COMP10001

Week 6
With Lucy

First, some revision!

Do the following snippets do the same thing?
What are their advantages/disadvantages?

```
print("We need some saws")
print("We need some hammers")
print("We need some cogs")
print("We need some nails")
```

```
def get_str(part):
    return f"We need some {part}"

print(get_str("saws"))
print(get_str("hammers"))
print(get_str("cogs"))
print(get_str("nails"))
```

```
def get_str(part):
    return f"We need some {part}"

parts = ("saws", "hammers", "cogs", "nails")

for part in parts:
    print(get_str(part))
```

Consider the following loops. Are the two for loops equivalent? Why might you choose one over the other?

```
count = 0
items = ('eggs', 'spam', 'more eggs')
while count < len(items):
    print(f"we need to buy more {items[count]}")
    count += 1
```

```
items = ('eggs', 'spam', 'more eggs')
for count in range(len(items)):
    print(f"we need to buy more
{items[count]}")
```

```
items = ('eggs', 'spam', 'more eggs')
for item in items:
    print(f"we need to buy more
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Dictionaries and sets

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- Access values with index notation: dictionary_name[key] gives value
- Add values by declaring a key value pair: dictionary_name[key] = value
- Remove values with .pop(): dictionary_name.pop(key)

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  - .pop(key) deletes the key:value pair associated with that key in a dictionary
  - .pop() called without a key on a dictionary raises an error

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- Sets store collections of unique objects
- E.g. use to remove duplicates from a list
- Also use to get access to set operations!

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- Intersection:
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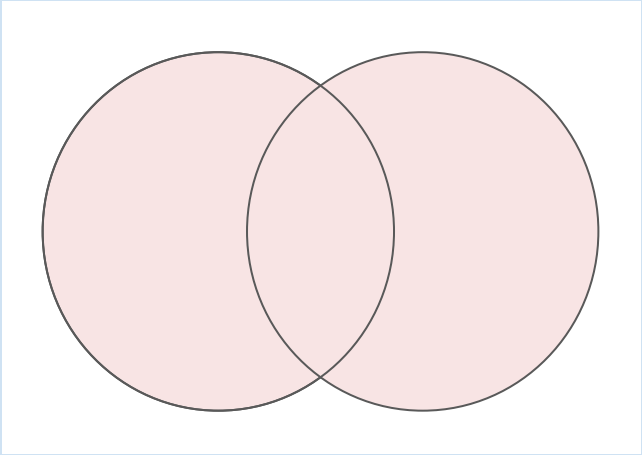

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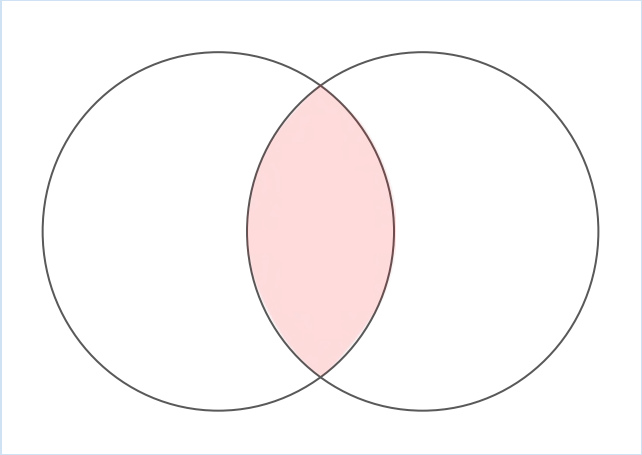

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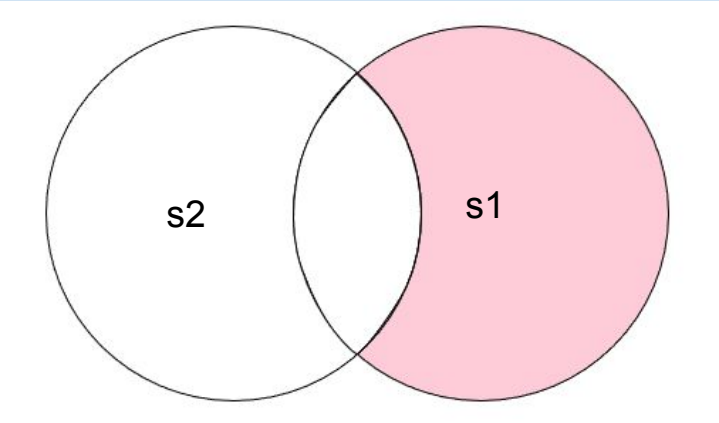

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- Adding an item: `my_set.add(item)`
- Removing an item: `my_set.remove(item)`

Exercises!

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- None is a special value:
  - The thing that's returned when a function has no return statement
  - Value we get when we assign to many mutating methods, e.g. .append()
- Represents the *absence of a result*
- Its own type (not really Boolean!) so no value of any other type has equality with it!

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- `sorted(my_list)` does not change the value of the variable `my_list`
- `my_list.sort()` changes the value of the variable `my_list`

- `.sort()` changes the value of `my_list` ***in-place***

What is the difference between sorted() and .sort() when applied to a list?

- For example:

```
lst = [2,1,3]
new_lst = lst.sort()
print(lst, new_lst)
```

```
lst = [2,1,3]
new_lst = sorted(lst)
print(lst, new_lst)
```

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- For example:

```
lst = [2,1,3]
new_lst = lst.sort()
print(lst, new_lst)
```

```
[1,2,3] None
```

```
lst = [2,1,3]
new_lst = sorted(lst)
print(lst, new_lst)
```

```
[2,1,3] [1,2,3]
```

Exercises!

Write a function with takes a string as inputs and print the frequency of each character in the string, using a dictionary

E.g. `freq_counts("booboo")`
should print:

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b 2

o 4
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```
def freq_count(words):
    freqs = {}
    for letter in words:
        if letter in freqs:
            freqs[letter] += 1
        else:
            freqs[letter] = 1
    for key in freqs:
        print(key, freqs[key])
```

Write a function which takes two lists as input and returns a list containing the numbers which they both have in common

E.g., `in_common([1,2,4], [3,4,5])` should return `[4]`

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```
def in_common(list_1, list_2):
    set_1 = set(list_1)
    set_2 = set(list_2)
    common = set_1 & set_2
    return list(common)
```