

CompSci 101 Lab 5

Part B

Lists
for ... in ... Loops



Lists

- A list is a sequence of items of any type.
- The list items are enclosed in square brackets and separated by commas.

Examples:

- `colours_list = ["red", "green", "blue", "yellow"]`
- `temperatures_list = [26.5, 38, 21, 19.5]`
- `is_finished_list = [True, False, False, True]`
- `contact_details = ["Ann", 413, True]`

Accessing Elements in a List

- Each element of a list has an index number.
- The index number always starts at 0 so the first element in a list is Element 0.
- Each element of a list can be accessed using its index number.

Examples:

- `colours_list[2] = "orange"`
 - would assign "orange" to Element 2 of `colours_list`
- `colours_list[-1] = "purple"`
 - would assign "purple" to the **last** element of `colours_list`

Joining Lists

- The concatenation operator '+' can be used to form a new list by joining lists together.

Examples:

- `colours_list += ["white", "yellow"]`
- `new_colours_list = colours_list + ["magenta"]
+ ["purple", "pink", "black"]`

The `append()` method

- To add an item onto the end of a list you can use the `append()` method.

Examples:

- `colours_list.append("cyan")`
- `numbers_list.append(5)`
- `booleans_list.append(True)`

The split() method

- The split() method separates a single string into a list of strings using the separator defined.

Example:

```
address = "123 ABC Street#Anywhere#Spain"  
address_list = address.split("#")  
print(address_list)
```

Would print:

```
["123 ABC Sreet", "Anywhere", "Spain"]
```

The split() method (continued)

- If no separator is defined then the default separator is whitespace (spaces, tabs, newlines).

Example:

```
sentence = "Today is Monday"  
words_list = sentence.split()  
print(words_list)
```

would print:

```
["Today", "is", "Monday"]
```

Iterating through a list using a for ... in ... loop

Example 1:

```
numbers_list = [6, 3, 0, 8]  
for number in numbers_list:  
    print(number)
```

would print the following:

6
3
0
8

Iterating through a list using a for ... in ... loop

Example 2:

- The following function creates another list of words from the list of words passed in as a parameter. It returns a list of all the words in the parameter list but with each word appearing only once – i.e. no duplicates.

```
def create_unique_list_of_words(words_list):  
    unique_list_of_words = []  
    for word in words_list:  
        if word not in unique_list_of_words:  
            unique_list_of_words.append(word)  
    return unique_list_of_words
```

Iterating through a list using a for ... in ... loop

Example 3:

The function below splits a paragraph into a list of words, then loops through the list of words and returns the smallest word.

```
def get_smallest_word(paragraph):  
    words_list = paragraph.split()  
    smallest_word = words_list[0]  
    for word in words_list:  
        if len(word) < len(smallest_word):  
            smallest_word = word  
    return smallest_word
```

Next week

No lab next week (week beginning 4th May)

Good luck for your test 😊