. This allows me to loop over the list of dictionaries and access each recipe value easily.

The next step was to apply the principles of Object Oriented Programming (OOP) to create the objects needed for my app. The first class that I created was a Recipe class which holds the data for a single recipe such as name, ingredients, instructions, preparation time, country and rating. I later realized that because my app deals with browsing a list of recipes in different ways, that I need to create another class which holds all of the recipes. For this reason I created the RecipesDatabase class which not only holds a list of recipes, but also provides a number of methods for processing the list. After this I created a method for every functionality of the app and wrote the implementation of all of these methods. Each method looped through the list of recipes, to either look for a specific recipe, sort the recipes, or filter out certain recipes.

After implementing the classes needed for this app, I started working on the main loop of the program. I created a while loop which asks the user for a number every time, and based on that number using if/else statements, one of the RecipeDatabase methods gets called. I then tested the application by entering a non-integer input and the program crashed because it was not able to convert the input to an integer. To fix this issue, I created a function for the purpose of getting user input with a try/catch block. If the input was successfully converted to an integer, it would be returned by the function, otherwise the function runs again until the user has inputted a valid number. In some cases, some of the options needed a second input, such as when searching for a recipe by name, which I had to get another user input, and pass the value into the method. Since those inputs were all of type string, I didn’t need to perform any error handling and the method would simply not find any results. In the case of entering multiple ingredients, because the user has to enter multiple values, I needed to find a format that allows me to split the input into individual ingredients. For this I specified in the app that the list of ingredients has to be separated by commas. This allows me to easily split the string into a list of strings, which I can loop over each ingredient.