If ... Else

Python supports the usual logical conditions from mathematics:

- Equals: **a == b**
- Not Equals: **a != b**
- Less than: **a < b**
- Less than or equal to: **a <= b**
- Greater than: **a > b**
- Greater than or equal to: **a >= b**

These conditions can be used in several ways, most commonly in "if statements" and loops.

An "if statement" is written by using the if keyword.

```
a = 33
b = 200
if b > a:
  print("b is greater than a")
```

```
b is greater than a
```

In this example above, we use two variables, a and b, which are used as part of the if statement to test whether b is greater than a. As a is 33, and b is 200, we know that 200 is greater than 33, and so we print to screen that "b is greater than a".

Indentation

Python relies on indentation (whitespace at the beginning of a line) to define scope in the code. Other programming languages often use curly-brackets for this purpose.

```
a = 33
b = 200

if b > a:
print("b is greater than a")
```

```
  File "demo_if_error.py", line 4
    print("b is greater than a")
        ^
IndentationError: expected an indented block
```

Elif

The **elif** keyword is pythons way of saying "if the previous conditions were not true, then try this condition".

```
a = 33
b = 33
if b > a:
  print("b is greater than a")
elif a == b:
  print("a and b are equal")
```

```
a and b are equal
```

In this example a is equal to b, so the first condition is not true, but the elif condition is true, so we print to screen that "a and b are equal".

Else

The **else** keyword catches anything which isn't caught by the preceding conditions.

```
a = 200
b = 33
if b > a:
  print("b is greater than a")
elif a == b:
  print("a and b are equal")
else:
  print("a is greater than b")
```

```
a is greater than b
```

In this example a is greater than b, so the first condition is not true, also the elif condition is not true, so we go to the else condition and print to screen that "a is greater than b".

Short Hand If

If you have only one statement to execute, you can put it on the same line as the if statement.

One line if statement:

```
if a > b: print("a is greater than b")
```