### Exercise 1.2: Data Types in Python

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?

iPython provides more guidance to the default Python’s shell. It uses syntax highlighting that makes easier to identify inputs and outputs, as well as automated indentation for like nested statements.

1. 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.

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| **Data type** | **Definition** | **Scalar or Non-Scalar?** |
| int | Represents integer including both negative and positive numbers and zero | Scalar |
| bool | Stores either of the two values, True or False | Scalar |
| list | Stores ordered sequence that is mutable (data can be modified, deleted and reordered) | Non-Scalar |
| dictionary | Stores unordered set of items as key-value pairs | Non-Scalar |

1. 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.

Tuple is immutable and list is mutable. In another words, list allows you to modify data like changing values, deleting items and reorder them as opposed to tuple. But tuple is faster to read and access when working with the large amounts of data. Therefore there are some situations where using tuple would be more appropriate than using list.

1. 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.

I would use dictionary as the data structure for each word so it’s easier to access the required data like word, category and definition. To store all words, I would choose list as it provides flexibility to play around with the data like modifying or deleting items. List also has sort() function that can be useful for such as shuffling flashcards.