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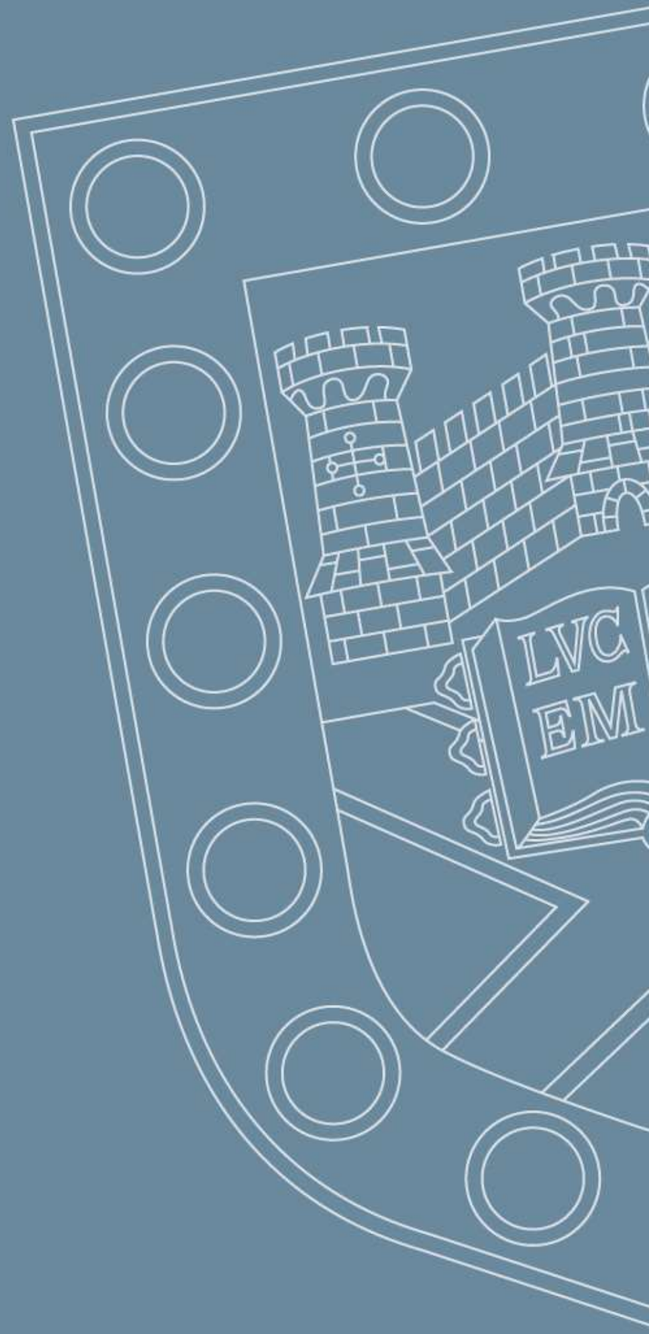
Python programming

Lists and dictionaries



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VARIABLES

Recap

```
n = 12
val = 0.01
msg_to = 'Bob‘
await_reply = False
```

LISTS

Initialise a list (collection)

```
my_list = ['Birmingham','Leeds','Manchester']
```

Uses square brackets [ ] and commas.

Can contain items of any type.

Can contain items of mixed types.

LISTS

Operations on lists

```
my_list = ['Birmingham','Leeds','Manchester']
new_list = my_list + ['Leicester']
```

Joins the two lists together.

What does this do?

```
my_list = ['Birmingham','Leeds','Manchester']
new_list = my_list * 2
```

LISTS

Lists can be indexed, and are *mutable*

```
my_list = ['Birmingham','Leeds','Manchester']
print(my_list[0])
my_list[0] = 'Bradford'
```

This may seem obvious, but strings DO NOT have this property. Try it.

How about -

```
my_list[3] = ‘Lincoln'
```

LISTS

Lists can be empty, and appended to

```
my_list = []
my_list.append('London')
print(my_list)
```

Other list method include

```
pop() remove() sort() reverse()
```

DICTIONARIES

An alternative *collection*

```
trees = {"oak": 1, "ash": 2, "willow" : 2, "hazel" : 1}
print(trees)
print(trees["oak"])
```

Each item within the dictionary has a key, value pair.

Keys are unique, and new keys can be added at any time.

```
trees = {}
trees["oak"] = 0
```

LISTS AND DICTIONARIES

Surprises

```
things = {"oak":True, 3:21, True:2, False:[0,None]}
print(things)
```

Both lists and dictionaries can contain a mix of types, and although keys must be unique, they can be of different types.

Watch out for this. (False is the same as 0)

```
things = {False:"untrue", 0:"hello"}
```

LISTS AND DICTIONARIES

Exercises

Write a function that takes a dictionary as an argument and returns either a list of keys, or a list of values.

```
def dict_to_list(dictionary, keys=True):
    # Your code here
    return result
```

Write a function to combine a list of keys and a list of values to form a dictionary.

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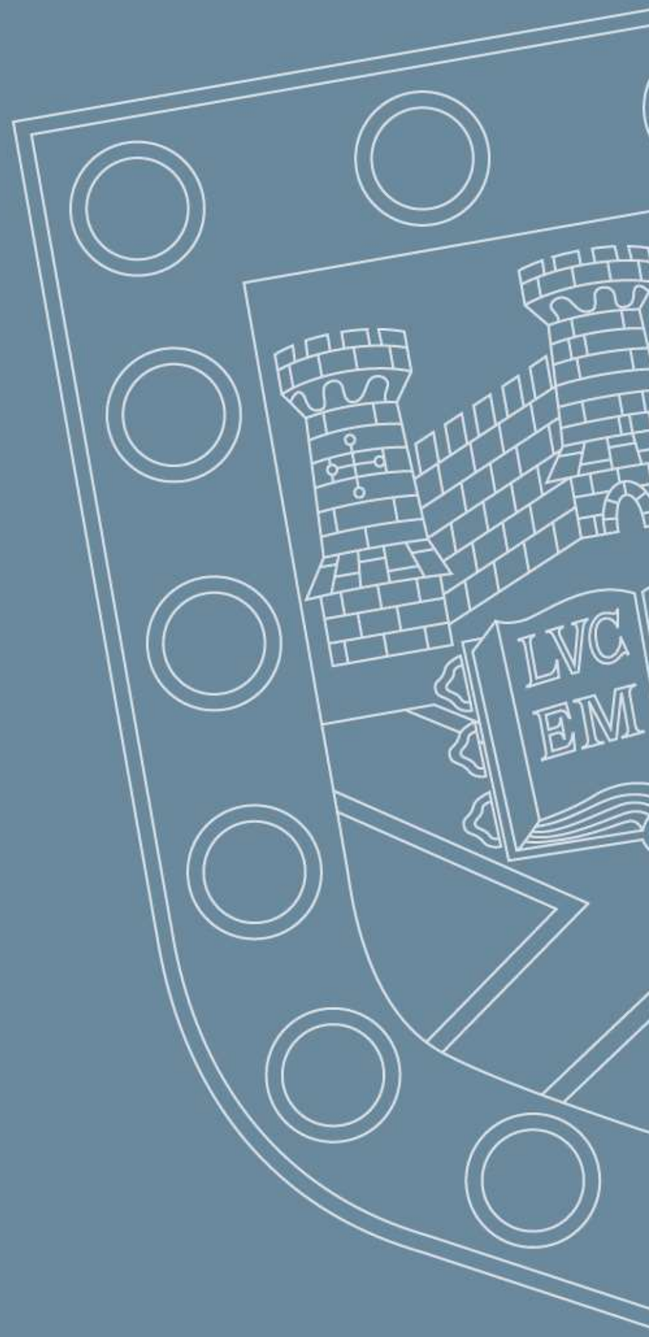

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