Lab 6: Boolean operators, range checking, in and not in

Refresher quiz

Which of these code snippets returns the length of a string.

- ○ len(string)
- ○ string.length()
- ○ length(string)
- ○ string.len()

Check

I am confused

A reminder of Boolean operators before you start the lab exercises:

Operator	Effect
and	*Both* expressions must be true for the overall expression to be true
or	One or both expressions must be true for the overall expression to be true
not	A unary operator, it returns the opposite of a Boolean expression

The example below demonstrates `and` and `or` operators:

```
x = int(input("Type a number >>> "))
y = int(input("And another number >>> "))
if x == 4 and y == 4:
    print("Both are four")
elif x == 4 or y == 4:
    print("One of the numbers is four")
else:
    print("Neither is four")
```

1. TRIANGLE CHECKER

Write a program that receives the lengths of the three sides of a triangle and determines if the triangle is either equilateral (all sides equal (`and`)) or isosceles (two sides equal (`or`)) or scalene (no sides equal (`else`)).

2. FOOTBALL MATCH REVIEW

Write a program to comment on how interesting a football match was.

- If no goals were scored, Python should say “the game was a boring draw!”
- 1-2 goals: “Not the most interesting game”
- 3-5 goals: “It was a very interesting game”
- 6+ goals: “The football match was an unmissable game!”

This uses ranges: `5 < b <= 10`, for example, returns `True` if b is greater than 5 and less than or equal to 10, otherwise it returns `False` otherwise.

3. WEATHER CHECKER

Write a program that reads a temperature in Celsius from the user (an integer). If the temperature is

- 10 or less, print "Brr, It's a cold day!"
- more than 10 but less than or equal to 15, print "It's a mild day"
- more than 15 but less than 21, print "It's a warm day"
- 21 or above, print "It's a hot day"

4. LETTER CHECKER

Write a program that asks for and reads a letter of the alphabet from the user.

- If the user enters anything other than a letter display an error message (`.isalpha()`).
- Or else if the user enters `a`, `e`, `i`, `o` or `u` then your program should display a message indicating that the entered letter is a vowel.
- Or else if the user enters `y` then your program should display a message indicating that sometimes y is a vowel (e.g. rhythm), and sometimes y is a consonant (e.g. yellow).
- Or else your program should display a message indicating that the letter is a consonant.

5. BEATLES NAMES 🎼

Ask the user for their name. If their name is John, George, Ringo or Paul print "Hey that's the name of a Beatle!". If not, print "That's a nice name". Write the if statement using a tuple and the `in` operator.

6. STRING COMPARISON 💬 solution (https://cit.instructure.com/courses/108475/files/3176659?wrap=1) ⬇ (https://cit.instructure.com/courses/108475/files/3176659/download?download_frd=1)

1. Read two words from the user and put them in alphabetical order
2. Read three words from the user and put them in alphabetical order

7. GROUP EXERCISE 🤸 (please wait for me to initiate this exercise)

In exercise 3, you wrote code to comment on the weather based on the temperature. If you were a lecturer and you were in charge of evaluating student's code how would you assign marks for this exercise? Consider the importance of code functionality (does the code do what it is meant to do?), code readability (choice of variable identifiers, comments, clear layout).

You have 10 marks to give for successful completion of this exercise, create a rubric for these 10 marks. Write your completed rubric down and clearly define each gradable component and the marks assigned to it.

Once you have completed your rubric discuss it with your neighbour. After your discussion use the rubric to evaluate your neighbour's code. Ensure you point out to good things that they did that gained them marks. Make a note of the improvements they could make in future iterations of their code.

EXTRA EXERCISES ⚽🗡️🏓

A local Sports Club is applying for a grant from the Sports Council.
To apply they must enter the name of the club and the amount of funding raised locally.
To get a grant they need to have done some local fund-raising and the amount they receive will then depend on the
amount they have raised locally.
The rules governing how much money will be given by the Sports Council to the Club are shown below:

Local Funding Raised	Sports Council Funding due
Up to €10,000	No Extra funding
€10,000 up to €50,000	Match 50% funds raised
€50,000 or over	€25,000 donation

Write a program that asks for the

- name of the club
- amount of funding raised locally

The program will then print a message to congratulate them on their application or wish them better luck next time.
It will also show the amount of funding, if any, that will be received from the Sports Council.

If you are happy with all of this week's lab exercises you can have a look at this resource and see if you can use this style in any of your exercises: 🌈 **COMP1C Changing the colour in the console (Not Required Reading) (https://cit.instructure.com/courses/108475/pages/comp1c-changing-the-colour-in-the-console-not-required-reading?wrap=1)**