# Control Statements

## Exercises

### Week 3

Prior to attempting these exercises ensure you have read the lecture notes and/or viewed the video, and followed the practical. You may wish to use the Python interpreter in interactive mode to help work out the solutions to some of the questions.

Download and store this document within your own filespace, so the contents can be edited. You will be able to refer to it during the test in Week 6.

Enter your answers directly into the highlighted boxes.

For more information about the module delivery, assessment and feedback please refer to the module within the MyBeckett portal.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## ©2021 Mark Dixon / Tony Jenkins

What is the *data-type* of the result when evaluating comparison (relational) expressions such as < and >?

*Answer:*

The data-type would be a Boolean value of True or False.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

For each of the following expressions write the result of their evaluation.

100 < 101

*Answer:*

True

100 > 99

*Answer:*

True

100 >= 100

*Answer:*

True

100 != 100

*Answer:*

False, as 100 is equal to 100

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

For each of the following expressions write the result of their evaluation.

"abc" < "xyz"

*Answer:*

True, because python uses the ASCII order to check and evaluate.

"abc" < "XYZ"

*Answer:*

False, because lower-case letters are greater than the upper-case letters.

"100" == 100

*Answer:*

False

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

For each of the following expressions write the result of their evaluation.

10 > 20 and 10 >= 10

*Answer:*

False

10 > 30 > 20

*Answer:*

False

40 < 20 or 20 < 30

*Answer:*

True

not True

*Answer:*

False

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

What would be the output shown following the execution of the following Python statements?

colours = [ "Blue", "Black", "Orange" ]

print("The colour black is in the list : ", "Black" in colours)

*Answer:*

True, as Black is in the list list of colours shown above.

print("The colour orange is in the list : ", "orange" in colours)

*Answer:*

False, as there is capitalization in the colours list. Therefor, it should be “Orange” not “orange”

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Which of the following concepts does the Python ‘if’ statement support?

**Sequence**, **Selection** or **Iteration**?

*Answer:*

The ‘if’ statement supports selection. The statement is mostly written as a Boolean expression and it looks at the result of the expression to choose to execute.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

What would be the output shown following the execution of the following Python statements?

num1 = 100

num2 = 10

if num1 % num2 == 0:

print("num1 is divisible by num2")

else:

print("num1 is not divisible by num2")

*Answer:*

The output would be the if statement: num1 is divisible by num2. Because the remainder of 100/10 is 0.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

What would be the output shown following the execution of the following Python statements?

num1 = 99

num2 = 70

if num1 < num2:

print("num1 is less than num2")

elif num1 > num2:

print("num1 is greater than num2")

else:

print("num1 is equal to num2")

*Answer:*

The output would be elif statement: “num1 is greater than num2” as 99 is greater than 70.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

What is the name given to the following type of Python operator shown below?

lowest = x if x < y else y

*Answer:*

The type of operator is called the ternary operator. The first value is if the condition is true and else is if the value is false.

And, what value would be assigned to the variable ‘lowest’ when ‘x’ was equal to 10 and ‘y’ was equal to 5?

*Answer:*

The value would be 5.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Within the answer box below write a small Python program, that asks the user to enter a value between 1 and 10.

Once the value has been input display a message saying whether the value was in the requested range.

Remember: values returned from the **input()** function are *strings*, and need converting before being used within expressions, i.e. you will need code such as this -

num = input("please enter a number between 1 and 10 : ")

num = int(num)

*Answer:*

num = int(input("Enter a value between (1-10): "))

if 0 < num <= 10:

print("The value is", num)

else:

print("The value is not within 1 to 10")

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Within the answer box below write a small Python program that asks the user to enter two values. Store these in variables called x and y respectively.

If the 'x' value is larger than 'y' then print

The value 'x' is larger than the value 'y'

otherwise print

The value 'y' is larger than the value 'x'

*Answer:*

x = int(input("Enter the first value: "))

y = int(input("Enter the second value: "))

if x > y:

print(f"The value {x} is larger than the value {y}")

else:

print(f"The value {y} is larger than the value {x}")

Examine the output generated by the above program. Is the displayed text entirely accurate in all cases? If not Why?

*Answer:*

The above program is not completely accurate as there is no condition if the number is equal

So the output would be incorrect.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Within the answer box below write a small Python program that asks the user to enter two values.

Store these values in two variables then output a message displaying the result of dividing the first value by the second value.

Include code that prevents a run-time error being reported when the user inputs a value of '0' for the second input. *Hint:* use an ‘if’ statement

If a '0' value is input, print a message saying "division by 0 is not possible".

*Answer:*

x = int(input("Enter the first value: "))

y = int(input("Enter the second value: "))

if x == 0 or y == 0:

print("division by 0 is not possible")

else:

print(x/y)

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Which of the following concepts does the Python while statement support?

**Sequence**, **Selection** or **Iteration**?

*Answer:*

The while statement supports iteration as the statement is executed and looped repeatedly as long as the condition is True.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

What would be the output shown following the execution of the following Python statements?

num = 5

while num > 0:

print(num)

num -= 1

*Answer:*

The output would go down by 1 each iteration from 5 to 0.

5, 4, 3, 2, 1.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Write a small Python program that prints your name to the screen 100 times, then enter the program into the answer box below. Hint: use a ‘while’ loop.

*Answer:*

name = 0

while name < 100:

print("Swastik")

name += 1

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

What would be the output shown following the execution of the following Python statements?

vals = ["A", "B", "C", "D"]

for letter in vals:

print(letter)

*Answer:*

The output would be the iteration of the letters inside the vals list.

A

B

C

D

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

What would be the output shown following the execution of each of the following Python statements?

for num in range(5):

print(num)

*Answer:*

The output would be the numbers ranging from 0 to 4 as the iteration starts from 0.

0, 1, 2, 3, 4

for num in range(10,16):

print(num)

*Answer:*

The output would be numbers 10 to 15 as 16 is exclusive.

10, 11, 12, 13, 14, 15

for num in range(0,10,-1):

print(num)

*Answer:*

There will be no output as the “step” value is decreasing by 1 and the range is only till 0 to 9.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Enter and execute the python code shown below, then show the exact output into the answer box.

for x in range(1,10):

for y in range (1,x):

print("\*")

print()

*Answer:*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

What is the term used to refer to code blocks that appear inside other code blocks as in the above program?

*Answer:*

The term is called Nested blocks or code.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## **Exercises are complete**

Save this logbook with your answers. Then ask your tutor to check your responses to each question.