**Key takeaways**

1. The **comparison** (or the so-called *relational*) operators are used to compare values. The table below illustrates how the comparison operators work, assuming that x = 0, y = 1, and z = 0:

|  |  |  |
| --- | --- | --- |
| **Operator** | **Description** | **Example** |
| == | returns if operands' values are equal, and False otherwise | x == y # False  x == z # True |
| != | returns True if operands' values are not equal, and False otherwise | x != y # True  x != z # False |
| > | True if the left operand's value is greater than the right operand's value, and False otherwise | x > y # False  y > z # True |
| < | True if the left operand's value is less than the right operand's value, and False otherwise | x < y # True  y < z # False |
| ≥ | True if the left operand's value is greater than or equal to the right operand's value, and False otherwise | x >= y # False  x >= z # True  y >= z # True |
| ≤ | True if the left operand's value is less than or equal to the right operand's value, and False otherwise | x <= y # True  x <= z # True  y <= z # False |

2. When you want to execute some code only if a certain condition is met, you can use a **conditional statement**:

* a single if statement, e.g.:

x = 10

if x == 10: # condition

print("x is equal to 10") # executed if the condition is True

* a series of if statements, e.g.:

x = 10

if x > 5: # condition one

print("x is greater than 5") # executed if condition one is True

if x < 10: # condition two

print("x is less than 10") # executed if condition two is True

if x == 10: # condition three

print("x is equal to 10") # executed if condition three is True

Each if statement is tested separately.

* an if-else statement, e.g.:

x = 10

if x < 10: # condition

print("x is less than 10") # executed if the condition is True

else:

print("x is greater than or equal to 10") # executed if the condition is False

* a series of if statements followed by an else, e.g.:

x = 10

if x > 5: # True

print("x > 5")

if x > 8: # True

print("x > 8")

if x > 10: # False

print("x > 10")

else:

print("else will be executed")

Each if is tested separately. The body of else is executed if the last if is False.

* The if-elif-else statement, e.g.:

x = 10

if x == 10: # True

print("x == 10")

if x > 15: # False

print("x > 15")

elif x > 10: # False

print("x > 10")

elif x > 5: # True

print("x > 5")

else:

print("else will not be executed")

If the condition for if is False, the program checks the conditions of the subsequent elif blocks - the first elif block that is True is executed. If all the conditions are False, the else block will be executed.

* Nested conditional statements, e.g.:

x = 10

if x > 5: # True

if x == 6: # False

print("nested: x == 6")

elif x == 10: # True

print("nested: x == 10")

else:

print("nested: else")

else:

print("else")

**Key takeaways: continued**

**Exercise 1**

What is the output of the following snippet?

x = 5

y = 10

z = 8

print(x > y)

print(y > z)  
Check

False

True

**Exercise 2**

What is the output of the following snippet?

x, y, z = 5, 10, 8

print(x > z)

print((y - 5) == x)  
Check

False

True

**Exercise 3**

What is the output of the following snippet?

x, y, z = 5, 10, 8

x, y, z = z, y, x

print(x > z)

print((y - 5) == x)  
Check

True

False

**Exercise 4**

What is the output of the following snippet?

x = 10

if x == 10:

print(x == 10)

if x > 5:

print(x > 5)

if x < 10:

print(x < 10)

else:

print("else")  
Check

True

True

else