Exercise 1.2: Data Types in Python

Learning Goals

Explain variables and data types in Python
Summarize the use of objects in Python
Create a data structure for your Recipe app

Reflection Questions

1. **Imagine you're having a conversation with a future colleague about whether to use the iPython Shell instead of Python's default shell. What reasons would you give to explain the benefits of using the iPython Shell over the default one?**

   The main reasons I would bring up the benefits of using iPython Shell would include:
   - Syntax highlighting makes for better visibility (contrasting fonts and colors)
   - Automatic indenting for nested statements
   - Testing code is quick and easy (commands are executed immediately after typing)

2. **Python has a host of different data types that allow you to store and organize information. List 4 examples of data types that Python recognizes, briefly define them, and indicate whether they are scalar or non-scalar.**

Data type	Definition	Scalar or Non-Scalar?
integer (int)	An integer is a whole number	Scalar
float	A float is a decimal number	Scalar
string (str)	Strings are surrounded by double or single quotes. They are composed of symbols and alphanumeric characters	Non-Scalar
boolean (bool)	A boolean can be either true or false	Scalar

3. **A frequent question at job interviews for Python developers is: what is the difference between lists and tuples in Python? Write down how you would respond.**

   The difference between lists and tuples are that the elements in a list can be modified or deleted, where as this is not possible in tuples.

4. **In the task for this Exercise, you decided what you thought was the most suitable data structure for storing all the information for a recipe. Now, imagine you're creating a language-learning app that helps users memorize vocabulary through flashcards. Users can input vocabulary words, definitions, and their category (noun, verb, etc.) into the flashcards. They can then quiz themselves by flipping through the flashcards. Think about the necessary data types and what would be the most suitable data**

structure for this language-learning app. Between tuples, lists, and dictionaries, which would you choose? Think about their respective advantages and limitations, and where flexibility might be useful if you were to continue developing the language-learning app beyond vocabulary memorization.

Between the three options, I would chose to use dictionaries. I believe dictionaries would be the best option as anything can be stored as a value. This would be beneficial for the user as they can input vocabulary words, definitions and their category. Dictionaries are also flexible and this is advantageous if the language learning app develops beyond vocabulary memorization.