# 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.

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

*Answer:*

Boolean data-type

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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

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

"abc" < "xyz"

*Answer:*

True

"abc" < "XYZ"

*Answer:*

True

"100" == 100

*Answer:*

False

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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

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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:*

The colour black is in the list : True

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

*Answer:*

The colour orange is in the list : False

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

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

*Answer:*

Selection

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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:*

num1 is divisible by num2

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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:*

num1 is greater than num2

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

lowest = x if x < y else y

*Answer:*

Ternary operator

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 of ‘lowest’ will be ‘5’.

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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:*

# Ask the user to enter a number between 1 and 10

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

# Convert the input to an integer

num = int(num)

# Check if the entered value is in the requested range

if 1 <= num <= 10:

print("The entered value is in the requested range.")

else:

print("The entered value is outside the requested range.")

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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:*

# Ask the user to enter two values

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

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

# Compare the values and print the result

if x > y:

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

elif x < y:

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

else:

print("The values x and y are equal.")

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

*Answer:*

The output will accurately reflect the relationship between x and y in all the cases.

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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:*

# Ask the user to enter two values

num1 = float(input("Enter the first value: "))

num2 = float(input("Enter the second value: "))

# Check if the second value is 0 to prevent division by zero

if num2 == 0:

print("Division by 0 is not possible.")

else:

# Output the result of dividing the first value by the second value

result = num1 / num2

print(f"The result of {num1} divided by {num2} is: {result}")

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

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

*Answer:*

Iteration

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

num = 5

while num > 0:

print(num)

num -= 1

*Answer:*

5

4

3

2

1

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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:*

count = 0

while count < 100:

print("Your Name") # Replace "Your Name" with your actual name

count += 1

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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:*

A

B

C

D

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

for num in range(5):

print(num)

*Answer:*

0

1

2

3

4

for num in range(10,16):

print(num)

*Answer:*

10

11

12

13

14

15

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

print(num)

*Answer:*

9

8

7

6

5

4

3

2

1

0

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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:*

nested code blocks or nested structures

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## **Exercises are complete**

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