CompSci 101 Lab 4 — if, if…else, if…elif, while loops

Topics covered:

- `if, if … else, and if … elif` statements
- `while` loops
- boolean expressions
- relational operators
- boolean operators (`and`, `or`, `not`)

Programming Exercises

IMPORTANT: for each of your programs you need to add a docstring at the top of the program. The docstring should contain your name, your username, date and a short description of the program.

Notes

1. The skeleton code for each of the Lab 4 programs is provided. Each program requires you to complete a function. As you complete each function you can test that the function is correct by pasting the whole function (including the header) into CodeRunner3 and pressing the CHECK button.
2. After the description of each program there is a textbox with some example code and beside it a textbox containing the expected output for that code.

Question 1 Program 1

Define the `get_feedback(mark, out_of)` function which is passed two integer parameters: a mark (`mark`), and how much the mark is out of (`out_of`). The function calculates the percentage mark rounded to the nearest whole number and returns whichever of the following strings is appropriate:

- `"Excellent"` - If the percentage mark is 80 or more,
- `"Good"` - If the percentage mark is between 60 and 79,
- `"Pass"` - If the percentage mark is between 50 and 59,
- `"Not a pass"` - If the percentage mark is less than 50.

```
print(get_feedback(15, 20))
print(get_feedback(100, 200))
```

```
Good
Pass
```

Question 2 Program 2

Complete the

```
get_ticket_price(number_of_tickets, price_per_ticket, has_discount, is_a_member)
```

function which is passed four parameters: the number of tickets, the price of each ticket, a boolean indicating whether a discount is to be applied to the price and a boolean indicating whether the buyer is a member or not. The function returns the total price of the tickets rounded to the nearest whole dollar. The price of the tickets is calculated according to the following:

- If the buyer is a member and has a discount then the price is 80% of the full price,
- if the buyer has a discount but is not a member then the price is 85% of the full price,
- if the buyer is a member but does not have a discount then the price is 90% of the full price,
- otherwise the price is the full price.

```
print("$" + str(get_ticket_price(5, 20, False, True)))
print("$" + str(get_ticket_price(5, 20, False, False)))
```

```
$90
$100
```

Question 3 Program 3

Complete the `print_even_numbers(first_num, last_num)` function which is passed two integer parameters. The function prints all the even numbers between the two parameter numbers (both inclusive) in one line of output. Each number is separated from the next number by a single space (there is a space after the last number).

Notes

- Your code **MUST** use a `while` loop.
- If the second parameter is less than the first parameter then nothing is printed.

```
print_even_numbers(6, 20)
print_even_numbers(7, 20)
```

```
6 8 10 12 14 16 18 20
8 10 12 14 16 18 20
```

Question 4 Program 4

Complete the `remove_spaces(phrase)` function which is passed a string parameter. The function returns the string which is the same as the parameter string after all the spaces have been removed.

Notes

- Your code **MUST** use a `while` loop.

```
print(remove_spaces("programming  is such fun,  fun,   fun"))
print(remove_spaces("1 5 67 88    "))
```

```
programmingissuchfun,fun,fun
156788
```

Question 5 Program 5

Define the `get_letter(word)` function which is passed a string parameter. The function first prints the parameter string on a single line and then keeps prompting the user for a valid index number using the prompt "`Enter index: `"until the user enters a **positive** index number which is a valid index number of the parameter string. The function returns the letter at the index number entered by the user.

Notes

- Your code **MUST** use a `while` loop.

```
letter = get_letter("Dreams")
print(letter)
```

In this example output the user input is shown in a larger font and in bold.

```
Dreams
Enter index: 8
Enter index: 6
Enter index: -2
Enter index: 1
r
```

Question 6 Program 6

Complete the `test_number(number)` function which is passed an integer parameter. The function returns `True` if the parameter number is an even number between 30 and 50 (both inclusive), otherwise the function returns `False`.

```
print(test_number(28))
print(test_number(30))
```

```
False
True
```

Question 7 Program 7

Complete the `test_string(phrase)` function which is passed a string parameter. The function returns `True` if the parameter string starts or ends with a lowercase or uppercase vowel (`'aeiouAEIOU'`) and has an even number of characters (including spaces), otherwise the function returns `False`.

```
print(test_string("Anatonis"))
print(test_string("PD"))
```

```
True
False
```