💡 Lists

👋 Heads Up! This content is intended to be used in a facilitated session with mentors. Feel free to browse the materials here, but be aware that if you choose to work through this material in advance, you will still be expected to start from scratch and follow along with the rest of the class.

Lists

Learning Objectives:

- Understand what kind of data we would store in a list.
- Be able to create and update lists.

Introduction

Give a brief (verbal) description of what a list is, e.g. "A list is a way to store multiple pieces of related data in one variable. The data could be strings, booleans, integers, floats, of a mix of many different data types!"

Creating a List

Demonstrate:

1. How to create a list.
2. How to index list items (could also demonstrate this with strings).

Create a new file: `lists_playground.py`

Walk through (and have the students follow along on their own computers) an example to demonstrate the ideas listed above, for example:

```
chilli_wishlist = ["igloo", "chicken", "donut toy", "cardboard box"]

# indexing
print(len(chilli_wishlist))
print(chilli_wishlist[4])

print(chilli_wishlist[0])
print(chilli_wishlist[1])
print(chilli_wishlist[-1])
print(chilli_wishlist[0:2])
print(chilli_wishlist[1:3])
chilli_wishlist[1] = 'carrot'
```

Set a small challenge similar to the example you walked through, some ideas:

- Print the sublist of items in positions 2 through to 3.
- Print the item in the -3 position.

- Change the value of the first item in the list.

Adding and Removing Items

Demonstrate:

1. How to add items to a list.
2. How to remove items from a list.

Walk through (and have the students follow along on their own computers) an example to demonstrate the ideas listed above, for example:

```
chilli_wishlist.append('dig mat')
chilli_wishlist.extend(['kong', 'tennis ball', 'crocodile toy'])
chilli_wishlist.insert(1, 'peanut butter')
print(chilli_wishlist)

chilli_wishlist.pop()
chilli_wishlist.pop(2)
chilli_wishlist.remove('kong')
print(chilli_wishlist)
```

Set a small challenge similar to the example you walked through, some ideas:

- Add a new item to position -2
- Remove the third item from the list
- Add four new items to the end of the list.
- Remove the “igloo” item from the list.

Logic with Lists

Demonstrate:

1. Perform simple logic using lists.

Walk through (and have the students follow along on their own computers) an example to demonstrate the ideas listed above, for example:

```
if "tennis ball" in chilli_wishlist:
     print("Chilli would like a tennis ball.")
else:
     print("Chilli doesn't feel like playing fetch.")

if len(chilli_wishlist > 8):
     print("Chilli wants a lot of stuff!")
```

Set a small challenge similar to the example you walked through, some ideas:

- Use an if statement to check if blueberries are in the list, if they are missing, then add them.

Sublists

Demonstrate:

1. How to create sublists.
2. How to index items in sublists.

Walk through (and have the students follow along on their own computers) an example to demonstrate the ideas listed above, for example:

```
chilli_wishlist = [
     ['igloo'], # bed
     ['donut toy','tennis ball', 'crocodile toy'], # toys
     ['chicken', 'peanut butter'], # treats
     ['cardboard box', 'kong', 'dig mat'] # activity based toys
]

print(chilli_wishlist[2])
print(chilli_wishlist[2][1])
```

Set a small challenge similar to the example you walked through, some ideas:

- Use indexing to change the third item in the second list.
- Add another sublist to the list.