Selection statements

(continued)

Review of key points:

```
if expression:
```
indent → `//execute statements A`
 `//(which are indented)`

```
//execute statements B
//(which are NOT indented)
```

if **expression** evaluates to true, then:

      execute statements **A**,
      execute statements **B**.

But if expression evaluates to false, then:

      execute statements **B** only.

Review of key points:

- The statements to be executed must be indented
- Use spaces or tabs, but spaces are recommended (4 spaces)
- Do NOT mix spaces and tabs
- Indentation must be consistent for all statements
- When in doubt, check Python Style Guide (PEP 8)

```python
if expression:
    execute statement 1
    ...
    execute statement N
```

Review of key points:

```python
if x > 0:
    print("greater!")
```

Our code:

```python
x = 1
```

Python displays:

```
greater
```

Review of key points:

```python
if x > 0:
    print("greater!")
elif x < 100:
    print("smaller!")
```

Our code:

```python
x = 1
```

Python displays:

```
greater!
```

Review of key points:

```python
if x > 0:
    print("greater!")
elif x < 100:
    print("smaller!")
```

Our code:

```python
x = -101
```

Python displays:

```
smaller!
```

Review of key points:

```python
if x > 0:
    print("greater!")
elif x < 100:
    print("smaller!")
else:
    print("whatever's left!")
```

Our code:

```python
x = -5
```

Python displays:

```
whatever's left!
```

Review of key points:

- Evaluate boolean expressions until:
  - The boolean expression returns True
  - None of the boolean expressions return True

- If a boolean returns True, run the corresponding suite.
  Skip the rest of the if

- If no boolean returns True, run the else suite, the default suite

Comparison (or relational) operators

An expression will evaluate to a Boolean value when you **compare** two expressions to get a value of true or false:

    `a < b` evaluates to true if `a` is less than `b`

We use the following **comparison operators**:

>	greater than	5 > 3	evaluates to true
<	less than	5 < 3	evaluates to false
==	equal	4 == 4	evaluates to true
<=	greater than or equal	etc...	
>=	less than or equal		
!=	not equal		

Logical operators

An expression will evaluate to a Boolean value when you combine two **Boolean** expressions with **logical operators**:

expression1 and expression2   a **and** b

*evaluates to true if **both** a and b are true*

expression1 or expression2   a **or** b

*evaluates to true if **either** a **or** b are true*

...or when you negate a **Boolean** expression with the NOT operator:

not expression1   **not** a

evaluates to true if a is false, and to false if a is true

Using logical operators: truth tables

p	q	not p	p and q	p or q
true	true			
true	false			
false	true			
false	false			

Using logical operators: truth tables

p	q	not p	p and q	p or q
true	true	false		
true	false	false		
false	true	true		
false	false	true		

Using logical operators: truth tables

p	q	not p	p and q	p or q
true	true		true	
true	false		false	
false	true		false	
false	false		false	

Using logical operators: truth tables

p	q	not p	p and q	p or q
true	true			true
true	false			true
false	true			true
false	false			false

Using logical operators: truth tables

p	q	not p	p and q	p or q
true	true	false	true	true
true	false	false	false	true
false	true	true	false	true
false	false	true	false	false

Practice...