# **Day 4**

## Operators

Used in testing conditions and manipulating values.

Expression: 2 + 3

When two objects of a different type, like **str** and **int**, are compared they are never equal, except for different numeric types like **int** and **float** which can be equal.

**TypeError**, occurs when any operand is a complex number if the objects are different types that cannot be compared to one another, or where there is no defined ordering. **<**, **<=**, **>** and **>=**

## Using Operators

**Operators** perform operations on expressions using symbols or keywords.

**Operands** are the data on which operators operate.

**2 + 3** # + is the operator, 2 and 3 are operands

**Mathematical Operators:**

* Adds two numbers. **5 + 2** # Result: 7
* Subtracts one number from another. **5 - 2** # Result: 3
* Multiplies two numbers. **5 \* 2** # Result: 10
* Divides one number by another. **5 / 2** # Result: 2.5
* Returns the integer result of division. **8 // 5** # Result: 1
* Returns the remainder of division. **8 % 5** # Result: 3

**Mathematical Functions:**

* **abs(a):** Absolute value of a. **abs(-8)** # Result: 8
* **int(a):** Converts a to an integer. **int("776")** # Result: 776
* **float(a):** Converts a to a floating point number. **float("5.4")** # Result: 5.4
* **complex(re, imag):** Creates a complex number. **complex(8, 3)** # Result: (8+3j)
* **divmod(a, b):** Returns (a // b, a % b). **divmod(8, 5)** # Result: (1, 3)
* **pow(a, b) or a \*\* b:** a raised to the power b. **8 \*\* 3** # Result: 512

**Comparison Operators:**

* **<, <=, >, >=, ==, !=:** Compare values and return True or False.
* **is:** Checks if two objects are identical.
* **is not:** Checks if two objects are not identical.

7 < 8.8 # Result: True

7 <= 8.8 # Result: True

7 > 8.8 # Result: False

7 >= 8.8 # Result: False

7 == 8.8 # Result: False

7 != 8.8 # Result: True

7 is not 8.8 # Result: True

**Assignment Operators:**

* **-=:** Subtract and assign.
* \***=:** Multiply and assign.
* **/=:** Divide and assign.
* **%=:** Modulus and assign.

x = 16

x -= 2 # x now equals 14

x \*= 2 # x now equals 28

x /= 4 # x now equals 7

x %= 3 # x now equals 1